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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

The present document is part 3 of a multi-part deliverable covering the 5G System (5GS) User Equipment (UE) protocol conformance specification, as identified below:

- 3GPP TS 38.523-1 [8]: "5GS; User Equipment (UE) conformance specification; Part 1: Protocol".
- 3GPP TS 38.523-2 [9]: "5GS; User Equipment (UE) conformance specification; Part 2: Applicability of protocol test cases".
- **3GPP TS 38.523-3: "5GS; User Equipment (UE) conformance specification; Part 3: Protocol Test Suites"** (the present document).

1 Scope

The present document specifies the protocol and signalling conformance testing in TTCN-3 for the 3GPP UE connecting to the 5G System (5GS) via its radio interface(s).

The following TTCN test specification and design considerations can be found in the present document:

- the test system architecture;
- the overall test suite structure;
- the test models and ASP definitions;
- the test methods and usage of communication ports definitions;
- the test configurations;
- the design principles and assumptions;
- TTCN styles and conventions;
- the partial PIXIT proforma;
- the test suites.

The Test Suites designed in the document are based on the test cases specified in prose in 3GPP TS 38.523-1 [8]. The applicability of the individual test cases is specified in 3GPP TS 38.523-2 [9].

The present document is valid for TTCN development for 5GS UE conformance test according to 3GPP Releases starting from Release 15 up to the Release indicated on the cover page of the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [3] ISO/IEC 9646-7: "Information technology - Open systems interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [4] ETSI ES 201 873: "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3".
- [5] 3GPP TS 38.508-1: "5GS; User Equipment (UE) conformance specification; Part 1: Common test environment".
- [6] 3GPP TS 38.508-2: "5GS; User Equipment (UE) conformance specification; Part 2: Common Implementation Conformance Statement (ICS) proforma".
- [7] 3GPP TS 38.509: "5GS; Special conformance testing functions for User Equipment (UE)".

- [8] 3GPP TS 38.523-1: "5GS; User Equipment (UE) conformance specification; Part 1: Protocol".
- [9] 3GPP TS 38.523-2: "5GS; User Equipment (UE) conformance specification; Part 2: Applicability of protocol test cases".
- [10] 3GPP TS 36.508: "Common test environments for User Equipment (UE) conformance testing".
- [11] 3GPP TS 36.509: "Terminal logical test interface; Special conformance testing functions".
- [12] 3GPP TS 36.523-3: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 3: Test suites".
- [13] 3GPP TS 38.321: "NR; Medium Access Control (MAC) protocol specification".
- [14] 3GPP TS 38.322: "NR; Radio Link Control (RLC) protocol specification".
- [15] 3GPP TS 38.323: "NR; Packet Data Convergence Protocol (PDCP) specification".
- [16] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification".
- [17] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA) Radio Resource Control (RRC); Protocol Specification".
- [18] 3GPP TS 24.301: "Non-Access-Stratum (NAS) Protocol for Evolved Packet System (EPS); Stage 3".
- [19] 3GPP TS 38.211: "NR; Physical channels and modulation".
- [20] 3GPP TS 38.212: "NR; Multiplexing and channel coding".
- [21] 3GPP TS 38.213: " NR; Physical layer procedures for control".
- [22] 3GPP TS 38.214: "NR; Physical layer procedures for data".
- [23] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation".
- [24] 3GPP TS 38.304: "NR; User Equipment (UE) procedures in Idle mode and RRC Inactive state".
- [25] 3GPP TS 33.501: "Security architecture and procedures for 5G system".
- [26] 3GPP TS 24.501: "Non-Access-Stratum (NAS) Protocol for 5G System (5GS); Stage 3".
- [27] RFC 5448: "Improved Extensible Authentication Protocol Method for 3rd Generation Authentication and Key Agreement (EAP-AKA')".
- [28] 3GPP TS 37.571-4: "User Equipment (UE) conformance specification for UE positioning; Part 4: Test Suites".
- [29] 3GPP TS 37.355: " LTE Positioning Protocol (LPP)".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

In addition for the purposes of the present document, the following terms, definitions, symbols and abbreviations apply:

- such given in ISO/IEC 9646-1 [2] and ISO/IEC 9646-7 [3]

NOTE: Some terms and abbreviations defined in [2] and [3] are explicitly included below with small modification to reflect the terminology used in 3GPP.

Implementation eXtra Information for Testing (IXIT): A statement made by a supplier or implementer of an UEUT which contains or references all of the information (in addition to that given in the ICS) related to the UEUT and its testing environment, which will enable the test laboratory to run an appropriate test suite against the UEUT.

IXIT proforma: A document, in the form of a questionnaire, which when completed for an UEUT becomes an IXIT.

Protocol Implementation Conformance Statement (PICS): An ICS for an implementation or system claimed to conform to a given protocol specification.

Protocol Implementation eXtra Information for Testing (PIXIT): An IXIT related to testing for conformance to a given protocol specification.

3.2 Symbols

No specific symbols have been identified so far.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

5GC	5G Core Network
ASP	Abstract Service Primitive
ATS	Abstract Test Suite
AWGN	Additive White Gaussian Noise
CA	Carrier Aggregation
CBRA	Contention Based Random Access
CC	Component Carriers
CCE	Control Channel Element
CFRA	Contention Free Random Access
CORESET	Control Resource Set
DAI	Downlink Assignment Index
DCI	Downlink Control Information
DL	Downlink
DL-SCH	Downlink Shared Channel
DMRS	Demodulation Reference Signal
EHC	Ethernet Header Compression
EN-DC	E-UTRA-NR Dual Connectivity
EPC	Evolved Packet Core
FR1	Frequency Range 1
FR2	Frequency Range 2
HO	Handover
H-SFN	Hyper SFN
ICS	Implementation Conformance Statement
IUT	Implementation Under Test
IXIT	Implementation eXtra Information for Testing
LSB	Least Significant Bit
MCG	Master Cell Group
MN	Master Node
MSB	Most Significant Bit
NE-DC	NR-E-UTRA Dual Connectivity
NR	NR Radio Access
NR-DC	NR-NR Dual Connectivity
PCell	Primary Cell
PDCCH	Physical Downlink Control Channel
PDSCH	Physical Downlink Shared Channel
PRACH	Physical Random Access Channel

PRB	Physical Resource Block
PSCell	Primary SCG Cell
PSS	Primary Synchronisation Signal
PUCCH	Physical Uplink Control Channel
PUSCH	Physical Uplink Shared Channel
RA	Random Access
RACH	Random Access Channel
RAR	Random Access Response
RAT	Radio Access Technology
RMSI	Remaining Minimum SI
SCell	Secondary Cell
SCG	Secondary Cell Group
SFN	System Frame Number
SN	Secondary Node
SRS	Sounding Reference Signal
SS	System Simulator
SSB	Synchronization Signal and PBCH block
SSS	Secondary Synchronisation Signal
TC	Test Case
UL	Uplink
UL-SCH	Uplink Shared Channel
UT	Upper Tester
VNG	Virtual Noise Generator

4 Test system architecture

4.1 General system architecture

The architecture specified in TS 36.523-3 [12] subclause 4.1.1 applies to the present document.

4.2 Component architecture

The architecture specified in TS 36.523-3 [12] subclause 4.1.2 applies to the present document, with NR RAT as another separate TTCN-3 parallel component.

5 Test models

5.1 EN-DC

5.1.1 Layer 3

5.1.1.1 Single NR carrier

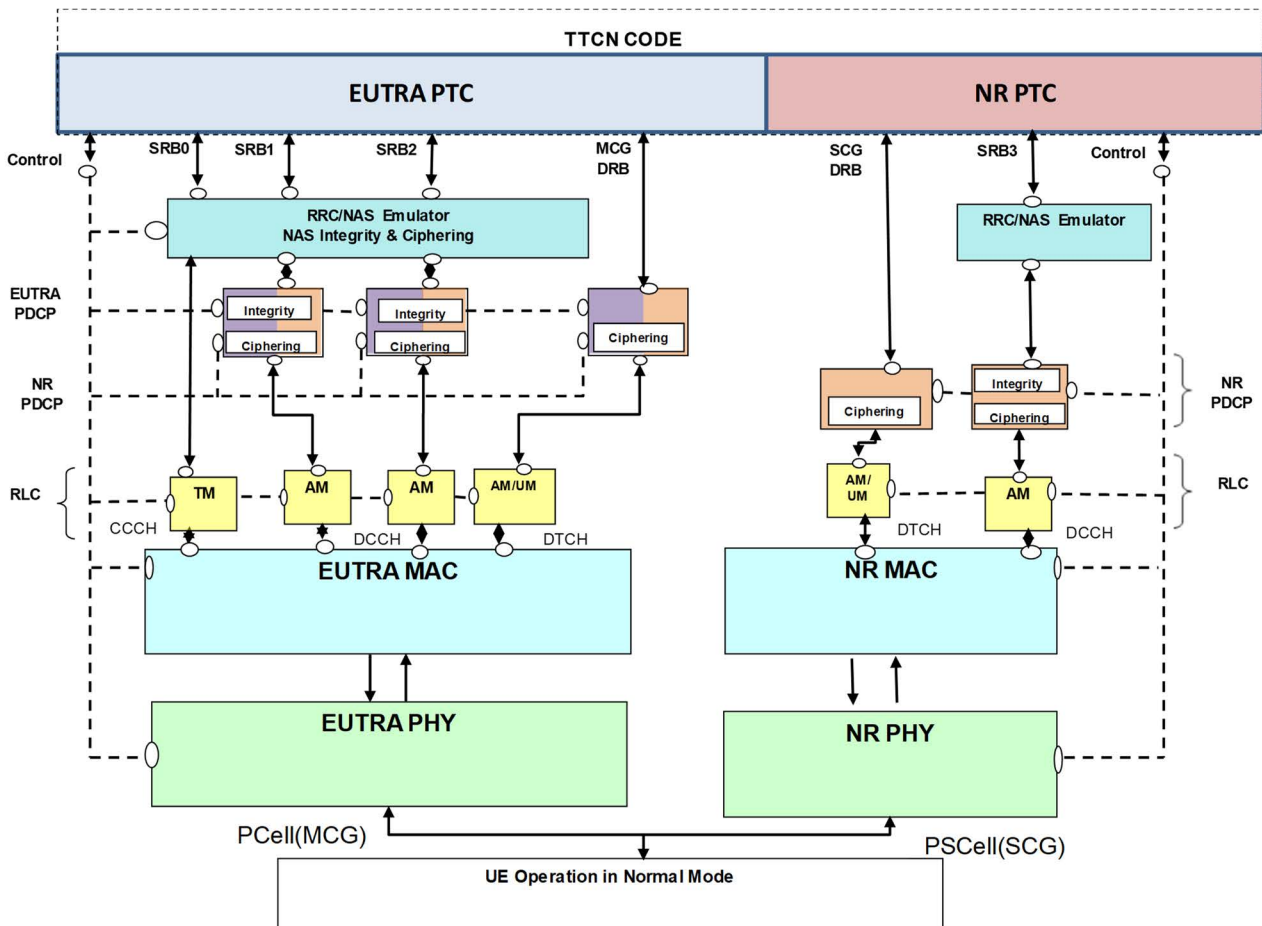


Figure 5.1.1.1-1: Test model for EN-DC Layer3 testing (MCG and SCG)

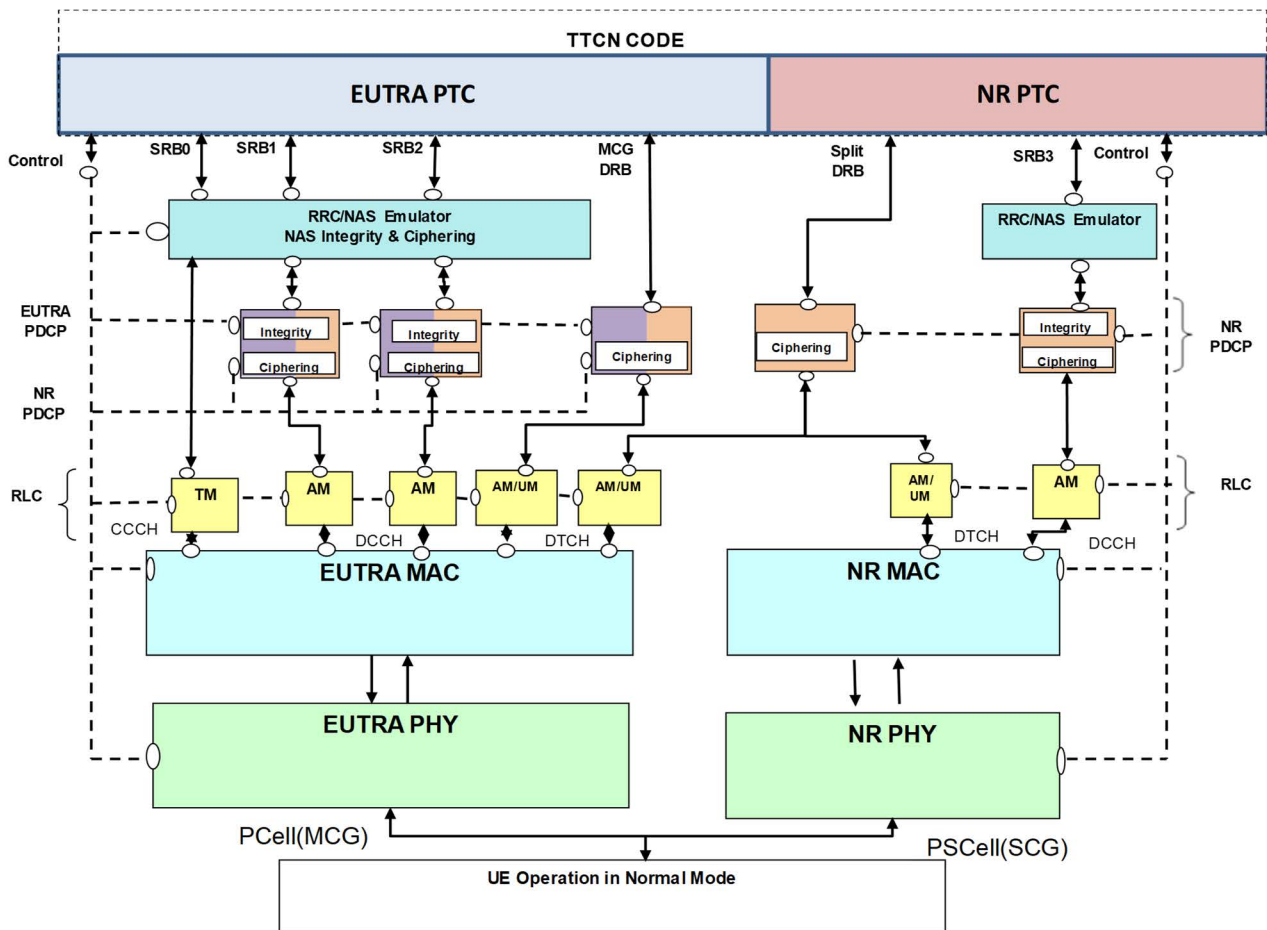


Figure 5.1.1.1-2: Test model for EN-DC Layer3 testing (MCG and split DRB)

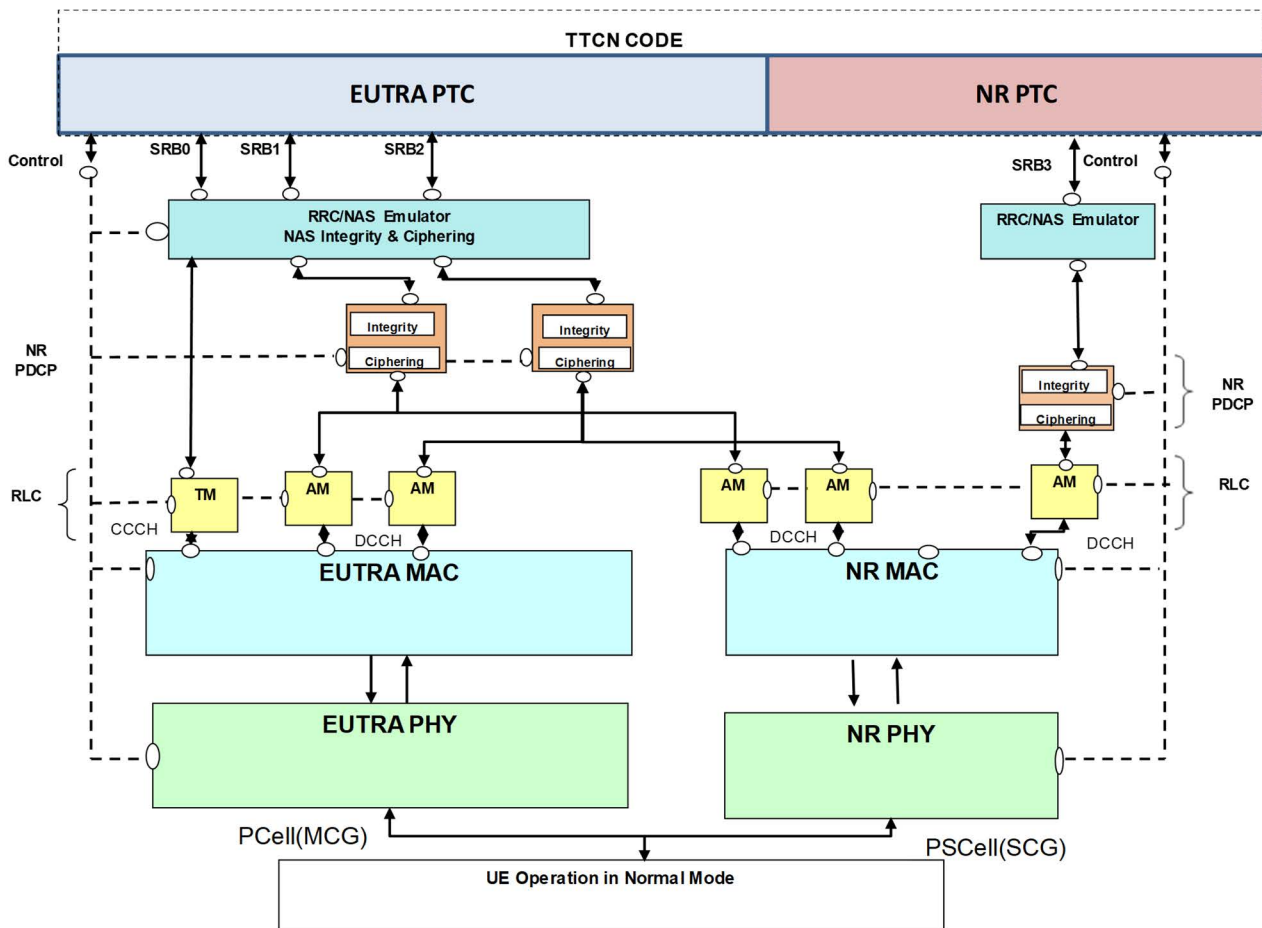


Figure 5.1.1.1-3: Test model for EN-DC Layer3 testing (*Split SRB(s)*, DRBs removed for clarity)

The UE is configured in normal mode. On the UE side Ciphering and Integrity (PDCP and NAS) are enabled and header compression is not configured.

On the SS Side L1, MAC and RLC (EUTRA/NR) and PDCP (EUTRA/NR) are configured in normal way and shall perform all their functions. SRB0, 1 & 2 are configured only in EUTRA. For SRB0 the DL and UL port is above RLC. For SRB1 and SRB2 the port is above/below the EUTRA RRC and NAS emulator, which is implemented as a parallel test component. For DRB, the port is above PDCP. PDCP Ciphering/Integrity is enabled. NAS integrity/Ciphering is enabled.

NOTE: PDCP (EUTRA/NR) is always configured in the EUTRA PTC for SRB1 & 2.

The EUTRA RRC/NAS emulator for SRB1 and SRB2 shall provide the Ciphering and Integrity functionality for the EPS NAS messages. In UL direction, SS shall report RRC messages, still containing (where appropriate) the secure and encoded NAS message, to the RRC port. In DL, RRC and NAS messages with same timing information shall be embedded in one PDU after integrity and ciphering for NAS messages.

SRB3 is connected directly to the SRB port in the NR PTC/dummy NR RRC/NAS emulator.

The NR PDCP can be configured in either the EUTRA or NR PTC for one or more SRBs or DRBs. If NR PDCP is configured, the bearer can be split. In this case the PDCP will be fully configured on the cell upon which the bearer is terminated and the other PTC will be configured with a proxy PDCP. Data shall be sent/received only on the PTC upon which the bearer is terminated. The SS shall route data to/from either cell, via the routing information provided.

5.1.1.2 NR carrier aggregation

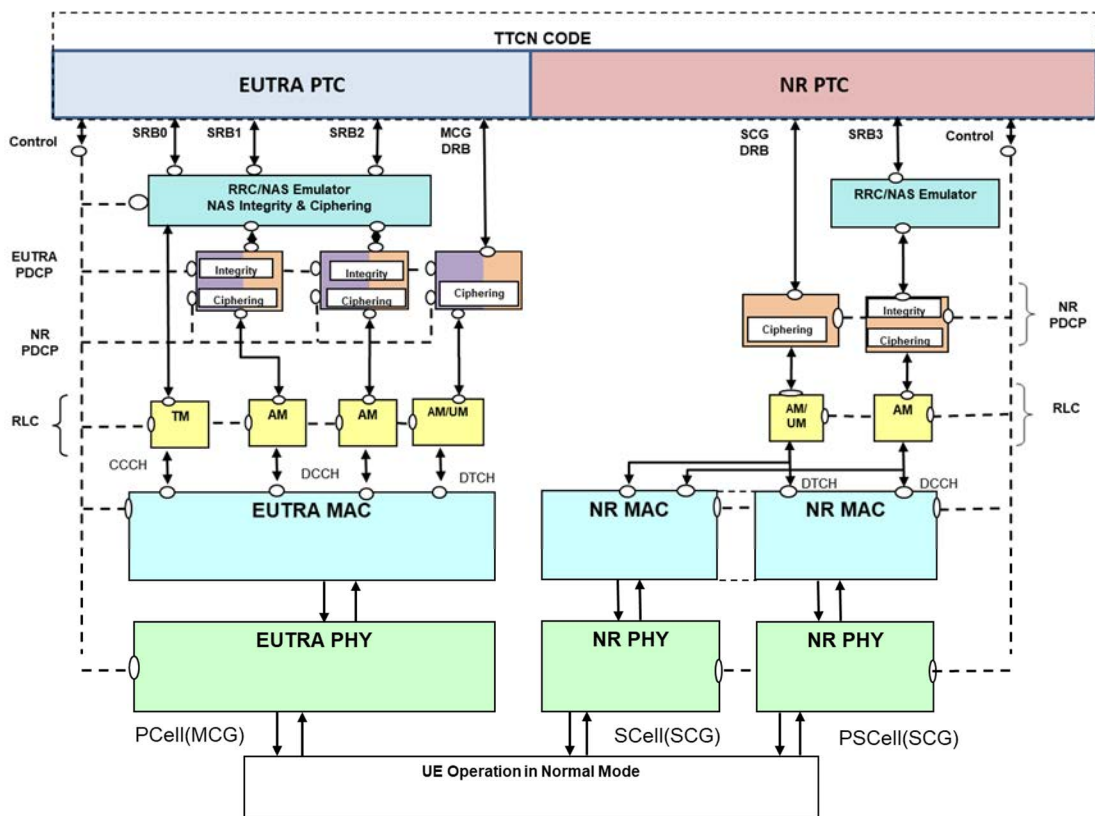


Figure 5.1.1.2-1: Test model for EN-DC Layer3 CA testing

The EN-DC Layer3 CA test model builds on top of the EN-DC Layer3 test model, with the differences specified hereafter.

On the SS NR side, in the SCG there is one PSCell and one SCell configured:

- PSCell: The associated SCell is linked to this PSCell, to enable the connection of the SCell MAC layer to the PSCell RLC/PDCP layers for DCCH/DTCH.
- SCell: Only PHY and MAC layers are configured, and MIB is broadcast.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception in PSCell over system indication port, if configured.

The NR data routing between the RLC layer of PSCell and the lower layers of either PSCell or SCell shall be provided to/by SS in the common part of the data ASP using the MacBearerRouting field.

In a similar way the reception of PRACH preambles in PSCell / SCell is reported by SS over the same port, if configured.

5.1.2 Layer 2

5.1.2.1 PDCP

5.1.2.1.1 Single NR carrier

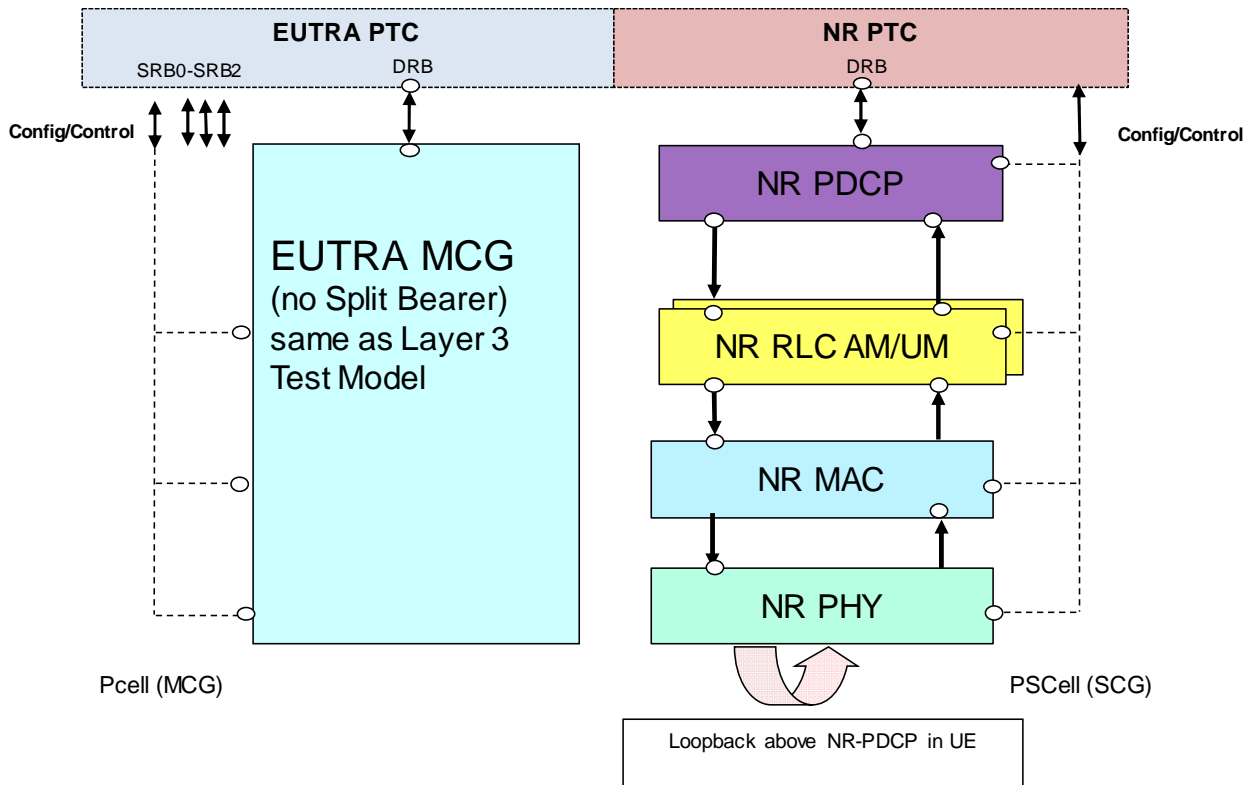


Figure 5.1.2.1.1-1: Test model for EN-DC PDCP testing (MCG and SCG)

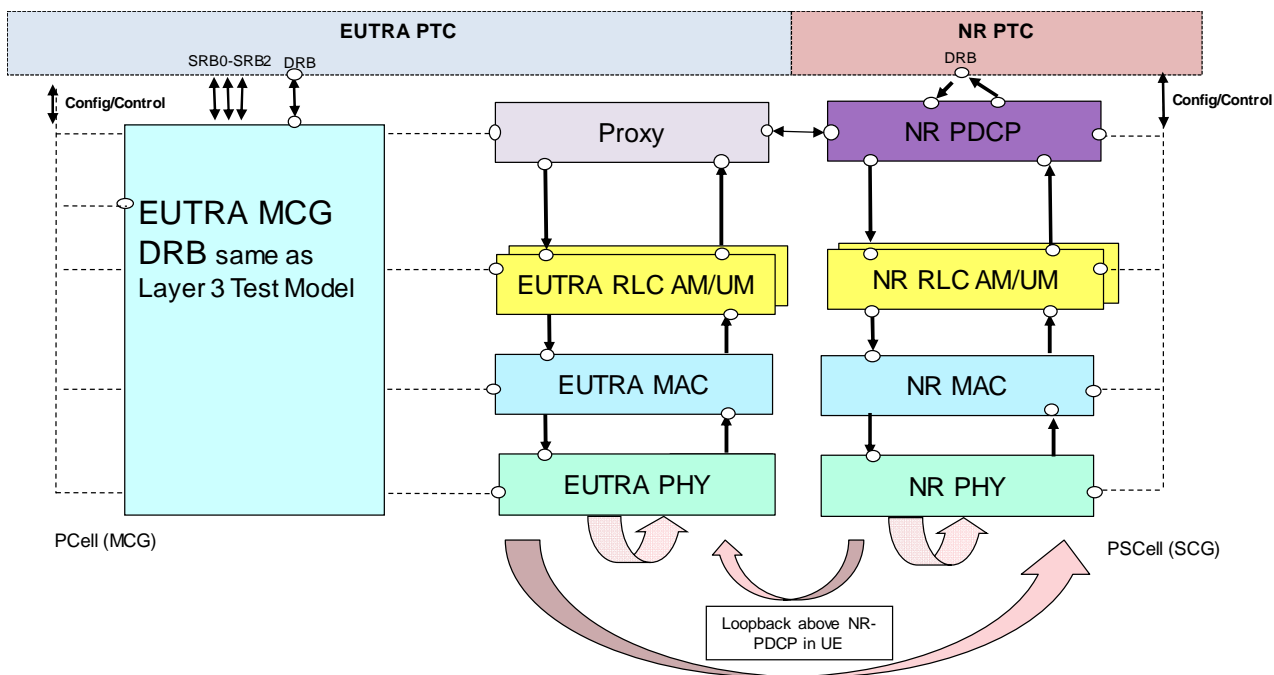


Figure 5.1.2.1.1-2: Test model for EN-DC PDCP testing (MCG and split DRB)

The UE is configured in Test Loop Mode, to loop back the user domain data above PDCP layer. On UE side Ciphering is enabled as null algorithm and header compression is not configured.

Test Loop Mode can be active on SCG DRB as shown in Figure 5.1.2.1.1-1 or active split DRB as shown in Figure 5.1.2.1.1-2.

NOTE: Test loop Mode activation on MCG DRB with NR-PDCP is not considered in Figure 5.1.2.1.1-2.

On the SS NR, Layer 1, MAC and RLC are configured in the normal operation. The PDCP is configured in a special mode, where SS does not add any PDCP headers in DL and/or not remove any PDCP headers in UL directions respectively at DRB port on the NR PTC. The TTCN maintains sequence numbers and state variables for the PDCP layer.

On the SS side the EUTRA MCG layer 1, MAC, RLC and MCG DRB's PDCP are configured in normal operation. They shall perform their functions. In case of split DRB, MCG leg's PDCP layer is configured as Proxy mode, TTCN shall configure EUTRA for EN-DC PDCP testing only when a Test Loop Mode is active on a split DRB.

The SS shall route DL PDCP PDUs from TTCN to PCell and/or PSCell and SS shall indicate that the UL PDCP PDU is received from PCell or PSCell.

Duplication function:

- UL SS shall include routing information for each UL PDCP PDU.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception over system indication port, if configured.

5.1.2.1.2 NR carrier aggregation

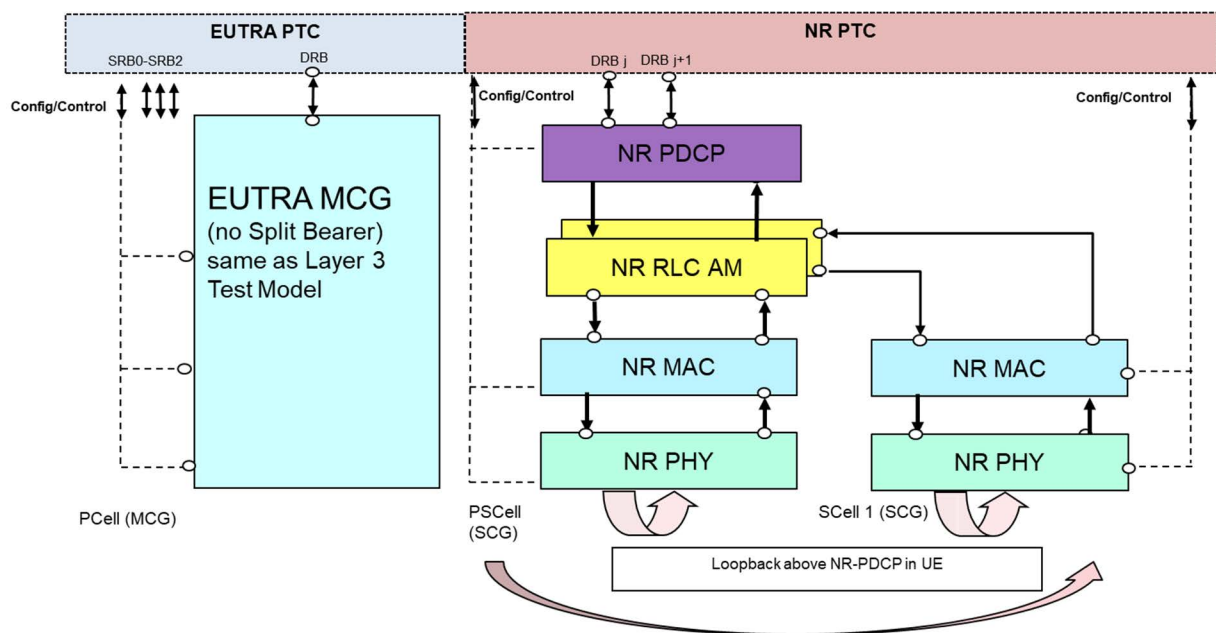


Figure 5.1.2.1.2-1: Test model for EN-DC with NR CA duplication PDCP testing (MCG and SCG)

The UE is configured in Test Loop Mode, to loop back the user domain data above PDCP layer. On UE side Ciphering is enabled as null algorithm and header compression is not configured. Test Loop Mode is activated on SCG DRB as shown in Figure 5.1.2.1.2-1.

On the SS side the EUTRA MCG layer 1, MAC, RLC and MCG DRB's PDCP are configured in normal operation. They shall perform their functions.

On the NR side, the SS configures in the PSCell, Layer 1, MAC and RLC in the normal operation. The NR PDCP is configured in a special mode, where SS does not add any PDCP headers in DL and/or not remove any PDCP headers in UL directions respectively at DRB port on the NR PTC. The TTCN maintains sequence numbers and state variables for the PDCP layer.

The SS configures DRB j and DRB j+1 on the PSCell, every DRB is connected to an RLC entity. The RLC entity configured on DRB j is linked to the MAC entity on the PSCell, the RLC entity configured on DRB j+1 is linked to the MAC entity on the SCell.

The SS configures SCell with Layer 1, MAC in normal operation. The MAC entity of the SCell is linked to the RLC entity on DRB j+1 of the PSCell.

The NR data routing between the RLC layer of PSCell and the lower layers of either PSCell or SCell shall be provided to/by SS in the common part of the data ASP using the MacBearerRouting field.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception over system indication port, if configured.

5.1.2.2 RLC

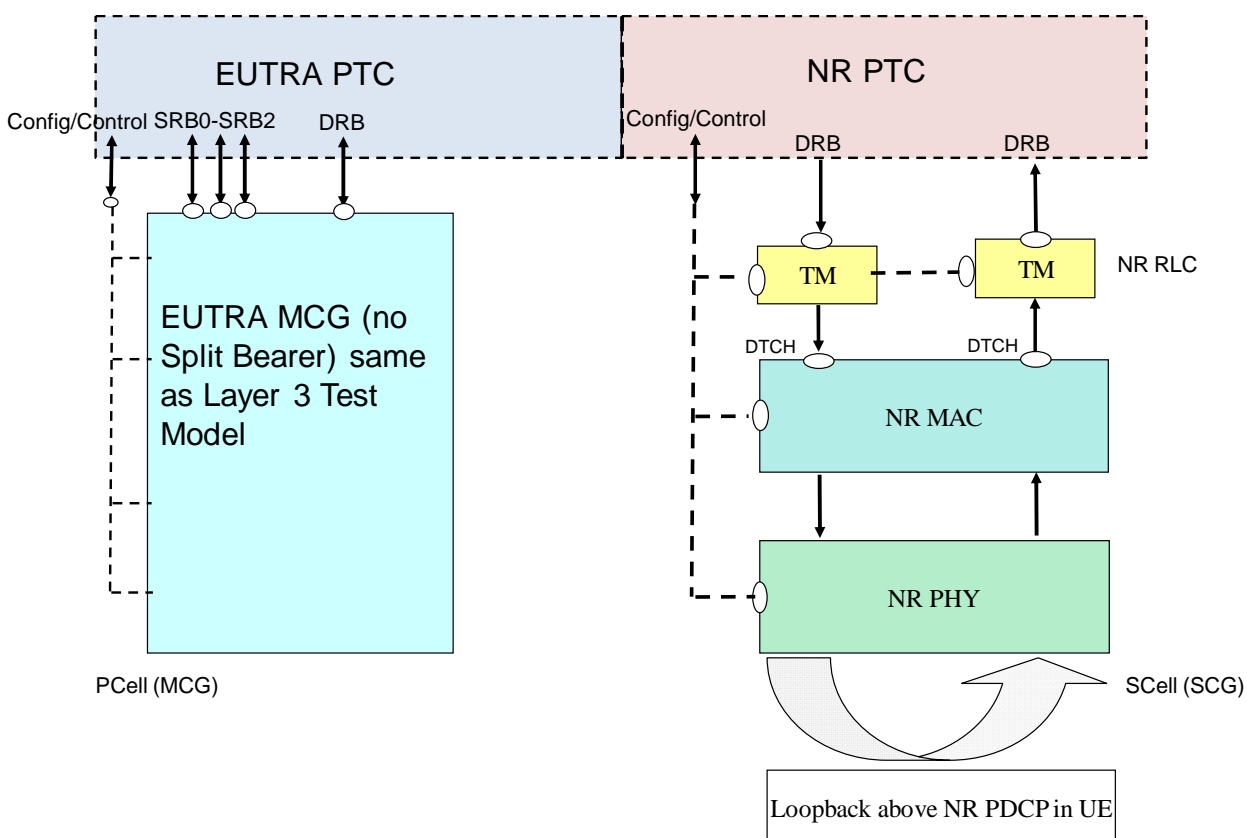


Figure 5.1.2.2-1: Test model for EN-DC RLC AM/UM testing

The PCell is an EUTRA Cell and PSCell is an NR cell on which testing happens. The UE is registered in EUTRA, using SRBs 0-2, and configured for EN-DC operation.

This model is suitable for testing both UM/AM mode of operation of DRBs on UE side.

The UE is configured in Test Loop Mode, to loop back the user domain data above PDCP layer. On UE side Ciphering is enabled (since mandatory) but with null ciphering algorithm, which is equivalent to not using ciphering. Header compression is not configured on UE side.

On the SS Side, L1 and MAC are configured in the normal way. The RLC of the SCG DRBs is configured in transparent mode. Hence with this configuration PDUs out of SS RLC are same as the SDUs in it. There is no PDCP configured on SS NR PTC side. The ports are directly above RLC.

The PDUs, exchanged between TTCN and SS, shall be the final RLC PDUs consisting of RLC and PDCP headers. TTCN code shall take care in DL of building RLC headers and PDCP headers and in UL handle RLC and PDCP headers. TTCN code shall take care of maintaining sequence numbers and state variables for RLC and PDCP layers. If RLC on UE side is in AM mode, TTCN shall take care of generating polls in DL and responding with RLC control PDUs on reception of UL Poll.

5.1.2.3 MAC

5.1.2.3.1 Single NR carrier

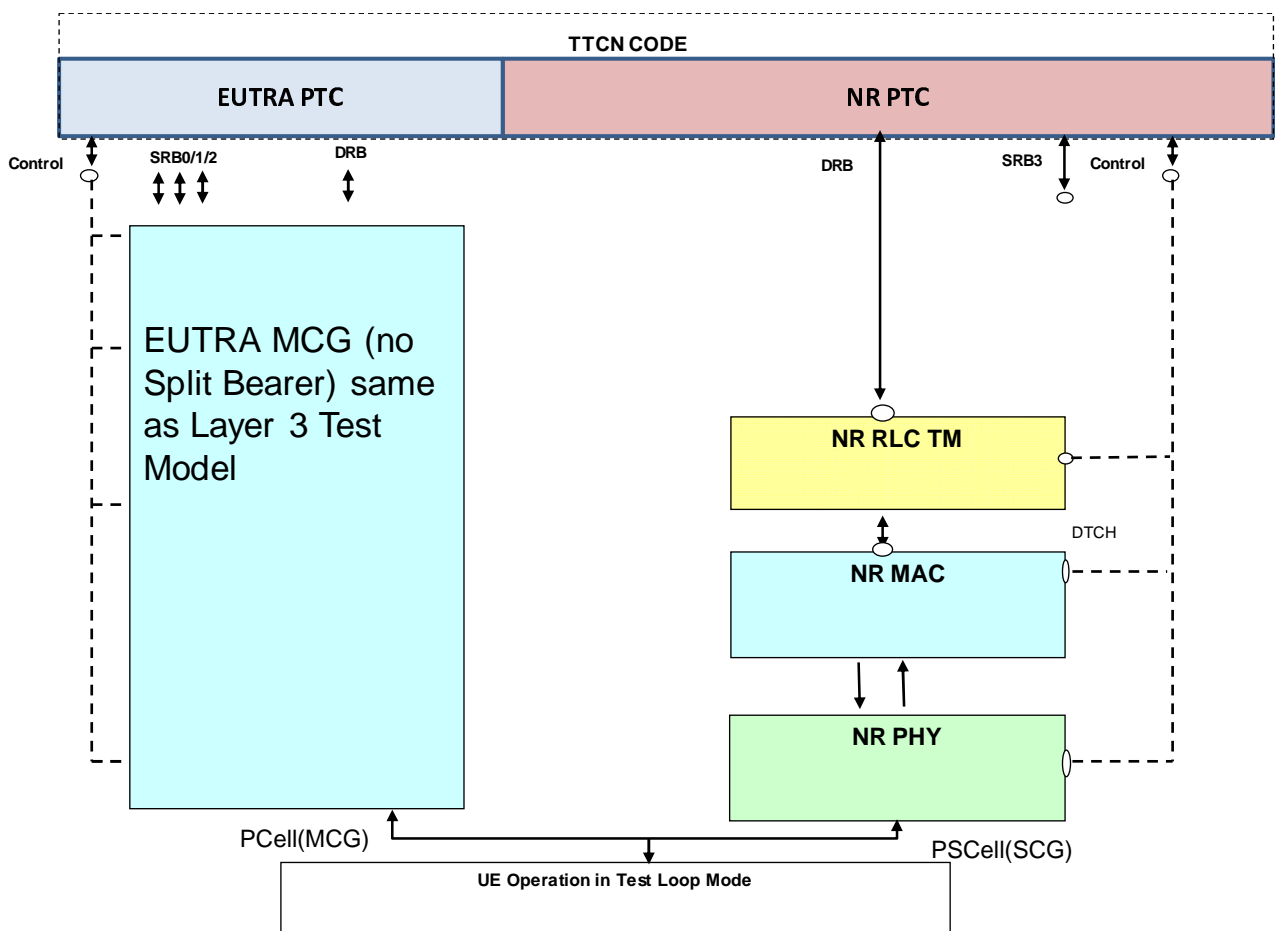


Figure 5.1.2.3.1-1: Test model for EN-DC MAC testing

The UE is configured in Test Loop Mode, to loop back the User Plane data above PDCP layer. On UE side Ciphering is enabled (since Mandatory) but with null ciphering algorithm, which is equivalent to not using ciphering. Header compression is not configured on UE side.

On the SS Side the EUTRA MCG is configured as per the EN-DC Layer 3 test model in normal operation. The EN-DC MAC test model expects no split bearers to be configured.

On the SS NR, Layer 1 is configured in the normal way. NR MAC is configured in a special mode, where it does not add any MAC headers in DL and /or not remove any MAC headers in UL directions respectively at DRB port. In this case, the TTCN shall provide the final MAC PDU, including padding. Except for this, the NR MAC layer shall perform all its other functions. SRB3 if present is configured as in Layer 3 test model in normal operation.

On DRBs the NR RLC is configured in transparent mode. Hence with this configuration PDUs out of SS RLC are same as the SDUs in it. There is no NR PDCP configured on SS Side. The ports are directly above NR RLC.

There are two different test modes in which NR MAC header addition/removal can be configured:

1. DL/UL header-transparent mode: no header addition in DL and no header removal in UL.
2. DL only header-transparent mode: no header addition in DL; UL NR MAC is configured in normal mode to remove MAC header and de-multiplex the MAC SDUs according to the logical channel Ids.

If SS NR MAC is configured in DL/UL header-transparent mode, the PDUs, exchanged at the DRB port between TTCN and SS, shall be the final MAC PDUs consisting of MAC, RLC and PDCP headers. TTCN code shall take care in DL of building MAC header, RLC headers and PDCP headers and in UL handle MAC, RLC and PDCP headers. TTCN code shall take care of maintaining sequence numbers and state variables for RLC and PDCP layers. During testing of multiple DRBs at the UE side, it shall still be possible to configure only one DRB on SS side with configuration in the figure 5.1.2.3-1. Other DRBs will not be configured, to facilitate routing of UL MAC PDUs. Multiplexing/de-multiplexing of PDUs meant/from different DRBs shall be performed in TTCN. Since the MAC layer does not evaluate the MAC headers in UL it cannot distinguish between SRB and DRB data in UL. There shall be no SRB3 traffic while MAC is configured in this test mode. The SS MAC shall take care of automatic repetitions/retransmission in UL and DL, based on normal MAC HARQ behaviour.

If SS NR MAC is configured in DL only header-transparent mode, the UL PDUs exchanged at the DRB port between TTCN and SS shall be final RLC PDUs consisting of RLC and PDCP headers. SS shall route these PDUs based on logical channel IDs. In DL, TTCN sends fully encoded MAC PDUs at the DRB port (consisting of MAC, RLC and PDCP headers). In this case TTCN needs to take care of maintaining sequence numbers and state variables for RLC and PDCP layers. Furthermore, in UL and DL the SS MAC layer shall be capable of dealing with SRB3 data (i.e. it shall handle DL RLC PDUs coming from SRB3 RLC layer or de-multiplex UL RLC PDUs to SRB3) as in normal mode. The SS MAC shall take care of automatic repetitions/retransmissions in UL and DL, based on normal MAC HARQ behaviour. TTCN shall ensure that no DL MAC SDUs in normal mode and DL MAC PDUs in test mode are mixed for the same TTI.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception over system indication port, if configured. In a similar way the reception of PRACH preambles is reported by SS over the same port.

When SS is configured either with *pusch-AggregationFactor* > 1 or with *pusch-RepTypeIndicatorDCI-0-1-r16* set to *pusch-RepTypeB* and SS NR MAC is configured in DL/UL header-transparent mode, SS shall handle UE automatic subsequent repetitions/retransmissions in UL on the same HARQ process according to TS 38.214[22] clause 6.1.2.1, and in addition SS shall transmit to TTCN every received UL HARQ transmission/retransmission within a bundle as separate MAC PDUs.

5.1.2.3.2 NR carrier aggregation

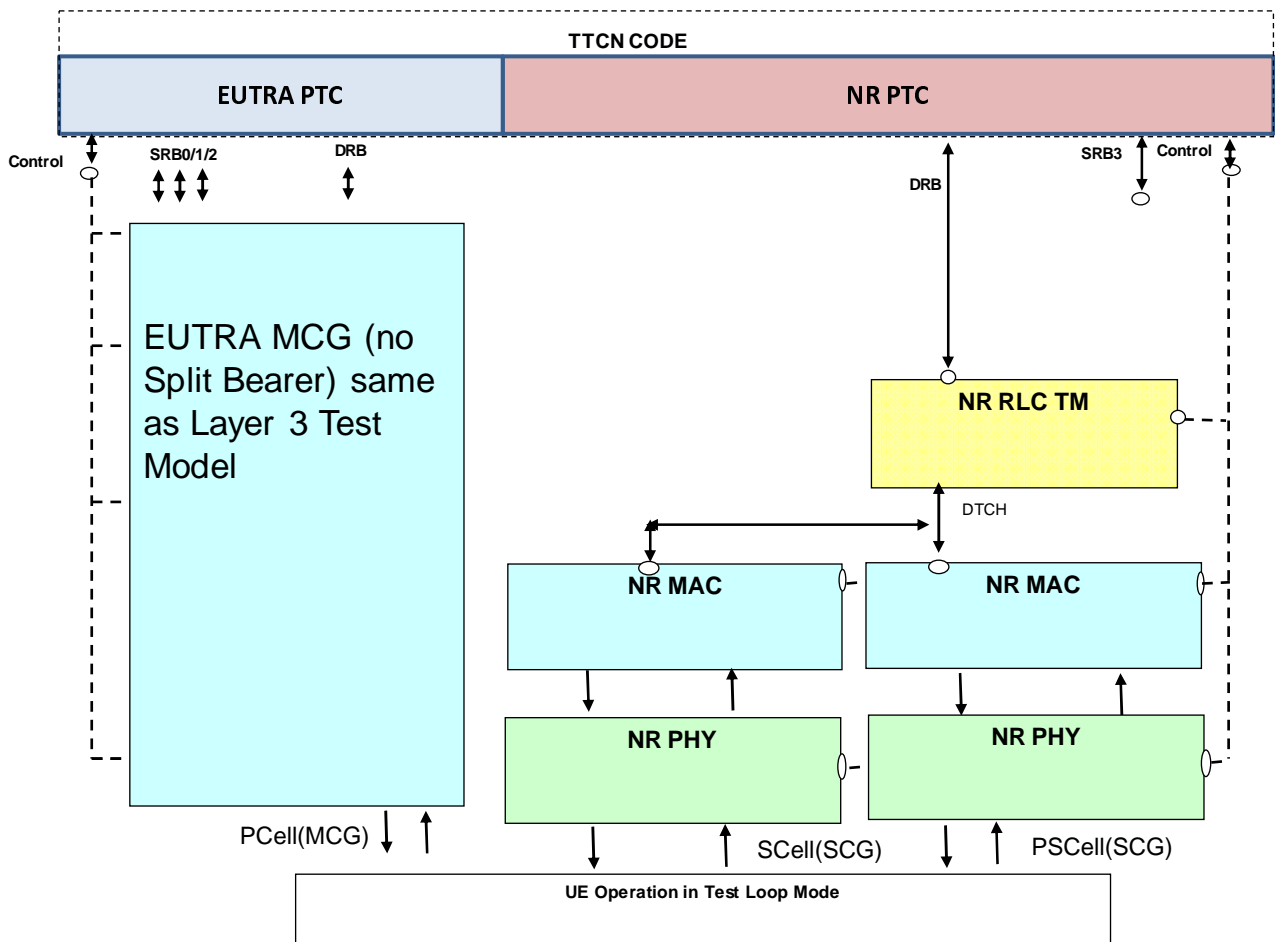


Figure 5.1.2.3.2-1: Test model for EN-DC MAC CA testing

The EN-DC MAC CA test model builds on top of the EN-DC MAC test model, with the differences specified hereafter.

On the SS NR side, in the SCG there is one PSCell and one SCell configured:

- PSCell only: On DRBs the NR RLC is configured in transparent mode. Hence with this configuration PDUs out of SS RLC are same as the SDUs in it. There is no NR PDCP configured in the SS. The ports are directly above NR RLC.
- PSCell / SCell: Layer 1 is configured in the normal way. NR MAC is configured in a special mode, where it does not add any MAC headers in DL and /or not remove any MAC headers in UL directions respectively at DRB port. In this case, the TTCN shall provide the final MAC PDU, including padding. Except for this, the MAC layer shall perform all of its other functions.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception in PSCell over system indication port, if configured. In a similar way the reception of PRACH preambles in PSCell / SCell is reported by SS over the same port, if configured.

The NR data routing between the RLC layer of PSCell and the lower layers of either PSCell or SCell shall be provided to/by SS in the common part of the data ASP using the MacBearerRouting field.

5.2 NR/5GC

5.2.1 Layer 3

5.2.1.1 Single NR carrier

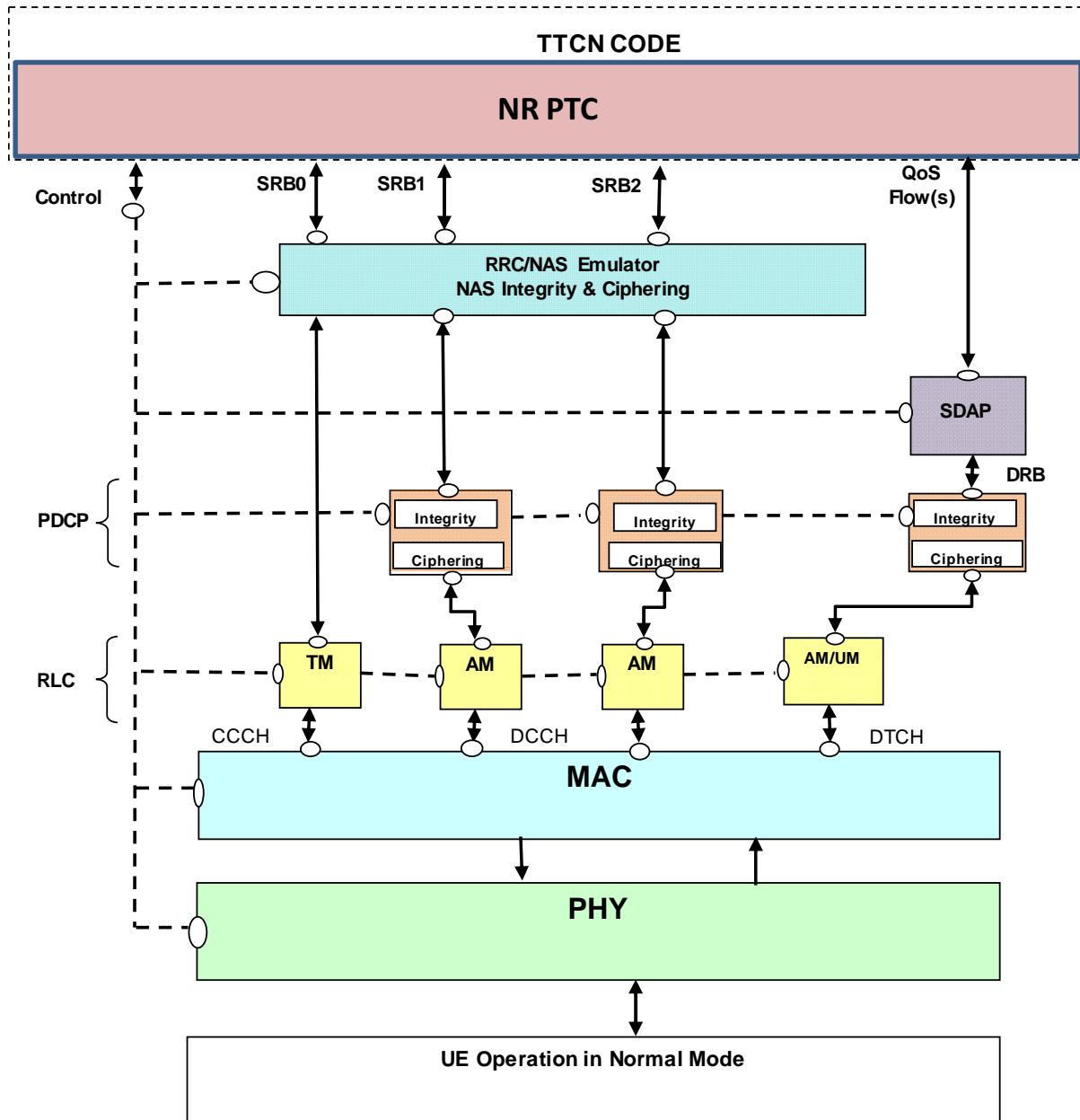


Figure 5.2.1.1-1: Test model for NR/5GC Layer3 testing

The UE is configured in normal mode. On the UE side Ciphering and Integrity (PDCP and NAS) are enabled and header compression is not configured.

On the SS Side L1, MAC, RLC, PDCP and SDAP are configured in the normal way and shall perform all their functions. For SRB0 the DL and UL port is above RLC. For SRB1 and SRB2 the port is above/below the NR RRC and NAS emulator, which is implemented as a parallel test component. For DRB, the port is above SDAP. PDCP Ciphering/Integrity is enabled. NAS integrity/Ciphering is enabled.

The RRC/NAS emulator for SRB1 and SRB2 shall provide the Ciphering and Integrity functionality for the 5GC NAS messages. In UL, the SS shall report RRC messages, still containing (where appropriate) the secure and encoded NAS message, to the RRC port. In DL, RRC and NAS messages with same timing information shall be embedded in one PDU after integrity and ciphering of the NAS messages.

5.2.1.2 NR carrier aggregation

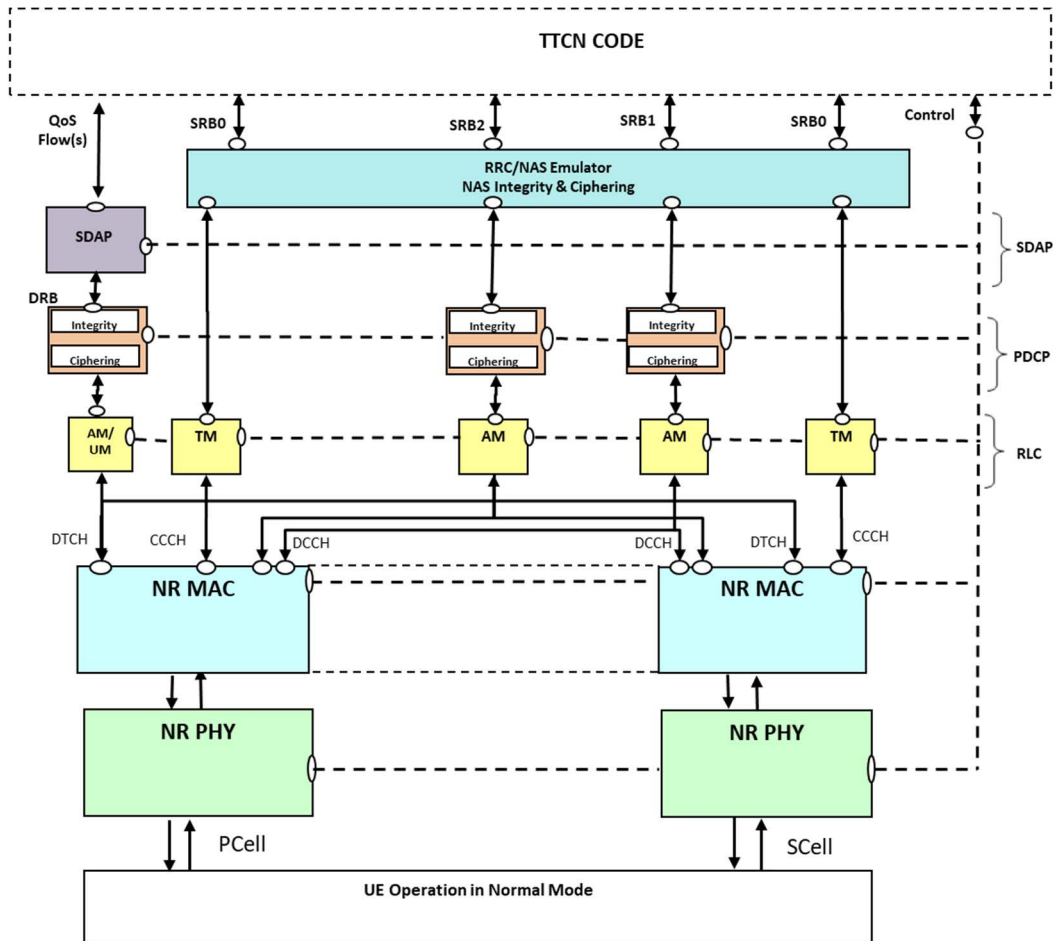


Figure 5.2.1.2-1: Test model for NR/5GC Layer3 CA testing

The NR/5GC Layer3 CA test model builds on top of the NR/5GC Layer3 test model, with the differences specified hereafter.

In the SS side, there is one PCell and one SCell configured:

- PCell: The associated SCell is linked to this PCell to enable the connection of the SCell MAC layer to the PCell RLC/PDCP layers for DCCH/DTCH.
- SCell: PHY and MAC layers are configured in normal way. RLC layer is configured only for BCCH/PCCH/CCCH.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. The SS reports PUCCH scheduling information reception in PCell over system indication port, if configured.

The NR data routing between the RLC layer of PCell and the lower layers of either PCell or SCell shall be provided to/by SS in the common part of the data ASP using the MacBearerRouting field.

In a similar way the reception of PRACH preambles in PCell / SCell is reported by SS over the same port, if configured.

5.2.1.3 NR/5GC Inter-RAT

5.2.1.3.1 NR/E-UTRA Inter-RAT

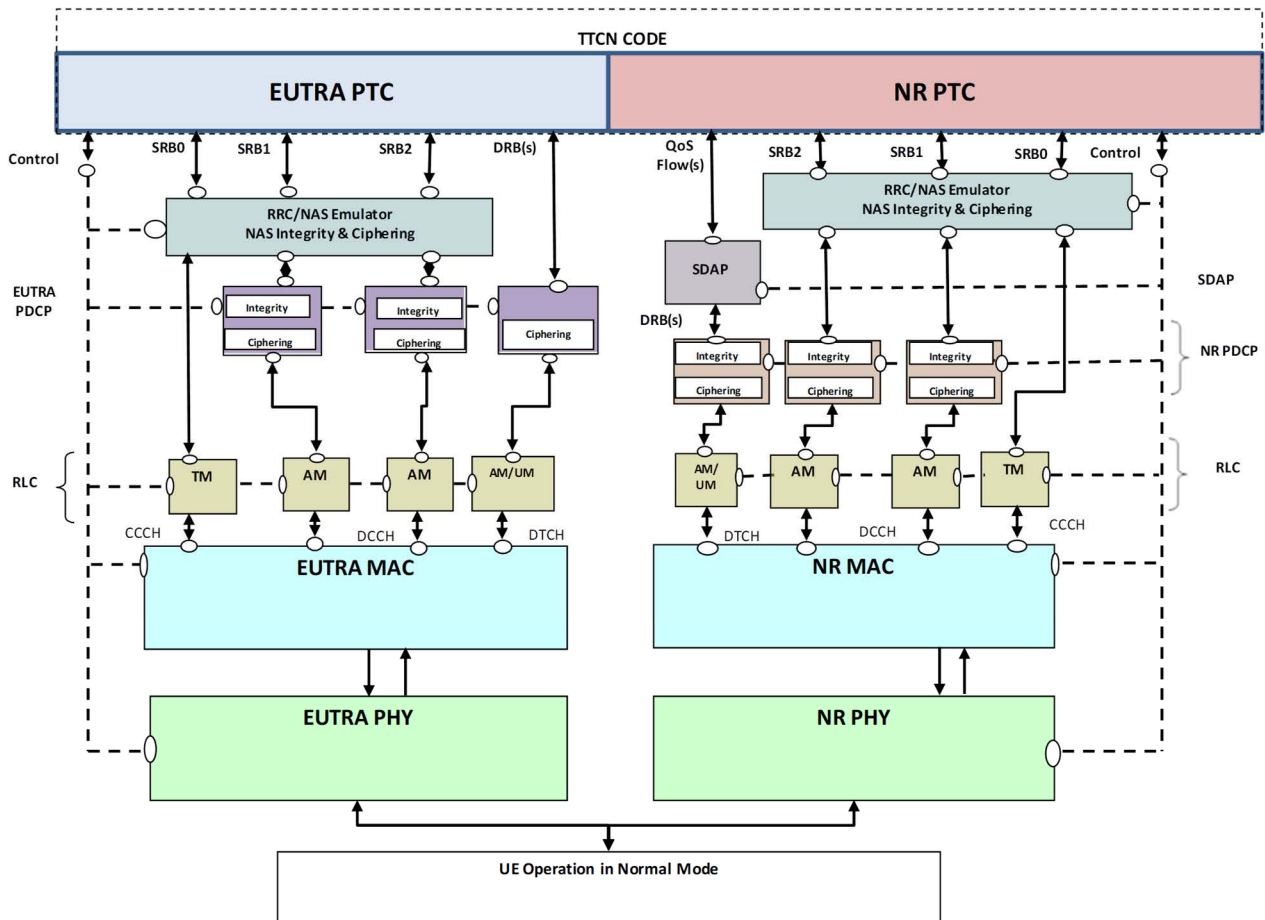


Figure 5.2.1.3.1-1: Test model for NR/E-UTRA Inter-RAT testing

This test model is only relevant for NR/5GC to/from E-UTRA/EPC inter-RAT and is not applicable to E-UTRA/5GC. The model consists of a dual protocol stack: one for NR and one for E-UTRA. The TTCN implementation for NR and E-UTRA functionalities will be in separate Parallel Test Components.

The SS NR part is the same as the model defined in subclause 5.2.1.1 for NR/5GC L3 testing.

The SS E-UTRA part is the same as the model defined in 36.523-3 [12] clause 4.2.2 for RRC testing.

The UE is configured in normal mode. Ciphering/Integrity (PDCP and NAS) are enabled and header compression is not configured.

5.2.1.3.2 NR/UTRAN Inter-RAT

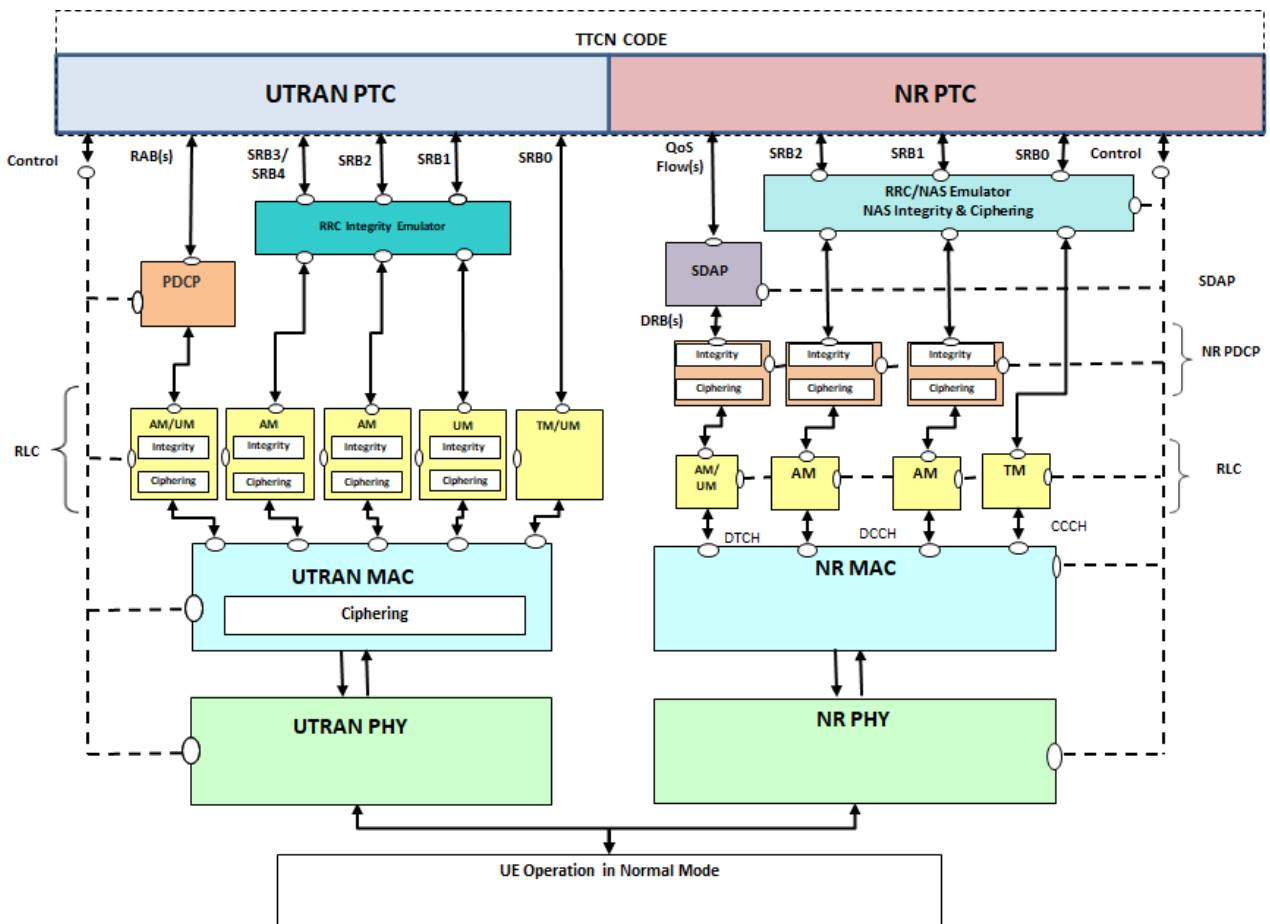


Figure 5.2.1.3.2-1: Test model for NR/UTRAN Inter-RAT testing

The model consists of a dual protocol stack: one for NR and one for UTRAN. The TTCN implementation for NR and UTRAN functionalities will be in separate Parallel Test Components.

The SS NR part is the same as the model defined in subclause 5.2.1.1 for NR/5GC L3 testing.

The SS UTRAN part consisting of PHY, MAC, RLC and PDCP (optionally, if PS user RB established only), are configured in normal mode. They shall perform all of their functions normally. Ciphering is enabled and shall be performed in RLC (AM/UM) and MAC (TM RLC). Integrity is enabled, and SS shall provide RRC emulator for integrity protection calculation and checking and 'Direct transfer' adaptation. Ports are above RLC (CS RAB and SRB0), PDCP (PS RAB) and RRC Emulator (SRB1 to SRB4).

The UE is configured in normal mode. Ciphering/Integrity (PDCP and NAS) are enabled. Ciphering is enabled in UTRAN and header compression is not configured.

5.2.1.3.3 NR/WLAN Inter-RAT

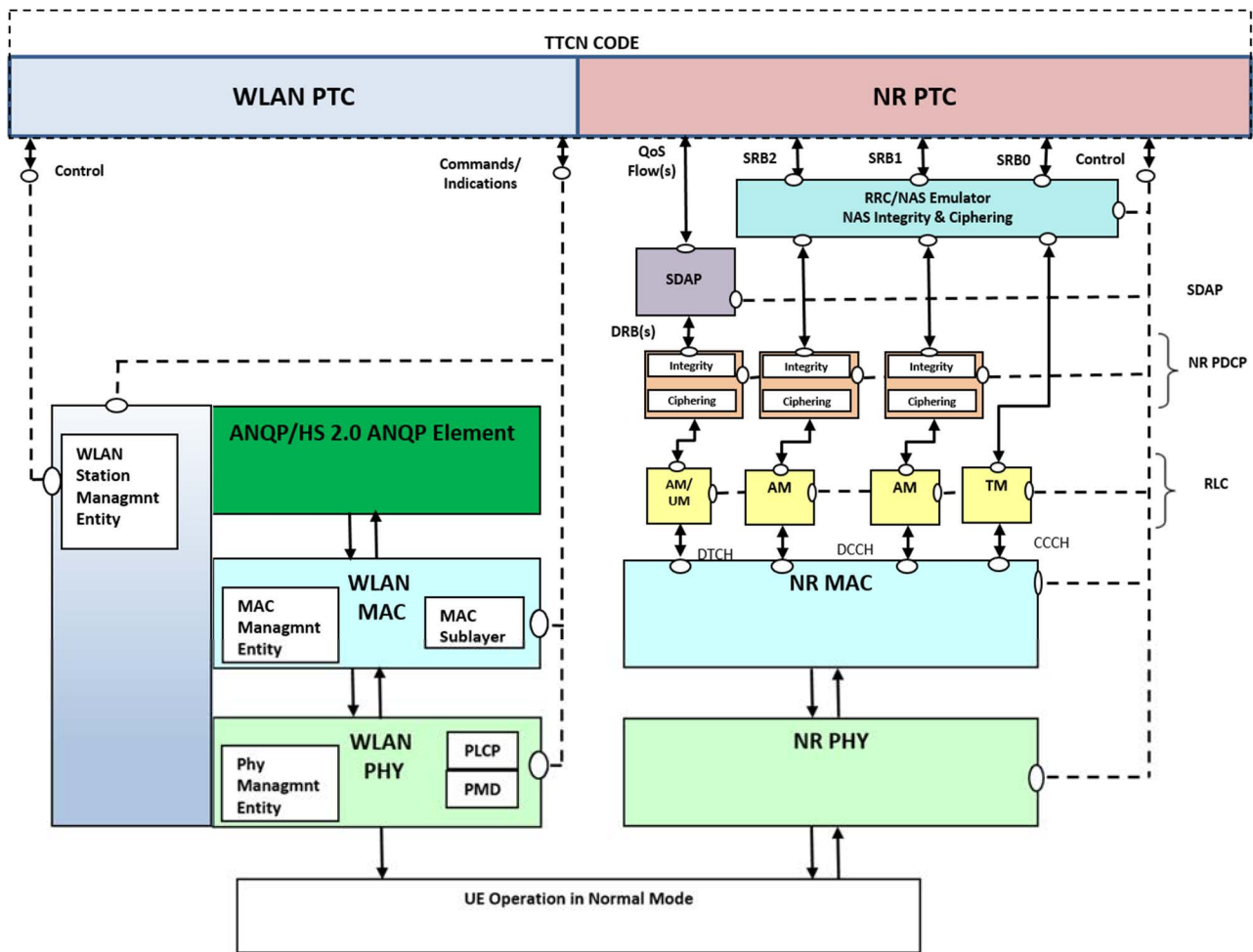


Figure 5.2.1.3.3-1: Test model for NR/WLAN Inter-RAT testing

The current test model is relevant for NR/5GC and is aimed to simulate solely the presence of the WLAN Access Point (AP) in the testing environment. It can be used by test cases where the UE is only required to measure the Beacon RSSI of the WLAN AP. No data transfer between the UE and the emulated WLAN AP is supported. The TTCN implementation for NR and WLAN functionalities is located in separate Parallel Test Components.

The SS NR part is the same as the model defined in subclause 5.2.1.1 for NR/5GC L3 testing.

The SS WLAN part is the same as the model defined in TS 36.523-3 [12] clause 4.5 with the following restrictions:

- WLAN AP shall be configured via SYS and SYS_IND ports. WLAN AP Address Information provided during the configuration should be treated as a bogus data needed for the configuration but not actually used.
- SYS_EPDG and SYS_EPDG_IND ports of WLAN PTC should not be used for any configuration.

The UE is configured in normal mode. Ciphering/Integrity (PDCP and NAS) are enabled and header compression is not configured.

5.2.1.3.4 NR/GERAN Inter-RAT

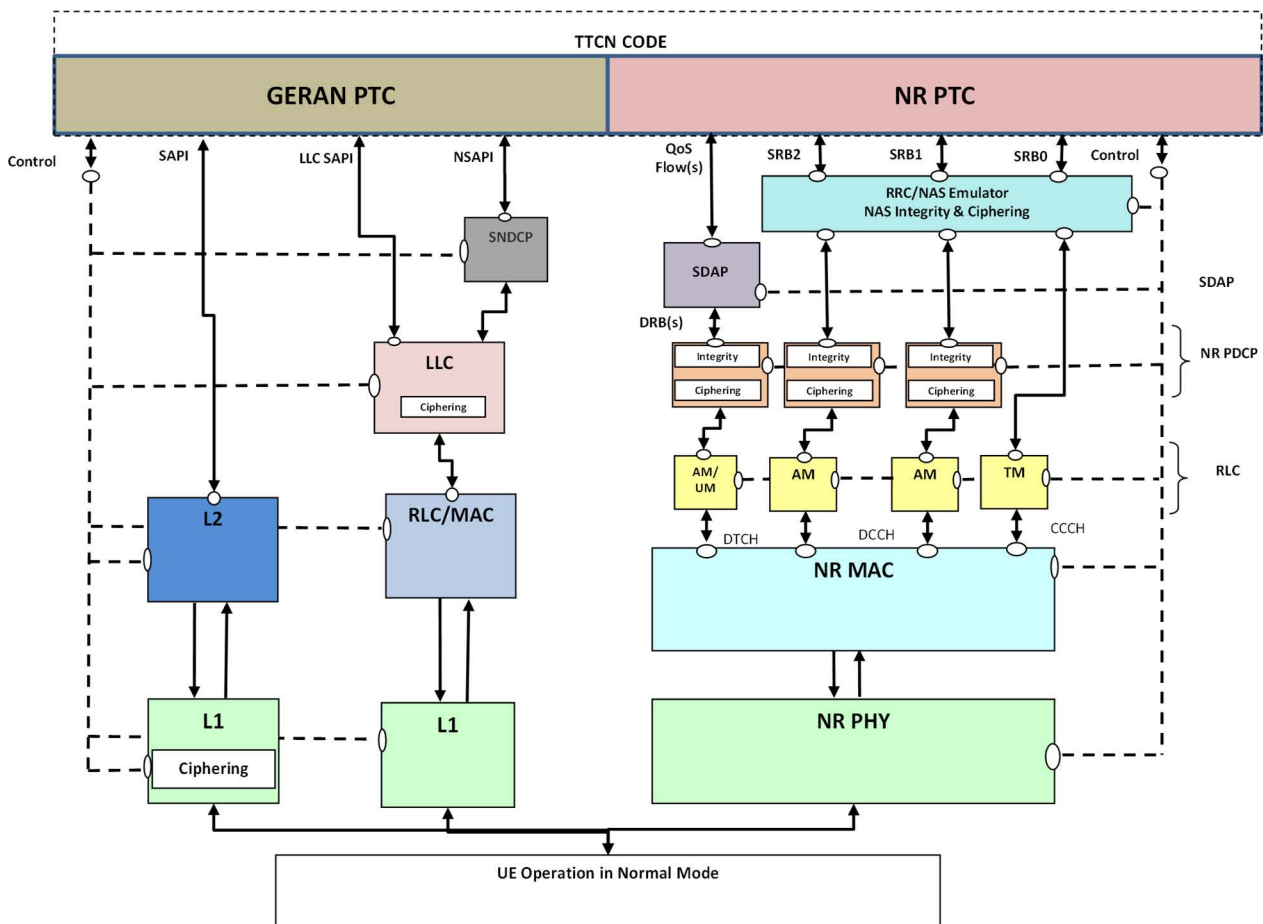


Figure 5.2.1.3.4-1: Test model for NR/GERAN Inter-RAT testing

The model consists of dual protocol stack one for NR and one for GERAN. The TTCN implementation for NR and GERAN functionalities will be in separate Parallel Test Components.

This model may also be used in conjunction with the NR/UTRAN test model, defined in subclause 5.2.1.3.2, in order to provide all 3 RATs: NR, UTRAN and GERAN. The TTCN implementation for NR, UTRAN and GERAN functionalities will be in separate Parallel Test Components.

The SS NR part is the same as the model defined in subclause 5.2.1.1 for NR/5GC L3 testing.

The SS GERAN model for GPRS consists of L1, MAC/ RLC and LLC, configured in normal mode. SNDPCP may also be configured. If SNDPCP is configured, this shall reference the LL Entity by the LLMEId. They shall perform all of their functions normally. Ciphering is enabled and shall be performed in LLC. XIDs shall be sent/received by the TTCN and the TTCN will then send the XID information to the SS using the G_CLLC_XID_Config_REQ ASP. Ports are above RLC (GRR messages), LLC (NAS and Data) and SNDPCP (User Data).

The SS GERAN model for GSM consists of L1, L2 (MAC/ RLC), configured in normal mode. They shall perform all of their functions normally. Ciphering is enabled and shall be performed in L1. Ports are above L2.

The UE is configured in normal mode. Ciphering/Integrity (PDCP and NAS) are enabled and header compression is not configured in NR. Ciphering is enabled in GERAN.

5.2.1.4 NR supplementary uplink

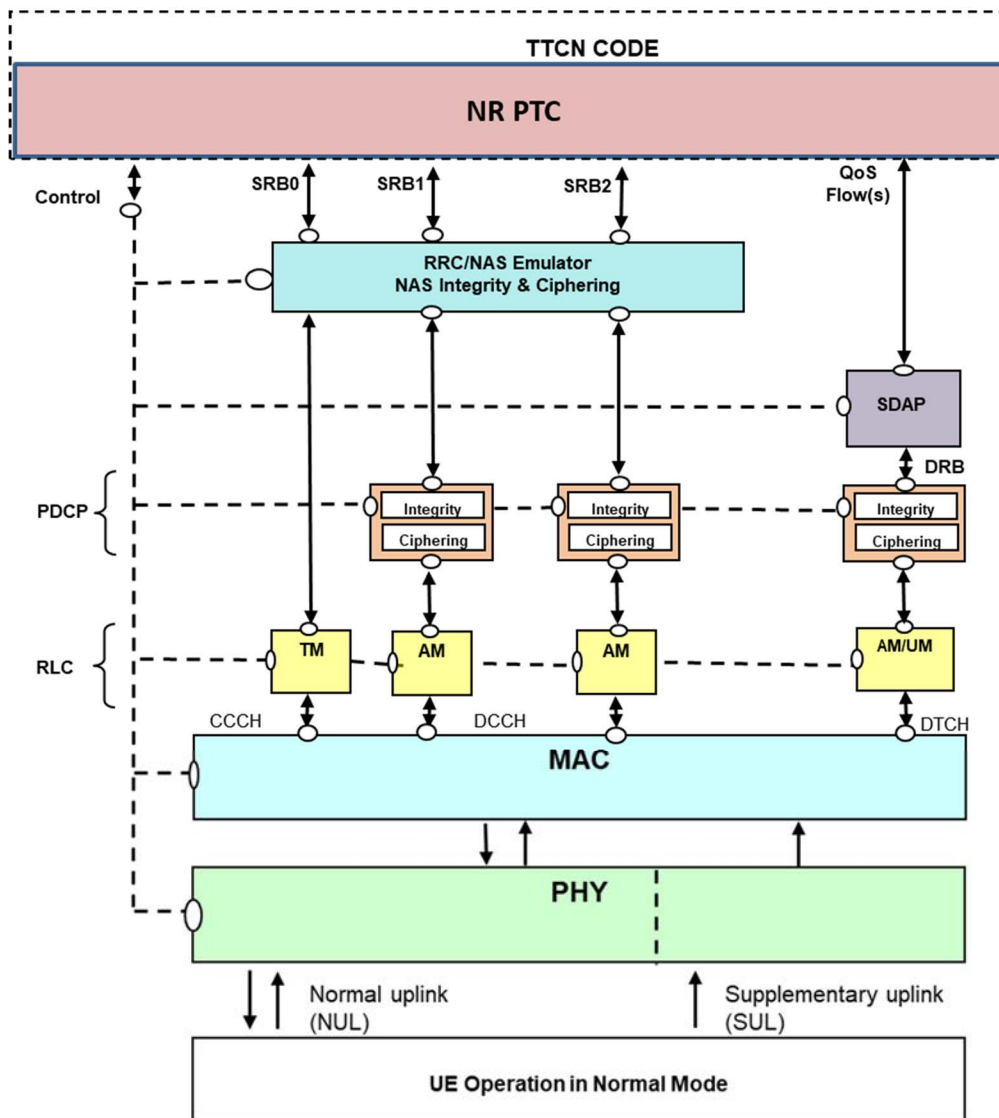


Figure 5.2.1.4-1: Test model for NR/5GC Layer3 supplementary uplink testing

The NR/5GC Layer3 supplementary uplink test model builds on top of the NR/5GC Layer3 test model, with the differences specified hereafter.

In the SS side:

- The NR cell is configured with one uplink (NUL) carrier and one supplementary uplink (SUL) carrier. See NOTE 1.
- The SUL routing information shall be provided by SS in the common part of the indication ASP when the data is received from the SUL carrier.
- The SS shall monitor both NUL carrier and SUL carrier for PRACH reception. TTCN checks whether RA Msg1 and RA Msg3 are received from NUL or SUL carrier using the SUL routing information in the indication ASP.
- The UL scheduling Grants are configured from TTCN over the system control port for PUSCH transmission on the NUL carrier or the SUL carrier.

NOTE 1: While TS 38.508-1 [5] defines an SUL carrier as a pseudo-standalone NR Cell 33, in the present test model, the SUL carrier is an additional carrier to the NR Cell operating on the NUL carrier. So NR Cell of identity 33 is not used in TTCN.

5.2.1.5 NR-NR dual connectivity

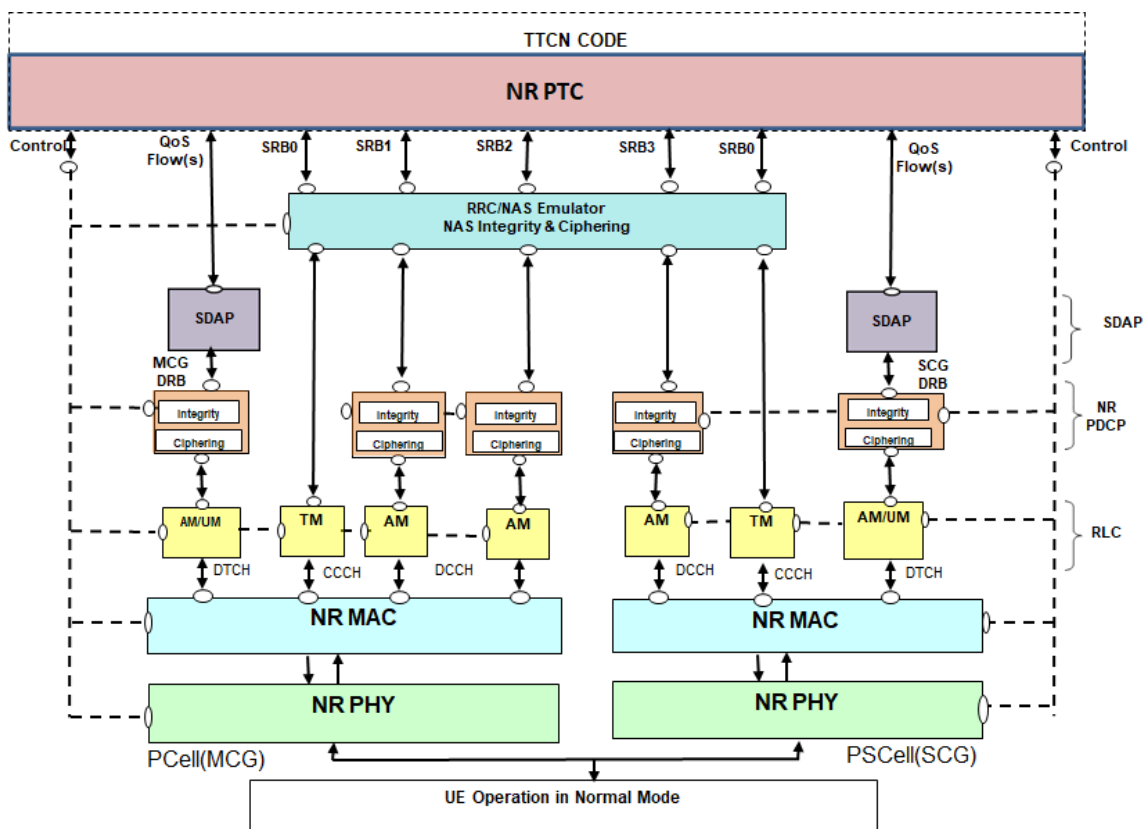


Figure 5.2.1.5-1: Test model for NR/5GC NR-DC Layer3: MCG and SCG

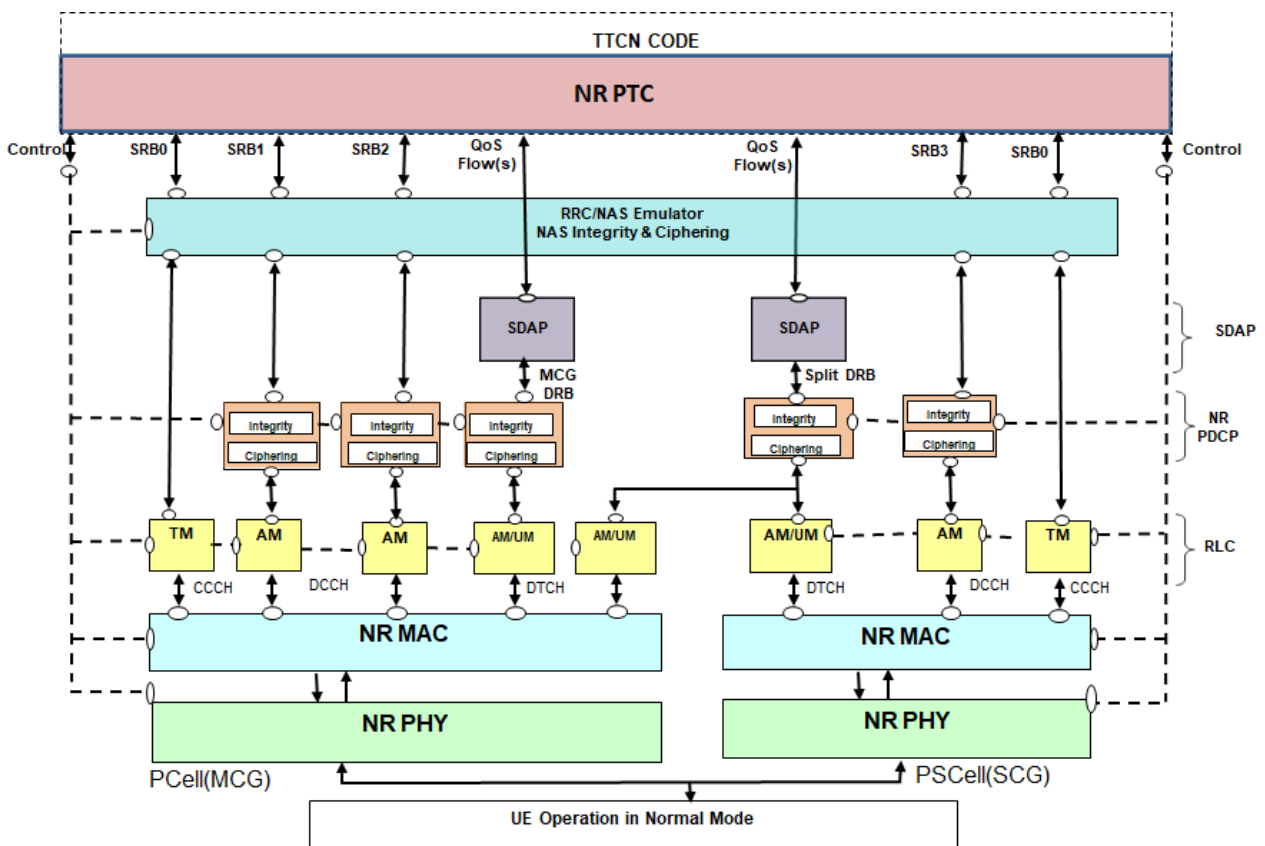


Figure 5.2.1.5-2: Test model for NR/5GC NR-DC Layer3 testing: MCG and split DRB

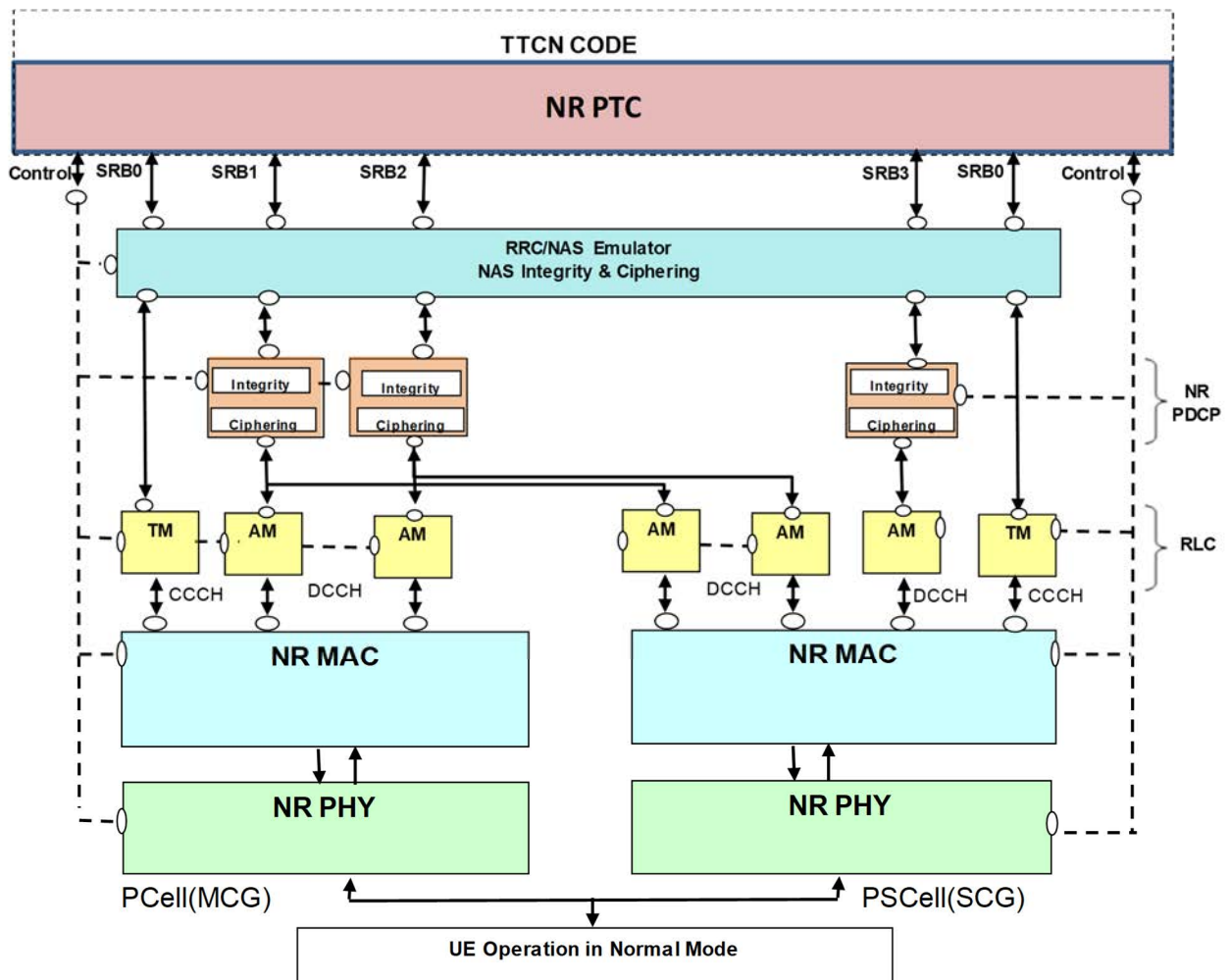


Figure 5.2.1.5-3: Test model for NR/5GC NR-DC Layer3 testing: Split SRB(s), DRBs removed for clarity

The NR/5GC Layer3 NR-DC test model builds on top of the NR/5GC Layer3 test model, with the differences specified hereafter:

- SRB1 and SRB2 are configured only in the PCell,
- SRB3 can be configured in the PSCell,
- The NR PDCP can be configured in split for one or more SRBs or DRBs. In this case NR PDCP is configured in one cell and a proxy PDCP will be configured in the other cell. The SS shall route data to/from either cell, via the routing information provided.

5.2.1.5A NR-E-UTRA dual connectivity

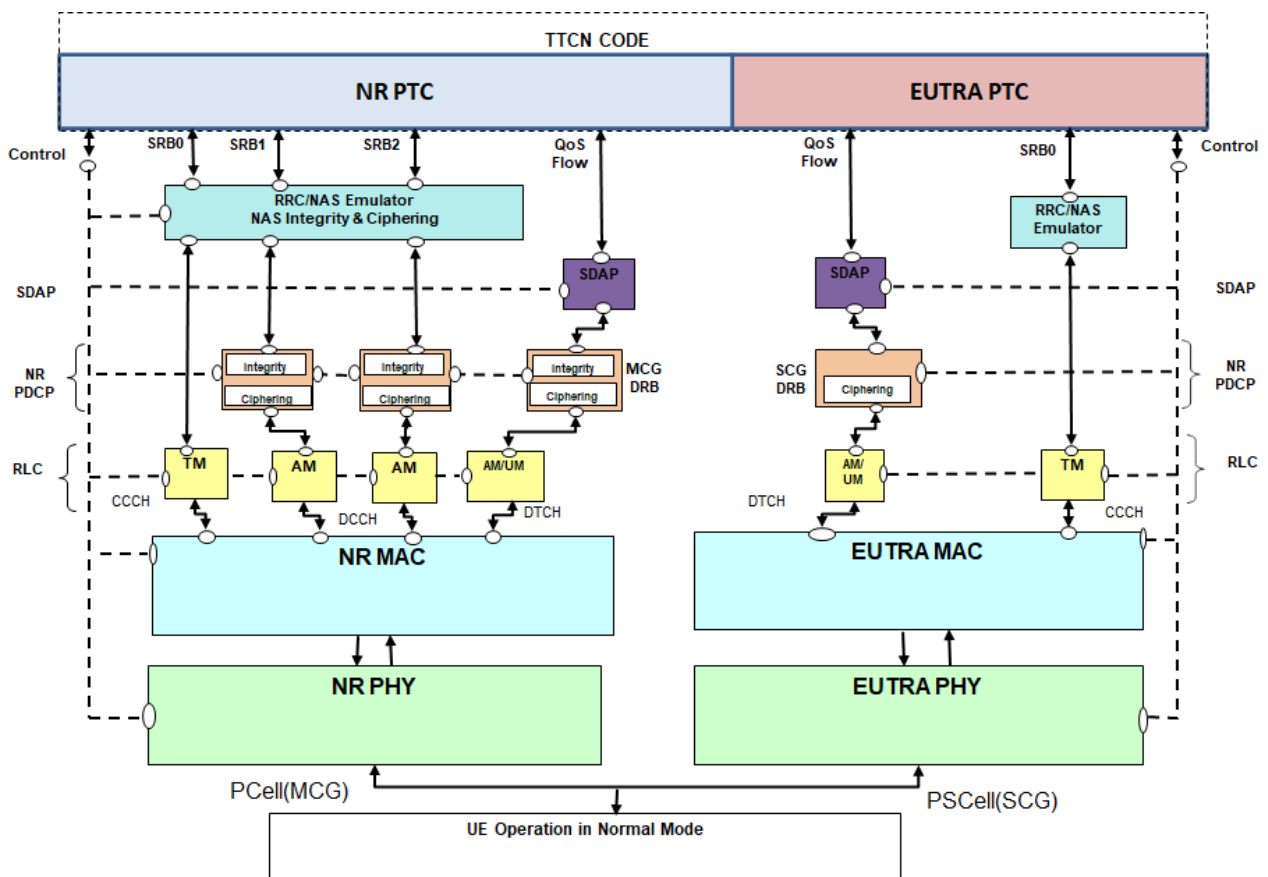


Figure 5.2.1.5A-1: Test model for NR/5GC NE-DC Layer3: MCG and SCG

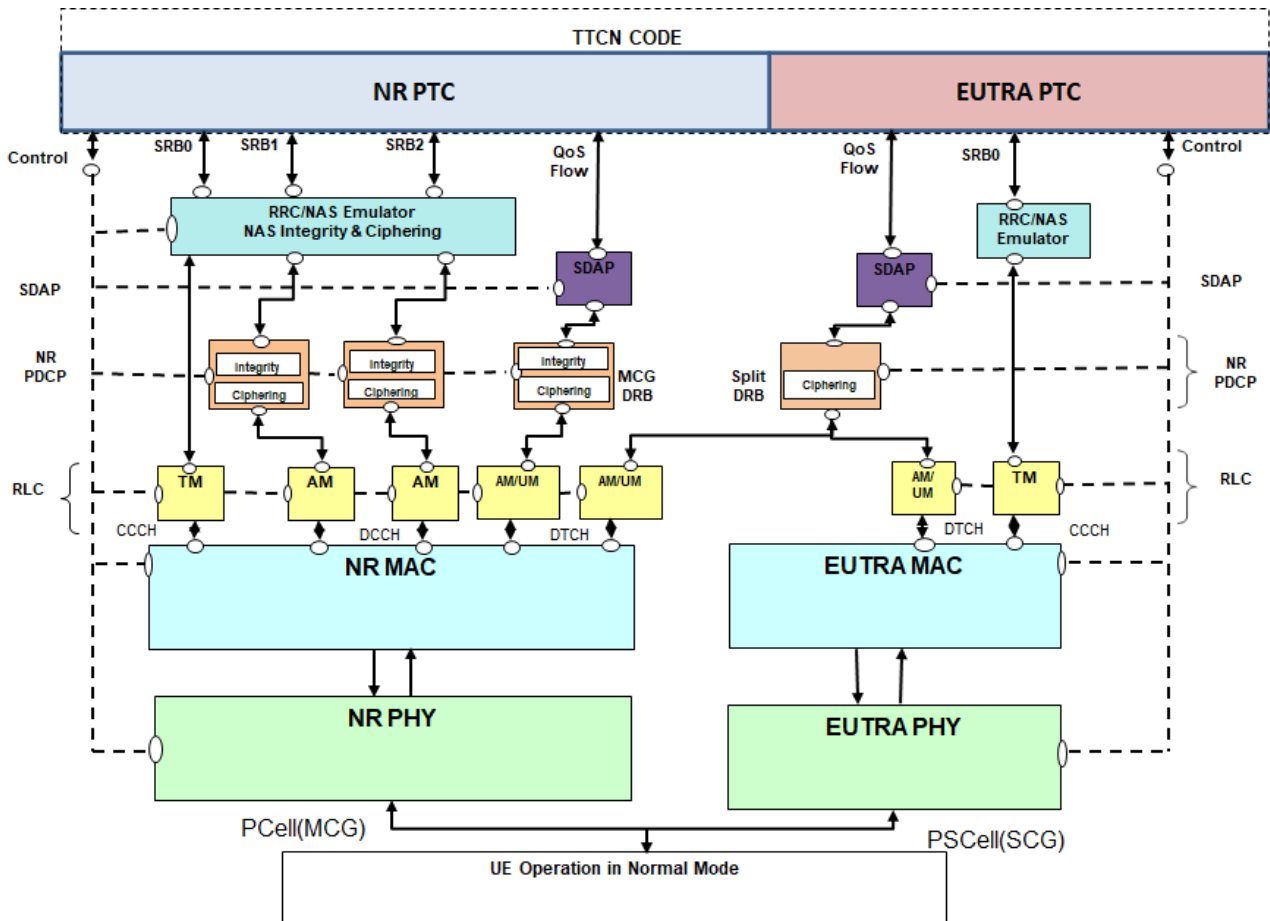


Figure 5.2.1.5A-2: Test model for NR/5GC NE-DC Layer3 testing: MCG and split DRB, E-UTRA terminated

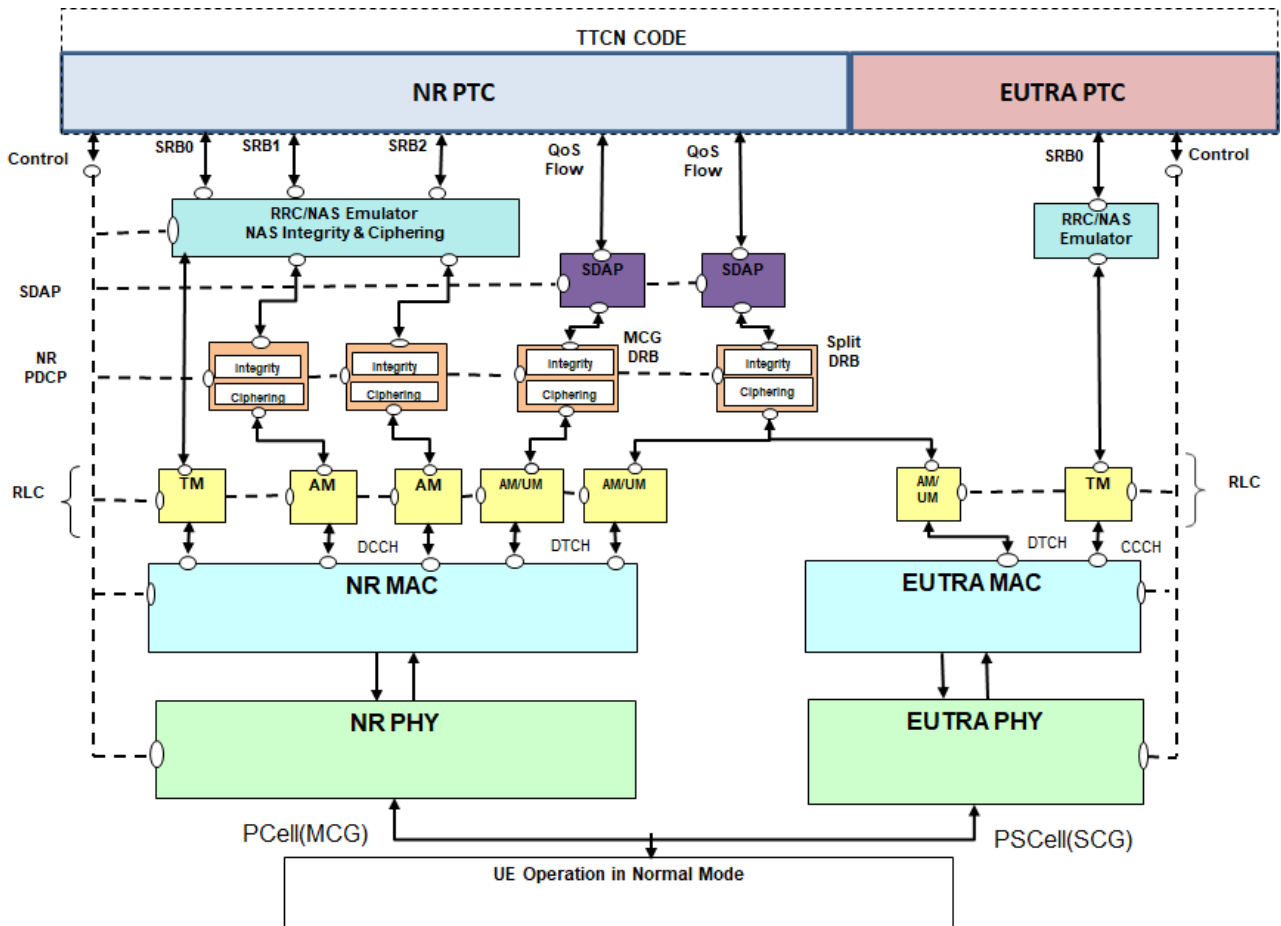


Figure 5.2.1.5A-3: Test model for NR/5GC NE-DC Layer3 testing: MCG and split DRB, NR terminated

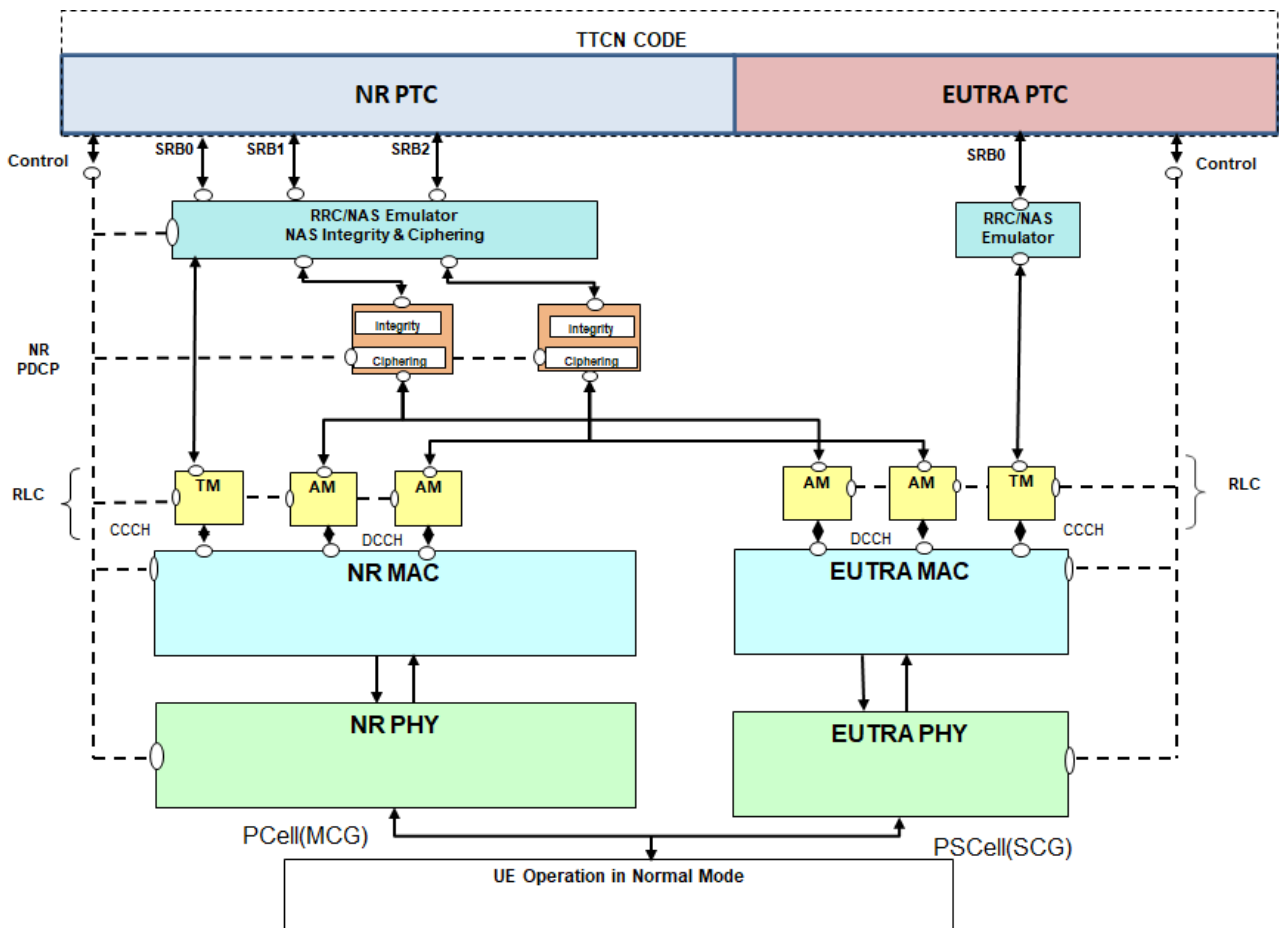


Figure 5.2.1.5A-4: Test model for NR/5GC NE-DC Layer3 testing: Split SRB(s), DRBs removed for clarity

The NR/5GC Layer3 NE-DC test model builds on top of the NR/5GC Layer3 test model, with the differences specified hereafter:

- SRBs 0, 1 and 2 are configured in NR.
- Only SRB0 is configured in E-UTRA and is connected directly to the SRB port in the E-UTRA RRC/NAS emulator.
- On the SS side E-UTRA L1, MAC and RLC are configured in normal way and shall perform all their functions.
- Only NR PDCP is configured in both NR and E-UTRA (E-UTRA PDCP is not used). This can be configured in split for one or more SRBs or DRBs. In this case NR PDCP is configured in one cell and a proxy PDCP will be configured in the other cell. The SS shall route data to/from either cell, via the routing information provided.
- SDAP can be configured in both NR and E-UTRA.

5.2.1.6 Void

5.2.2 Layer 2

5.2.2.1 SDAP

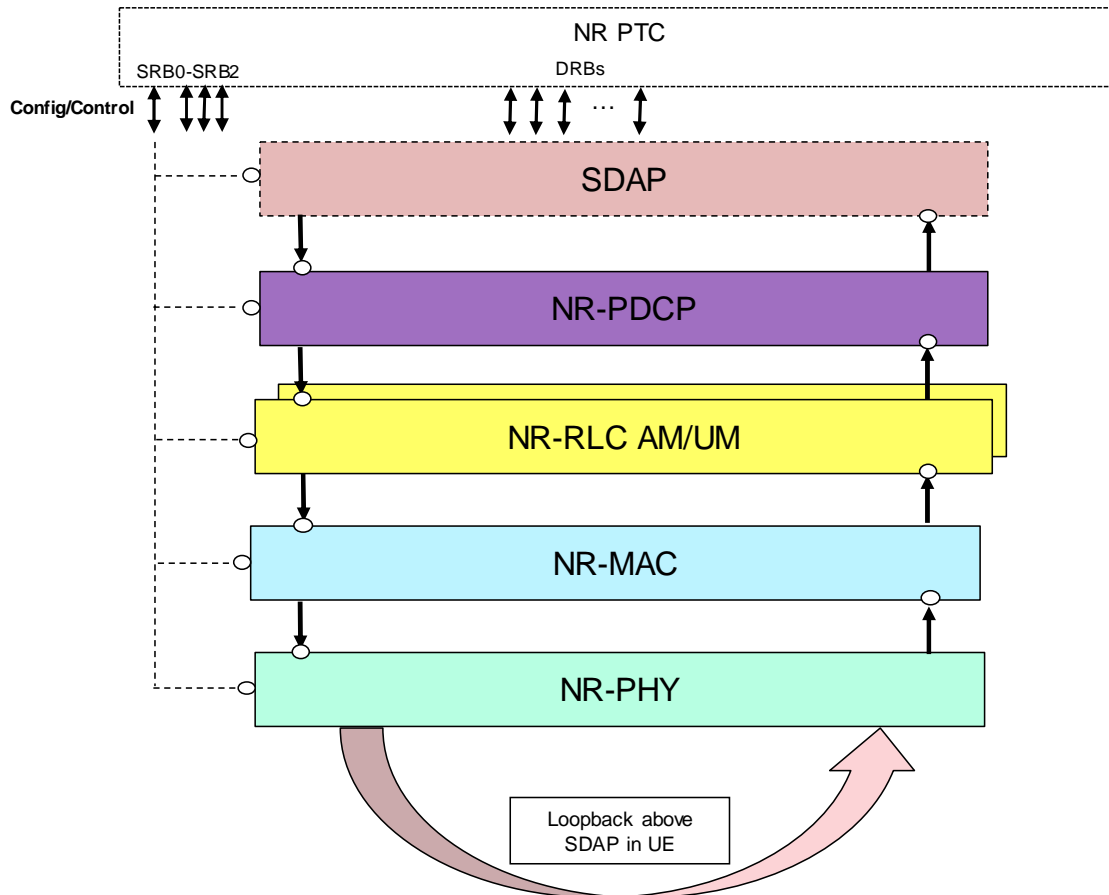


Figure 5.2.2.1-1: Test model for NR/5GC SDAP testing

The UE is configured in Test Loop Mode, to loop back the user domain data above SDAP layer. On UE side Ciphering is enabled with null algorithm and header compression is not configured.

On the SS, Layer 1, MAC, RLC and PDCP are configured in the normal operation. The SDAP is configured in a special mode, where SS does not add any SDAP header in DL and does not remove any SDAP header in UL at the DRB port on the NR PTC. The TTCN code will take care of the SDAP header handling and of the QoS flow to DRB mapping, i.e. the SS will route DL SDAP PDUs from TTCN to the corresponding DRB.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port.

5.2.2.2 PDCP

5.2.2.2.1 Single NR carrier

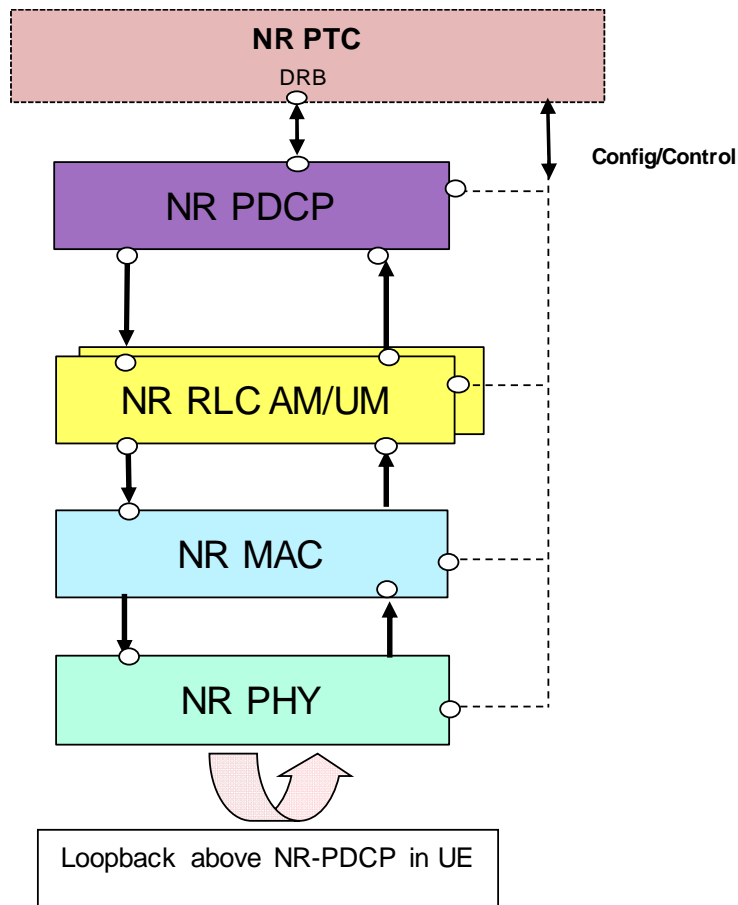


Figure 5.2.2.2.1-1: Test model for NR/5GC PDCP testing

The UE is configured in Test Loop Mode, to loop back the user domain data above PDCP layer. On UE side Ciphering is enabled as null algorithm and header compression is not configured.

On the SS NR, Layer 1, MAC and RLC is configured in the normal operation.

The PDCP is configured in a special mode, where SS does not add any PDCP headers in DL and/or not remove any PDCP headers in UL directions respectively at DRB port on the NR PTC. The TTCN maintains sequence numbers and state variables for the PDCP layer.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception over system indication port, if configured.

5.2.2.2.2 NR-NR dual connectivity

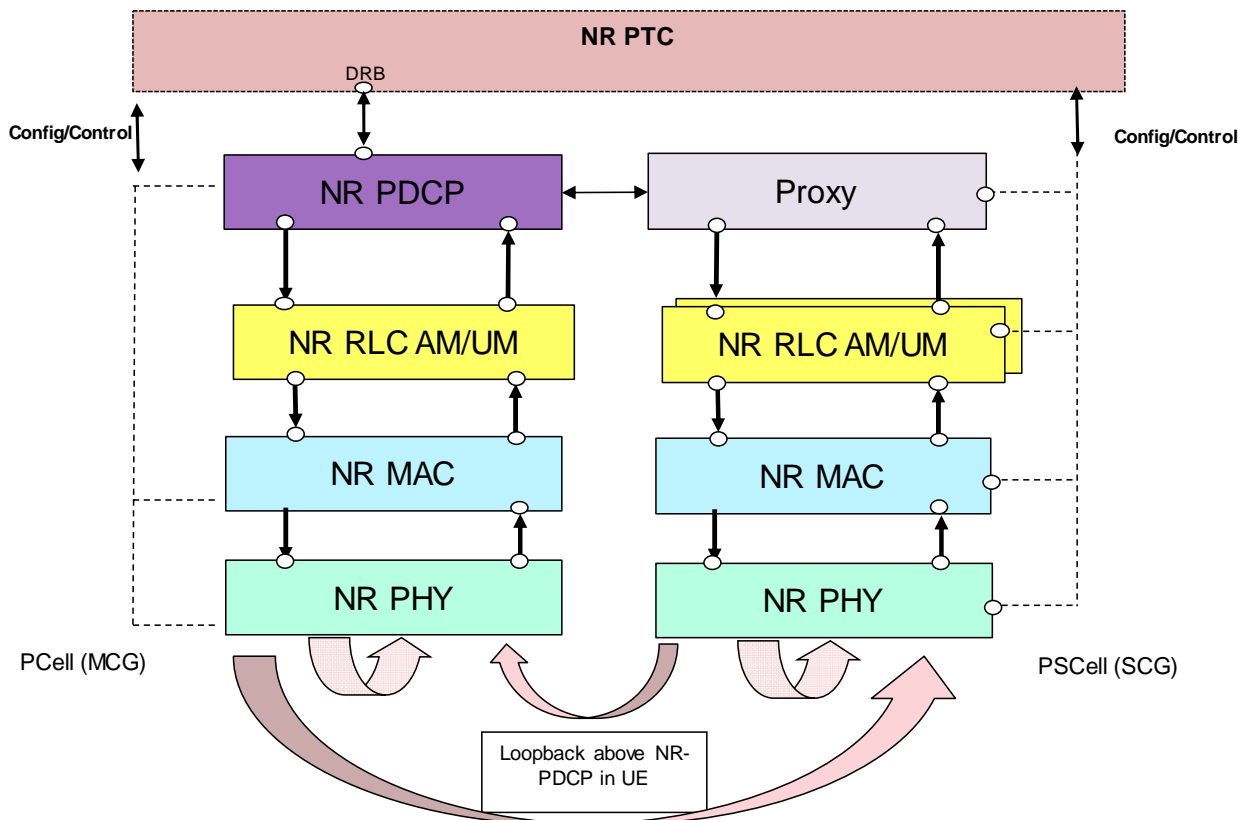


Figure 5.2.2.2-1: Test model for NR/5GC NR-DC PDCP testing (*split DRB*)

The UE is configured in Test Loop Mode, to loop back the user domain data above PDCP layer.

On UE side Ciphering is enabled as null algorithm and header compression is not configured.

The SS configures in the First Cell, Layer 1, MAC and RLC in the normal operation. The NR PDCP is configured in a special mode, where SS does not add any PDCP headers in DL and/or not remove any PDCP headers in UL directions respectively at DRB port on the NR PTC. The TTCN maintains sequence numbers and state variables for the PDCP layer.

The SS configures in the Second Cell, Layer 1, MAC and RLC in the normal operation. The NR PDCP is configured as Proxy. DRB data will be sent between the NR PDCP Proxy and the NR PDCP.

Note that the First Cell refers to MCG PCell and the Second Cell to SCG PSCell, or vice versa.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception over system indication port, if configured.

5.2.2.2.3 NR-E-UTRA dual connectivity

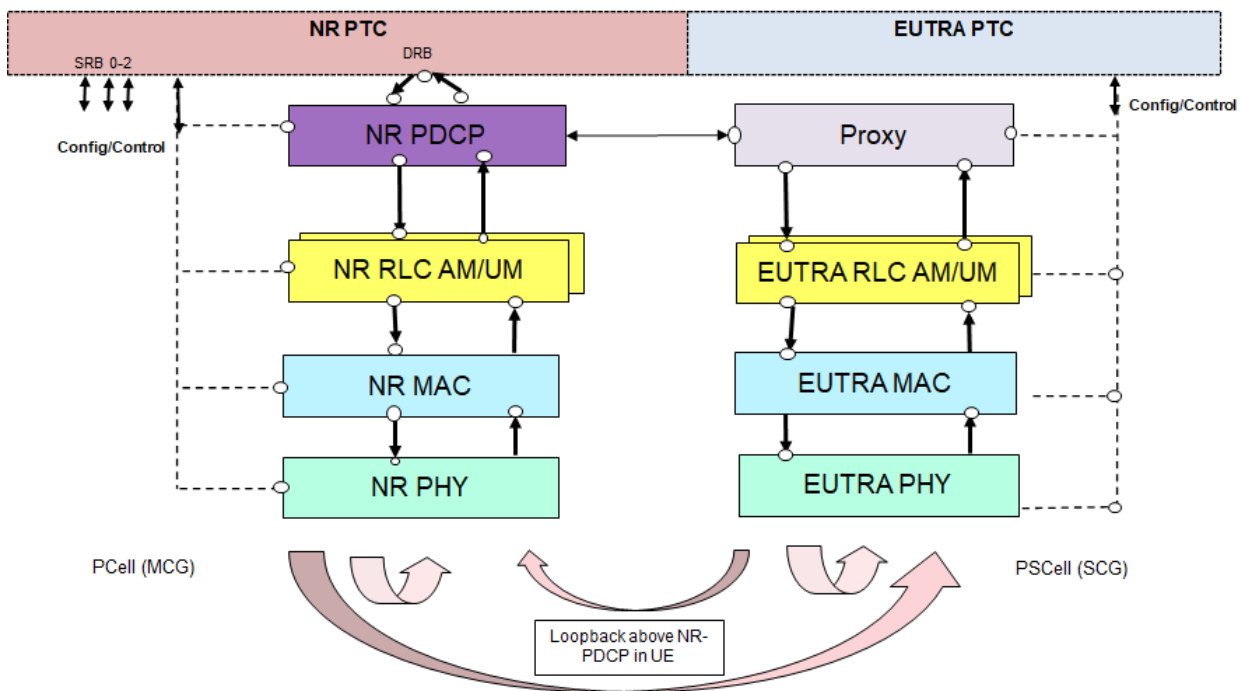


Figure 5.2.2.2.3-1: Test model for NE-DC PDCP testing (*split DRB*)

The UE is configured in Test Loop Mode, to loop back the user domain data above NR PDCP layer.

On UE side Ciphering is enabled as null algorithm and header compression is not configured.

Test Loop Mode can be active on split DRB as shown in Figure 5.2.2.2.3-1.

On the SS NR, SRBs 0,1 and 2 are configured as per Layer3 test model. The Layer1, MAC and RLC of the MCG bearer are configured in normal operation. The PDCP is configured in a special mode, where SS does not add any PDCP headers in DL and/or not remove any PDCP headers in UL directions respectively at DRB port on the NR PTC. The TTCN maintains sequence numbers and state variables for the PDCP layer.

On the SS E-UTRA the Layer1, MAC and RLC of the SCG bearer are configured in normal operation. The PDCP layer of the SCG leg is configured as Proxy mode, TTCN shall configure E-UTRA for NE-DC PDCP testing only when a Test Loop Mode is active on a split DRB.

The SS shall route DL PDCP PDUs from TTCN to PCell and/or PSCell and SS shall indicate that the UL PDCP PDU is received from PCell or PSCell.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception over system indication port, if configured.

5.2.2.2.4 NR carrier aggregation

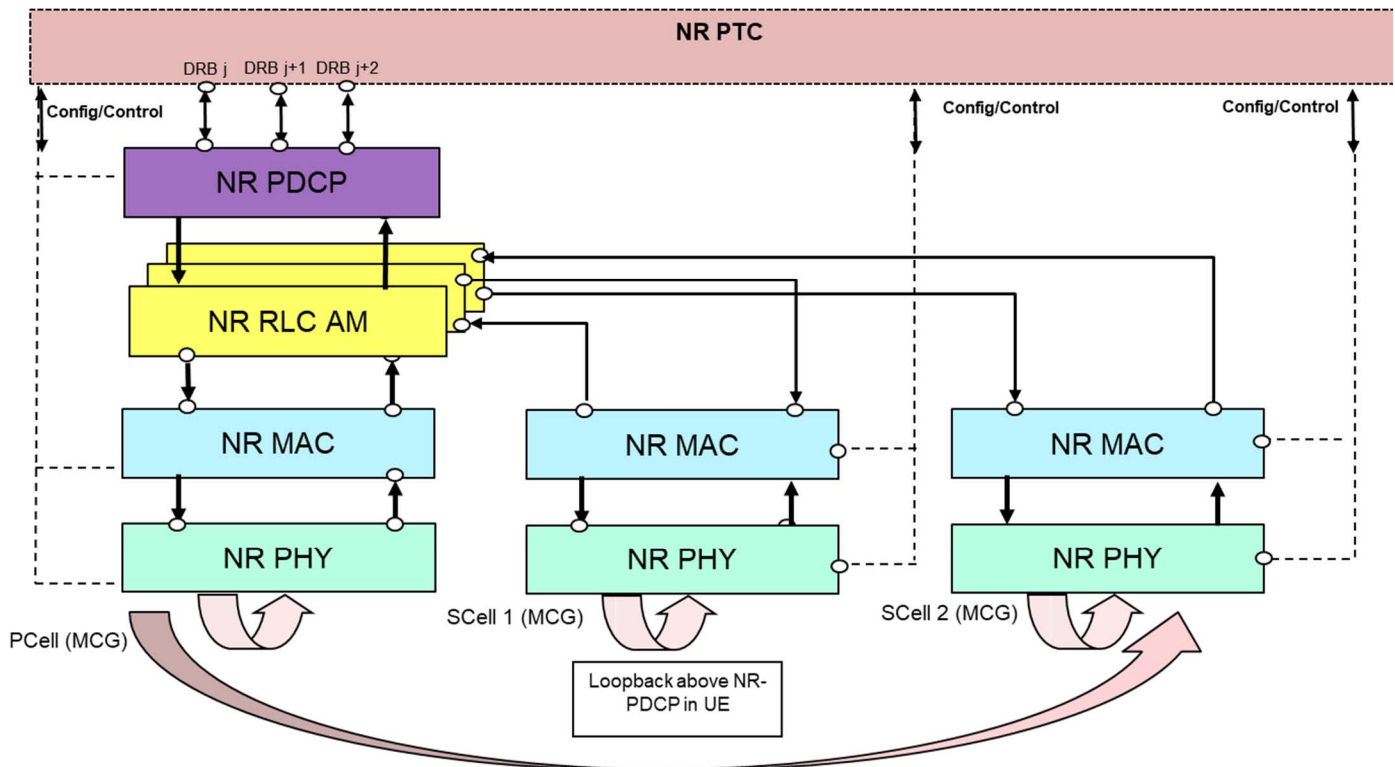


Figure 5.2.2.2.4-1: Test model for NR CA PDCP testing

The UE is configured in Test Loop Mode, to loop back the user domain data above PDCP layer.

On UE side Ciphering is enabled as null algorithm and header compression is not configured.

The SS configures in the PCell, Layer 1, MAC and RLC in the normal operation. The NR PDCP is configured in a special mode, where SS does not add any PDCP headers in DL and/or not remove any PDCP headers in UL directions respectively at DRB port on the NR PTC. The TTCN maintains sequence numbers and state variables for the PDCP layer.

The SS is configured with one or two SCell(s), the figure 5.2.2.2.4-1 shows 2 SCells.

The SS configures DRB j, DRB j+1 and DRB j+2 on the PCell, every DRB is connected to an RLC entity. The RLC entity configured on DRB j is linked to the MAC entity on the PCell, the RLC entity configured on DRB j+1 is linked to the MAC entity on the SCell 1 and the DRB j+2 is linked to the MAC entity on the SCell 2.

The SS configures SCell 1 with Layer 1, MAC in normal operation. The MAC entity of each SCell is linked to the RLC entity on DRB j+1 of the PCell.

The SS configures SCell 2 with Layer 1, MAC in normal operation. The MAC entity of each SCell is linked to the RLC entity on DRB j+2 of the PCell.

The NR data routing between the RLC layer of PCell and the lower layers of either PCell or SCell shall be provided to/by SS in the common part of the data ASP using the MacBearerRouting field.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception over system indication port, if configured.

5.2.2.2.5 NR-NR dual connectivity with NR carrier aggregation

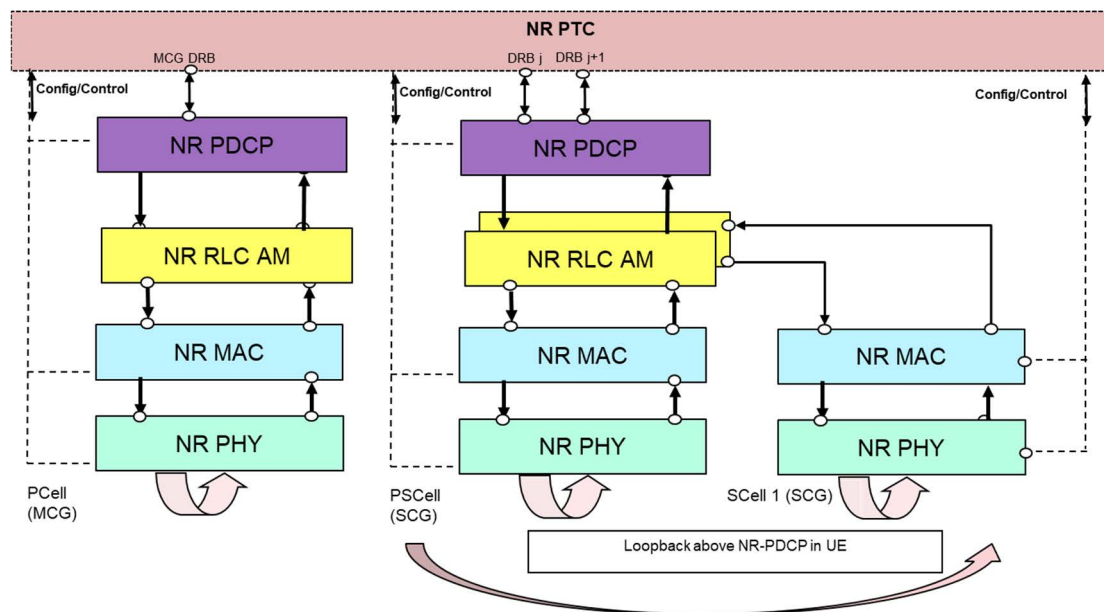


Figure 5.2.2.2.5-1: Test model for NR/5GC NR-DC with NR CA duplication in PDCP testing

The UE is configured in Test Loop Mode, to loop back the user domain data above PDCP layer.

On UE side Ciphering is enabled as null algorithm and header compression is not configured.

The SS configures in the PCell, Layer 1, MAC and RLC in the normal operation.

On the NR side, the SS configures in the PSCell, Layer 1, MAC and RLC in the normal operation. The NR PDCP is configured in a special mode, where SS does not add any PDCP headers in DL and/or not remove any PDCP headers in UL directions respectively at DRB port on the NR PTC. The TTCN maintains sequence numbers and state variables for the PDCP layer.

The SS configures DRB j and DRB $j+1$ on the PSCell, every DRB is connected to an RLC entity. The RLC entity configured on DRB j is linked to the MAC entity on the PSCell, the RLC entity configured on DRB $j+1$ is linked to the MAC entity on the SCell.

The SS configures SCell with Layer 1, MAC in normal operation. The MAC entity of the SCell is linked to the RLC entity on DRB $j+1$ of the PSCell.

The NR data routing between the RLC layer of PSCell and the lower layers of either PSCell or SCell shall be provided to/by SS in the common part of the data ASP using the MacBearerRouting field.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception over system indication port, if configured.

5.2.2.2.6 Ethernet header compression

EHC testing uses the PDCP test model specified in subclause 5.2.2.2.1, with the following differences.

EHC is configured in both directions (DRB created in pre-test conditions).

TTCN implements and operates the EHC compressor and the EHC decompressor. The PDCP layer at the SS handles EHC compressed packets (i.e. EHC full header packets and EHC compressed header packets) to/from the TTCN. These PDUs are each associated with one PDCP SDU.

The UE is expected to be configured with an Ethernet MAC address.

5.2.2.3 RLC

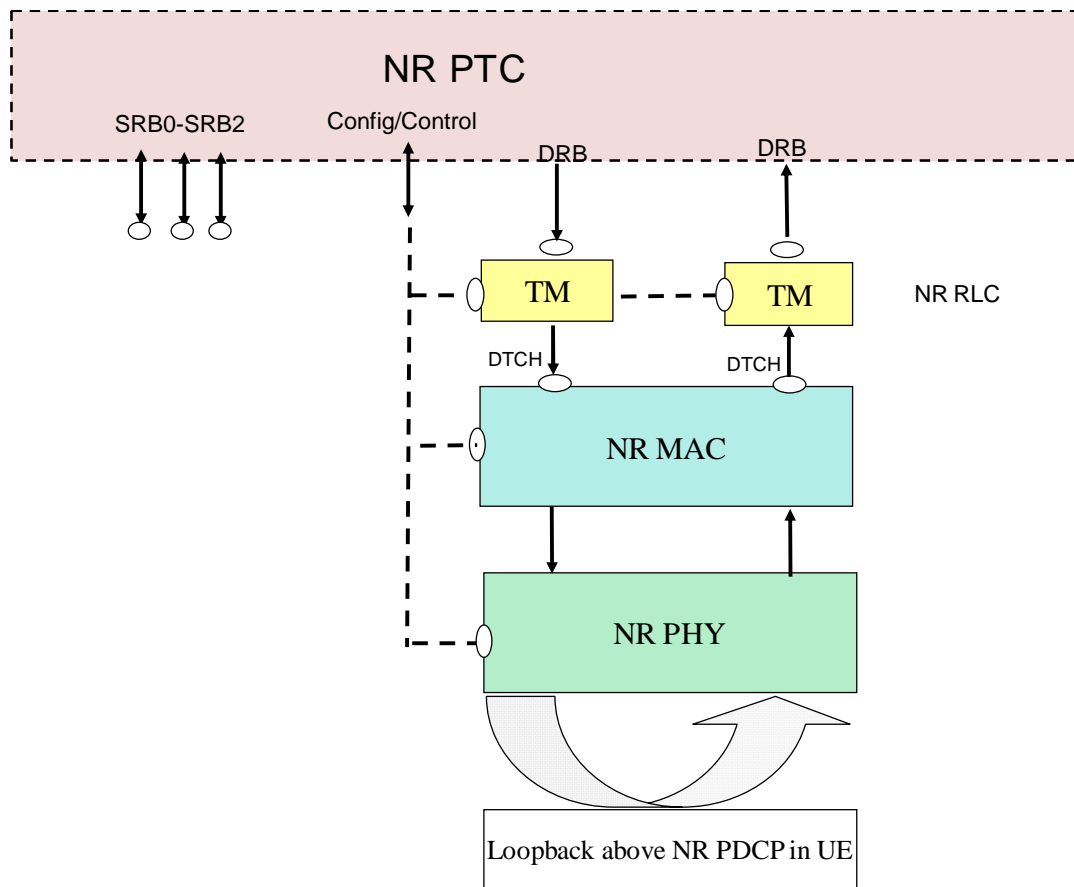


Figure 5.2.2.3-1: Test model for NR/5GC RLC testing

The UE is registered in NR, using SRBs 0-2, and configured for NR/5GC operation.

This model is suitable for testing both UM/AM mode of operation of DRBs on UE side.

The UE is configured in Test Loop Mode, to loop back the user domain data above PDCP layer. On UE side Ciphering is enabled (since mandatory) but with null ciphering algorithm, which is equivalent to not using ciphering. Header compression is not configured on UE side.

On the SS Side, L1 and MAC are configured in the normal way. The RLC of the DRBs is configured in transparent mode. Hence with this configuration PDUs out of SS RLC are same as the SDUs in it. There is no PDCP configured on SS side. The ports are directly above RLC.

The PDUs, exchanged between TTCN and SS, shall be the final RLC PDUs consisting of RLC and PDCP headers. TTCN code shall take care in DL of building RLC headers and PDCP headers and in UL handle RLC and PDCP headers. TTCN code shall take care of maintaining sequence numbers and state variables for RLC and PDCP layers. If RLC on UE side is in AM mode, TTCN shall take care of generating polls in DL and responding with RLC control PDUs on reception of UL Poll.

5.2.2.4 MAC

5.2.2.4.1 Single NR carrier

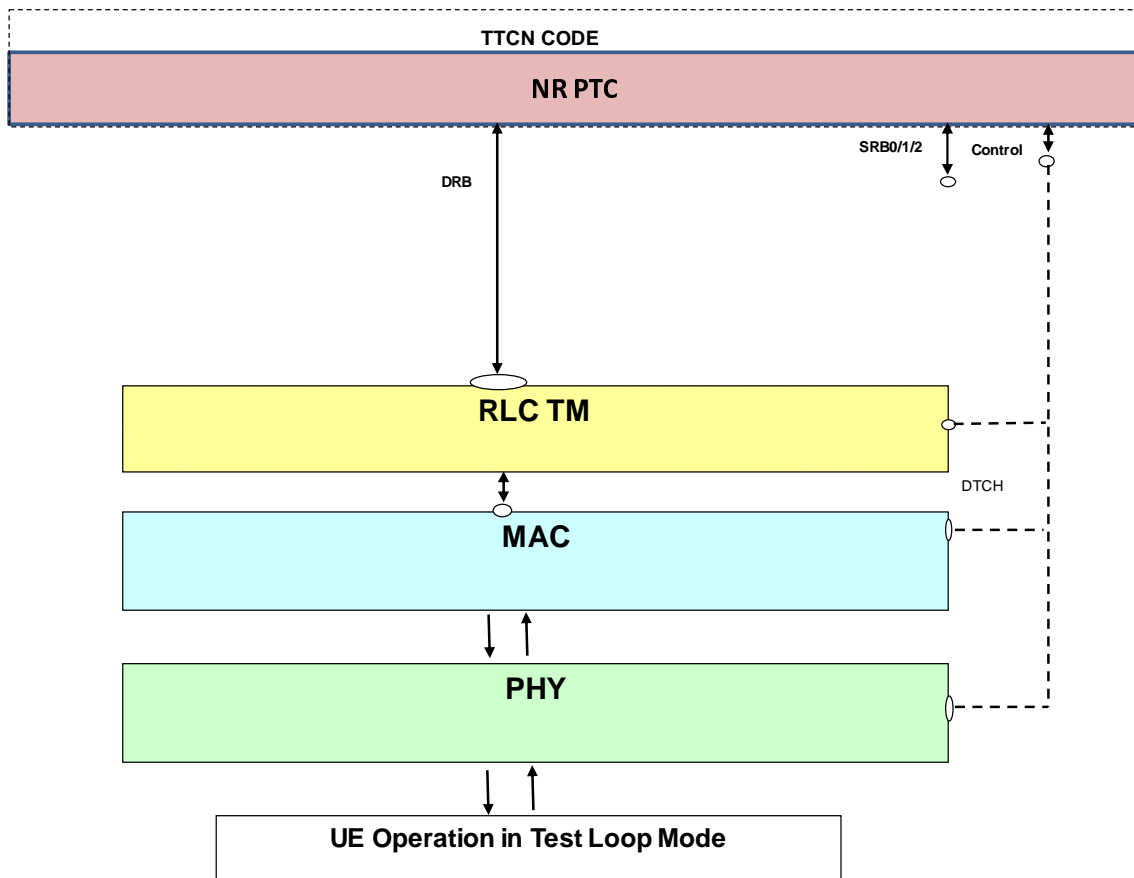


Figure 5.2.2.4.1-1: Test model for NR/5GC MAC testing

The UE is configured in Test Loop Mode A, to loop back the User Plane data above PDCP layer. On UE side Ciphering is enabled (since Mandatory) but with null ciphering algorithm, which is equivalent to not using ciphering. Header compression is not configured on UE side.

On the SS Side the NR MAC test model expects no split bearers to be configured.

On the SS NR, Layer 1 is configured in the normal way. NR MAC is configured in a special mode, where it does not add any MAC headers in DL and /or not remove any MAC headers in UL directions respectively at DRB port. In this case, the TTCN shall provide the final MAC PDU, including padding. Except for this, the NR MAC layer shall perform all its other functions. SRBs are configured as in Layer 3 test model in normal operation.

On DRBs the NR RLC is configured in transparent mode. Hence with this configuration PDUs out of SS RLC are same as the SDUs in it. There is no NR PDCP and SDAP configured on SS Side. The ports are directly above NR RLC.

There are two different test modes in which NR MAC header addition/removal can be configured:

1. DL/UL header-transparent mode: no header addition in DL and no header removal in UL.
2. DL only header-transparent mode: no header addition in DL; UL NR MAC is configured in normal mode to remove MAC header and de-multiplex the MAC SDUs according to the logical channel Ids.

If SS NR MAC is configured in DL/UL header-transparent mode, the PDUs, exchanged at the DRB port between TTCN and SS, shall be the final MAC PDUs consisting of MAC, RLC and PDCP headers. TTCN code shall take care in DL of building MAC header, RLC headers and PDCP headers and in UL handle MAC, RLC and PDCP headers. TTCN code shall take care of maintaining sequence numbers and state variables for RLC and PDCP layers. During

testing of multiple DRBs at the UE side, it shall still be possible to configure only one DRB on SS side with configuration in the figure 5.2.2.4.1-1. Other DRBs will not be configured, to facilitate routing of UL MAC PDUs. Multiplexing/de-multiplexing of PDUs meant/from different DRBs shall be performed in TTCN. Since the MAC layer does not evaluate the MAC headers in UL it cannot distinguish between SRB and DRB data in UL. There shall be no SRB traffic while MAC is configured in this test mode. The SS MAC shall take care of automatic repetitions/retransmission in UL and DL, based on normal MAC HARQ behaviour.

NOTE: There is no need to handle SDAP headers in TTCN for UL/DL as UE Test loop Mode A is above PDCP.

If SS NR MAC is configured in DL only header-transparent mode, the UL PDUs exchanged at the DRB port between TTCN and SS shall be final RLC PDUs consisting of RLC and PDCP headers. SS shall route these PDUs based on logical channel IDs. In DL, TTCN sends fully encoded MAC PDUs at the DRB port (consisting of MAC, RLC and PDCP headers). In this case TTCN needs to take care of maintaining sequence numbers and state variables for RLC and PDCP layers. Furthermore, in UL and DL the SS MAC layer shall be capable of dealing with SRB data (i.e. it shall handle DL RLC PDUs coming from SRB RLC layers or de-multiplex UL RLC PDUs to SRB's) as in normal mode. The SS MAC shall take care of automatic repetitions/retransmissions in UL and DL, based on normal MAC HARQ behaviour. TTCN shall ensure that no DL MAC SDUs in normal mode and DL MAC PDUs in test mode are mixed for the same TTI.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception over system indication port, if configured. In a similar way the reception of PRACH preambles is reported by SS over the same port.

When SS is configured either with *pusch-AggregationFactor* > 1 or with *pusch-RepTypeIndicatorDCI-0-1-r16* set to *pusch-RepTypeB* and SS NR MAC is configured in DL/UL header-transparent mode, SS shall handle UE automatic subsequent repetitions/retransmissions in UL on the same HARQ process according to TS 38.214[22] clause 6.1.2.1, and in addition SS shall transmit to TTCN every received UL HARQ transmission/retransmission within a bundle as separate MAC PDUs.

5.2.2.4.2 NR carrier aggregation

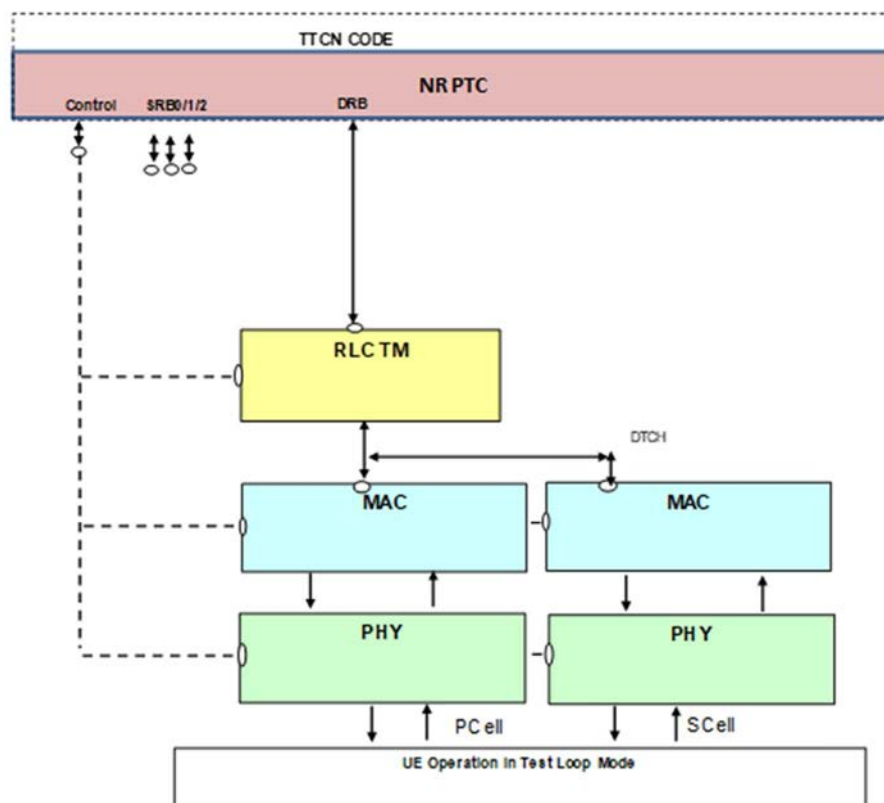


Figure 5.2.2.4.2-1: Test model for NR/5GC MAC CA testing

The NR/5GC MAC CA test model builds on top of the NR/5GC MAC test model, with the differences specified hereafter.

On the SS NR side, there is one PCell and one SCell configured:

- PCell only: On DRBs the NR RLC is configured in transparent mode. Hence with this configuration PDUs out of SS RLC are same as the SDUs in it. There is no NR PDCP and SDAP configured in the SS. The ports are directly above NR RLC.
- PCell / SCell: Layer 1 is configured in the normal way. NR MAC is configured in a special mode, where it does not add any MAC headers in DL and /or not remove any MAC headers in UL directions respectively at DRB port. In this case, the TTCN shall provide the final MAC PDU, including padding. Except for this, the MAC layer shall perform all of its other functions.

The UL Scheduling Grant and DL Scheduling assignments are configured from TTCN over system control port. SS reports PUCCH scheduling information reception in PCell over system indication port, if configured. In a similar way the reception of PRACH preambles in PCell / SCell is reported by SS over the same port, if configured.

The NR data routing between the RLC layer of PCell and the lower layers of either PCell or SCell shall be provided to/by SS in the common part of the data ASP using the MacBearerRouting field.

5.3 NR sidelink

5.3.1 Layer 3

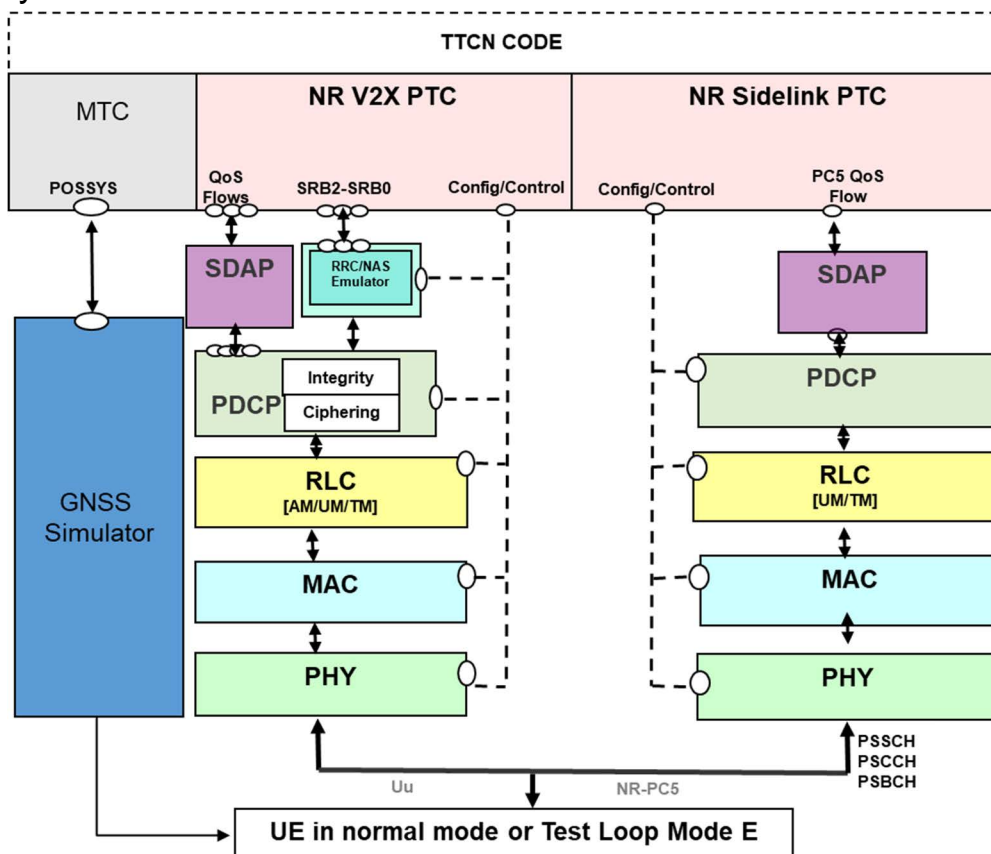


Figure 5.3.1-1: Test model for Layer 3 NR sidelink PC5 broadcast and groupcast in coverage

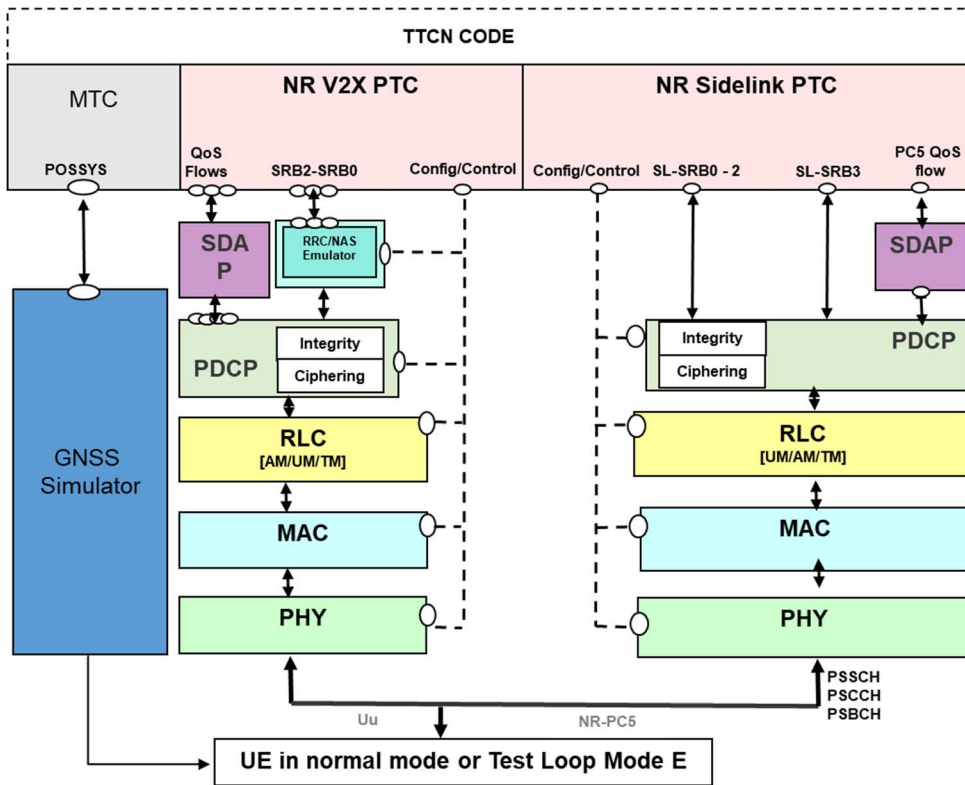


Figure 5.3.1-2: Test model for Layer 3 NR sidelink PC5 unicast in coverage

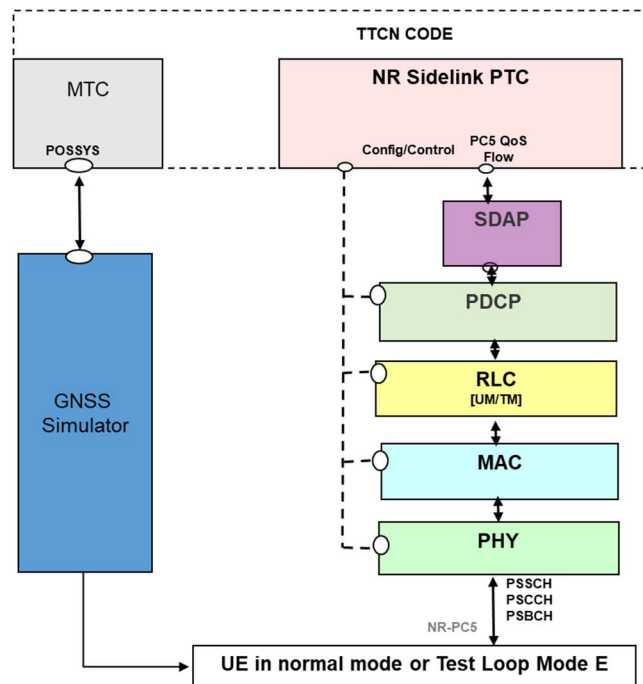


Figure 5.3.1-3: Test model for Layer 3 NR sidelink PC5 broadcast and groupcast out of coverage

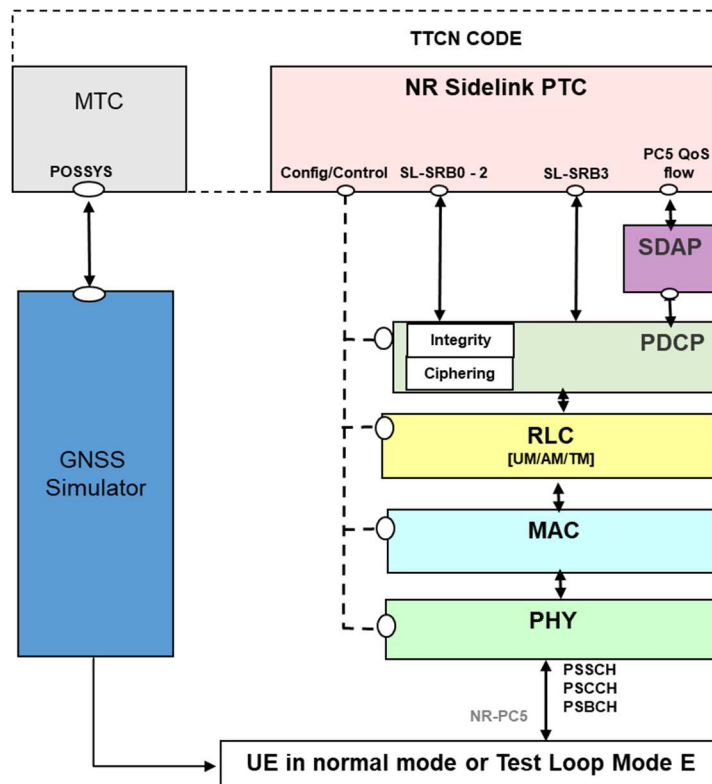


Figure 5.3.1-4: Test model for Layer 3 NR sidelink PC5 unicast out of coverage

The UE is configured in normal mode or in Test Loop Mode E. On the UE side on the Uu interface, ciphering and integrity (PDCP and NAS) are enabled and header compression is not configured. On the UE side on NR-PC5 interface, the NULL integrity algorithm and NULL ciphering is applied and header compression is not configured.

For testing NR sidelink, the system simulator (SS) can implement one or several simulated NR cells as specified in clause 5.1.1.1 and one or several simulated UEs, called hereafter NR-SS-UE. The NR-SS-UE is used to send/receive data with the UE under test over the PC5 interface. A GNSS Simulator is configured when GNSS synchronisation source or a geographical position is required in the test. The requirements for the GNSS simulator (also referred as positioning simulator) are specified in TS 37.571-4 [28]. When UE is in coverage of an NR cell, this is depicted in the NR sidelink test model of Figure 5.3.1-1 for PC5 broadcast and groupcast and Figure 5.3.1-2 for PC5 unicast. When UE is out of coverage of an NR cell, this is depicted in the NR sidelink test model of Figure 5.3.1-3 for PC5 broadcast and groupcast and Figure 5.3.1-4 for PC5 unicast.

The NR-SS-UE is controlled by TTCN in the NR Sidelink PTC and is configured for NR sidelink by TTCN over sidelink system control NR_SL_SYS port. The NR-SS-UE can be configured in coverage of an NR cell, out of coverage, UTC synchronised or synchronised on the UE under test. The NR-SS-UE can also be configured for transmission/reception of an SLSS/PSBCH. The NULL ciphering and integrity algorithms are applied. L1, MAC, RLC, PDCP and SDAP are configured in normal way; they shall perform all of their functions. The NR_SL_DATA port for transmission and reception of STCH data is above SDAP. The STCH data is considered as raw data.

Editor's note: MAC, RLC, PDCP and SDAP transparent modes are FFS

6 System interface

6.1 Upper tester interface

The Upper Tester (UT) interface is the same as specified in TS 36.523-3 [12] clause 5.

In addition, the following MMI commands are defined.

Table 6.1-1: MMI commands

Command	Parameters	
	Name	Value
"CAPABILIBY_ENQUIRY"	"Freq. Band List"	<charstring>
	"Two-Way"	"TRUE" / "FALSE"
"CLEAR_RSNPN"	(none)	
"PERIODICAL_MEASUREMENT_PSBCH_RSRP"	"Report Interval"	<charstring>
"SL_CSI_RS_CONFIGURATION"	"Freq. allocation One antenna Port"	<charstring>
	"First symbol"	<charstring>
	"Latency Bound"	<charstring>
"SNPN_AUTOMATIC"	(none)	
"SNPN_MANUAL"	"PLMN"	<PLMN ID>
	"N_ID"	<N ID>
"SNPN_SUBSCRIBER_DATA"	"PLMN"	<PLMN ID>
	"N_ID"	<N ID>
"UEAI"	"SL-QoS Flow ID"	<charstring>
"UNICAST_SLDRB"	"Action"	"ESTABLISH" / "MODIFY" / "RELEASE"

The following AT commands are also applied in the TTCN.

Table 6.1-2: AT Commands

Command
AT+C5GNSSAI
AT+C5GNSSAIRDP
AT+C5GQOS
AT+ CGBRRREQ
AT+CMICO

AT commands are referred to TS 27.007 [49].

6.2 Abstract system primitives

6.2.1 Introduction

The present subclause 6.2 specifies the abstract system primitives (ASPs) used on the system interface to configure and control the SS.

6.2.2 General requirements and assumptions

The requirements and assumptions specified in TS 36.523-3 [12] subclause 6.1 apply to the present document.

6.2.3 E-UTRAN ASP definitions

Please refer to TS 36.523-3 [12] subclause 6.2.

6.2.4 NR ASP definitions

See Annex D.

6.2.5 UTRAN ASP definitions

Please refer to TS 36.523-3 [12] subclause 6.3.

6.2.6 WLAN ASP definitions

Please refer to TS 36.523-3 [12] Annex D.

6.2.7 GERAN ASP definitions

Please refer to TS 36.523-3 [12] subclause 6.4.

7 Test methods and design considerations

7.1 Common aspects

7.1.1 Introduction

Subclause 7.1 specifies test methods and design considerations that are common to all 5GS deployment options.

7.1.2 Physical layer aspects

7.1.2.1 Search spaces and DCI

7.1.2.1.1 Parameters

For each search space there are several parameters specifying the location of this search space in the time and frequency domain.

7.1.2.2.1.1 Search space configuration

PDCCH monitoring periodicity	
Comment/description	slot periodicity in time domain
ASN.1 parameter	SearchSpace.monitoringSlotPeriodicityAndOffset
Core spec reference	TS 38.213 [21] clause 10.1
PDCCH monitoring offset	
Comment/description	slot offset
ASN.1 parameter	SearchSpace.monitoringSlotPeriodicityAndOffset
Core spec reference	TS 38.213 [21] clause 10.1
PDCCH monitoring pattern	
Comment/description	first symbol(s) of the control resource set within a slot for PDCCH monitoring; in general a search space starts with first symbol of a slot; the duration is given by the L1 parameter 'CORESET-time-duration'
ASN.1 parameter	SearchSpace.monitoringSymbolsWithinSlot
Core spec reference	TS 38.213 [21] clause 10.1
CORESET time duration	
Comment/description	Duration of a search space in time domain: 1, 2 or 3 symbols
ASN.1 parameter	ControlResourceSet.duration
Core spec reference	TS 38.213 [21] clause 10.1
CORESET frequency domain allocation	
Comment/description	Bitmap specifying the frequency domain allocation of a search space NOTE: The allocations needs to fit into the BWP to which the CORESET belongs
ASN.1 parameter	ControlResourceSet.frequencyDomainResources
Core spec reference	TS 38.213 [21] clause 10.1, TS 38.211 [19] clause 7.3.2.2

7.1.2.1.2 PDCCH search spaces

For each configured DL BWP, the TTCN may configure one or several search spaces.

For each search space, TTCN configures the SS with:

- The configuration of this search space as given to the UE, enabling the SS to determine the PDCCH transmission occasions (same as the UE PDCCH monitoring occasions) and associated CORESET.
For SearchSpaceZero the configuration according to TS 38.213 [21] clauses 10.1 and 13 is mapped to ASN.1 type SearchSpace to configure the SS; for CORESET#0 the configuration according to TS 38.211 [19] clause 7.3.2.2 is mapped to ASN.1 type ControlResourceSet to configure the SS.
- The CCE aggregation level L that the SS shall use for PDCCH transmission on this search space.
In general an aggregation level of 4 is used for SearchSpaceZero, common and UE-specific search space.
- The priority P of this search space that the SS shall consider in its PDCCH candidate selection algorithm.
 - a value of 0 represents the highest priority, a value of 1 the second highest priority and so on.

NOTE: “Search space” is used in terms of TS 38.213 [21] clause 10.1 and a single search space configuration (ASN.1 type ‘SearchSpace’) may contain several search spaces (see NR_BWP_SearchSpaceConfig_Type in Annex D).

7.1.2.1.3 DCI formats

7.1.2.1.3.1 Introduction

The SS shall support several DCI formats. For each 5GS option, the set of DCI formats to support may be different (see relevant option-specific subclauses).

7.1.2.1.3.2 Timing

The transmission of DCI formats may be explicitly requested from TTCN or semi-autonomously handled by the SS. In case of explicit request:

- If the associated timing information is explicit, the TTCN shall ensure that this timing information matches one of the configured PDCCH transmission occasions.
- If the associated timing information is now, the SS shall determine and use the next valid PDCCH transmission occasion.

7.1.2.1.3.3 DAI

In the DCI formats to be used by the SS, TTCN may set the DAI fields explicitly or may configure the SS to set the DAI fields automatically. TTCN configures the DAI parameters in the SS according to one of the columns of Table 7.1.2.1.3.3-1.

Table 7.1.2.1.3.3-1: DAI parameter settings

DAI field \ HARQ-ACK Codebook type	Semi-static		Dynamic with 1 sub-codebook		Dynamic with 2 sub-codebooks	
	Explicit mode	Auto mode	Explicit mode	Auto mode	Explicit mode	Auto mode
DCI0_1 FirstDAI	Index	Automatic	Index	Automatic	Index	Automatic
DCI0_1 SecondDAI	None	None	None	None	Index	Automatic
DCI1_0 DAI	Index	Automatic	Index	Automatic	Index	Automatic
DCI1_1 DAI	None	None	Index	Automatic	Index	Automatic

When TTCN configures the SS to use the automatic mode, the SS shall:

- Create DL association/transmission set, according to the setting by TTCN of TimeDomain, PdschHarqTimingIndicator and PucchResourceIndicator for DCI formats 1_x, their associated transmission timing information, and the set of serving cells configured, then
- Identify the need to multiplex a HARQ-ACK codebook into a PUSCH transmission according to above DL association/transmission set and the transmission timing information of received UL Grant(s), then
- Set the DAI fields in the DCI formats 1_x and 0_1 according to the above and the requirements on DAI values specified in TS 38.213 [21] subclause 9.1.2 for semi-static HARQ-ACK Codebook or subclause 9.1.3 for dynamic HARQ-ACK Codebook.

7.1.2.1.4 PDCCH candidate selection

The SS shall consider search space priorities as configured by TTCN to find appropriate PDCCH candidates for scheduling of DCI formats in case of:

a) Overlapping search spaces:

- Depending on system configuration and slot number candidates of the different search spaces may be located in same (or overlapping) CCEs.
 - Example: system information is automatically scheduled by the SS and UE-specific data transmission requires scheduling of PDCCH for the same slot and symbols
- => Candidates of the UE-specific search space may collide with actual PDCCH of a common search space (e.g. system information).

b) Within a search space if different search space types are mapped to the same search space configuration.

For every PDCCH assignment (in terms of TS 38.213 [21] clause 10.1) the SS shall apply the PDCCH candidate selection algorithm specified hereafter:

1) For each search space the SS selects the PDCCH candidate with index $m(\text{search space}, L) = 0$

With (see TS 38.213 [21] subclause 10.1):

- candidate index $m(\text{search space}, L) := 0 .. M(\text{search space}, L) - 1$;
- $M(\text{search space}, L)$: number of PDCCH candidates per CCE aggregation level for the given search space;
- L : CCE aggregation level

2) If there is an overlapping of the selected candidates, the SS shall:

- keep the PDCCH candidate of the search space with higher priority P ,
- increment m for the search space with lower priority;

3) The SS shall repeat 2) until there is no overlapping anymore.

In the following cases the SS shall raise an error:

- i) Collision of PDCCH candidates of search spaces with the same priority,
- ii) When a DL transmission or a single UL grant is scheduled with specific TimingInfo and after applying the above rules there is no PDCCH candidate left anymore.
NOTE: For TimingInfo 'Now' there is no error as the SS can shift the transmission to the next PDCCH occasion

In case of continuous UL grant configuration, the SS shall not raise an error when a grant cannot be scheduled at a specific point in time but skip it, if the grant is configured to be at every occasion, or shift it to the next occasion otherwise.

7.1.2.2 Downlink resource allocation

7.1.2.2.1 Parameters

There are several parameters specifying the resource allocation on PDCCH (see subclause 7.1.2.2.1.1) and PDSCH for a DL transmission. The following sub-clauses summarise the parameters being most relevant for downlink resource allocation from the test model's point of view.

7.1.2.2.1.1 Time domain resource allocation

For time domain resource allocation, either a default PDSCH time domain allocation according to TS 38.214 [22] clause 5.1.2.1.1 is applied or a table (pdsch-AllocationList) is configured via RRC signalling (pdsch-ConfigCommon.pdsch-TimeDomainAllocationList or pdsch-Config.pdsch-TimeDomainAllocationList, see TS 38.331 [16]). This table corresponds to L1 parameter "pdsch-AllocationList" and the entries are referred to by DCI.

pdsch-AllocationList has the following fields:

PDSCH slot offset (K_0)	
Comment/description	Slot offset of PDSCH transmission based on the corresponding PDCCH transmission (DCI) Assuming the same numerology for PDSCH and PDCCH: $K_0 = 0$ PDCCH and corresponding PDSCH transmission are in the same slot $K_0 > 0$ PDCCH and corresponding PDSCH transmission are in different slots
ASN.1 parameter	PDSCH-TimeDomainResourceAllocation.k0
Core spec reference	TS 38.214 [22] clause 5.1.2.1
PDSCH mapping type	
Comment/description	PDSCH mapping type A or B NOTE: In general - at least for early releases - type A is expected to be used by conformance testing (Type B seems to be intended for mini-slots)
ASN.1 parameter	PDSCH-TimeDomainResourceAllocation.mappingType
Core spec reference	TS 38.214 [22] clause 5.1.2.1
Start and length indicator (SLIV)	
Comment/description	The SLIV specifies the starting symbol (S) and the number of symbols (L) of the PDSCH resource assignment according to TS 38.214 [22] clause 5.1.2.1; valid start/length combinations depend on the PDSCH mapping type
ASN.1 parameter	PDSCH-TimeDomainResourceAllocation.startSymbolAndLength
Core spec reference	TS 38.214 [22] clause 5.1.2.1

7.1.2.2.1.2 Frequency domain resource allocation configured at the UE via RRC signalling

Resource allocation type	
Comment/description	Specifies the format of the frequency domain resource assignment field of DCI format 1_1 (resource allocation type 0, resource allocation type 1 or both) NOTE: for DCI format 1_0 this parameter seems to be not relevant.
ASN.1 parameter	PDSCH-Config.resourceAllocation
Core spec reference	TS 38.212 [20] clause 7.3.1.2.2

7.1.2.2.1.3 DCI parameters

Frequency domain resource assignment	
Comment/description	Resource allocation type 0: bitmap indicating resource block groups (RBGs) being allocated to the UE Resource allocation type 1: resource indication value (RIV) indicating start and length of a set of contiguously allocated resource blocks NOTE: for DCI format 1_0 only resource allocation type 1 is applicable (according to TS 38.214 [22] clause 5.1.2.2)
Core spec reference	TS 38.212 [20] clauses 7.3.1.2.1 and 7.3.1.2.2, TS 38.214 [22] clause 5.1.2.2
Time domain resource assignment	
Comment/description	Index addressing pre-configured time domain resource allocation (see clause 7.1.2.2.1.1)
Core spec reference	TS 38.212 [20] clauses 7.3.1.2.1 and 7.3.1.2.2
VRB-to-PRB mapping	

Comment/description	To distinguish non-interleaved and interleaved allocation of virtual resource blocks in case of resource allocation type 1
Core spec reference	TS 38.212 [20] clauses 7.3.1.2.1 and 7.3.1.2.2, TS 38.214 [22] clause 5.1.2.2
Modulation and coding scheme (MCS)	
Comment/description	Modulation and coding scheme according to TS 38.214 [22] clause 5.1.3: The DCI provides the MCS index (I_{MCS}) which refers to the respective tables in clause 5.1.3.1 of TS 38.214 [22]
Core spec reference	TS 38.212 [20] clauses 7.3.1.2.1 and 7.3.1.2.2, TS 38.214 [22] clause 5.1.3
Antenna port configuration	
Comment/description	Configuration of antenna port(s) according to tables 7.3.1.2.2-1/2/3/4 of TS 38.212 [20] for DCI format 1_1: Specifies the number of CDM groups without data and the antenna ports being used for a transmission. The number of CDM groups affects the number of REs which cannot be used for PDSCH transmission according to step 1 of clause 5.1.3.2 in TS 38.214 [22]. The number of antenna ports being used for the DL transmission corresponds to the number of layers v being used for the respective transport block transmission (1, 2, 3 or 4 layers per transport block). DCI format 1_0 does not have any field for antenna port configuration: TS 38.214 [22] clause 5.1.6.2 specifies that in general the UE shall assume 2 CDM groups i.e. there are no REs available for PDSCH transmission in any symbol where DMRS is sent. Regarding the number of layers $v=1$ is assumed for PDSCH transmissions scheduled with DCI format 1_0
Core spec reference	TS 38.212 [20] clauses 7.3.1.2.2, TS 38.214 [22] clause 5.1.3, TS 38.211 [19] clause 7.3.1.3/4

7.1.2.2.2 Timing

The timing information provided by the request ASP for a DL transmission specifies the slot in which the DCI on PDCCH is transmitted scheduling the corresponding PDSCH transmission. The exact timing of the PDSCH transmission is depending on the parameters for time domain resource allocation as described in the previous clause. If the timing information specifies a specific slot it is up to TTCN that an appropriate search space is configured for this slot. The SS shall not schedule the DL transmission otherwise and may raise an error.

In case of TimingInfo indicating “Now” or “Any slot” it is up to the SS to find the appropriate slot for scheduling of the DCI. The SS shall not use slots in which SS/PBCH blocks are scheduled.

NOTE: The restriction for slots containing SS/PBCH can be removed when there is clarification in core specs (e.g. TS 38.214 [22]) how “rate matching around” SS/PBCH blocks is reflected in the calculation of the transport block size (see clause 7.1.2.2.4).

In case of TimingInfo not being “Now” TTCN shall ensure that the data is scheduled at least 100ms in advance. Furthermore, it is up to the test case prose to avoid any overlapping of PDSCH and PDCCH transmissions in time domain and it is up to TTCN implementation to address an appropriate slot for which the TBS size determination is well-defined according to clause 7.1.2.2.4; the SS shall raise an error otherwise.

When SS is configured with *pdsch-AggregationFactor*, SS shall repeat PDSCH data on the same HARQ process automatically in *pdsch-AggregationFactor* consecutive slots. As according to TS 38.214[22] clause 5.1.2.1, for any of the consecutive slots, if at least one symbol from a set of symbols where SS schedules PDSCH transmission in the slot is an uplink symbol, then SS shall skip transmission in that slot.

Figures 7.1.2.2.2-1 and 7.1.2.2.2-2 illustrate the timing for $K_0 = 0$ and $K_0 > 0$.

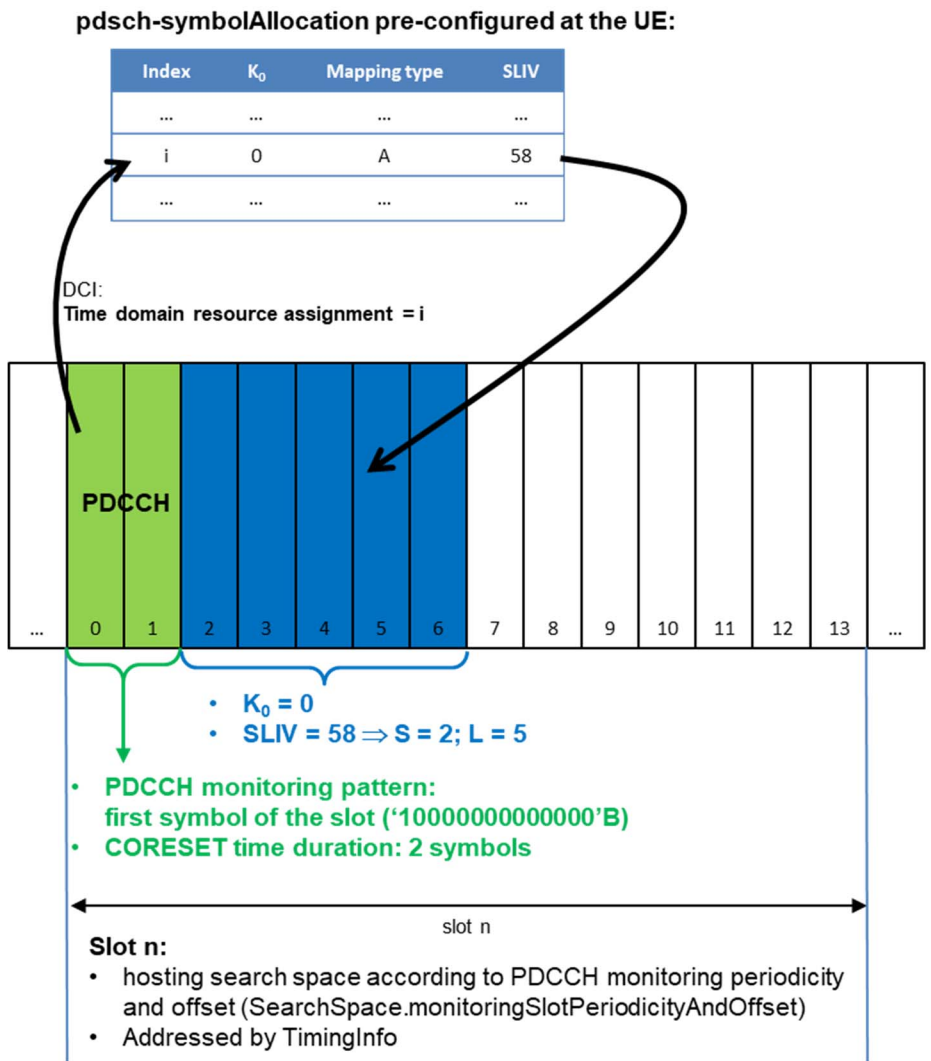


Figure 7.1.2.2-1: Example for time domain resource allocation for $K_0 = 0$

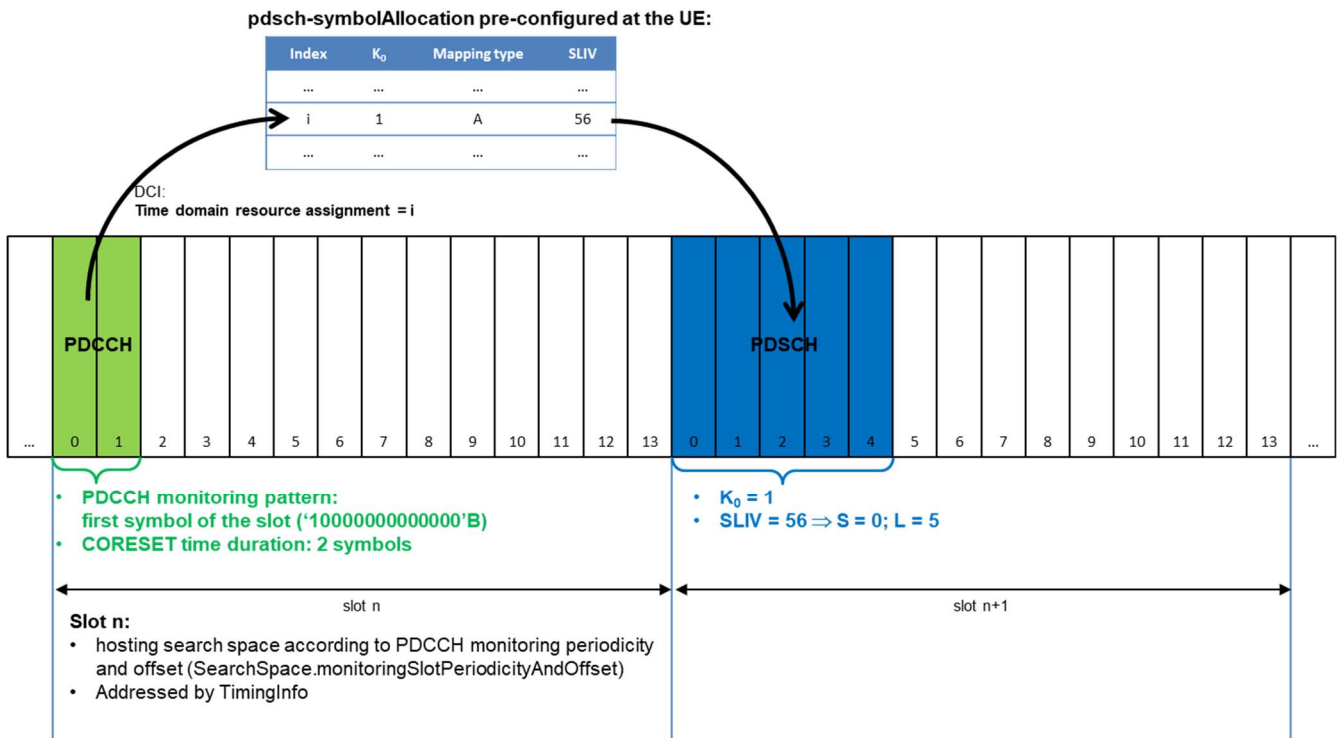


Figure 7.1.2.2-2: Example for time domain resource allocation for $K_0 > 0$

7.1.2.2.3 DL scheduling scheme

Different kinds of PDSCH transmissions need to be scheduled:

- System information (SI: SIB1 and other system information)
- Paging
- Random access response (RAR)
- DCCH/DTCH transmissions

The scheduling needs to be done so that there is no overlapping in frequency or time domain.

In general there are different ways to do the scheduling:

- a) Multiplexing in frequency domain of a single BWP
- b) Multiplexing in time domain of a single BWP (at slot or at symbol level)
- c) Use of different BWPs: e.g. initial BWP for SI, RAR, Paging + dedicated BWP for DCCH/DTCH
- d) Combinations of the above

In frequency domain the different kinds of PDSCH transmissions may use different resource allocation types (TS 38.214 [22] clause 5.1.2.2):

- Resource allocation (RA) type 0: Bitmap-based allocation of Resource Block Groups (RBGs): Applicable only for DCI format 1_1 \Rightarrow not applicable for scheduling of SI, Paging and RAR
- Resource allocation (RA) type 1, non-interleaved: continuous allocation of RBs with one-by-one mapping of virtual resource blocks (VRBs) to physical resource blocks (PRBs).
- Resource allocation (RA) type 1, interleaved: continuous allocation of RBs with interleaved VRB-to-PRB mapping according to TS 38.211 [19] clause 6.3.1.7.

7.1.2.2.3.1 DL scheduling scheme: Frequency domain multiplexing, RA type1, non-interleaved

This scheduling scheme multiplexes the different kinds of PDSCH transmissions in the frequency domain of a single BWP by exclusively using resource allocation type 1 with non-interleaved VRB-to-PRB mapping. Assuming the resource blocks being numbered from 0 to $N_{\text{BWP}}-1$ (with N_{BWP} being the size of the BWP) the following allocation is done:

Table 7.1.2.2.3.1-1: Resource allocation for frequency domain multiplexing, RA type1, non-interleaved

Kind of PDSCH transmission (Note 1)	CORESET#	SSB index of the cell (Note 4)	Resource block allocation (Note 2)	
			RB _{start} (Note 2)	L _{RBs,max} (Note 2)
System information	0	SSB#1	0	7
		SSB#0	$N_{\text{BWP}}-7$	7
Paging (Note 3)	0	SSB#1	7	$N_{\text{BWP}}-7$
		SSB#0	0	$N_{\text{BWP}}-7$
Random access response (Note 3)	0	SSB#1	7	$N_{\text{BWP}}-7$
		SSB#0	0	$N_{\text{BWP}}-7$
CCCH and DCCH transmission on CSS (Note 3)	0	SSB#1	7	$N_{\text{BWP}}-7$
		SSB#0	0	$N_{\text{BWP}}-7$
DCCH/DTCH transmissions (Note 3)	1	SSB#1	7+ Offset Carrier CORESET#0 [RBs] (Note 5)	$N_{\text{BWP}}-7$
		SSB#0	0	$N_{\text{BWP}}-7$

NOTE 1: In context of a generic 5G test model it is not relevant whether or not there is SI and Paging for a given deployment option (e.g. EN-DC).

NOTE 2: $L_{\text{RBs}} \leq L_{\text{RBs,max}}$ with L_{RBs} : number of resource blocks being eventually used for a particular transmission. L_{RBs} and RB_{start} are as specified in TS 38.214 [22] subclause 5.1.2.2.2.

NOTE 3: In general Paging, Random access response and CCCH/DCCH/DTCH transmissions are mutual exclusive and therefore share the same allocation.

NOTE 4: The SSB index used by an NR Cell is specified in TS 38.508-1 [5] Table 4.4.2-2.

NOTE 5: Offset Carrier CORESET#0 [RBs] values are specified in the frequency tables in TS 38.508-1 [5].

In order to achieve a test case behaviour being independent from the frequency channel bandwidth N_{BWP} is limited to the minimum value of 24 RBs in accordance to Table 5.3.2-1 of TS 38.101-1/2 [5, 6]. This implies that $L_{\text{RBs,max}} < 24$ RBs for all configurations.

In general PDCCH and corresponding PDSCH transmissions are in the same slot ($K_0 = 0$).

7.1.2.2.4 Transport block size determination

TS 38.214 [22] clause 5.1.3.2 describes the transport block size (TBS) determination from the UE's point of view: the UE calculates the TBS depending on several parameters. From a test model's point of view appropriate values need to be found for the parameters to achieve a given TBS.

There are two modes specified for DL scheduling:

- automatic mode
- explicit mode

In explicit mode all parameters for the TBS determination are provided by TTCN, i.e. it is up to the TTCN implementation to find proper values. In automatic mode TTCN only provides RB_{start} and $L_{\text{RBs,max}}$ and it is up to the SS to determine the values of L_{RBs} and I_{MCS} to achieve the TBS which is needed for a particular DL transmission.

The SS shall apply the rules as described in clause 7.1.2.2.4.2.

7.1.2.2.4.1 Parameters affecting TBS determination

The following parameters need to be considered for TBS determination:

Table 7.1.2.2.4.1-1: Parameters affecting TBS determination

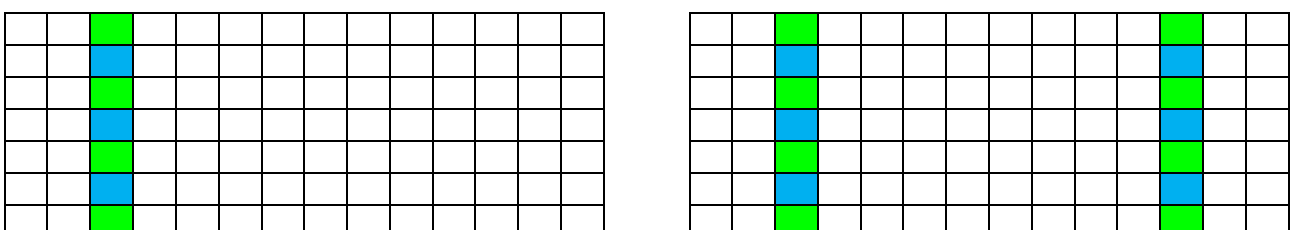
Parameter	Comment/Description	Reference
Number of RBs in frequency domain	Indicated by DCI	Clause 7.1.2.2.1.3
Number of symbols in time domain	Pre-configured at UE, selected by DCI; corresponds to "PDSCH duration" TS 38.211 [19] clause 7.4.1.1.2	Clause 7.1.2.2.1.1
MCS index I_{MCS}	Indicated by DCI: Modulation Order Q_m , Target code Rate R	Clause 7.1.2.2.1.3; TS 38.214 [22] Table 5.1.3.1-1 and 5.1.3.1-2
Number of layers ν	The number of layers being used for transmission of a transport block can be derived from the antenna port configuration provided by DCI format 1_1 taking into account the layer mapping according to TS 38.211 clause 7.3.1.3. For DCI format 1_1 in general $\nu = 1$ according to TS 38.508-1 [5] Table 4.3.6.1.2.2-1. For DCI format 1_0 $\nu = 1$ is assumed (in accordance to TS 38.214 [22] clause 5.1.6.2 specifying antenna port 1000 to be used for DMRS).	TS 38.214 [22] clause 5.1.1.1 and 5.1.6.2, TS 38.211 [19] clause 7.3.1.4, TS 38.212 [20] clause 7.3.1.2.2 and tables 7.3.1.2.2-1/2/3/4
PDSCH mcs-Table	Pre-configured at the UE via RRC signalling: PDSCH-Config.mcs-Table := {qam64, qam256}; indicates which MCS table to be applied when DL transmission is scheduled with C-RNTI NOTE: qam256 is applicable only when DCI format 1_1 is used.	TS 38.214 [22] clause 5.1.3.1
Number of REs per PRB	Number of REs per PRB which are applicable for the PDSCH transmission	Table 7.1.2.2.4.1-2
Rate matching	TS 38.214 [22] clause 5.1.3.2 does not specify how rate matching needs to be considered for TBS determination ⇒ at least for early implementations slots containing SS/PBCH block transmission shall not be used for PDSCH transmissions and further rate matching is assumed not to be configured via RRC signalling	TS 38.214 [22] clause 5.1.4

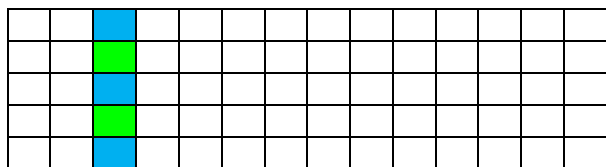
Table 7.1.2.2.4.1-2: Parameters affecting number of REs allocated for PDSCH per PRB

Parameter	Comment/Description	Reference
PDSCH mapping type	Type A or B	Clause 7.1.2.2.1.1; TS 38.211 [19] clause 7.4.1.1.2
dmrs-Type	DMRS Configuration type 1 or 2 as indicated to the UE by DMRS-DownlinkConfig.dmrs-Type	TS 38.211 [19] clause 7.4.1.1.2
dmrs-AdditionalPosition	Number of additional DMRS positions: For DCI format 1_1 as indicated to the UE by DMRS-DownlinkConfig.dmrs-AdditionalPosition 0, 1, 2 or 3 additional positions. For DCI format 1_0 according to TS 38.214 [22] clause 5.1.6.2 the UE shall assume dmrs-AdditionalPosition='pos2'	TS 38.211 [19] clause 7.4.1.1.2 and tables 7.4.1.1.2-3/4
maxLength	Number of OFDM symbols used for DMRS: For DCI format 1_1 as indicated to the UE by DMRS-DownlinkConfig.maxLength: Single or double symbol DM-RS. For DCI format 1_0 according to TS 38.214 [22] clause 5.1.6.2 single symbol DM-RS is applied.	TS 38.211 [19] clause 7.4.1.1.2 and table 7.4.1.1.2-5
number of CDM groups without data	The maximum number of CDM groups without data depends on the DMRS Configuration type (dmrs-Type): type 1: up to 2 CDM groups (TS 38.211 [19] Table 7.4.1.1.2-1) type 2: up to 3 CDM groups (TS 38.211 [19] Table 7.4.1.1.2-2) For DCI format 1_1 the number of CDM groups without data for a single transmission is determined by the antenna port configuration provided in the DCI (TS 38.212 [20] tables 7.3.1.2.2-1/2/3/4) For DCI format 1_0 according to TS 38.214 [22] clause 5.1.6.2 for mapping type A and PDSCH duration > 2 the UE shall assume that the number of DM-RS CDM groups without data is 2 (what results in PDSCH not being present in any symbol carrying DM-RS)	TS 38.211 [19] clause 7.4.1.1.2, TS 38.212 [20] clause 7.3.1.2.2 and tables 7.3.1.2.2-1/2/3/4, TS 38.214 [22] clause 5.1.3.2 and 5.1.6.2
xOverhead	Number of REs used for additional overhead as indicated to the UE by PDSCH-ServingCellConfig.xOverhead: 0, 6, 12, 18 REs	TS 38.214 [22] clause 5.1.3.2
PDSCH duration	Number of symbols allocated for the PDSCH transmission	Clause 7.1.2.2.1.1

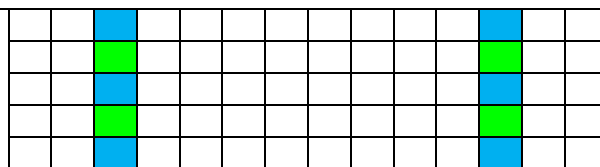
Table 7.1.2.2.4.1-3 gives examples for the position of DMRS within a resource block depending on different parameters, with DMRS CDM group 0 shown in blue and DMRS CDM group 1 (if any) shown in green. For DCI format 1_0 and PDSCH mapping type A the UE assumes both CDM groups to be used; for DCI format 1_1 the number of DMRS CDM groups without data depends on the antenna port configuration of the DCI: In case of dmrs-Type=1, maxLength=1 and only one code word TS 38.212 [20] table 7.3.1.2.2-1 is applied and '0000'B (as specified in TS 38.508-1 [5] table 4.3.6.1.2.2-1) corresponds one DRMS CDM group at port 1000 which results in the REs shown in blue.

Table 7.1.2.2.4.1-3: Examples for the position of DMRS in an RB with PDSCH mapping type A, DMRS configuration type 1, maxLength=1, dmrs-AdditionalPosition=2

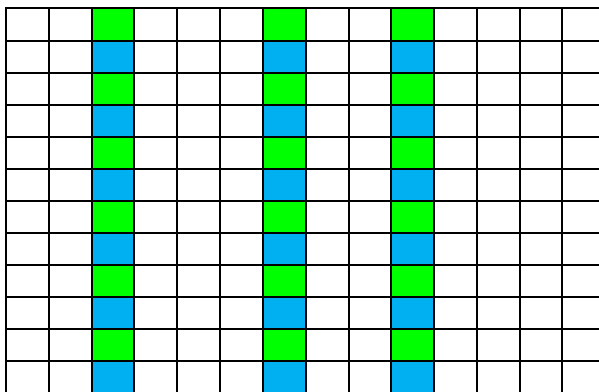




DL-DMRS-add-pos = 0:
 $k = 4n + 2k' + \Delta; k' = 0, 1; \Delta = 0, 1$
 $l_0 = 2$



DL-DMRS-add-pos = 1, PDSCH duration = 13, 14:
 $k = 4n + 2k' + \Delta; k' = 0, 1; \Delta = 0, 1$
 $l_0 = 2, l_1 = 11$



DL-DMRS-add-pos = 2, PDSCH duration = 10, 11, 12:
 $k = 4n + 2k' + \Delta; k' = 0, 1; \Delta = 0, 1$
 $l_0 = 2, l_1 = 6, l_2 = 9$

For PDSCH mapping type A and single-symbol DMRS according to TS 38.211 [19] Table 7.4.1.1.2-3 the number $N_{\text{Symbols with DMRS}}$ of symbols with DMRS per resource block is as shown in table 7.1.2.2.4.1-4.

Table 7.1.2.2.4.1-4: Number of symbols with DMRS per resource block

PDSCH duration	dmrs-AdditionalPosition			
	0	1	2	3
2	1	1	1	1
3				
4				
5				
6		2	2	2
7				
8		2	3	3
9				
10				
11				4
12				
13				
14				

Assuming DMRS configuration type 1, maxLength=1, Xoh-PDSCH=0 and no rate matching, depending on the number of CDM groups without data, this results in the number of REs for DMRS per PRB including the overhead of the DMRS CDM groups without data as shown in Table 7.1.2.2.4.1-5.

Table 7.1.2.2.4.1-5: Number of REs for DMRS per PRB including the overhead of the DMRS CDM groups without data for DMRS configuration type 1, maxLength=1, Xoh-PDSCH=0, no rate matching

	dmrs-AdditionalPosition	PDSCH duration	Number of REs for DMRS	
DCI format 1_1 indicating one DMRS CDM group without data according to TS 38.212 [20] Table 7.3.1.2.2-1	0 (NOTE 1)	any	6	6 * N _{Symbols with DMRS}
	1 (NOTE 1)	< 8	6	
		≥ 8	12	
DCI format 1_0	2 (NOTE 2)	< 8	12	12 * N _{Symbols with DMRS}
		8, 9	24	
		> 9	36	
NOTE 1: TS 38.508-1 [5] table 4.6.3-36 specifies pos0 or pos1				
NOTE 2: pos2 for DCI format 1_0 according to TS 38.214 clause 5.1.6.2				

7.1.2.2.4.2 Automatic mode - Determination of TBS and corresponding L_{RBs} and I_{MCS}

In automatic mode, for each PDSCH transmission, the SS shall autonomously select a TBS and a L_{RBs} / I_{MCS} pair for this TBS.

Common requirements for TBS determination:

The SS shall follow the below rules to determine the TBS for a PDSCH transmission:

- The SS shall maximise the data being sent in a single transmission (i.e. the SS shall not do RLC segmentation without need);
- The SS shall minimise padding (i.e. the SS shall not use a TBS greater than needed);
- If the maximum TBS for a given configuration is not sufficient to carry all data then:
 - if the RLC layer configuration at the SS allows segmentation for the given bearer then:
 - the SS shall apply RLC segmentation with minimised number of segments;
 - else:
 - the SS shall raise an error.

L_{RBs} / I_{MCS} pair determination:

Using the selected TBS, the SS shall apply the following rules:

- When the TBS can be achieved with more than one L_{RBs} / I_{MCS} pairs the SS shall choose the L_{RBs} / I_{MCS} pairs with maximum L_{RBs} ;
- When there is more than one L_{RBs} / I_{MCS} pair with maximum L_{RBs} the pair with minimum I_{MCS} shall be chosen.

The SS implementation shall comply to the above requirements and be based on the following assumptions (unless stated otherwise for a specific table):

- Number of layers $v = 1$
- PDSCH mapping type A
- dmrs-Type: type1
- maxLength: single symbol DM-RS
- xOverhead = 0

Further details are left up to SS implementation.

7.1.2.2.4.3 Explicit mode - Determination of I_{MCS} and L_{RBs} for given TBS

In explicit mode, for a PDSCH scheduled by a PDCCH with CRC scrambled by C-RNTI, it is up to the TTCN to determine the values of I_{MCS} and L_{RBs} to achieve the TBS specified in a test case prose.

Annex B.1 may be used to select a valid pair of $\{L_{RBs}, I_{MCS}\}$. The NR TBS table to be used is based on the TS 38.508-1 [5] default configurations outlined in Tables 7.1.2.2.4.3-1 and 7.1.2.2.4.3-2 below.

Table 7.1.2.2.4.3-1: TS 38.508-1 [5] default configurations for DCI format 1_0 affecting DL scheduling

Parameter	Value	Reference(s)
MCS index table	table 5.1.3.1-1 (MCS index table 1)	TS 38.214 [22] clause 5.1.3.1 with DCI format 1_0
dmrs-AdditionalPosition	2	Table 7.1.2.2.4.1-2 with DCI format 1_0
number of CDM groups	2	Table 7.1.2.2.4.1-2 with DCI format 1_0, mapping type A and PDSCH duration > 2
PDSCH duration	12 (mapping type A)	TS 38.508-1 [5] Tables 4.6.3-76 (<i>PDSCH-ConfigCommon</i>) and 4.6.3-78 (<i>PDSCH-TimeDomainResourceAllocationList</i>) and DCI format with "Time domain resource assignment"=0

Table 7.1.2.2.4.3-2: TS 38.508-1 [5] default configurations for DCI format 1_1 affecting DL scheduling

Parameter	Value	Reference(s)
MCS index table	table 5.1.3.1-1 (MCS index table 1)	TS 38.214 [22] clause 5.1.3.1 with DCI format 1_1 and mcs-Table=qam64 as according to TS 38.508-1 [5] Tables 4.6.3-75
dmrs-AdditionalPosition	1 (FR1) 0 (FR2)	TS 38.508-1 [5] Table 4.6.3-36 (DMRS-DownlinkConfig)
number of CDM groups	1	according to antenna port configuration (TS 38.508-1 [5] Table 4.3.6.1.2.2-1)
PDSCH duration	12 (mapping type A)	TS 38.508-1 [5] Tables 4.6.3-76 (<i>PDSCH-ConfigCommon</i>) and 4.6.3-78 (<i>PDSCH-TimeDomainResourceAllocationList</i>) and DCI format with "Time domain resource assignment"=0

7.1.2.3 Uplink grant

7.1.2.3.1 General principles and grant allocation types

Uplink grants assignments for NR follow similar principles as for LTE (TS 36.523-3 [12] clause 7.2).

7.1.2.3.1.1 PUCCH synchronisation in connected mode

To prevent the UE from doing RACH procedure for purpose of PUCCH synchronisation the SS gets configured to maintain PUCCH synchronisation at UE by periodically sending a MAC PDU containing the MAC control element 'Timing Advance Command'. The period as configured by TTCN is set to 80 % of the 'timeAlignmentTimer' value configured at UE.

As in general the PUCCH synchronisation is not time critical, the SS shall choose the next possible occasion for sending of the Timing Advance Command from expiry of the period onward (i.e. the SS shall not raise an error when sending of the Timing Advance Command is not possible at the calculated end of the period).

7.1.2.3.1.2 Grant allocation types

In general PUCCH synchronisation is configured at the SS for the different grant allocation types when the UE is in connected mode.

7.1.2.3.1.2.1 Grant allocation by RACH procedure

The UE gets assigned an uplink grant by the Random Access Response message being configured at the SS: Per default an UL grant as according to Table 7.1.2.3.3-1 is configured by TTCN.

7.1.2.3.1.2.2 Grant allocation type 1: Uplink grant triggered by SR

The SS gets configured to automatically assign an uplink grant when requested by the UE with a Scheduling Request (SR). The size of this UL grant is configured by TTCN, i.e. there is no requirement for SS implementation to determine the grant size but the configured value shall be used regardless of how much data the UE wants to send. The SS shall assign the UL grant within less than 10ms after it has received the scheduling requests.

7.1.2.3.1.2.3 Grant allocation type 2: Periodic uplink grant

The SS gets configured to assign uplink grants periodically irrespective of any Scheduling Request sent by the UE. The configuration specifies:

- the uplink grant size
- the periodicity: once, several times, continuous
- the period in number of slots (e.g. every slot, every second slot, etc.)

The first uplink grant transmitted is as specified in the explicit timing information. If timing information is "now" the SS selects the first suitable subframe for UL transmission.

The SS shall not assign any additional uplink grant due to a Scheduling Request sent by the UE.

7.1.2.3.1.2.4 Grant allocation type 3: Single uplink grant

Special case of Grant allocation type 2: Uplink grant is assigned only once.

7.1.2.3.1.2.5 Grant allocation type 4: Periodic uplink grant triggered by SR

Combination of Grant allocation type 1 and 2: Periodic uplink grant according to clause 7.1.2.3.1.2.3 is triggered by a Scheduling Request sent by the UE.

7.1.2.3.2 Determination of explicit uplink grants

7.1.2.3.2.1 Parameters

Similar as for the downlink the UE gets preconfigured with parameters for time and frequency domain and a particular UL transmission is addressed by DCI:

1. Time domain resource allocation:
Similar parameters are defined for UL as for DL (see clause 7.1.2.2.1.1, TS 38.214 [22] clause 6.1.2.1).
2. Frequency domain resource allocation:
Similar as for the DL there is resource allocation type 0 and 1 for the UL (see clause 7.1.2.2.1.2, TS 38.214 [22] clause 6.1.2.2).
Uplink resource allocation type 1 is assumed to be used for signalling conformance testing.
3. DCI parameters:
Similar parameters are defined for UL as for DL (see clause 7.1.2.2.1.3, TS 38.212 [20] clauses 7.3.1.1.1 and 7.3.1.1.2, TS 38.214 [22] clause 6.1).

In detail for a particular uplink grant the parameters listed in tables 7.1.2.3.2.1-1 and 7.1.2.3.2.1-2 need to be considered.

Table 7.1.2.3.2.1-1: Parameters affecting TBS determination

Parameter	Comment/Description	Reference
Number of RBs in frequency domain	Indicated by DCI	
Number of symbols in time domain	Pre-configured at UE, selected by DCI; corresponds to "Duration in symbols" TS 38.211 [19] clause 6.4.1.1.3	
MCS index I_{MCS}	Indicated by DCI: Modulation Order Q_m , Target code Rate R	TS 38.214 [22] clause 6.1.4.1; TS 38.214 [22] Table 5.1.3.1-1, 5.1.3.1-2, 6.1.4.1-1
Number of layers u	The number of layers being used for transmission of a transport block can be derived from the precoding information and the antenna port configuration provided by DCI format 0_1. For DCI format 0_1 in general $u = 1$ according to TS 38.508-1 [5] Table 4.3.6.1.1.2-1. For DCI format 0_0 $u = 1$ is assumed.	TS 38.214 [22] clause 6.1.1.1, TS 38.211 [19] clause 6.3.1.5, TS 38.212 [20] clause 7.3.1.1.2 and tables Table 7.3.1.1.2-2..5
PUSCH Parameters mcs -Table, mcs -TableTransformPrecoder, transformPrecoder, msg3-transformPrecoder	Pre-configured at the UE via RRC signalling: PUSCH-Config.mcs-Table := {qam64, qam256}; (NOTE 1) PUSCH-Config.mcs-TableTransformPrecoder := {qam64, qam256}; (NOTE 1) PUSCH-Config.transformPrecoder := {enabled, disabled}; or RACH-ConfigCommon.msg3-transformPrecoder := {enabled, disabled} (NOTE 2) indicates which MCS table to be applied NOTE 1: qam256 is applicable only when DCI format 0_1 is used. NOTE 2: msg3-transformPrecoder applies when DCI format 0_0 is used or when transformPrecoder is not configured; transformPrecoder applies only when DCI format 0_1 is used.	TS 38.214 [22] clause 6.1.4.1 and clause 6.1.3
Support of pi/2 BPSK modulation	In case of transformPrecoder==enabled and mcs-TableTransformPrecoder,==qam64 the first two entries of TS 38.214 [22] Table 6.1.4.1-1 depend on whether or not the UE supports pi/2 BPSK modulation.	TS 38.214 [22] clause 6.1.4.1
Number of REs per PRB	Number of REs per PRB which are applicable for the PUSCH transmission	Table 7.1.2.3.2.1-2

Table 7.1.2.3.2.1-2: Parameters affecting number of REs allocated for PUSCH per PRB

Parameter	Comment/Description	Reference
PUSCH mapping type	Type A or B	TS 38.211 [19] clause 6.4.1.1.3
dmrs-Type	DMRS Configuration type 1 or 2 as indicated to the UE by DMRS-UplinkConfig.dmr-Type	TS 38.211 [19] clause 6.4.1.1.3
dmrs-AdditionalPosition	Number of additional DMRS positions: For DCI format 0_1 as indicated to the UE by DMRS-UplinkConfig.dmr-AdditionalPosition: 0, 1, 2 or 3 additional positions. For DCI format 0_0 according to TS 38.214 [22] clause 6.2.2 the UE shall assume dmrs-AdditionalPosition='pos2' when frequency hopping is disabled and dmrs-AdditionalPosition='pos1' when frequency hopping is enabled.	TS 38.211 [19] clause 6.4.1.1.3 and tables 6.4.1.1.3-3/4, TS 38.214 [22] clause 6.2.2
maxLength	Number of OFDM symbols used for DMRS: For DCI format 0_1 as indicated to the UE by DMRS-UplinkConfig.maxLength: Single or double symbol DM-RS. For DCI format 0_0 according to TS 38.214 [22] clause 6.2.2 single symbol DM-RS is applied.	TS 38.211 [19] clause 6.4.1.1.3 and table 6.4.1.1.3-5, TS 38.214 [22] clause 6.2.2
number of CDM groups without data	The maximum number of CDM groups without data depends on the DMRS Configuration type (dmrs-Type): type 1: up to 2 CDM groups (TS 38.211 [19] Table 6.4.1.1.3-1) type 2: up to 3 CDM groups (TS 38.211 [19] Table 6.4.1.1.3-2) For DCI format 0_1 the number of CDM groups without data for a single transmission is determined by the antenna port configuration provided in the DCI (TS 38.212 [20] tables 7.3.1.1.2-6..23) For DCI format 0_0 according to TS 38.214 [22] clause 6.2.2 for PUSCH duration > 2 the UE shall assume that the number of DM-RS CDM groups without data is 2 (what results in PUSCH not being present in any symbol carrying DM-RS); for PUSCH duration = 2 the number of DM-RS CDM groups without data is 1.	TS 38.211 [19] clause 6.4.1.1.3, TS 38.212 [20] clause 7.3.1.1.2 and tables 7.3.1.1.2-6..23, TS 38.214 [22] clause 6.1.4.2 and 6.2.2
xOverhead	Number of REs used for additional overhead as indicated to the UE by PUSCH-ServingCellConfig.xOverhead: 0, 6, 12, 18 REs	TS 38.214 [22] clause 6.1.4.2
PUSCH duration	Number of symbols allocated for the PUSCH transmission by DCI	

The number of REs for DMRS and PDSCH per PRB is determined in the same way for UL as for DL (TS 38.211 [19] clause 7.4.1.1.2) ⇒ The same values are applicable for UL and DL (see Table 7.1.2.2.4.1-4).

7.1.2.3.2.2 Determination of I_{MCS} and L_{RBs} for given TBS

Uplink grant assignments are fully controlled by TTCN, i.e. it is up to the TTCN to determine the values of I_{MCS} and L_{RBs} to achieve the TBS specified in a test case prose.

Annex B.2 may be used to select a valid pair of $\{L_{RBs}, I_{MCS}\}$, based on the following assumptions (unless stated otherwise for a specific table):

- Number of layers $v = 1$
- PUSCH mapping type A (as according to PUSCH-TimeDomainResourceAllocationList and PUSCH-Config in TS 38.508-1 [5])
- dmrs-Type: type1

- maxLength: single symbol DM-RS
- xOverhead = 0

The NR TBS tables for uplink grants in annex B.2 are based on the TS 38.508-1 [5] default configurations outlined in Tables 7.1.2.3.2.2-1 and 7.1.2.3.2.2-2 below.

Table 7.1.2.3.2.2-1: TS 38.508-1 [5] default configurations for DCI format 0_0 affecting UL scheduling

Parameter	Value	Reference(s)
MCS index table	table 5.1.3.1-1 (MCS index table 1)	TS 38.214 [22] clause 6.1.4.1 with DCI format 0_0, transform precoding disabled as per TS 38.508-1 [5] Table 4.6.3-97 (<i>RACH-ConfigCommon.msg3-transformPrecoder</i>)
dmrs-AdditionalPosition	2	Table 7.1.2.3.2.1-2 with DCI format 0_0, no frequency hopping as per TS 38.508-1 [5] Table 4.3.6.1.1.1-1
number of CDM groups	2	Table 7.1.2.3.2.1-2 with DCI format 0_0, transform precoding disabled as per TS 38.508-1 [5] Table 4.6.3-97 (<i>RACH-ConfigCommon.msg3-transformPrecoder</i>)
PUSCH duration in symbols	14	TS 38.508-1 [5] Tables 4.6.3-90 (PUSCH-ConfigCommon) and 4.6.3-93 (PUSCH-TimeDomainResourceAllocationList) and DCI format with "Time domain resource assignment"=0

Table 7.1.2.3.2.2-2: TS 38.508-1 [5] default configurations for DCI format 0_1 affecting UL scheduling

Parameter	Value	Reference(s)
MCS index table	table 5.1.3.1-1 (MCS index table 1)	TS 38.214 [22] clause 6.1.4.1 with DCI format 0_1, transform precoding disabled as per TS 38.508-1 [5] Table 4.6.3-89 (<i>PUSCH-Config.transformPrecoder</i>)
dmrs-AdditionalPosition	1 (FR1) 0 (FR2)	TS 38.508-1 [5] Table 4.6.3-37 (DMRS-UplinkConfig)
number of CDM groups	1	according to antenna port configuration (TS 38.508-1 [5] Table 4.3.6.1.1.2-1)
PUSCH duration in symbols	14	TS 38.508-1 [5] Tables 4.6.3-90 (<i>PUSCH-ConfigCommon</i>) and 4.6.3-93 (<i>PUSCH-TimeDomainResourceAllocationList</i>) and DCI format with "Time domain resource assignment"=0

NOTE: Configuration according to Table 7.1.2.3.2.2-2 with PUSCH duration of 14 symbols and one CDM group results in the same TBS sizes for dmrs-AdditionalPosition=0 and dmrs-AdditionalPosition=1 as according to step 1 of TS 38.214 [22] clause 5.1.3.2 the number of resource elements allocated for PDSCH per resource block is limited by 156.
 ⇒ The transport block sizes corresponding to Table 7.1.2.3.2.2-2 are the same for FR1 and FR2.

7.1.2.3.3 Default grants

In general test cases for layer 3 and above do not need test case specific grants but use default grants as listed in table 7.1.2.3.3-1.

Table 7.1.2.3.3-1: Default grants

Purpose	Grant size (NOTE 1) or {L _{RBs} l _{MCS} } pair	Comment
Scheduling of Random Access Msg3, initial access	256 bits (NOTE 2)	grant provided by Random Access Response (Msg2)
Scheduling of Random Access Msg3, handover, EN-DC or RRC Re-establishment complete	48 bits (NOTE 2, 3)	grant provided by Random Access Response (Msg2)
Random Access Msg4 for C-RNTI based CBRA for synchronisation (e.g. EN-DC)	L _{RBs} = 1, l _{MCS} = 0	minimum grant (24 or 32 bits)
Random Access Msg4 for C-RNTI based CBRA for handover or RRC Re-establishment complete	144 bits (NOTE 4)	initial UL grant after handover
Default USS grant	L _{RBs} = 24, l _{MCS} = 9 (NOTE 5)	default grant: e.g. for test cases with main focus on control plane signalling
<p>NOTE 1: In general for a given grant size TTCN uses the {L_{RBs} l_{MCS}} pair according to annex B.2.</p> <p>NOTE 2: According to TS 38.213 [21] subclause 8.3, the RAR UL grant is always interpreted according to DCI format 0_0, so contents of Table 7.1.2.3.2.2-1 apply.</p> <p>NOTE 3: Minimum grant which can be assigned by the Random Access Response: The grant is sufficient to convey C-RNTI (3 bytes) and short BSR (2 bytes) or long BSR (minimum of 3 bytes). Even with short BSR there is not enough space to convey any segment of the <i>RRCReconfigurationComplete</i> or <i>RRCReestablishmentComplete</i> (at least 6 bytes: 2 bytes MAC header + 3 bytes RLC header + 1 byte payload).</p> <p>NOTE 4: Initial grant of RA procedure big enough to completely convey the <i>RRCReconfigurationComplete</i> (10 bits) or <i>RRCReestablishmentComplete</i> (<10 bits). This requires a minimum of 13 bytes (2 bytes MAC header + 3 bytes RLC header + 6 bytes PDCP header + 2 bytes payload). Additionally an optional PHR MAC element (3 bytes) needs to be considered since the PHR has higher priority than the MAC SDU. Any further user data would require a minimum of 6 additional bytes (2 bytes MAC header + 3 bytes RLC header + 1 byte payload, it is assumed that if UE has any data to transmit that will be on AM DRB).</p> <p>NOTE 5: Applicable only when MCS index table 5.1.3.1-1 or 6.1.4.1-1 is configured to be used for UL grants (e.g. in case of mcs-Table = qam256, a different l_{MCS} value needs to be defined)</p>		

7.1.2.4 Data scheduling

As according to TS 38.508-1[5] the SSB periodicity is set to 20ms, TTCN configures the SS to broadcast the SSB burst in half-frame 0 of frames with even SFN.

For scheduling of DL data or UL Grant, when timing information is explicit, the timing provided by TTCN corresponds to the time at which the SS shall transmit to the UE the PDCCH carrying the DCI message. The data scheduling applied by TTCN is specified in Tables 7.1.2.4-1 to 7.1.2.4-4.

Table 7.1.2.4-1: Data scheduling for FR1: FDD, SCS=15kHz

Frame									
Subframe 0	Subframe 1	Subframe 2	Subframe 3	Subframe 4	Subframe 5	Subframe 6	Subframe 7	Subframe 8	Subframe 9
Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0
0 PDCCH (UL)	0	0 PDCCH (DL)	0	0	0 PDCCH (UL)	0	0 PDCCH (DL)	0	0
1 SSB #0	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6 PDSCH	6	6 PUSCH	6	6	6 PDSCH	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9
10	10	10	10	10	10	10	10	10	10
11	11	11	11	11	11	11	11	11	11
12	12	12	12	12	12	12	12	12	12
13	13	13	13	13	13	13	13	13	13

NOTE 1: The PDCCH assignment in subframe 2 and 7 address DL transmissions in the same ($K_0 = 0$).

NOTE 2: The UL grants in subframe 0 and 5 address UL transmissions in subframe 4 and 9 respectively ($K_2 = 4$).

Table 7.1.2.4-2: Data scheduling for FR1: TDD, SCS=15kHz

Frame									
Subframe 0	Subframe 1	Subframe 2	Subframe 3	Subframe 4	Subframe 5	Subframe 6	Subframe 7	Subframe 8	Subframe 9
Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0
0 PDCCH (UL)	0 D	0 PDCCH (DL)	0 D	0 UL	0 PDCCH (UL)	0 D	0 PDCCH (DL)	0 D	0 UL
1 SSB #0	1 D	1	1	1	1	1	1	1	1
2	2 D	2	2	2	2	2	2	2	2
3	3 D	3	3	3	3	3	3	3	3
4	4 D	4	4	4	4	4	4	4	4
5	5 D	5	5	5	5	5	5	5	5
6	6 D	6 PDSCH	6	6 UL	6	6	6 PDSCH	6	6 UL
7	7 D	7	7	7	7	7	7	7	7
8	8 D	8	8	8	8	8	8	8	8
9	9 D	9	9	9	9	9	9	9	9
10	10 D	10	10	10	10	10	10	10	10
11	11 D	11	11	11	11	11	11	11	11
12	12 D	12	12	12	12	12	12	12	12
13	13 D	13	13	13	13	13	13	13	13

NOTE 1: The PDCCH assignment in subframe 2 and 7 address DL transmissions in the same ($K_0 = 0$).

NOTE 2: The UL grants in subframe 0 and 5 address UL transmissions in subframe 4 and 9 respectively ($K_2 = 4$).

Table 7.1.2.4-3: Data scheduling for FR1: TDD, SCS=30kHz

Frame									
Subframe 0	Subframe 1	Subframe 2	Subframe 3	Subframe 4	Subframe 5	Subframe 6	Subframe 7	Subframe 8	Subframe 9
Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0	Slot 0
0 DL	0 DL	0 DL PDCCH (DL)	0 DL	0 UL	0 DL	0 DL	0 DL PDCCH (DL)	0 DL	0 UL
1 SSB #0	1 DL	1	1	1	1	1	1	1	1
2	2 DL	2	2	2	2	2	2	2	2
3	3 DL	3	3	3	3	3	3	3	3
4	4 DL	4	4	4	4	4	4	4	4
5	5 DL	5	5	5	5	5	5	5	5
6	6 DL	6 PDSCH	6	6 UL	6	6	6 PDSCH	6	6 UL
7	7 DL	7	7	7	7	7	7	7	7
8	8 DL	8	8	8	8	8	8	8	8
9	9 DL	9	9	9	9	9	9	9	9
10	10 DL	10	10	10	10	10	10	10	10
11	11 DL	11	11	11	11	11	11	11	11
12	12 DL	12	12	12	12	12	12	12	12
13	13 DL	13	13	13	13	13	13	13	13
Slot 1	Slot 1	Slot 1	Slot 1	Slot 1	Slot 1	Slot 1	Slot 1	Slot 1	Slot 1
0 DL	0 DL	0 DL PDCCH (UL)	0 DL	0 UL	0 DL	0 DL	0 DL PDCCH (UL)	0 DL	0 UL
1	1 DL	1	1	1	1	1	1	1	1
2	2 DL	2	2	2	2	2	2	2	2
3	3 DL	3	3	3	3	3	3	3	3
4	4 DL	4	4	4	4	4	4	4	4
5	5 DL	5	5	5	5	5	5	5	5
6	6 DL	6	6	6	6	6	6	6	6
7	7 DL	7	7	7	7	7	7	7	7
8	8 DL	8	8	8	8	8	8	8	8
9	9 DL	9	9	9	9	9	9	9	9
10	10 DL	10	10	10	10	10	10	10	10
11	11 DL	11	11	11	11	11	11	11	11
12	12 DL	12	12	12	12	12	12	12	12
13	13 DL	13	13	13	13	13	13	13	13

NOTE 1: The DL assignments in slots 0 of subframe 2 and 7 address DL transmissions in the same slots ($K_0 = 0$).

NOTE 2: The UL grants in slots 1 of subframe 2 and 7 address UL transmissions in slot 1 of subframe 4 and 9 respectively ($K_2 = 4$).

NOTE 1: The DL assignments in slots 0 of subframe 2 and 7 address DL transmissions in the same slots ($K_0 = 0$).

NOTE 2: The UL grants in slots 3 of subframe 4 and 9 address UL transmissions in slot 7 of the same subframe ($K_2 = 4$).

7.1.2.5 Noise generator

Several test cases require one or several NR cells to be subject to noise interference at a well-defined level. To achieve this, a Virtual Noise Generator (VNG) is modelled, located in the SS and controlled by TTCN.

A VNG instance has a one-to-one relation with an NR cell instance and therefore operates on the same frequency as the operating frequency of the associated NR cell. Default configuration of VNG models AWGN transmission across the whole carrier bandwidth and in every time slot. The test model allows varying the power level of the AWGN referred to as a *CellNocLevel* and measured in dBm/SCS.

The NR cell shall be configured before the associated VNG instance is configured. A VNG instance is first configured with noise source being “off”, and subsequently activated to a specified *CellNocLevel*. VNG instance deactivation stops the noise generation.

7.1.3 System information

TTCN provides the MIB message to the SS as a structured ASN.1 type using a control ASP (NR_SYSTEM_CTRL_REQ). The SS shall:

- set the *systemFrameNumber* in the MIB to the 6 MSBs of the current SFN. A dummy value is provided by TTCN. The SS shall convey the 4 LSBs of the current SFN in the PBCH transport block. The SS shall fulfil $\text{current SFN mod } 80 = 0$.
- encode the MIB ASN.1 message as specified in Table 8.1-1.
- transmit the encoded MIB message periodically as specified in TS 38.331 [16]. For each transmission, the SS shall update *systemFrameNumber* value as specified above.

7.1.4 Cell(s) handling

7.1.4.1 Multi-cells environment

The same principles and rules are applied as according to clause 7.4.5 of TS 36.523-3 [12] to both E-UTRA and NR cells.

7.1.4.2 Cell power change

The same principles and rules are applied as according to clause 7.4.2 of TS 36.523-3 [12].

7.1.5 Timing aspects

7.1.5.1 SS time

The SS shall provide one system time common across all RATs and cells being configured in a test case. The timing of each configured cell is specified as an offset to this common system time.

7.1.5.2 Cell(s) timing

The timing of E-UTRA cells is specified in TS 36.523-3 [12] subclause 7.4.3.1.

The timing information used in an NR cell is specified in terms of H-SFN / SFN / subframe / slot. In the context of NR cells, the Hyper SFN (H-SFN) is used as an SFN wraparound counter (0..1023).

The DL timing offset of each NR cell is specified in Table 7.1.5.2-1.

Table 7.1.5.2-1: DL timing parameters of simulated NR cells

NR cell Id	H-SFN-offset (note 1)	SFN-offset for FDD (note 2)	SFN-offset for TDD (note 2)	Tcell (note 3)	Tc-offset (note 4)
NR Cell 1	0	0	0	0	0
NR Cell 2	0	124	0	0	0
NR Cell 3	0	257	257	0	0
NR Cell 4	0	1000	0	0	0
NR Cell 6	0	656	656	0	0
NR Cell 10	0	129	129	0	0
NR Cell 11	0	956	0	0	0
NR Cell 12	0	1015	257	0	0
NR Cell 13	0	890	656	0	0
NR Cell 14	0	680	680	0	0
NR Cell 23	0	383	257	0	0
NR Cell 28	0	890	890	0	0
NR Cell 29	0	680	890	0	0
NR Cell 30	0	1015	129	0	0
NR Cell 31	0	53	129	0	0

NOTE 1: H-SFN-offset corresponds to the offset applied on H-SFN as defined for E-UTRA. It shall be set to 0 for an NR cell.
NOTE 2: SFN-offset corresponds to the offset applied on system frame number (0..1023).
NOTE 3: Tcell corresponds to the timing offset in T_s . $T_s = 1/(15000 * 2048)$ as for E-UTRA.
NOTE 4: Tc-offset corresponds to the timing offset in T_c . $\kappa = T_s/T_c = 64$ with $T_c = 1/(480000 * 4096)$. See TS 38.211 [19] subclause 4.1 and TS 36.211 [23] subclause 4).
NOTE 5: For each NR cell, its SSB-Index is specified in TS 38.508-1 [5] Table 4.4.2-2.

The UL timing offset of each NR cell is configured as an offset (timing advance) to its DL timing specified in Table 7.1.5.2-1. By default, the timing advance is initialised to 0 (unless specifically specified otherwise in the test case prose).

In test cases involving configuration of SCell(s), the H-SFN-offset / SFN-offset / Tcell / Tc-offset of SCell(s) are set to the same values as that of associated PCell(s).

In test cases involving NR-DC configuration, the H-SFN-offset / SFN-offset / Tcell / Tc-offset of PSCell(s) are set to the same values as that of associated PCell(s).

7.1.6 Test modes

7.1.6.1 RLC test modes

The RLC test modes specified in TS 36.523-3 [12] clause 7.6.1 apply to the NR RLC entities as well.

7.2 EN-DC

7.2.1 Introduction

Subclause 7.2 specifies test methods and design considerations that are specific to EN-DC.

7.2.2 Physical layer aspects

7.2.2.1 Search spaces and DCI

For EN-DC test cases, TTCN provides the DCI configuration only for the following PDCCH search spaces on the active DL BWP:

- Type1-PDCCH common search space: used for the Random Access procedure on the NR cell, and
- UE specific search space (UL and DL): used for data exchange in RRC_CONNECTED state on the NR cell.

- For the default NR cell operation, TTCN configures DCI formats 0_1 and 1_1 in the SS.

7.2.3 System information

For EN-DC only MIB is configured and broadcast. SIB1 (RMSI) and Other SI are not configured.

7.2.4 Bearers

From a 3GPP network perspective, each bearer (MCG, SCG and split bearer) can be terminated either in MN or in SN.

From a EN-DC Test Model and PTC architecture perspective however, there is no dependency between the PTC on which the NR PDCP of a bearer is configured and the type of bearer (MN terminated or SN terminated), e.g. an SCG bearer may have its NR PDCP configured on the NR PTC and act as a MN terminated bearer.

7.2.5 Random Access procedure

7.2.5.1 NR

In EN-DC on NR side, when *reconfigurationWithSync* is indicated by RRC signalling, the UE performs a Random Access procedure, which is either contention free (CFRA) or contention based (CBRA) with C-RNTI based contention resolution. This is distinguished by whether or not *RACH-ConfigDedicated* is provided in the *reconfigurationWithSync* field of *CellGroupConfig*.

TTCN configures the SS accordingly, and in case of CBRA with C-RNTI based contention resolution, the UE gets a temporary C-RNTI being different than the C-RNTI the UE has got already and the UE gets an UL grant as according to Table 7.1.2.3.3-1.

7.2.5.2 E-UTRA

In EN-DC on E-UTRA side, in case of E-UTRA handover (when *mobilityControlInfo* is indicated in the *RRCConnectionReconfiguration* message), a Random Access procedure will take place. In that case TS 36.523-3 [12] subclause 7.16.3 applies, with the following amendment:

Initial grant: 208 bits.

NOTE: The *RRCConnectionReconfigurationComplete* including NR *RRCReconfigurationComplete* (5 bytes) shall completely be conveyed in the initial grant of RA procedure. This requires a minimum of 13 or 14 bytes (1 byte MAC header + 2 bytes RLC header + 6 bytes PDCP header (in case of NR PDCP) or 5 bytes PDCP header (in case of E-UTRA PDCP) + 5 bytes payload). Additionally an optional DC-PHR MAC element (9 bytes) needs to be considered since the DC-PHR has higher priority than the MAC SDU. Any further user data would require a minimum of 5 additional bytes (2 bytes MAC header + 2 bytes RLC header + 1 byte payload).

7.2.6 PSCell change

7.2.6.1 Sequence of EN-DC NR inter-cell PSCell change

In general, the NR inter-cell PSCell change is done without activation time, i.e. the timing information for configuration of the SS and sending of the *RRCConnectionReconfiguration* is 'Now'.

1. NR Target Cell: Configuration of SRB3 (if necessary) and DRBs
2. Transfer of the PDCP Count for DRBs and SRB3 (if necessary) from NR source to NR target cell:
 - a) NR Source Cell: Get PDCP COUNT.
 - b) NR Target Cell: Set PDCP COUNT.

NOTE 1: No further sending/receiving of DRB data before the PSCell change is done.

NOTE 2: For AM DRBs the PDCP count is maintained. For SRB3 (if applied) and UM DRBs, the PDCP count is maintained or reset depending on the *RRCCConnectionReconfiguration* message content.

3. NR Target Cell: Inform the SS about the PSCell change and about the source cell id.

4. NR Target Cell: Configure RACH procedure either dedicated or C-RNTI based.

NOTE 3: The FollowOnFlag is set to true in the ASP reconfiguring C-RNTI.

5. NR Target Cell: Activate security.

6. NR Target Cell: Configure UL grant configuration ("OnSR", default grant).

NOTE 4: Unless explicitly specified UL grant configuration keeps configured as per default at the NR source cell.

7. E-UTRA Cell: Send *RRCCConnectionReconfiguration*.

8. E-UTRA Cell: Receive *RRCCConnectionReconfigurationComplete*.

9. NR Target Cell: Inform the SS about completion of the PSCell change (e.g. to trigger PDCP STATUS REPORT PDU).

10. NR Source Cell: Release SRB3 (if necessary) and DRBs.

7.2.6.2 Sequence of EN-DC NR intra-cell PSCell change

For EN-DC NR intra-cell PSCell change dedicated timing information is used: the sequence starts at time T with sending of the *RRCCConnectionReconfiguration*. T is set to 300 ms in advance of the PSCell change.

1. NR Cell before T: Get PDCP count for DRBs and SRB3 (if applied).

2. E-UTRA Cell at T: Send *RRCCConnectionReconfiguration*.

3. NR Cell at T: Release SRB3 (if necessary) and DRBs.

4. NR Cell at T: Configure RACH procedure either dedicated or C-RNTI based.

NOTE 1: The FollowOnFlag is set to true in the ASPs reconfiguring the RadioBearerList (step 3) and C-RNTI (step 4).

5. NR Cell at T + 5ms: (Re-)configure SRB3 (if necessary) and DRBs.

6. NR Cell at T + 5ms: Restore the PDCP counts

NOTE 2: For AM DRBs the PDCP count is maintained. For SRB3 (if applied) and UM DRBs, the PDCP count is maintained or reset depending on the *RRCCConnectionReconfiguration* message content.

7. NR Cell at T + 5ms: Re-establish security.

8. E-UTRA Cell (after step 2): Receive *RRCCConnectionReconfigurationComplete*.

9. Void

7.2.6.3 UL grants used in RA procedure during EN-DC NR PSCell change

An UL grant is assigned to the UE by the RAR and in case of CBRA with C-RNTI based contention resolution, another UL grant, as initial grant, is assigned for contention resolution. The default Random Access procedure specified in clause 7.2.5.1 is applied.

7.2.6.4 Sequence of EN-DC NR CA inter-cell PSCell change

This procedure is applicable when there are more than one CC in NR before and after the PSCell change.

In general, the NR CA inter-cell PSCell change is done without activation time, i.e. the timing information for configuration of the SS and sending of the *RRCCConnectionReconfiguration* is 'Now'.

1. NR Target PSCell: Configuration of SRB3 (if necessary) and DRBs
2. Transfer of the PDCP Count for DRBs and SRB3 (if necessary) from NR source PSCell to NR target PSCell:
 - a) NR Source PSCell: Get PDCP COUNT.
 - b) NR Target PSCell: Set PDCP COUNT.

NOTE 1: No further sending/receiving of DRB data before the PSCell change is done.

NOTE 2: For AM DRBs the PDCP count is maintained. For SRB3 (if applied) and UM DRBs, the PDCP count is maintained or reset depending on the *RRCCConnectionReconfiguration* message content.

3. NR Target PSCell: Inform the SS about the PSCell change and about the source cell id.
4. NR Target PSCell: Configure RACH procedure either dedicated or C-RNTI based.

NOTE 3: The FollowOnFlag is set to true in the ASP reconfiguring C-RNTI.

5. NR Target PSCell: Activate security.
6. NR Target PSCell: Configure UL grant configuration ("OnSR", default grant).

NOTE 4: Unless explicitly specified UL grant configuration keeps configured as per default at the NR source PSCell.

7. NR Target PSCell: Configure Target PSCell as PSCell.

NOTE 5: The FollowOnFlag is set to true in the ASP reconfiguring PSCell.

8. NR Target SCell: Configure Target SCell as SCell with new PSCell association.
9. E-UTRA Cell: Send *RRCCConnectionReconfiguration*.
10. E-UTRA Cell: Receive *RRCCConnectionReconfigurationComplete*.
11. NR Target PSCell: Inform the SS about completion of the PSCell change (e.g. to trigger PDCP STATUS REPORT PDU).
12. NR Source PSCell: If source PSCell is not the same as target SCell, Release SRB3 (if necessary) and DRBs, reconfigure the cell as a normal cell.
13. NR Source SCell: If source SCell is not the same as target SCell or target PSCell, reconfigure the cell as a normal cell.

NOTE 6: The FollowOnFlag is set to true in the ASP reconfiguring PSCell.

7.3 NR/5GC

7.3.1 Introduction

Subclause 7.3 specifies test methods and design considerations that are specific to NR/5GC.

7.3.2 Physical layer aspects

7.3.3 System information

7.3.3.1 General SS requirements

TTCN provides the complete system information and scheduling information to the SS as a structured ASN.1 type using a single control ASP (NR_SYSTEM_CTRL_REQ). The following rules apply:

- The system information is sent to SS using the asn.1 types. The SS shall encode each SI message as specified in Table 8.1-1 and add the necessary padding bits as specified in TS 38.331 [16], clause 8.5.
- The SS shall start scheduling all system information from the same SFN.
- The scheduling information sent to SS is the same as the scheduling information sent to the UE. For each SI message (including SI messages containing posSIBs), the slotOffset list in NR_SYSTEM_CTRL_REQ indicates the exact point in time in the SI-window at which SS shall transmit the related SI to the UE.
- SI-window shall be calculated as per TS 38.331[16] clause 5.2.2.3.2 for all SI messages. For SI messages containing posSIBs, the parameter OffsetToSI_Used indicates to SS the SI-window calculation to be applied.
- In the present version of this specification, encryption of the content of SI messages containing posSIBs is not supported.

7.3.3.2 Scheduling information

The maximum number of resource blocks as defined in table 7.3.3.2-1 are used to broadcast the system information.

Table 7.3.3.2-1: Maximum number of resource blocks

	Maximum number of resource blocks assigned	Number of symbols assigned
SIB1	7	12
for all SIs	7	12

The slot offset values defined in Table 7.3.3.2-1A are used for all SI messages, including SIs containing posSIBs when *OffsetToSI-Used* is not configured, with their respective SI-window.

Table 7.3.3.2-1A: SubframeOffset values

Configuration	subframeOffset list
FR1 FDD & TDD SCS=15kHz	{5, 6, 15, 16}
FR1 TDD SCS=30kHz	{5, 6}
FR2 TDD SCS=120kHz	{5}

When *OffsetToSI-Used* is configured, the slot offset values defined in Table 7.3.3.2-1B are used for all SIs containing posSIBs with their respective SI-window.

Table 7.3.3.2-1B: PosSI SubframeOffset values when *offsetToSI-Used* is configured

Configuration	subframeOffset list
FR1 FDD & TDD SCS=15kHz	{25}
FR1 TDD SCS=30kHz	{15}
FR2 TDD SCS=120kHz	{6}

All System Information messages are sent only once within the SI-window and redundancy version 0 is selected.

SIB1 is broadcasted in slot#1 in frames with even SFN.

Tables 7.3.3.2-2 to 7.3.3.2-4 give the SFN's and subframe numbers in which the MIB, SIB1 and other SIs are actually scheduled as per default parameters for si-WindowLength s80 for FR1 and s160 for FR2, periodicity for SI are defined in TS 38.508-1 [5]. These SI schedulings are applied to all SIs, including SIs containing posSIBs when *OffsetToSI_Used* is not configured.

Table 7.3.3.2-2: MIB, SIB1 and SI scheduling for FR1: FDD and TDD, SCS=15kHz

SFN	Frame											
	Subframe 0	Subframe 1	Subframe 2	Subframe 3	Subframe 4	Subframe 5	Subframe 6	Subframe 7	Subframe 8	Subframe 9		
0	SI	MIB	SI	SIB1	SI		SI	SI1	SI		SI	
1	SI		SI		SI		SI	SI1	SI		SI	

Table 7.3.3.2-6: MIB, SIB1, SI and PosSI with *OffsetToSI-Used* configured scheduling for FR1 TDD, SCS=30kHz

SFN	Frame									
	Subframe 0	Subframe 1	Subframe 2	Subframe 3	Subframe 4	Subframe 5	Subframe 6	Subframe 7	Subframe 8	Subframe 9
0	MIB			SI1						
	SIB1		SI1							
1										
2	MIB									
	SIB1									
3										
4	MIB			SI2						
	SIB1		SI2							
5										
6	MIB									
	SIB1									
7										
8	MIB			SI3						
	SIB1		SI3					PosSI1		
9										
10	MIB									
	SIB1									
11										
12	MIB			SI4						
	SIB1		SI4					PosSI2		
13										
14	MIB									
	SIB1									
15										
16	MIB									
	SIB1							PosSI3		
17										

Table 7.3.3.2-7: MIB, SIB1, SI and PosSI with *OffsetToSI-Used* configured scheduling for FR2: TDD, SCS=120kHz

SFN	Frame									
	Subframe 0	Subframe 1	Subframe 2	Subframe 3	Subframe 4	Subframe 5	Subframe 6	Subframe 7	Subframe 8	Subframe 9
0	MIB									
	SIB1									
	SI1									
1										

SFN	Frame																							
7	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
8	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
9	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
10	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
11	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
12	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
13	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0
	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0	S7	S6	S5	S4	S3	S2	S1	S0

7.3.3.3 System information modification

For system information modification, the same rules as defined in clause 7.3.3.1 and 7.3.3.2 are applied.

The SFN for the start of modification period is calculated by TTCN. The modified system information and the calculated SFN are provided in the ASP NR_SYSTEM_CTRL_REQ. When the cell is switched off, 'activateNow' is used.

The updated SI other than ETWS and CMAS, is broadcasted in the modification period following the one where SI change indication is transmitted. The updated SI for ETWS and CMAS is broadcasted in the same modification period as the one where SI change indication is transmitted. Short message indications are transmitted as follows:

- When UE is in RRC_IDLE or in RRC_INACTIVE, a single Short Message indication is transmitted in UE paging occasions of the modification period. With the default values provided in TS 38.508-1[5], this results in 4 Short Messages transmitted by SS during the modification period.
- When UE is in RRC_CONNECTED, Short Message indications are transmitted in every paging occasions of each frame throughout the modification period. With the default values provided in TS 38.508-1[5], this results in 64*4*2 Short Messages transmitted by SS during the modification period.

7.3.3.4 Request for on demand system information

In case PRACH preamble (Msg1) is used for indication of requested other SI:

- TTCN configures SS with the SI-RequestConfig as provided to UE in SIB1 and SS shall monitor these PRACH resources.
- TTCN configures SS to report PRACH preambles and to transmit Random Access Response (Msg2) as response to Msg1 but not to handle contention resolution.
- TTCN reconfigures SS to stop broadcasting a specific SI from the start of a modification period and reconfigures SS to restart broadcasting the SI with activation time 'Now' (after the reception of PRACH preamble in TTCN). When activation time 'Now' is applied, SS shall start broadcasting from the next SI-window.

In case Msg3 is used for indication of requested other SI:

- TTCN configures the SS to transmit a Msg4 with Contention Resolution Identity upon receipt of *RRCSystemInfoRequest* (Msg3).
- TTCN reconfigures SS to stop broadcasting a specific SI from the start of a modification period and reconfigures SS to restart broadcasting the SI with activation time 'Now' (after the reception of *RRCSystemInfoRequest* in TTCN). When activation time 'Now' is applied, SS shall start broadcasting from the next SI-window.

7.3.4 Paging and Short Message

SS can be configured with a DCI including Short Messages. In that case, when SS is triggered to transmit a *Paging* message, the Short Message indication shall be included in the DCI.

SS can be triggered to transmit Short Messages alone, this is achieved in TTCN with the DciTrigger type. SS is triggered to send the *Paging* message or a Short Message indication at a calculated Paging Occasion provided in the activation time and optionally a list slot offsets when multiple paging occasions are applied. Discontinuous Reception (DRX) is applied for the transmission of a *Paging* message or a Short Message indication to the UE in the RRC_IDLE or RRC_INACTIVE states. The paging frame calculation is according to TS 38.304 [24] clause 7. The following default values are provided in TS 38.508-1[5]:

- defaultPagingCycle = 128
- Ns = one
- N = 64
- PF_Offset = 0

When these default values are applied, the Paging Frame calculation is:

- Paging Frame: $SFN \bmod 128 = 2 * (UE_ID \bmod 64)$ so depending on UE_ID, the Paging Frame is set to 0,2,4,6,... 126 of the paging cycle.

When UE is in RRC_IDLE or RRC_INACTIVE and when PDCCH monitoring occasions with default association is applied, the Paging Occasion is set to:

- slot#2 of the Paging Frame when the cell is configured with SSB#1 or
- slot#1 of the Paging Frame when the cell is configured with SSB#0.

To notify system information modification when UE is in RRC_CONNECTED and when PDCCH monitoring occasions with default association is applied, the Paging Occasion is set to:

- slot#1 and slot#2 of the Paging Frame when the cell is configured with SSB#1 or
- slot#0 and slot#1 of the Paging Frame when the cell is configured with SSB#0.

7.3.5 RRC connection control

7.3.5.1 Early contention resolution

When the contention based RACH procedure is being executed (RRC connection establishment, RRC reconfiguration, RRC connection resume or RRC re-establishment), in general the UE Contention Resolution Identity MAC CE and the DL RRC PDU on DL CCCH (*RRCSetup/RRCReject*) or DL DCCH (*RRCResume/RRCReestablishment/RRCRelease*) are sent in one MAC PDU (RA Msg4). This is achieved by pre-configuring the SS (before the start of the RRC procedure) to send the encoded DL message and UE Contention Resolution Identity MAC CE in one MAC PDU.

There are cases however where it is necessary to send the DL CCCH or DL DCCH message separately from RA Msg4, this is implemented in TTCN using the test case attribute *EarlyContentionResolution*:

- RRC connection establishment: when *RRCSetup* message is part of the test purpose,
- RRC connection reject: when *RRCReject* message is part of the test purpose,
- RRC connection resume: when *RRCResume* or *RRCRelease* message is part of the test purpose,
- RRC connection re-establishment: when *RRCReestablishment* message is part of the test purpose
- Special cases: e.g. when no contention resolution shall be sent according to the test purpose.

7.3.5.2 RRC connection release sequence

According to TS 38.331 [19], clause 5.3.8.3, after reception of the *RRCRelease* message the UE may either wait 60 ms or for indication of acknowledgement from lower layer. After the *RRCRelease* message there are cases where the UE may immediately come up with an *RRCSetupRequest* message. This requires scheduled release of resources at the SS:

1. At T: Send *RRCRelease*, stop UL grants.
2. At T + 5ms: Release security.
3. At T + 10ms: Release DRX configuration at the SS.
4. At T + 15ms: Release measurement gap configuration at the SS.
5. At T + 55ms: Release SRBs and DRBs.
6. At T + 60ms: (Re-)configure SRBs.
7. Delay of 840ms (NOTE)

T is set to 300ms in advance of *RRCRelease*.

NOTE: The delay ensures that the UE is camping on the serving cell again to avoid side effects e.g. due to subsequent power level changes. It does not affect any sending of messages by the UE. The delay 840 ms is chosen to ensure the UE is re-camping on the cell and has read relevant system information (MIB, SIB1 and all other SIs).

7.3.5.3 Handover

7.3.5.3.1 Sequence of intra-NR inter-cell handover

In general, the intra-NR inter-cell handover is done without activation time, i.e. the timing information for configuration of the SS and sending of the *RRCReconfiguration* is 'Now'.

The sequence may be interrupted if other events need to be handled. E.g. when a Mobility procedure is performed in the target cell and there are procedures left to be executed on the source cell.

1. Target Cell: Configuration of DRBs
2. Transfer of the PDCP Count for AM DRBs and SRBs (if applied) from source to target cell:
 - a) Source Cell: Get PDCP COUNT.
 - b) Target Cell: Set PDCP COUNT.

NOTE 1: No further sending/receiving of DRB data before the HO is done.

NOTE 2: For AM DRBs the PDCP count is maintained, for UM DRBs the PDCP count is reset. For SRBs, the PDCP count is maintained or reset depending on the *RRCReconfiguration* message content.

3. Target Cell: Inform the SS about the HO and about the source cell id.
4. Target Cell: Configure RACH procedure either dedicated or C-RNTI based.

NOTE 3: The FollowOnFlag is set to true in the ASP reconfiguring C-RNTI.

5. Target Cell: Activate security.
6. Void
7. Source Cell: Stop periodic TA.

NOTE 4: Unless explicitly specified UL grant configuration keeps configured as per default at the source cell.

8. Target Cell: Configure UL grant configuration ("OnSR", periodic TA is not started).
9. Source Cell: Send *RRCReconfiguration*.
10. Target Cell: Receive *RRCReconfigurationComplete*.
11. Target Cell: Start periodic TA.
12. Target Cell: Inform the SS about completion of the HO (e.g. to trigger PDCP STATUS REPORT PDU).
13. Target Cell: Re-configure RACH procedure as for initial access.
14. Target Cell: Configure measurement gap (if configured in the source cell or as provided in the *RRCReconfiguration* message).
15. Source Cell: Reset SRBs and release DRBs.
16. Source Cell: Release MeasGapConfig configuration.

7.3.5.3.2 Sequence of intra-NR intra-cell handover

For intra-NR intra-cell handover dedicated timing information is used: the sequence starts at time T with sending of the *RRCReconfiguration*. T is set to 300 ms in advance of the handover.

1. Before T: Get PDCP count for AM DRBs and SRBs (if applied).
2. At T: Send *RRCReconfiguration*.
3. At T + 5ms: Release SRBs and DRBs.
4. At T + 5ms: Configure RACH procedure either dedicated or C-RNTI based.

NOTE 1: Since the RACH procedure may require a new C-RNTI to be used it cannot be configured before sending out the *RRCReconfiguration*.

NOTE 2: The FollowOnFlag is set to true in the ASPs reconfiguring the RadioBearerList (step 3) and C-RNTI (step 4).

5. At T + 5ms: (Re-)configure measurement gap if provided in the *RRCReconfiguration* message.
6. At T + 10ms: (Re-) configure SRBs and DRBs.
7. At T + 10ms: Set PDCP COUNT for AM DRBs and SRBs (if applied).

NOTE 3: For AM DRBs the PDCP count is maintained while for UM DRBs the PDCP count is reset. For SRBs, the PDCP count is maintained or reset depending on the *RRCReconfiguration* message content.

8. At T + 10ms: Re-establish security, disable TA transmission.
9. (after step 7) Receive *RRCReconfigurationComplete*.
10. (after step 8) Re-configure RACH procedure as for initial access, enable TA transmissions.

NOTE 4: The FollowOnFlag is set to true in the ASP reconfiguring RACH.

7.3.5.3.3 UL grants used in RA procedure during handover

An UL grant is assigned to the UE by the RAR and in case of CBRA with C-RNTI based contention resolution another UL grant, as initial grant, is assigned for contention resolution.

When UL data is pending, the UE will try to put as much data into given grants as possible, i.e. it will segment the user data and send it e.g. with the initial grant if possible. To avoid this segmentation of user data, the grant assigned by RAR and the initial grant during handover are set according to Table 7.1.2.3.3-1.

7.3.5.3.4 Sequence of intra-NR inter-cell CA handover

This procedure is applicable when there are more than one CC before and after the handover.

The intra-NR inter-cell CA handover is done with activation time, i.e. the timing information for configuration of the SS and sending of the *RRCReconfiguration* is explicit. Time 'T' is set to 700 ms in advance of the handover, time T1 = T + 10 ms and time T2 = T + 20 ms.

At Time T, steps 1-3:

1. Source PCell: Stop periodic TA.

NOTE 1: Unless explicitly specified UL grant configuration keeps configured as per default at the source cell.

2. Target PCell: Configure target PCell for no RACH response transmission.
3. Source PCell: Schedule the transmission of *RRCReconfiguration* message to UE requesting Handover to target PCell and SCell.

At time T1 if target PCell is the same as source SCell, else at time "Now", steps 4-6:

4. If target PCell is same as source SCell

4.1 Source PCell: Configure from PCell to normal cell: remove source SCell from the SCell list in the source PCell.

4.2 Target PCell: Configure from SCell to PCell.

5. Target PCell: Configuration of DRBs
6. Transfer of the PDCP Count for AM DRBs and SRBs (if applied) from source to target PCell:
 - a) Source PCell: Get PDCP COUNT.
 - b) Target PCell: Set PDCP COUNT.

NOTE 2: No further sending/receiving of DRB data before the HO is done.

NOTE 3: For AM DRBs the PDCP count is maintained, for UM DRBs the PDCP count is reset. For SRBs, the PDCP count is maintained or reset depending on the *RRCReconfiguration* message content.

At time T2, steps 7-12:

7. Target PCell: Inform the SS about the HO and about the source PCell id.
 8. Target PCell: Configure RACH procedure either dedicated or C-RNTI based.
- NOTE 4: The FollowOnFlag is set to true in the ASP reconfiguring C-RNTI.
9. Target PCell: Activate security.
 10. Target PCell: Configure UL grant configuration ("OnSR", periodic TA is not started).
 11. Target PCell: Configure Target PCell as PCell.

NOTE 5: The FollowOnFlag is set to true in the ASP reconfiguring PCell.

12. Target SCell: Configure Target SCell as SCell with new PCell association.

After time T2 (without activation time):

13. Target PCell: Receive *RRCReconfigurationComplete*.
14. Target PCell: Start periodic TA.
15. Target PCell: Inform the SS about completion of the HO (e.g. to trigger PDCP STATUS REPORT PDU).
16. Target PCell: Re-configure RACH procedure as for initial access.
17. Source PCell: If source PCell is not target SCell:
 - 17.1 Reset SRBs and release DRBs.
 - 17.2 Void.
- 17a. Source PCell: If target PCell is not the same as source SCell:
 - 17a.1 Configure from PCell to normal cell: remove source SCell from the SCell list in the source PCell.
18. Source SCell: If source SCell is neither target PCell nor target SCell:
 - 18.1 Release DRBs.

7.3.5.4 RRC connection re-establishment

In general, the re-establishment is done without activation time, i.e. the timing information for configuration of the SS and sending of the *RRCReestablishment* is 'Now'.

The Source Cell and Target cell can be the same cell.

0. Source Cell: If the Source Cell is the same as the Target Cell:
 - Release SRBs and DRBs.

(Re-)configure SRBs.

1. Target Cell: Reconfigure DCCH/DTCH DCI on CSS and reconfigure RACH procedure with a list of two RACH procedures:

RACH procedure contention-based with UE Contention Resolution Identity MAC CE and with a new C-RNTI,

RACH procedure with contention-based with C-RNTI based contention resolution.

NOTE 1: The FollowOnFlag is set to true in the ASP reconfiguring C-RNTI.

2. Target Cell: Receive *RRCReestablishmentRequest*.

3. Void

NOTE 2: Void

4. Target Cell: Void

5. Target Cell: Activate Security.

6. Target Cell: Send *RRCReestablishment*.

7. Target Cell: Receive *RRCReestablishmentComplete*.

8. Target Cell: Reconfigure UL DCCH/DTCH DCI on USS.

- 8a. Target Cell If the Source Cell is different from the Target Cell

Configure UL grant "OnSR" and stop periodic TA.

Else

Stop periodic TA.

- 8b Target Cell Reconfigure DRBs

9. Target Cell: Send *RRCReconfiguration*.

10. Target Cell: Receive *RRCReconfigurationComplete*.

11. Target Cell: Reconfigure DL DCCH/DTCH DCI on USS.

NOTE 3: The FollowOnFlag is set to true in the ASP reconfiguring the target PCell.

12. Target Cell: Re-configure RACH procedure as for initial access, start periodic TA.

NOTE 4: The FollowOnFlag is set to true in the ASP reconfiguring the target PCell.

13. Source Cell: If the Source Cell is different from the Target Cell:

Release security.

Release SRBs and DRBs.

(Re-)configure SRBs.

Stop UL grant and periodic TA.

NOTE 5: The FollowOnFlag is set to true in the ASP configuring the SRBs

7.3.5.5 NR-DC PSCell change

7.3.5.5.1 Sequence of NR-DC inter-cell PSCell change

In general, the NR inter-cell PSCell change is done without activation time, i.e. the timing information for configuration of the SS and sending of the *RRCReconfiguration* is 'Now'.

1. NR Target PSCell: Configuration of SRB3 (if necessary) and DRBs.
2. Transfer of the PDCP Count for DRBs and SRB3 (if necessary) from NR source to NR target PSCell:
 - a) NR Source PSCell: Get PDCP COUNT.
 - b) NR Target PSCell: Set PDCP COUNT.

NOTE 1: No further sending/receiving of DRB data before the PSCell change is done.

NOTE 2: For AM DRBs the PDCP count is maintained. For SRB3 (if applied) and UM DRBs, the PDCP count is maintained or reset depending on the *RRCReconfiguration* message content.

3. NR Target PSCell: Inform the SS about the PSCell change and about the source cell id.
4. NR Target PSCell: Configure RACH procedure either dedicated or C-RNTI based.

NOTE 3: The FollowOnFlag is set to true in the ASP reconfiguring C-RNTI.

5. NR Target PSCell: Activate security.
6. NR Target PSCell: Configure UL grant configuration ("OnSR", default grant).

NOTE 4: Unless explicitly specified UL grant configuration keeps configured as per default at the NR source PSCell.

7. NR PCell: Send *RRCReconfiguration*.
8. NR PCell: Receive *RRCReconfigurationComplete*.
9. NR Target PSCell: Inform the SS about completion of the PSCell change (e.g. to trigger PDCP STATUS REPORT PDU).
10. NR Source PSCell: Release SRB3 (if necessary) and DRBs.

7.3.5.5.2 Sequence of NR-DC intra-cell PSCell change

For NR-DC NR intra-cell PSCell change dedicated timing information is used: the sequence starts at time T with sending of the *RRCReconfiguration*. T is set to 300 ms in advance of the PSCell change.

1. NR PSCell before T: Get PDCP count for DRBs and SRB3 (if applied).
2. NR PCell at T: Send *RRCReconfiguration*.
3. NR PSCell at T: Release SRB3 (if necessary) and DRBs.
4. NR PSCell at T: Configure RACH procedure either dedicated or C-RNTI based.

NOTE 1: The FollowOnFlag is set to true in the ASP reconfiguring C-RNTI.

5. NR PSCell at T + 5ms: (Re-)configure SRB3 (if necessary) and DRBs.
6. NR PSCell at T + 5ms: Restore the PDCP counts

NOTE 2: For AM DRBs the PDCP count is maintained. For SRB3 (if applied) and UM DRBs, the PDCP count is maintained or reset depending on the *RRCReconfiguration* message content.

7. NR PSCell at T + 5ms: Re-establish security.
8. NR PCell: Receive *RRCReconfigurationComplete*.

7.3.5.5.3 Sequence of NR-DC intra-PCell handover and intra-cell PSCell change

For NR-DC intra-NR intra PCell handover dedicated timing information is used: the sequence starts at time T with sending of the *RRCReconfiguration*. T is set to 300 ms in advance of the handover.

1. PCell and PSCell before T: Get PDCP count for AM DRBs and SRBs (if applied).
2. PCell At T : Send *RRCReconfiguration*.
3. PCell and PSCell at T + 5ms: Release SRBs and DRBs.
4. PCell and PSCell at T + 5ms: Configure RACH procedure either dedicated or C-RNTI based.

NOTE 1: Since the RACH procedure may require a new C-RNTI to be used it cannot be configured before sending out the *RRCReconfiguration*.

NOTE 2: The FollowOnFlag is set to true in the ASPs reconfiguring the RadioBearerList (step 3) and C-RNTI (step 4).

5. PCell and PSCell at T + 10ms: (Re-) configure SRBs and DRBs.
7. PCell and PSCell at T + 10ms: Set PDCP COUNT for AM DRBs and SRBs (if applied).

NOTE 3: For AM DRBs the PDCP count is maintained while for UM DRBs the PDCP count is reset. For SRBs, the PDCP count is maintained or reset depending on the *RRCReconfiguration* message content.

8. PCell and PSCell at T + 10ms: Re-establish security, disable TA transmission.
9. PCell (after step 8) Receive *RRCReconfigurationComplete*.
10. PCell (after step 9) Re-configure RACH procedure as for initial access, enable TA transmissions.

NOTE 4: The FollowOnFlag is set to true in the ASP reconfiguring RACH.

7.3.6 Bearers

7.3.6.1 DRB Identity Management

If a UE is configured to establish more than one PDU session at switch on, the order in which they are requested by the UE cannot be guaranteed; and in fact may be different between successive instances of switching on in the same test case. In order to align NR/5GC with EN-DC and E-UTRA/EPC, TTCN allocates:

- *drb-Identity 1* for the default DRB of the PDU session for IMS.
- *drb-Identity 2* onwards for other DRB(s).

7.3.7 Processing delay testing for RRC procedures

7.3.7.1 Introduction

Test cases testing RRC procedure delay (according to TS 38.331 [16] clause 12), when UE is PUCCH synchronized and can respond to UL grant, require special test method.

7.3.7.2 Procedure delays in PUCCH synchronized state

The following SS and UE configurations apply:

By default in TS 38.508-1[5] DRX is not configured.

By default SS is configured to retransmit any DL MAC PDU max 4 times.

HARQ retransmissions in UL cannot be compensated, any HARQ error in UL shall result in an inconclusive verdict for the test case (otherwise a UE may get fail due to a HARQ error).

SS is configured to report UL HARQ ACK/NACK received from UE to TTCN.

NOTE: Due to L2 signalling (e.g. RLC STATUS PDUs) it is necessary to limit the reporting of UL HARQ ACK/NACK to the time between sending of the DL RRC message and receiving the HARQ ACK.

To avoid unexpected side effects the *timeAlignmentTimer* is set to infinity and TTCN configures the SS to not send any Timing Advance Command MAC CE during the test case body (since this may result in additional UL HARQ ACK/NACK).

SS is configured to report HARQ errors and in the case of an UL HARQ error, an inconclusive verdict is assigned.

The following timing applies:

Let *Nsf* be the maximum allowed RRC procedure delay value (in ms) as specified in the test case prose. *Nsf* is the maximum time allowed for UE from the end of reception of the DL message on the UE physical layer up to when the UE shall be ready for the reception of UL grant for the transmission of the response message.

NOTE: A tolerance may have been added to the *Nsf* value in the test case prose on top of the RRC procedure delay specified in TS 38.331 [16] clause 12.

Let $N_{slot} = (N_{sf} * N_{slot}^{subframe, \mu}) + 1$

TTCN schedules at time *T1* the transmission of the DL message to the UE.

T2 is the time HARQ ACK is received.

TTCN schedules UL grants from *T3*: $T3 = T1 + N_{slot} + \Delta_1$

Δ_1 is expressed in slots. *T1* and *T3* timing are expressed in SFN/subframe/slots.

For FDD

$$\Delta_1 = 0$$

The UL grant is repeated continuously in every slot

For FR1 TDD SCS=15kHz

$\Delta_1 = 5 - (T1 + N_{slot}) \bmod 5$. This is the possible slot delay since not all slots can be used for UL grant.

The UL grant periodicity is set to 5 slots. It is repeated in subframe#0 and subframe#5, to cope with *K2*=4 and the UL subframe#4 and subframe#9.

For FR1 TDD SCS=30kHz

$\Delta_1 = (4 - (T1 + N_{slot}) \bmod 10) \bmod 10$. This is the possible slot delay since not all slots can be used for UL grant.

The UL grant periodicity is set to 10 slots. It is repeated in slot#0 in subframe#2 and subframe#7, to cope with *K2*=4 and the UL slots: slot#0 in subframe#4 and subframe#9.

For FR2 TDD SCS=120kHz

$\Delta_1 = (5 - (T1 + N_{slot}) \bmod 5) \bmod 5$. This is the possible slot delay since not all slots can be used for UL grant.

The UL grant periodicity is set to 5 slots. It is repeated for possible transmission in every UL slots.

The UL data is received by SS at *T4*.

The RRC procedure delay requirements are fulfilled when: $(T4 - K2) - (T2 - K1) \leq N_{slot} + \Delta_2$

Δ_2 is expressed in slots. *T4* and *T2* timing are expressed in SFN/subframe/slots.

For FDD

$$\Delta_2 = 0$$

For FR1 TDD SCS=15kHz

$$\Delta_2 = 5 - (T2 - K1 + Nslot) \bmod 5$$

For FR1 TDD SCS=30kHz

$$\Delta_2 = (4 - (T2 - K1 + Nslot) \bmod 10) \bmod 10$$

For FR2 TDD SCS=120kHz

$$\Delta_2 = (5 - (T2 - K1 + Nslot) \bmod 5) \bmod 5$$

Figure 7.3.7.2-1 shows the RRC procedure delay check sequence that will be applied when the DL Message is retransmitted once when UE is in PUCCH synchronized state and can respond to UL grants.

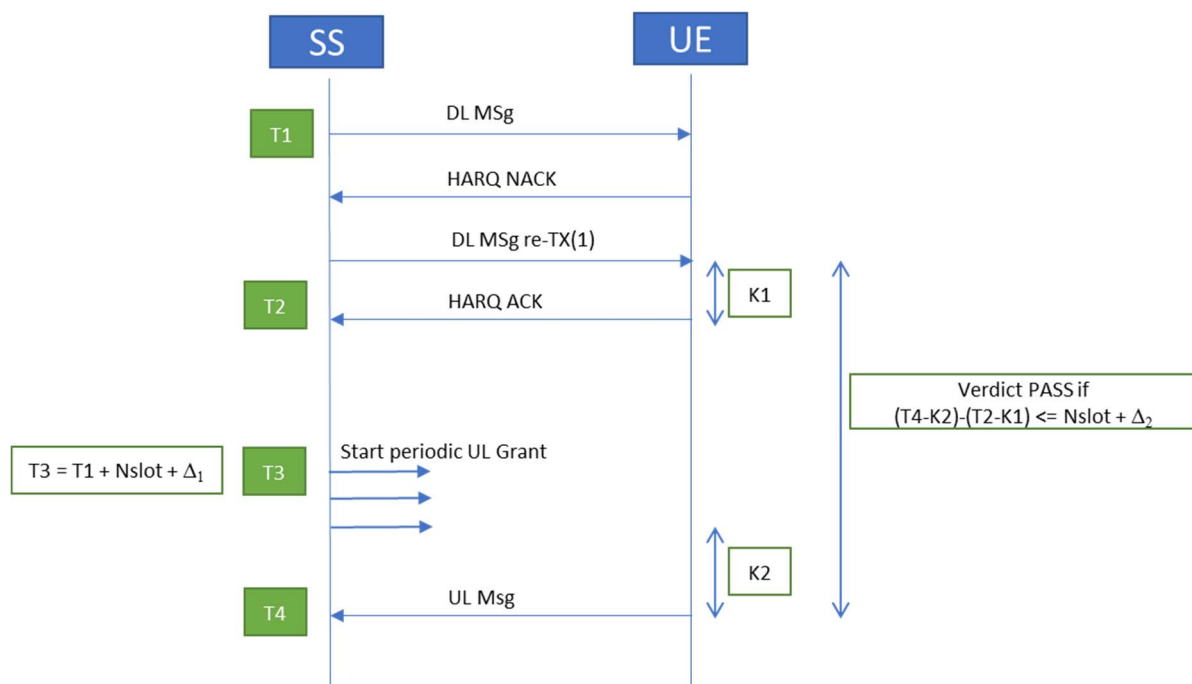


Figure 7.3.7.2-1: Delays in PUCCH synchronized state

7.3.7.3 Procedure delays with RACH procedure

The following SS and UE configurations apply:

SS is configured with RACH procedure with contention-based with C-RNTI based contention resolution.

By default in TS 38.508-1[5] DRX is not configured.

In TTCN, this procedure delays with RACH is implemented in parallel to the PUCCH synchronized state procedure, as defined in clause 7.3.7.2, as some UEs may use SR/PUCCH. Therefore, SS is configured to retransmit any DL MAC PDU max 4 times.

No HARQ retransmission of *RRCReestablishment* is taken into account in the delay calculation in the procedure with RACH.

HARQ retransmissions in UL cannot be compensated, any HARQ error in UL shall result in an inconclusive verdict for the test case (otherwise a UE may get fail due to a HARQ error).

SS is configured to report UL HARQ ACK/NACK received from UE to TTCN.

NOTE: Due to L2 signalling (e.g. RLC STATUS PDUs) it is necessary to limit the reporting of UL HARQ ACK/NACK to the time between sending of the DL RRC message and receiving the HARQ ACK.

By default, the *timeAlignmentTimer* is set to infinity and TTCN configures the SS to not send any Timing Advance Command MAC CE during the test case body (since this may result in additional UL HARQ ACK/NACK).

SS is configured to report HARQ errors and in the case of an UL HARQ error, an inconclusive verdict is assigned.

SS is configured to report RACH preamble.

The following timing applies:

Let N_{sf} be the maximum allowed RRC procedure delay value (in ms) as specified in the test case prose. N_{sf} is the maximum time allowed for UE from the end of reception of the DL message on the UE physical layer up to when the UE shall be ready for the reception of UL grant for the transmission of the response message.

Let $N_{slot} = (N_{sf} * N_{slot}^{subframe, \mu}) + 1$

TTCN schedules at time T1 the transmission of the DL message to the UE as specified in the prose.

T2 is the time HARQ ACK is received.

TTCN schedules UL grants from T3: $T3 = T1 + N_{slot} + \Delta 1$ (as per clause 7.3.7.2)

The UL RACH preamble is received at T5

T6 is the last occasion for SS to transmit RAR in message 2

The UL data is received by SS at T4

The RRC procedure delay requirements are fulfilled when: $T4 - T1 \leq N_{slot} + \Delta_{TDelaymax}$

$\Delta_{TDelaymax}$ is expressed in slots. T4 and T1 timing are expressed in SFN/subframe/slots.

For FDD SCS=15kHz

$$\Delta_{TDelaymax} = 13$$

For FDD SCS=30kHz

$$\Delta_{TDelaymax} = 30$$

For FR1 TDD SCS=15kHz

$$\Delta_{TDelaymax} = 7$$

For FR1 TDD SCS=30kHz

$$\Delta_{TDelaymax} = 17$$

For FR2 TDD SCS=120kHz

$$\Delta_{TDelaymax} = 32$$

Figure 7.3.7.3-1 shows the RRC procedure delay check sequence that will be applied when the DL Message is retransmitted once when UE is in PUCCH synchronized state and can respond to UL grants.

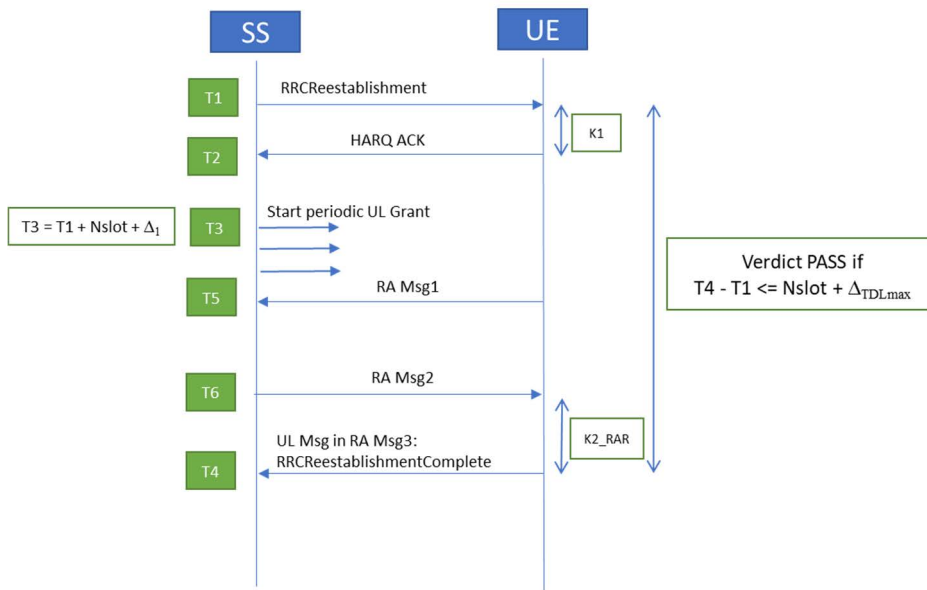


Figure 7.3.7.3-1: Delays with RACH procedure

7.3.8 Void

7.4 NR sidelink

7.4.1 Introduction

Test cases testing sidelink require a special test method.

7.4.2 Physical and MAC layer aspects

7.4.2.1 General

For each configured SL BWP, the TTCN may configure resource pools for transmission and/or reception. TTCN configures NR-SS-UE with reception pool equivalent to UE transmission pool and TTCN configures NR-SS-UE with transmission pool equivalent to UE reception pool.

NR-SS-UE is not configured to do any sensing.

7.4.2.2 Timing

7.4.2.2.1 NR-SS-UE timing synchronisation

The SS shall provide one system time common across all RATs and NR-SS-UEs. The timing of each configured NR-SS-UE is specified as an offset to this common system time.

For timing synchronisation, the NR-SS-UE can be configured:

- In coverage of an NR cell: the NR-SS-UE is associated with an NR cell, it selects the NR Cell as synchronisation reference source. NR-SS-UE applies the same timing start and timing offsets as the NR cell, the DFN corresponds to the SFN.
- Out of coverage synchronising from the GNSS signal: the NR-SS-UE selects the GNSS signal as the synchronisation reference source. The DFN, subframe and slot numbers are derived from the UTC time of the GNSS signal as specified in TS 38.331 [16] clause 5.8.12.

- Out of coverage synchronising from UE: the UE under test is the synchronisation source, i.e. the SyncRef UE. The NR-SS-UE shall use the received SLSS and *MasterInformationBlock-SL-V2X* transmitted by UE as synchronisation source as specified in TS 38.331 [16], clause 5.8.6.
- Out of coverage without synchronisation reference source: NR-SS-UE shall initiate autonomously the *DirectFrameNumber*, Subframe and slot numbers using respective offsets specified in test case prose or Table 7.3.8.2-1. The timing of each configured NR-SS-UE is specified as an offset to the common system time.

Table 7.3.8.2-1: Timing parameters of NR-SS-UEs

NR cell Id	DFN-offset (note 1)	Tcell offset (note 2)	Tc-offset (note 3)
NR SS UE 1	0	0	0
NR SS UE 2	5	1	216
NR SS UE 3	253	4	1523
NOTE 1: DFN-offset corresponds to the offset applied on system frame number (0..1023). NOTE 2: Tcell corresponds to the timing offset in T_s . $T_s = 1/(15000 * 2048)$ as for NR. NOTE 3: Tc-offset corresponds to the timing offset in T_c . $\kappa = T_s/T_c = 64$ with $T_c = 1/(480000 * 4096)$. See TS 38.211 [19] subclause 4.1 and TS 36.211 [23] subclause 4).			

No timing advance is applied to NR-SS-UE.

7.4.2.2.2 ASP timing

The timing information provided by the request ASP for a transmission on PC5 specifies the slot in which the SCI format 1-A is transmitted. If the configured SCI indicates one PSSCH resource, the NR-SS-UE shall transmit the PSSCH in the same slot as the corresponding SCI. If the configured SCI indicates multiple PSSCH resources, the request ASP provides the corresponding list of SDU/PDU to be transmitted, i.e. one SDU/PDU is provided per PSSCH resource. The configured SCI specifies the slot offset between PSSCH as specified in TS 38.214 [22] clause 8.1.5.

In case the *TimingInfo* indicates “Now” or “Any slot”, it is up to the NR-SS-UE to find the appropriate sidelink slot for scheduling PCCH/PSSCH. Sidelink slots are specified as per TS 38.214 [22] clause 8.1.2.1. When configured for SLSS and *MasterInformationBlockSidelink* reception and/or transmission, NR-SS-UE shall not transmit in slots reserved for S-SS/PSBCH. When configured with PSFCH, the NR-SS-UE shall not transmit PSSCH in symbols which are configured for PSFCH.

In case of *TimingInfo* not being “Now” TTCN shall ensure that the data is scheduled at least 100ms in advance.

In reception, NR-SS-UE monitors all sidelink slots, no SCI is configured in reception. NR-SS-UE reports to TTCN the data matching the configured source and/or destination Layer-2 ID.

7.4.2.3 SLSS/PSBCH transmission and reception

When the NR-SS-UE is configured to transmit S-SS/PSBCH, the following rules apply:

- TTCN provides the *MasterInformationBlockSidelink* to the NR-SS-UE as an structured ASN.1 type using the sidelink system control port. The NR-SS-UE shall set the *directFrameNumber* and *slotIndex* in the *MasterInformationBlockSidelink* according to TS 38.331 [16] clause 5.8.9.4.3. A dummy value is provided by TTCN.
- The NR-SS-UE shall encode the *MasterInformationBlockSidelink* ASN.1 message as specified in Table 8.1-1.
- The NR-SS-UE shall transmit the encoded *MasterInformationBlockSidelink* message periodically as specified in TS 38.331 [16]. For each transmission, the SS shall update *directFrameNumber* and *slotIndex* value as specified above.

When the NR-SS-UE is configured to receive S-SS/PSBCH, the following rules apply:

- NR-SS-UE can be configured in out of coverage synchronising from UE.

- NR-SS-UE shall report SL-SSID and *MasterInformationBlockSidelink* over the sidelink system indication port when configured to do so.

7.4.2.4 Resource allocation in frequency domain

7.4.2.4.1 General

TS 38.214 [22] clause 8.1.3.2 describes the transport block size (TBS) determination from the UE's point of view: the UE calculates the TBS depending on several parameters. From a test model's point of view appropriate values need to be found for the parameters to achieve a given TBS and the corresponding $N_{\text{subchannel}}^{SL}$.

Scheduling mode for transmission is only in automatic mode. The NR-SS-UE shall apply the rules as described in clause 7.3.8.6.3.2.

7.4.2.4.2 Automatic mode - Determination of TBS and corresponding $N_{\text{subchannel}}^{SL}$

In automatic mode, for each PSSCH transmission, the SS shall autonomously select a TBS and a $\mathbf{L}_{RBs} / \mathbf{I}_{MCS}$ pair for this TBS as according to clause 7.1.2.2.4.2 and according to the minimum and maximum MCS values provided in NR_SL_ResourcePool_Type.sl_MaxTxTransNumPSSCH_r16. NR-SS-UE defines $N_{\text{subchannel}}^{SL}$ using the $\mathbf{L}_{RBs} / \mathbf{I}_{MCS}$ pair.

The SS implementation shall comply to the above requirements and be based on the following assumptions:

- Number of layers $v = 1$
- $x_{\text{Overhead}} = 0$
- sl-PSSCH-DMRS-TimePattern = 2
- sl-LengthSymbols = 14

Further details are left up to SS implementation.

7.4.2.5 HARQ processes and retransmissions

When configured in reception, the NR-SS-UE is configured with the maximum number of HARQ retransmission (NR_SL_ResourcePool_Type.sl_MaxTxTransNumPSSCH_r16). According to TS 38.321[13] clause 5.22.1.1, UE selects the number of HARQ retransmissions from this maximum allowed number. Unless explicitly specified in the test model, retransmissions are not transmitted to TTCN.

When configured in transmission, the maximum number of HARQ retransmission (NR_SL_ResourcePool_Type.sl_MaxTxTransNumPSSCH_r16) indicates to NR-SS-UE the exact number of retransmissions to be applied unless PSFCH is configured and ack is received from the UE under test.

When PSFCH is configured in the resource pool, if NR-SS-UE receives a PSSCH and the HARQ feedback enabled/disabled indicator field in the associated SCI format 2-A or SCI format 2-B has value 1, the NR-SS-UE shall provide to UE under test the HARQ-ACK/NACK information in a PSFCH transmission in the resource pool as specified in TS 38.321[13].

7.4.3 SCCH and STCH data transmission and reception

7.4.3.1 Broadcast and groupcast

UE and NR-SS-UE are configured with the same pool(s) of resources.

When configured in transmission, the SL-DRB in NR-SS-UE is configured with:

- NR-SS-UE layer-2 ID (which corresponds to the source layer-2 ID) is set to a constant and
- UE Layer-2 ID (which corresponds to the destination layer-2 ID) is set to the destination layer-2 ID for broadcast or groupcast (TS 38.508-1 [5]).

- The initial value of the SN is set to a constant value.

When configured in reception, the SL-DRB in NR-SS-UE is configured with:

- NR-SS-UE layer-2 ID (which corresponds to the destination layer-2 ID) is set to the destination layer-2 ID for broadcast or groupcast (TS 38.508-1 [5]); NR-SS-UE shall send to TTCN only the data packets received with the correct destination layer-2 identities in the MAC header.
- UE Layer-2 ID (which corresponds to the source layer-2 ID) is set to 'AnyValue' as it is randomly and uniquely self-selected by UE.
- Logical Channel Id is set to 'AnyValue' as it is selected by the transmitting UE.
- The initial value of the SN is set to the SN of the first received PDCP Data PDU.

7.4.3.2 Unicast

7.4.3.2.1 General

UE and NR-SS-UE are configured with the same pool(s) of resources.

7.4.3.2.2 Unicast procedures

7.4.3.2.2.1 UE initiated PC5 unicast direct link communication

In general, the UE initiating PC5 unicast direct link communication procedure is done without activation time.

1. NR-SS-UE is previously configured with Tx and Rx pools. SL-SRB0/1/2/3 are configured with UE layer-2 ID and NR-SS-UE layer-2 ID set to 'AnyValue'.

2. Receive DIRECT LINK ESTABLISHMENT REQUEST message on SL-SRB0.

NOTE 1: The Source and destination Layer-2 IDs used to transmit the message are reported in the common part of NR_SL_SYSTEM_IND.

3. Reconfigure SL-SRB1/2/3: set the UE layer-2 ID with the source Layer-2 ID received with the DIRECT LINK ESTABLISHMENT REQUEST message. Set the NR-SS-UE Id to a constant.
4. Start ciphering and integrity on SL-SRB1/2/3.
5. Send DIRECT LINK SECURITY MODE COMMAND on SL-SRB1.

6. Receive DIRECT LINK SECURITY MODE COMPLETE on SL-SRB1.

NOTE 2: Retrieve the PQFI from DIRECT LINK SECURITY MODE COMPLETE.

7. Send DIRECT LINK ESTABLISHMENT ACCEPT on SL-SRB2.
8. Receive *RRCReconfigurationSidelink* on SL-SRB3.

NOTE 3: Retrieve parameters to configure SL-DRB.

9. Configure SL-DRB.
10. Activate ciphering and integrity on SL-DRB.
11. Send *RRCReconfigurationCompleteSidelink* on SL-SRB3.

7.4.3.2.2.2 NR-SS-UE initiated PC5 unicast direct link communication

In general, the NR-SS-UE initiating PC5 unicast direct link communication procedure is done without activation time.

1. NR-SS-UE is previously configured with Tx and Rx pools. SL-SRB0/1/2/3 configured with UE layer-2 ID set to the Destination layer-2 ID for unicast initial signalling (TS 38.508-1 [5] Table 4.7.5.5-42) and NR-SS-UE layer-2 ID set to a constant value.

2. Start ciphering and integrity on SL-SRB1/2/3.
3. Send DIRECT LINK ESTABLISHMENT REQUEST message on SL-SRB0.
4. Receive DIRECT LINK SECURITY MODE COMMAND on SL-SRB1.

NOTE 1: The Source Layer-2 ID and destination Layer-2 ID used to transmit the message is reported in the common part of NR_SL_SYSTEM_IND.

5. Reconfigure SL-SRB1/2/3: set the UE layer-2 ID to the source Layer-2 ID used by UE to transmit the DIRECT LINK SECURITY MODE COMMAND message.
6. Send DIRECT LINK SECURITY MODE COMPLETE on SL-SRB1.
7. Receive DIRECT LINK ESTABLISHMENT ACCEPT on SL-SRB2.
8. Configure SL-DRB.
9. Activate ciphering and integrity on SL-DRB.
10. Send *RRCReconfigurationSidelink* on SL-SRB3.
11. Receive *RRCReconfigurationCompleteSidelink* on SL-SRB3.

8 Other SS requirements with TTCN-3 impact

8.1 Codec requirements

The SS shall comply with the requirements specified in TS 36.523-3 [12] subclause 8.1. In addition, the SS shall also comply with the codec requirements specified in Table 8.1-1.

Table 8.1-1: Codec requirements

Type definitions	Codec requirements	Encoding rule in TTCN-3
NR ASN.1 types used for RRC signalling	shall comply to TS 38.331 [16] subclause 8.3	UNALIGNED_PER_OctetAligned
EAP types	shall comply to Tabular Notated (see note)	EAP Types
LPP(e) ASN.1 types used for LPP(e) broadcast signalling	shall comply to TS 37.355 [29] clause 7.4	UNALIGNED_PER_OctetAligned
NOTE: Tabular Notated is performed by concatenation of all the present fields in the TTCN-3 template.		

8.2 External function definitions

The SS shall implement the external functions specified in TS 36.523-3 [12] subclause 8.2.

The following external functions shall also be implemented by the SS.

TTCN-3 External Function		
Name	fx_NG_NasIntegrityAlgorithm	
Description	Apply integrity protection algorithm on a given octetstring	
Parameters	NAS PDU	octetstring according to TS 24.501 [26], clause 4.4.3.3 this shall include octet 7 to n of the security protected NAS message, i.e. the sequence number IE and the NAS message IE
	Integrity Algorithm	4 bits as defined in TS 24.501 [26], clause 9.11.3.34
	KNAS _{int}	Integrity key
	NAS COUNT	as documented in TS 24.501 [26]
	BEARER Id	fix value of '00000'B for 3GPP access and '00001'B for non-3GPP access
	Direction	UL: 0 DL: 1 (acc. to TS 33.501 [25], clause D.3.1)
Return Value	Message Authentication Code (4 octets)	

TTCN-3 External Function		
Name	fx_NG_NasCiphering	
Description	Apply ciphering on a given octetstring	
Parameters	NAS PDU	octetstring
	Ciphering Algorithm	4 bits as defined in TS 24.501 [26], clause 9.11.3.34
	KNAS _{enc}	Ciphering Key
	NAS COUNT	as documented in TS 24.501 [26]
	BEARER Id	fix value of '00000'B for 3GPP access and '00001'B for non-3GPP access
Return Value	ciphered octet string	

TTCN-3 External Function		
Name	fx_NG_NasDeciphering	
Description	Apply deciphering on a given octetstring	
Parameters	ciphered NAS PDU	octetstring
	Ciphering Algorithm	4 bits as defined in TS 24.501 [26], clause 9.11.3.34
	KNAS _{enc}	Ciphering Key
	NAS COUNT	as documented in TS 24.501 [26]
	BEARER Id	fix value of '00000'B for 3GPP access and '00001'B for non-3GPP access
Return Value	deciphered octet string	

TTCN-3 External Function		
Name	fx_NR_AsIntegrityAlgorithm	
Description	Apply integrity protection algorithm on a given octetstring	
Parameters	PDCP PDU	octetstring
	Integrity Algorithm	3 bits as defined in TS 33.501 [25]
	KRRC _{int}	Integrity key
	PDCP COUNT	octetstring, length 4
	BEARER Id	the value of the DRB identity minus one
	Direction	UL: 0 DL: 1 (acc. to TS 33.501 [25], clause D.3)
Return Value	Message Authentication Code (4 octets)	

9 IXIT proforma

9.1 Introduction

The partial IXIT proforma contained in the present document is provided for completion, when the related Abstract Test Suite(s) is(are) to be used against the Implementation Under Test (IUT).

The completed partial IXIT will normally be used in conjunction with the completed ICS, as it adds precision to the information provided by the ICS.

The PIXITs specified in TS 36.523-3 [12] clause 9 apply. Additional 5GS PIXITs are specified in the following subclauses.

9.2 E-UTRA and NR PIXIT

Table 9.2-1: E-UTRA and NR PIXIT

Parameter Name	Parameter Type	Default Value	Supported Values	Description
px_ENDC_BandCombination	ENDC_BandCombination_Type	DC_1A_n28A		EN-DC Band Combination
px_ENDC_CA_BandCombination	ENDC_CA_BandCombination_Type	DC_1A_n28A_n78A		EN-DC CA Band Combination
px_ENDC_SecondaryBandCombination	ENDC_BandCombination_Type	DC_1A_n77A		Secondary EN-DC Band Combination
px_IPv4_Address_Other	charstring			Other IPv4 Address (see NOTE 4)
px_IPv6_Address_Other	charstring			Other IPv6 Address (see NOTE 4)
px_IPv4_Address4_NW	charstring			IPv4 Gateway Address in PDN4
px_IPv6_Address4_NW	charstring			IPv6 Gateway Address in PDN4
px_IPv4_Address4_UE	charstring			IPv4 Address connected to PDN4
px_IPv6_Address4_UE	charstring			IPv6 Address connected to PDN4
px_IPv4_Address5_NW	charstring			IPv4 Gateway Address in PDN5
px_IPv6_Address5_NW	charstring			IPv6 Gateway Address in PDN5
px_IPv4_Address5_UE	charstring			IPv4 Address connected to PDN5
px_IPv6_Address5_UE	charstring			IPv6 Address connected to PDN5
px_IPv4_Address6_NW	charstring			IPv4 Gateway Address in PDN6
px_IPv6_Address6_NW	charstring			IPv6 Gateway Address in PDN6
px_IPv4_Address6_UE	charstring			IPv4 Address connected to PDN6
px_IPv6_Address6_UE	charstring			IPv6 Address connected to PDN6
px_NEDC_BandCombination	NEDC_BandCombination_Type	DC_n28A_3A		NE-DC Band Combination
px_NEDC_SecondaryBandCombination	NEDC_BandCombination_Type	DC_n28A_39A		Secondary NE-DC Band Combination
px_NR_CA_BandCombination	NR_CA_BandCombination_Type	CA_n3A_n77A		NR CA Band Combination with 2CC
px_NR_CA_3CC_BandCombination	NR_CA_3CC_BandCombination_Type	CA_n257H		NR CA Band Combination with 3CC
px_NR_DC_BandCombination	NR_DC_BandCombination_Type	DC_n78A_n257A		NR-DC Band Combination
px_NR_DC_CA_BandCombination	NR_DC_CA_BandCombination_Type	DC_n78A_n257G		NR-DC CA Band Combination
px_NR_CipheringAlgorithm	CipheringAlgorithm	nea2		Ciphering Algorithm (see Note 1)
px_NR_IntegrityProtAlgorithm	IntegrityProtAlgorithm	nia2		Integrity Algorithm (see Note 1)
px_NR_OverlappingNotSupportedBand_MFBI	integer	1		A not supported NR band that is overlapping with a supported band (px_NR_PrimaryBand). Applied to MFBI test case scenario.
px_NR_PrimaryBand	integer	1		NR primary band
px_NR_SecondaryBand	integer	2		NR secondary band. Applied to inter-band and SUL test cases.
px_NR_SidelinkBand	integer	47		NR sidelink band
px_NR_RATComb_Tested	NR_RATComb_Tested_Type	NR_UTRA	NR_UTRA, NR_GERAN	This parameter represents the network RAT capability / preference and indicates which, if any is supported, RAT combination is to be tested.
px_NR_V2X_ConcurrentOperationBandCombination	NR_V2X_ConcurrentOperationBandCombination_Type	V2X_n71_n47		V2X operating bands for concurrent operation

NOTE 1: Unless specified otherwise in the test case prose, the null algorithm shall not be used for verification.
 NOTE 2: Void.
 NOTE 3: Void.
 NOTE 4: IP address used for specific IP-address-related test requirements. The only requirements applying to this IP address is that its value shall be different from the values of all other IP address PIXITs (see TS 36.523-3 [12] clause 9) and it shall not be used within more than one PDN (PDU session) within a test case. In the present version of this specification, it is only used within PDN1 NW.

9.3 5GC PIXIT

Table 9.3-1: Void

Table 9.3-2: 5GC PIXIT

Parameter Name	Parameter Type	Default Value	Supported Values	Description
px_NAS_5GC_AuthenticationType	NAS_5GC_AKA_Type	AKA_5G	AKA_5G, AKAP_EAP	NAS 5GC Authentication type
px_NAS_5GC_CipheringAlgorithm	B4_Type	'0010'B		NAS 5GC Ciphering Algorithm (see Note 1)
px_NAS_5GC_IntegrityProtAlgorithm	B4_Type	'0010'B		NAS 5GC Integrity Algorithm (see Note 1)
px_NAS_5GC_XRES_Length	integer	16		NAS 5GC XRES length, in octets, used in Authentication

NOTE 1: Unless specified otherwise in the test case prose, the null algorithm shall not be used for verification.

10 Postambles

10.1 Introduction

The purpose of the present clause 10 is to specify the postambles used to bring the UE to a well-defined state regardless of the UE state at the termination of main test body or of the SS conditions and values of the system information inherited from the test.

10.2 On E-UTRA/EPC

10.2.1 UE postamble states and procedures

In order to bring the UE to switched/power off state there are some procedures that need to be executed. The identified procedures are shown in figure 10.2.1-1.

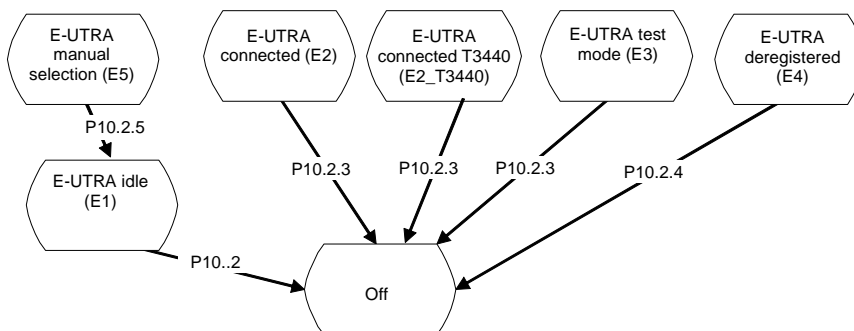


Figure 10.2.1-1: UE postamble states and procedures for E-UTRA/EPC

10.2.2 Switch/Power off procedure in State E1

Table 10.2.2-1: Switch/Power off procedure

Step	Procedure	Message Sequence	
		U - S	Message
1-2a3Aa5	Same as TS 36.523-3 [12] table 10.3.2.1-1, steps 1-2a3Aa5.	-	-
-	EXCEPTION: Step 2a3Aa5Aa1 describes behaviour depending UE implementation; the "lower case letter" identifies a step sequence that take place if the UE performs a specific action.	-	-
2a3Aa5Aa1	IF the UE is connected to one or more additional PDNs, then the procedure specified in table 10.2.2-2 may take place.	-	-
2a3Aa6 - 2a4	Same as TS 36.523-3 [12] table 10.3.2.1-1, steps 2a3Aa6 - 2a4.	-	-

Table 10.2.2-2: PDN disconnect procedure

Step	Procedure	Message Sequence	
		U - S	Message
1	The UE transmits a PDN DISCONNECT REQUEST	-->	RRC: <i>ULInformationTransfer</i> PDN DISCONNECT REQUEST
2	The SS transmits an <i>RRCConnectionReconfiguration</i> message to deactivate an EPS bearer.	<--	RRC: <i>RRCConnectionReconfiguration</i> NAS: DEACTIVATE EPS BEARER CONTEXT REQUEST
-	EXCEPTION: The events in steps 3 and 4 may occur in any order	-	-
3	The UE transmits an <i>RRCConnectionReconfigurationComplete</i> message to confirm the deactivation of EPS bearer.	-->	RRC: <i>RRCConnectionReconfigurationComplete</i>
4	The UE transmits an <i>ULInformationTransfer</i> message to accept deactivation of the EPS bearer.	-->	RRC: <i>ULInformationTransfer</i> NAS: DEACTIVATE EPS BEARER CONTEXT ACCEPT

10.2.3 Switch/Power off procedure in States E2 and E3

10.2.3.1 Procedure for E2 and E3

Table 10.2.3.1-1: Switch/Power off procedure

Step	Procedure	Message Sequence	
		U - S	Message
1-2a1Aa2	Same as TS 36.523-3 [12] table 10.3.3.1-1, steps 1-2a1Aa2.	-	-
-	EXCEPTION: Step 2a1Aa3a1 describes behaviour depending UE implementation; the "lower case letter" identifies a step sequence that take place if the UE performs a specific action.	-	-
2a1Aa3a1	IF the UE is connected to one or more additional PDNs, then the procedure specified in table 10.2.2-2 may take place.	-	-
2a1-2a2	Same as TS 36.523-3 [12] table 10.3.3.1-1, steps 2a1-2a2.	-	-

10.2.3.2 Procedure for E2_T3440

Table 10.2.3.2-1: RRC release and switch/power off procedure

Step	Procedure	Message Sequence	
		U - S	Message
1-4a3Aa5	Same as TS 36.523-3 [12] table 10.3.3.2-1, steps 1-4a3Aa5.	-	-
-	EXCEPTION: Step 4a3Aa5Aa1 describes behaviour depending UE implementation; the "lower case letter" identifies a step sequence that take place if the UE performs a specific action.	-	-
4a3Aa5Aa1	IF the UE is connected to one or more additional PDNs, then the procedure specified in table 10.2.2-2 may take place.	-	-
4a3Aa6 - 4a4	Same as TS 36.523-3 [12] table 10.3.3.2-1, steps 4a3Aa6 – 4a4.	-	-

10.2.4 Switch/Power off procedure in State E4

The procedure specified in TS 36.523-3 [12] subclause 10.3.4 applies.

10.2.5 Automatic selection mode procedure in State E5 (current cell, neighbour cell)

The procedure specified in TS 36.523-3 [12] subclause 10.3.5 applies.

10.3 On NR/5GC

10.3.1 UE postamble states and procedures

In order to bring the UE to the switched/powered off state, a procedure needs to be executed, which depends on the UE state at the end of test case body. The UE postamble start states and associated procedures are shown in figure 10.3.1-1.

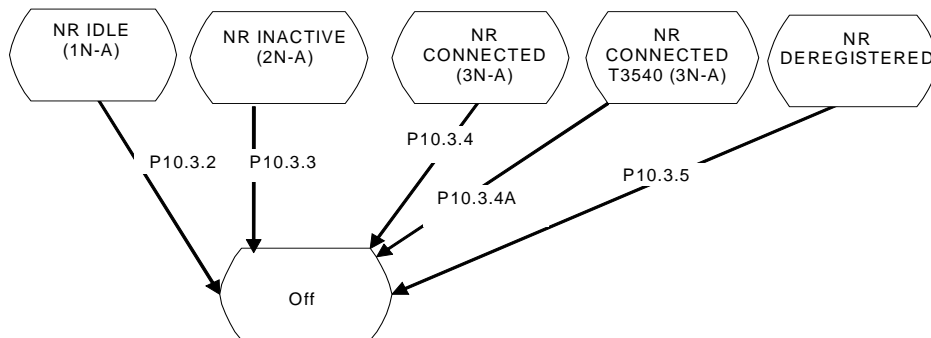


Figure 10.3.1-1: UE postamble states and procedures for NR/5GC

If the test body ends by releasing an emergency call whilst in limited service, the UE may be in either NR REGISTERED or in NR DEREGISTERED state as the UE behaviour is not specified. The postamble procedures shall allow for both possible start states.

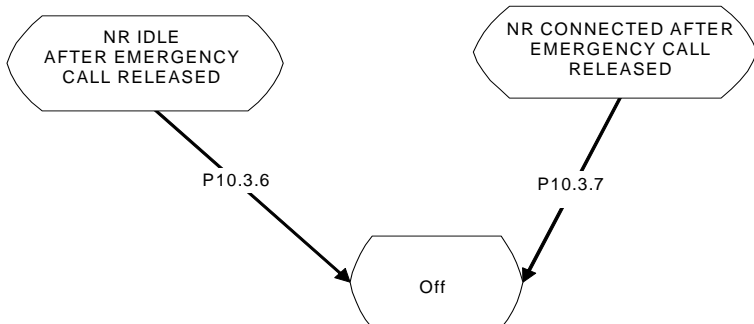


Figure 10.3.1-2: UE postamble states and procedures after emergency call release in limited service

10.3.2 Switch/Power off procedure in State 1N-A

Table 10.3.2-1: Switch/Power off procedure

Step	Procedure	Message Sequence	
		U - S	Message
1	Test procedure for Switch off / Power off in RRC_IDLE as specified in 38.508-1 [5] subclause 4.9.6.1	-	-

10.3.3 Switch/Power off procedure in State 2N-A

Table 10.3.3-1: Switch/Power off procedure

Step	Procedure	Message Sequence	
		U - S	Message
1	Test procedure for Switch off / Power off in RRC_INACTIVE as specified in 38.508-1 [5] subclause 4.9.6.2		

10.3.4 Switch/Power off procedure in State 3N-A

Table 10.3.4-1: Switch/Power off procedure

Step	Procedure	Message Sequence	
		U - S	Message
1	Test procedure for Switch off / Power off in RRC_CONNECTED as specified in 38.508-1 [5] subclause 4.9.6.3	-	-

10.3.4A Switch/Power off procedure in State 3N-A with T3540 started

Table 10.3.4A-1: Switch/Power off procedure

Step	Procedure	Message Sequence	
		U - S	Message
1	Test procedure for Switch off / Power off in RRC_CONNECTED with T3540 started as specified in 38.508-1 [5] subclause 4.9.6.3A	-	-

10.3.5 Switch/Power off procedure in NR DEREGISTERED

Table 10.3.5-1: Switch/Power off procedure

Step	Procedure	Message Sequence	
		U - S	Message
1	Test procedure for Switch off / Power off in State DEREGISTERED as specified in 38.508-1 [5] subclause 4.9.6.4	-	-

10.3.6 Switch/Power off procedure after EMERGENCY CALL RELEASED in RRC_IDLE

Table 10.3.6-1: Switch/Power off procedure

Step	Procedure	Message Sequence	
		U - S	Message

-	EXCEPTION: Steps 1a1 to 1b1 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that take place if [36] <i>pc_SwitchOnOff</i> or [37] <i>pc_USIM_Removal</i> is supported.	-	-
1a1	IF <i>pc_SwitchOnOff</i> THEN switch off UE, IF <i>pc_USIM_Removal</i> THEN remove the USIM (NOTE 1)	-	-
1a2	Start <i>T_Delay</i> =5 sec		
-	EXCEPTION: Steps 1a3a1 to 1a3b1 describe behaviour depending UE implementation; the "lower case letter" identifies a step sequence that take place if the UE performs a specific action.	-	-
1a3a1	The UE transmits an <i>RRCSetupRequest</i> message	-->	NR RRC: <i>RRCSetupRequest</i>
1a3a2	Stop <i>T_Delay</i>		
1a3a3	SS transmits an <i>RRCSetup</i> message	<--	NR RRC: <i>RRCSetup</i>
1a3a4	The UE transmits an <i>RRCSetupComplete</i> message including the DEREGISTRATION REQUEST message	-->	NR RRC: <i>RRCSetupComplete</i> 5GMM: DEREGISTRATION REQUEST
1a3a5	The SS transmits an <i>RRCRelease</i> message	<--	RRC: <i>RRCRelease</i>
1a3b1	<i>T_Delay</i> expires (NOTE 2)	-	-
1b1	ELSE power off UE (NOTE 3)	-	-
NOTE 1: USIM removal is a feasible alternative to switch off UE.			
NOTE 2: The UE has performed local deregistration			
NOTE 3: Power off is used when UE does not support switch off or USIM removal, in which case no UE originated deregistration procedure is expected.			

10.3.7 Switch/Power off procedure after EMERGENCY CALL RELEASED in RRC_CONNECTED

Table 10.3.7-1: Switch/Power off procedure

Step	Procedure	Message Sequence	
		U - S	Message
1	The SS transmits a DEREGISTRATION REQUEST message with Deregistration type IE set to "re-registration not required".	<--	NR RRC: <i>DLInformationTransfer</i> 5GMM: DEREGISTRATION REQUEST
2	Start <i>T_Delay</i> =5 sec.		
-	EXCEPTION: Steps 3a1 – 3c3 describe optional behaviour that depends on the UE implementation.	-	-
3a1	The UE transmits a DEREGISTRATION ACCEPT message.	-->	NR RRC: <i>ULInformationTransfer</i> 5GMM: DEREGISTRATION ACCEPT
3a2	Stop <i>T_Delay</i> .		
3a3	The SS transmits an <i>RRCRelease</i> message	<--	RRC: <i>RRCRelease</i>
3b1	<i>T_Delay</i> expires. (NOTE 1)	-	-
3b2	The SS locally releases the RRC connection.		
3c1	The UE transmits a 5GMM STATUS message	-->	NR RRC: <i>ULInformationTransfer</i> 5GMM: 5GMM STATUS
3c2	Stop <i>T_Delay</i> .		
3c3	The SS transmits an <i>RRCRelease</i> message	<--	RRC: <i>RRCRelease</i>
4	Test procedure for Switch off / Power off in State DEREGISTERED as specified in TS 38.508-1 [5] subclause 4.9.6.4.	-	-
NOTE 1: The UE has performed local deregistration, so the SS shall also perform the deregistration procedure.			

Table 10.3.7-2: DEREGISTRATION REQUEST (Step 1, Table 10.3.7-1)

Derivation Path: TS 38.508-1 [5], Table 4.7.1-14.			
Information Element	Value/remark	Comment	Condition
De-registration type	'0001'B	Re-registration not required	

10.4 On UTRAN

Please refer to TS 36.523-3 [12] subclause 10.1.

10.5 On NR sidelink

In order to bring the UE to switched/powered off state there are some procedures that need to be executed.

When UE is Out of coverage of an NR cell:

- When a PC5 unicast link is established, the PC5 release procedure as specified in TS 38.508-1[5] clause 4.9.30 is executed before UE is switched/powered off.
- When no PC5 unicast link is established, UE is switched/powered off.

When UE is In coverage of an NR cell:

- When a PC5 unicast link is established, the PC5 release procedure as specified in TS 38.508-1[5] clause 4.9.30 is executed then the NR postamble procedure as specified in clause 10.3 is executed.
- When no PC5 unicast link is established, the NR postamble procedure as specified in clause 10.3 is executed.

10.6 On GERAN

Please refer to TS 36.523-3 [12] subclause 10.2.

11 Guidelines on test execution

11.1 Introduction

Clause 11 provides the guidelines on test executions.

The restriction on test case execution is due to the number of frequencies available for the specific band under test specified in TS 38.508-1[5] and the number of frequencies used by the test cases specified in TS 38.523-1[8].

11.2 EN-DC

11.2.1 Single NR carrier

This clause provides the guidelines for the EN-DC test cases.

A test case using more than one radio frequency on NR, i.e. using the radio frequencies NRf2 or NRf3 or NRf4 specified in TS 38.508-1 [5], shall not be executed on:

- Band combination DC_1A_n51A
- Band combination DC_20A_n51A
- Band combination DC_28A_n51A

Band combination DC_3A_n51A

Band combination DC_41A_n41A

Band combination DC_42A_n51A

Band combination DC_7A_n51A

The list of test cases is given below:

8.2.3.6.1a, 8.2.3.7.1a, 8.2.3.8.1a, 8.2.3.10.1, 8.2.3.11.1

11.3 NR/5GC

11.3.1 NR/5GC single RAT

11.3.1.1 Single NR carrier

This clause provides the guidelines for the NR/5GC test cases.

A test case using more than one radio frequency, i.e. using the radio frequencies NRf2 or NRf3 or NRf4 specified in TS 38.508-1 [5], shall not be executed on:

Band n51.

The list of test cases is given below:

6.1.1.1, 6.1.1.2, 6.1.1.3, 6.1.1.5, 6.1.1.6, 6.1.1.7, 6.1.1.8, 6.1.2.7, 6.1.2.11, 6.1.2.13, 6.1.2.14, 6.1.2.16, 6.1.2.18, 6.1.2.20, 6.1.2.21, 6.1.2.22, 6.3.1.1, 6.3.1.2, 6.3.1.3, 6.3.1.4, 6.3.1.5, 6.3.1.8, 6.3.1.9, 6.3.1.10, 6.4.1.1, 6.4.1.2, 6.4.2.2, 6.5.1.2, 6.5.2.4, 6.5.2.6,

7.1.3.4.4

8.1.1.2.1, 8.1.1.3.1, 8.1.1.3.3, 8.1.1.3.7, 8.1.1.3.7b, 8.1.3.1.3, 8.1.3.1.6, 8.1.3.1.9, 8.1.3.1.11, 8.1.3.1.12, 8.1.3.1.14A, 8.1.3.1.15A, 8.1.3.1.20, 8.1.3.21, 8.1.4.1.2, 8.1.4.1.10, 8.1.4.3.4, 8.1.4.3.5, 8.1.6.1.2.2, 8.1.6.1.2.10, 8.1.6.1.3.2, 8.1.6.1.3.3, 8.1.6.1.3.7, 8.1.6.1.4.3, 8.1.6.1.4.7,

9.1.4.1, 9.1.5.1.1, 9.1.5.1.2, 9.1.5.1.4, 9.1.5.1.8, 9.1.5.1.10, 9.1.5.1.12, 9.1.5.1.14, 9.1.9.3,

11.3.5, 11.3.6, 11.3.8, 11.3.9,

11.4.7, 11.4.8.

A test case using more than two radio frequencies, i.e. using the radio frequencies NRf3 or NRf4 specified in TS 38.508-1 [5], shall not be executed on:

Band n14,

Band n24,

Band n30,

Band n53.

The list of test cases is given below:

6.1.1.1, 6.1.1.2, 6.1.1.3, 6.1.1.5, 6.1.1.6, 6.1.1.7, 6.1.1.8, 6.1.2.7, 6.1.2.11, 6.1.2.20, 6.3.1.1, 6.3.1.2, 6.3.1.3, 6.3.1.5, 6.3.1.8, 6.4.1.1, 6.4.1.2, 6.4.2.2, 6.5.2.4, 6.5.2.6,

8.1.1.3.3, 8.1.6.1.3.3,

9.1.5.1.2, 9.1.5.1.8.

11.3.1.2 NR carrier aggregation

The restriction on NR CA test case execution as listed in this clause is due to the restriction of bandwidth of an NR CA configuration accommodating the necessary number of NR radio frequencies.

These test cases with switched allocation of PCell and SCell shall avoid to be executed on an NR CA inter-band combination with a frequency for the SCell having no UL:

CA_n28A_n75A,
CA_n29A_n66A,
CA_n29A_n70A,
CA_n29A_n71A,
CA_n75A_n78A,
CA_n76A_n78A,
CA_n8A_n75A

The list of test cases is given below:

8.1.4.1.7.2, 8.1.4.1.9.2.

These test cases with switched allocation of PCell and SCell shall avoid to be executed on an NR CA intra-band contiguous combination with a frequency for the SCell having no UL:

CA_n66B

The list of test cases is given below:

8.1.4.1.7.1, 8.1.4.1.9.1

11.3.2 NR/5GC Inter-RAT

11.3.2.1 NR/E-UTRA Inter-RAT

This clause contains the guidelines for the NR/5GC and E-UTRA inter-RAT test cases executed on the different bands. According to TS 38.508-1 [5] clause 6.2.3.3, it is assumed that the NR and E-UTRA bands under test are not overlapping.

A test case using more than one radio frequency on E-UTRA, i.e. using the radio frequencies f2, f3 or f4 specified in TS 36.508 [10], shall not be executed on:

Band 13,
Band 18,
Band 31,
Band 72,
Band 73

The list of test cases is given below:

6.4.3.1,
8.1.1.3.4,
11.1.4, 11.1.5.

A test case using more than one radio frequency on NR, i.e. using the radio frequencies NRf2 or NRf3 or NRf4 specified in TS 38.508-1 [5], shall not be executed on:

Band n51.

The list of test cases is given below:

6.2.1.1, 6.2.1.2, 6.2.1.3, 6.2.1.4,

8.1.1.3.7a.

A test case using more than two radio frequencies on NR, i.e. using the radio frequencies NRf3 or NRf4 specified in TS 38.508-1 [5], shall not be executed on:

Band n14,

Band n24,

Band n30,

Band n53

The list of test cases is given below:

6.2.1.1.

11.3.2.2 NR/EN-DC Inter-RAT

This clause contains the guidelines for the NR/5GC and EN-DC inter-RAT test cases.

A test case using more than one radio frequency on NR, i.e. using the radio frequencies NRf2 or NRf3 or NRf4 specified in TS 38.508-1 [5], shall not be executed on:

Band combination DC_1A_n51A

Band combination DC_20A_n51A

Band combination DC_28A_n51A

Band combination DC_3A_n51A

Band combination DC_41A_n41A

Band combination DC_42A_n51A

Band combination DC_7A_n51A

The list of test cases is given below:

8.1.4.2.1.2

11.3.3 NR MFBI

The following NR MFBI test case shall be executed using the combinations specified in Table 11.3.3-1 for px_NR_OverlappingNotSupportedBand_MFBI and px_NR_PrimaryBand:

6.1.2.23.

Table 11.3.3-1: NR MFBI bands combinations

px_NR_OverlappingNotSupportedBand_MFBI	px_NR_PrimaryBand (Note)
n2	n25
n25	n2
n38	n41
n41	n38
n77	n78
n78	n77
n257	n258, n261
n258	n257
n261	n257
Note:	The UE supports one or more of the listed MFBI bands and does not support at least one overlapping band. If the UE supports all overlapping bands, these test cases are not applicable.

Annex A (normative): Test Suites

This annex references the approved Test Suites, which accompany the present document. The Test Suites have been produced using the Testing and Test Control Notation version 3 (TTCN-3) according to ES 201 873 [4].

A.1 Baseline of specifications

Table A.1-1 lists the core specifications and test specifications, which the delivered Test Suites are based upon.

Table A.1-1: References of the test and core specifications

Type	Specification	Release	Version
Core specifications	TS 38.321 [13]	Note 1	Note 2
	TS 38.322 [14]	Note 1	Note 2
	TS 38.323 [15]	Note 1	Note 2
	TS 36.331 [17]	Note 1	Note 2
	TS 38.331 [16]	Note 1	Note 2
	TS 24.301 [18]	Note 1	Note 2
Test specifications	TS 36.508 [10]	Note 2	Note 2
	TS 36.509 [11]	Note 1	Note 2
	TS 38.508-1 [5]	Note 2	Note 2
	TS 38.508-2 [6]	Note 2	Note 2
	TS 38.509 [7]	Note 1	Note 2
	TS 38.523-1 [8]	Note 2	Note 2
	TS 38.523-2 [9]	Note 2	Note 2
NOTE 1: Latest release available, up to the release number of the present document.			
NOTE 2: Latest available.			

A.2 5GS Test Suites

A.2.1 EN-DC Test Suites

Table A.2.1-1 lists all approved test cases.

For a given test case, the following variants are distinguished (if applicable):

- FR1: FR1 NR frequency band(s) in the NR cell(s).
- FR2: FR2 NR frequency band(s) in the NR cell(s).
- FRx: Mix of FR1 NR frequency band(s) and FR2 NR frequency band(s) in the NR cell(s).

An "X" in columns FR1, FR2 or FRx indicates the test case is approved for the respective variant.

An "-" in columns FR1, FR2 or FRx indicates the test case is not applicable to the respective variant.

Table A.2.1-1: EN-DC TTCN test cases

Test case	Description	FR1	FR2	FRx
7.1.1.1.1.ENDC	Correct selection of RACH parameters / Random access preamble and PRACH resource explicitly signalled to the UE by RRC / contention free random access procedure	X	X	-
7.1.1.1.1a.ENDC	Correct selection of RACH parameters / Random access preamble and PRACH resource explicitly signalled to the UE by PDCCH Order / contention free random access procedure	X	X	-

7.1.1.1.2.ENDC	Random access procedure / Successful/ C-RNTI Based/Preamble selected by MAC itself	X	X	-
7.1.1.2.1.ENDC	Correct Handling of DL MAC PDU / Assignment / HARQ process	X	X	-
7.1.1.3.1.ENDC	Correct Handling of UL MAC PDU / Assignment / HARQ process	X	X	-
7.1.1.3.2.ENDC	Logical channel prioritization handling	X	X	-
7.1.1.3.2b.ENDC	Logical channel prioritization handling with Mapping restrictions	X	X	-
7.1.1.3.3.ENDC	Correct handling of MAC control information / Scheduling requests	X	X	-
7.1.1.3.4.ENDC	Correct handling of MAC control information / Buffer status / UL data arrive in the UE Tx buffer / Regular BSR	X	X	-
7.1.1.3.5.ENDC	Correct handling of MAC control information / Buffer Status / UL resources are allocated / Padding BSR	X	X	-
7.1.1.3.6.ENDC	Correct handling of MAC control information / Buffer status / Periodic BSR timer expires	X	X	-
7.1.1.3.7.ENDC	UE power headroom reporting / Periodic reporting / DL pathloss change reporting	X	X	-
7.1.1.3.9.ENDC	Correct Handling of UL HARQ process/ PUSCH Aggregation	X		-
7.1.1.3.8.1.ENDC	UE power headroom reporting / SCell activation / DL pathloss change reporting / Intra-band Contiguous CA	X		-
7.1.1.4.1.1.ENDC	DL-SCH Transport Block Size selection / DCI format 1_0	X		-
7.1.1.4.2.1.ENDC	UL-SCH transport block size selection / DCI format 0_0 / Transform precoding disabled	X		-
7.1.1.4.2.3.ENDC	UL-SCH transport block size selection / DCI format 0_1 / RA type 0/RA Type 1 / Transform precoding disabled	X		-
7.1.1.4.2.4.ENDC	UL-SCH transport block size selection / DCI format 0_1 / RA type 0/RA Type 1 / 256QAM / Transform precoding disabled	X		-
7.1.1.4.2.5.ENDC	UL-SCH Transport Block Size selection / DCI format 0_0 / Transform precoding and 64QAM	X		-
7.1.1.5.1.ENDC	DRX operation / Short cycle not configured / Parameters configured by RRC	X	X	-
7.1.1.5.2.ENDC	DRX operation / Short cycle not configured /Long DRX command MAC control element reception	X	X	-
7.1.1.5.3.ENDC	DRX operation / Short cycle configured / Parameters configured by RRC	X	X	-
7.1.1.5.4.ENDC	DRX Operation / Short cycle configured / DRX command MAC control element reception	X	X	-
7.1.1.5.5.ENDC	DRX Operation / Short cycle configured / Long DRX command MAC control element reception	X	X	-
7.1.1.7.1.1.ENDC	Activation/Deactivation of SCells / Activation/Deactivation MAC control element reception / sCellDeactivationTimer / Intra-band Contiguous CA	X	X	-
7.1.1.7.1.2.ENDC	Activation/Deactivation of SCells / Activation/Deactivation MAC control element reception / sCellDeactivationTimer / Inter-band CA	X		
7.1.1.9.1.ENDC	MAC Reset	X	X	-
7.1.2.2.1.ENDC	UM RLC / Segmentation and reassembly / 6-bit SN / Segmentation Info (SI) field	X	X	-
7.1.2.2.2.ENDC	UM RLC / Segmentation and reassembly / 12-bit SN / Segmentation Info (SI) field	X	X	-
7.1.2.2.3.ENDC	UM RLC / 6-bit SN / Correct use of sequence numbering	X	X	-
7.1.2.2.4.ENDC	UM RLC / 12-bit SN / Correct use of sequence numbering	X	X	-
7.1.2.2.5.ENDC	UM RLC / Receive Window operation and t-Reassembly expiry	X	X	-
7.1.2.2.6.ENDC	UM RLC / RLC re-establishment procedure	X	X	-
7.1.2.3.1.ENDC	AM RLC / 12-bit SN/Segmentation and reassembly / Segmentation Info (SI) field	X	X	-
7.1.2.3.2.ENDC	AM RLC / 18-bit SN/Segmentation and reassembly / Segmentation Info (SI) field	X	X	-
7.1.2.3.3.ENDC	AM RLC / 12-bit SN / Correct use of sequence numbering	X	X	-
7.1.2.3.4.ENDC	AM RLC / 18-bit SN / Correct use of sequence numbering	X	X	-
7.1.2.3.5.ENDC	AM RLC / Control of transmit window / Control of receive window	X	X	-
7.1.2.3.6.ENDC	AM RLC / Polling for status	X	X	-
7.1.2.3.7.ENDC	AM RLC / Receiver status triggers	X	X	-
7.1.2.3.8.ENDC	AM RLC / Reconfiguration of RLC parameters by upper layers	X	X	-
7.1.2.3.9.ENDC	AM RLC / Reassembling of AMD PDUs	X	X	-
7.1.2.3.10.ENDC	AM RLC / Re-transmission of RLC PDU with and without re-segmentation	X	X	-
7.1.2.3.11.ENDC	AM RLC / RLC re-establishment procedure	X	X	-
7.1.3.1.1.ENDC	Maintenance of PDCP sequence numbers / User plane / 12-bit SN	X	X	-
7.1.3.1.2.ENDC	Maintenance of PDCP sequence numbers / User plane / 18-bit SN	X	X	-
7.1.3.2.1.ENDC	Integrity protection / Correct functionality of encryption algorithm SNOW3G / SRB / DRB	X	X	-
7.1.3.2.2.ENDC	Integrity protection / Correct functionality of encryption algorithm AES / SRB / DRB	X	X	-

7.1.3.2.3.ENDC	Integrity protection / Correct functionality of encryption algorithm ZUC / SRB / DRB	X	X	-
7.1.3.3.1.ENDC	Ciphering and deciphering / Correct functionality of encryption algorithm SNOW3G / SRB / DRB	X	X	-
7.1.3.3.2.ENDC	Ciphering and deciphering / Correct functionality of encryption algorithm AES / SRB / DRB	X	X	-
7.1.3.3.3.ENDC	Ciphering and deciphering / Correct functionality of encryption algorithm ZUC / SRB / DRB	X	X	-
7.1.3.4.1.ENDC	PDCP handover / Lossless handover / PDCP sequence number maintenance/PDCP status report to convey the information on missing or acknowledged PDCP SDUs at handover/ In-order delivery and duplicate elimination in the downlink	X	X	-
7.1.3.4.2.ENDC	PDCP handover / Non-lossless handover / PDCP sequence number maintenance	X	X	-
7.1.3.5.1.ENDC	PDCP Discard	X	X	-
7.1.3.5.2.ENDC	PDCP Uplink Routing / Split DRB	X	X	-
7.1.3.5.3.ENDC	PDCP Data Recovery	X	X	-
7.1.3.5.4.ENDC	PDCP reordering / Maximum re-ordering delay below t-Reordering / t-Reordering timer operations	X	X	-
7.1.3.5.5.ENDC	PDCP Duplication	X		-
8.2.1.1.1.ENDC	UE capability transfer / Success / EN-DC	X	X	-
8.2.2.1.1.ENDC	SRB3 Establishment, Reconfiguration and Release / NR addition, modification and release / EN-DC	X	X	-
8.2.2.2.1.ENDC	Split SRB Establishment and Release / EN-DC	X	X	-
8.2.2.3.1.ENDC	Simultaneous SRB3 and Split SRB / Sequential message flow on SRB3 and Split SRB with one UL path / EN-DC	X	X	-
8.2.2.4.1.ENDC	PSCell addition, modification and release / SCG DRB / EN-DC	X	X	-
8.2.2.5.1.ENDC	PSCell addition, modification and release / Split DRB / EN-DC	X	X	-
8.2.2.6.1.ENDC	Bearer Modification / MCG DRB / SRB / PDCP version change / EN-DC	X	X	-
8.2.2.7.1.ENDC	Bearer Modification / Handling for bearer type change without security key change / EN-DC	X	X	-
8.2.2.8.1.ENDC	Bearer Modification / Handling for bearer type change with security key change / EN-DC	X	X	-
8.2.2.9.1.ENDC	Bearer Modification / Uplink data path / Split DRB Reconfiguration / EN-DC	X	X	-
8.2.3.1.1.ENDC	Measurement configuration control and reporting / Inter-RAT measurements / Event B1 / Measurement of NR cells / EN-DC	X	X	-
8.2.3.2.1.ENDC	Measurement configuration control and reporting / Inter-RAT measurements / Event B1 / Measurement of NR cells / RSRQ based measurements / EN-DC	X		-
8.2.3.3.1.ENDC	Measurement configuration control and reporting / Inter-RAT measurements / Periodic reporting / Measurement of NR cells / EN-DC	X	X	-
8.2.3.4.1.ENDC	Measurement configuration control and reporting / Event A1 / Measurement of NR PSCell / EN-DC	X	X	-
8.2.3.5.1.ENDC	Measurement configuration control and reporting / Event A2 / Measurement of NR PSCell / EN-DC	X	X	-
8.2.3.6.1.ENDC	Measurement configuration control and reporting / Event A3 / Measurement of Neighbour NR cell / Intra-frequency measurements / EN-DC	X	X	-
8.2.3.6.1a.ENDC	Measurement configuration control and reporting / Event A3 / Measurement of Neighbour NR cell / Inter-frequency measurements / EN-DC	X	X	-
8.2.3.6.1b.ENDC	Measurement configuration control and reporting / Event A3 / Measurement of Neighbour NR cell / Inter-band measurements / EN-DC		X	-
8.2.3.7.1.ENDC	Measurement configuration control and reporting / Event A4 / Measurement of Neighbour NR cell / Intra-frequency measurements / EN-DC	X	X	-
8.2.3.7.1a.ENDC	Measurement configuration control and reporting / Event A4 / Measurement of Neighbour NR cell / Inter-frequency measurements / EN-DC	X	X	-
8.2.3.7.1b.ENDC	Measurement configuration control and reporting / Event A4 / Measurement of Neighbour NR cell / Inter-band measurements / EN-DC	X	X	-
8.2.3.8.1.ENDC	Measurement configuration control and reporting / Event A5 / Measurement of Neighbour NR cell / Intra-frequency measurements / EN-DC	X	X	-
8.2.3.8.1a.ENDC	Measurement configuration control and reporting / Event A5 / Measurement of Neighbour NR cell / Inter-frequency measurements / EN-DC	X	X	-
8.2.3.8.1b.ENDC	Measurement configuration control and reporting / Event A5 / Measurement of Neighbour NR cell / Inter-band measurements / EN-DC	X	X	-
8.2.3.12.1.ENDC	Measurement configuration control and reporting / Inter-RAT measurements / Event B2 / Measurement of NR cells / EN-DC	X		-
8.2.3.13.1.ENDC	PCell Handover with SCG change / Reconfiguration with sync / SCG DRB / EN-DC	X		-

8.2.3.14.1.ENDC	SCG change / Reconfiguration with sync / Split DRB / EN-DC	X	X	-
8.2.3.15.1.ENDC	Measurement configuration control and reporting / Two simultaneous events A2 and A3 (intra-frequency measurements) / Measurement of Neighbour NR cells / EN-DC	X		-
8.2.3.16.1.ENDC	Measurement configuration control and reporting / SRB3 / Intra NR measurements / EN-DC	X	X	-
8.2.4.1.1.1.ENDC	NR CA / NR SCell addition / modification / release / Success / EN-DC / Intra-band Contiguous CA	X	X	-
8.2.4.1.1.3.ENDC	NR CA / NR SCell addition / modification / release / Success / EN-DC / Inter-band CA	X		-
8.2.4.2.1.1.ENDC	NR CA / Simultaneous PSCell and SCell addition / PSCell and SCell change / CA Release / EN-DC / Intra-band Contiguous CA	X		
8.2.4.2.1.3.ENDC	NR CA / Simultaneous PSCell and SCell addition / PSCell and SCell change / CA Release / EN-DC / Inter-band CA	X		
8.2.4.3.1.1.ENDC	NR CA / SCell change / Intra-NR measurement event A6 / SRB3 / EN-DC / Intra-band Contiguous CA	X		-
8.2.4.3.1.3.ENDC	NR CA / SCell change / Intra-NR measurement event A6 / SRB3 / EN-DC / Inter-band CA	X		
8.2.5.1.1.ENDC	Radio link failure / PSCell addition failure - random access problem / EN-DC	X	X	
8.2.5.2.1.ENDC	Radio link failure / PSCell out of sync indication / Radio link failure / EN-DC	X	X	-
8.2.5.3.1.ENDC	Radio link failure / rlc-MaxNumRetx failure / EN-DC	X	X	
8.2.5.4.1.ENDC	Reconfiguration failure / SCG change failure / EN-DC	X	X	-
8.2.6.2.1.ENDC	Processing delay / PSCell addition / SCG DRB / Success / Latency check / EN-DC	X	X	-
10.2.1.1.ENDC	Default EPS bearer context activation	X	X	-
10.2.1.2.ENDC	Dedicated EPS bearer context activation	X	X	-
10.2.2.1.ENDC	EPS bearer resource allocation / modification	X	X	-

A.2.2 NR/5GC Test Suites

Table A.2.2-1 lists all approved test cases.

For a given test case, the following variants are distinguished (if applicable):

- FR1: FR1 NR frequency band(s) in the NR cell(s).
- FR2: FR2 NR frequency band(s) in the NR cell(s).
- FRx: Mix of FR1 NR frequency band(s) and FR2 NR frequency band(s) in the NR cell(s).

An "X" in columns FR1 or FR2 indicates the test case is approved for the respective variant.

An "-" in columns FR1, FR2 or FRx indicates the test case is not applicable to the respective variant.

Table A.2.2-1: NR/5GC TTCN test cases

Test case	Description	FR1	FR2	FRx
6.1.1.1.NR5GC	PLMN selection of RPLMN, HPLMN/EHPLMN, UPLMN and OPLMN / Automatic mode	X		-
6.1.1.2.NR5GC	PLMN selection of "Other PLMN/access technology combinations" / Automatic mode	X		-
6.1.1.3.NR5GC	Cell reselection of ePLMN in manual mode	X		-
6.1.1.4.NR5GC	PLMN selection in shared network environment / Automatic mode	X	X	-
6.1.1.5.NR5GC	PLMN selection of RPLMN, HPLMN/EHPLMN, UPLMN and OPLMN / Automatic mode / User reselection	X		-
6.1.1.6.NR5GC	PLMN selection / Periodic reselection / MinimumPeriodicSearchTimer	X		-
6.1.1.7.NR5GC	PLMN selection of RPLMN or (E)HPLMN; Automatic mode	X		-
6.1.1.8.NR5GC	PLMN selection of RPLMN or (E)HPLMN; Manual mode	X		-
6.1.2.1.NR5GC	Cell Selection/Qrxlevmin & Cell Reselection (Intra NR)	X	X	-
6.1.2.2.NR5GC	Cell Selection/Qqualmin/Intra NR / Serving cell becomes non-suitable (Srxlev > 0, Squal < 0)			-
6.1.2.3.NR5GC	Cell selection / Intra NR/ Serving cell becomes non-suitable (S<0, MIB Indicated barred)	X		-
6.1.2.4.NR5GC	Cell reselection for interband operation	X		-

6.1.2.5.NR5GC	Cell reselection for interband operation using Pcompensation / Between FDD and TDD	X		-
6.1.2.7.NR5GC	Cell reselection / Equivalent PLMN	X		-
6.1.2.8.NR5GC	Cell reselection / Equivalent PLMN / Single Frequency operation	X		-
6.1.2.9.NR5GC	Cell reselection using Qhyst, Qoffset and Treselection	X	X	-
6.1.2.11.NR5GC	Area Specific SIBs using systemInformationAreaID	X		-
6.1.2.12.NR5GC	Cell reselection using cell status and cell reservations / cellReservedForOtherUse	X		-
6.1.2.13.NR5GC	Cell reselection using cell status and cell reservations / Access Identity 1 , 2 and 12 to 14 - cellReservedForOperatorUse	X		-
6.1.2.14.NR5GC	Cell reselection using cell status and cell reservations / Access Identity 11 or 15 - cellReservedForOperatorUse	X		-
6.1.2.15.NR5GC	Cell reselection in shared network environment	X	X	-
6.1.2.16.NR5GC	Inter-frequency cell reselection (equal priority)	X		-
6.1.2.17.NR5GC	Cell reselection / Cell-specific reselection parameters provided by the network in a neighbouring cell list	X	X	-
6.1.2.18.NR5GC	Cell reselection, Sintrasearch, Snonintrasearch	X		-
6.1.2.19.NR5GC	Speed Dependent Cell Reselection	X		-
6.1.2.20.NR5GC	Inter-frequency cell reselection according to cell reselection priority provided by SIBs	X		-
6.1.2.21.NR5GC	Cell reselection , SintraSearchQ and SnonIntraSearchQ	X		-
6.1.2.22.NR5GC	Inter-frequency cell reselection based on common priority information with parameters ThreshX, HighQ, ThreshX, LowQ and ThreshServing, LowQ	X		-
6.1.2.23.NR5GC	Cell Reselection / MFBI	X		-
6.2.1.1.NR5GC	Inter-RAT PLMN Selection / Selection of correct RAT for OPLMN / Automatic mode	X		-
6.2.1.2.NR5GC	Inter-RAT PLMN Selection / Selection of correct RAT for UPLMN / Automatic mode	X		-
6.2.1.3.NR5GC	Inter-RAT PLMN Selection / Selection of correct PLMN and RAT in shared network environment / Automatic mode	X		-
6.2.1.4.NR5GC	Inter-RAT PLMN Selection / Selection of correct RAT from the OPLMN list / Manual mode	X		-
6.2.1.5.NR5GC	Inter-RAT Background HPLMN Search / Search for correct RAT for HPLMN / Automatic Mode	X		-
6.2.2.1.NR5GC	Inter-RAT cell selection / From NR RRC_IDLE to EUTRA_Idle / Serving cell becomes non-suitable	X		-
6.2.2.2.NR5GC	Inter-RAT cell selection / From E-UTRA_Idle to NR RRC_IDLE / Serving cell becomes non-suitable	X		-
6.2.3.1.NR5GC	Inter-RAT cell reselection / From E-UTRA_Idle to NR RRC_IDLE (lower priority & higher priority , Srxlev based)	X		-
6.2.3.2.NR5GC	Inter-RAT cell reselection / From E-UTRA_Idle to NR RRC_IDLE (lower priority & higher priority , Squal based)	X		-
6.2.3.3.NR5GC	Inter-RAT cell reselection / From NR RRC_Idle to E-UTRA_IDLE (lower priority & higher priority , Srxlev based)	X		-
6.2.3.4.NR5GC	Inter-RAT cell reselection / From NR RRC_Idle to E-UTRA_IDLE (lower priority & higher priority , Squal based)	X		-
6.2.3.5.NR5GC	Inter-RAT cell reselection / From NR RRC_IDLE to E-UTRA_Idle according to RAT priority provided by dedicated signalling (RRCRelease)	X		-
6.2.3.6.NR5GC	Inter-RAT cell reselection / From E-UTRA_Idle to NR RRC_IDLE according to RAT priority provided by dedicated signalling (RRConnRelease)	X		-
6.2.3.7.NR5GC	Inter-RAT cell reselection / From NR RRC_IDLE to E-UTRA RRC_Idle, Snonintrasearch	X		-
6.2.3.8.NR5GC	Inter-RAT cell reselection / From E-UTRA RRC_IDLE to NR RRC_Idle, Snonintrasearch	X		-
6.2.3.9.NR5GC	Speed Dependent Cell Reselection (NR RRC_IDLE to E-UTRA RRC_IDLE)	X		-
6.2.3.10.NR5GC	Inter-RAT cell reselection / From E-UTRA_Idle to NR RRC_IDLE / schedulingInfoList-v12j0	X		-
6.2.3.11.NR5GC	Inter-RAT cell reselection / From E-UTRA_Idle to NR RRC_IDLE / schedulingInfoListExt-r12	X		-
6.3.1.1.NR5GC	Steering of UE in roaming during registration/security check successful using List Type 1	X		-
6.3.1.2.NR5GC	Steering of UE in roaming during registration/security check successful but SOR Transparent container indicates ACK has been NOT been requested	X		-
6.3.1.3.NR5GC	Steering of UE in roaming during registration/security check unsuccessful/Automatic mode	X		-

6.3.1.4.NR5GC	Steering of UE in roaming during registration/security check unsuccessful/Manual mode	X	X	-
6.3.1.5.NR5GC	Steering of UE in roaming during registration/UE configured to receive Steering of Roaming information but does not receive Steering of Roaming from Network	X		-
6.3.1.7.NR5GC	Steering of UE in roaming during registration/security check unsuccessful but emergency service pending to be activated	X	X	-
6.3.1.8.NR5GC	Steering of UE in roaming after registration/automatic plmn selection mode	X		-
6.3.1.9.NR5GC	Steering of UE in roaming after registration/manual plmn selection mode	X	X	-
6.3.1.10.NR5GC	Steering of UE in roaming during mobility update registration	X		-
6.4.1.1.NR5GC	PLMN Selection/Higher priority/HPLMN in Automatic PLMN Selection Mode	X		-
6.4.1.2.NR5GC	Cell reselection of ePLMN in manual mode	X		-
6.4.2.1.NR5GC	Cell Selection/Qrxlevmin & Cell Reselection (Intra NR in RRC_INACTIVE state)	X		-
6.4.2.2.NR5GC	Inter-frequency cell reselection according to cell reselection priority provided by SIBs in RRC_INACTIVE state	X		-
6.4.3.1.NR5GC	Inter-RAT cell reselection / From NR RRC_INACTIVE to E-UTRA RRC_IDLE (lower priority & higher priority , Srxlev based)	X		-
6.5.2.1.NR5GC	CAG Selection in Manual Mode	X		-
6.5.2.2.NR5GC	CAG Selection in Automatic Mode	X		-
6.5.2.3.NR5GC	CAG / Limited Service / No Suitable cell	X		-
6.5.2.4.NR5GC	CAG / cell reselection / Within allowed CAG/ non-CAG cell to CAG cell	X		-
7.1.1.1.1.NR5GC	Correct selection of RACH parameters / Random access preamble and PRACH resource explicitly signalled to the UE by RRC / contention free random access procedure	X	X	-
7.1.1.1.1a.NR5GC	Correct selection of RACH parameters / Random access preamble and PRACH resource explicitly signalled to the UE by PDCCH Order / contention free random access procedure	X	X	-
7.1.1.1.2.NR5GC	Random access procedure / Successful/ C-RNTI Based/Preamble selected by MAC itself	X	X	-
7.1.1.1.3.NR5GC	Random access procedure / Successful/SI request	X	X	-
7.1.1.1.6.NR5GC	Random access procedure / Successful/ Temporary C-RNTI Based/Preamble selected by MAC itself	X	X	-
7.1.1.2.1.NR5GC	Correct Handling of DL MAC PDU / Assignment / HARQ process	X	X	-
7.1.1.2.3.NR5GC	Correct HARQ process handling / CCCH	X	X	-
7.1.1.2.4.NR5GC	Correct HARQ process handling / BCCH	X	X	-
7.1.1.3.1.NR5GC	Correct Handling of UL MAC PDU / Assignment / HARQ process	X	X	-
7.1.1.3.2.NR5GC	Logical channel prioritization handling	X	X	-
7.1.1.3.2b.NR5GC	Logical channel prioritization handling with Mapping restrictions	X	X	-
7.1.1.3.3.NR5GC	Correct handling of MAC control information / Scheduling requests	X	X	-
7.1.1.3.4.NR5GC	Correct handling of MAC control information / Buffer status / UL data arrive in the UE Tx buffer / Regular BSR	X	X	-
7.1.1.3.5.NR5GC	Correct handling of MAC control information / Buffer Status / UL resources are allocated / Padding BSR	X	X	-
7.1.1.3.6.NR5GC	Correct handling of MAC control information / Buffer status / Periodic BSR timer expires	X	X	-
7.1.1.3.7.NR5GC	UE power headroom reporting / Periodic reporting / DL pathloss change reporting	X	X	-
7.1.1.3.8.1.NR5GC	UE power headroom reporting / SCell activation / DL pathloss change reporting / Intra-band Contiguous CA	X		-
7.1.1.3.8.2.NR5GC	UE power headroom reporting / SCell activation / DL pathloss change reporting/ Inter-band CA	X		-
7.1.1.3.9.NR5GC	Correct Handling of UL HARQ process/ PUSCH Aggregation	X		-
7.1.1.4.1.1.NR5GC	DL-SCH Transport Block Size selection / DCI format 1_0	X		-
7.1.1.4.2.1.NR5GC	UL-SCH transport block size selection / DCI format 0_0 / Transform precoding disabled	X		-
7.1.1.4.2.3.NR5GC	UL-SCH transport block size selection / DCI format 1_1 / RA type 0 / RA Type 1 / Transform precoding disabled	X		-
7.1.1.4.2.4.NR5GC	UL-SCH transport block size selection / DCI format 0_1 / RA type 0/RA Type 1 / 256QAM / Transform precoding disabled	X		-
7.1.1.4.2.5.NR5GC	UL-SCH Transport Block Size selection / DCI format 0_0 / Transform precoding and 64QAM	X		-
7.1.1.5.1.NR5GC	DRX operation / Short cycle not configured / Parameters configured by RRC	X	X	-
7.1.1.5.2.NR5GC	DRX operation / Short cycle not configured /Long DRX command MAC control element reception	X	X	-
7.1.1.5.3.NR5GC	DRX operation / Short cycle configured / Parameters configured by RRC	X	X	-

7.1.1.5.4.NR5GC	DRX Operation / Short cycle configured / DRX command MAC control element reception	X	X	-
7.1.1.5.5.NR5GC	DRX Operation / Short cycle configured / Long DRX command MAC control element reception	X	X	-
7.1.1.7.1.1.NR5GC	Activation/Deactivation of SCells / Activation/Deactivation MAC control element reception / sCellDeactivationTimer / Intra-band Contiguous CA	X	X	-
7.1.1.7.1.2.NR5GC	Activation/Deactivation of SCells / Activation/Deactivation MAC control element reception / sCellDeactivationTimer / Inter-band CA	X		
7.1.1.7.1.3.NR5GC	Activation/Deactivation of SCells / Activation/Deactivation MAC control element reception / sCellDeactivationTimer / Intra-band non-Contiguous CA	X		-
7.1.1.9.1.NR5GC	MAC Reset	X	X	-
7.1.1.10.1.NR5GC	DataInactivityTimer expiry	X	X	-
7.1.2.2.1.NR5GC	UM RLC / Segmentation and reassembly / 6-bit SN / Segmentation Info (SI) field	X	X	-
7.1.2.2.2.NR5GC	UM RLC / Segmentation and reassembly / 12-bit SN / Segmentation Info (SI) field	X	X	-
7.1.2.2.3.NR5GC	UM RLC / 6-bit SN / Correct use of sequence numbering	X	X	-
7.1.2.2.4.NR5GC	UM RLC / 12-bit SN / Correct use of sequence numbering	X	X	-
7.1.2.2.5.NR5GC	UM RLC / Receive Window operation and t-Reassembly expiry	X	X	-
7.1.2.2.6.NR5GC	UM RLC / RLC re-establishment procedure	X	X	-
7.1.2.3.1.NR5GC	AM RLC / 12-bit SN/Segmentation and reassembly / Segmentation Info (SI) field	X	X	-
7.1.2.3.2.NR5GC	AM RLC / 18-bit SN/Segmentation and reassembly / Segmentation Info (SI) field	X	X	-
7.1.2.3.3.NR5GC	AM RLC / 12-bit SN / Correct use of sequence numbering	X	X	-
7.1.2.3.4.NR5GC	AM RLC / 18-bit SN / Correct use of sequence numbering	X	X	-
7.1.2.3.5.NR5GC	AM RLC / Control of transmit window / Control of receive window	X	X	-
7.1.2.3.6.NR5GC	AM RLC / Polling for status	X	X	-
7.1.2.3.7.NR5GC	AM RLC / Receiver status triggers	X	X	-
7.1.2.3.8.NR5GC	AM RLC / Reconfiguration of RLC parameters by upper layers	X	X	-
7.1.2.3.9.NR5GC	AM RLC / Reassembling of AMD PDUs	X	X	-
7.1.2.3.10.NR5GC	AM RLC / Re-transmission of RLC PDU with and without re-segmentation	X	X	-
7.1.2.3.11.NR5GC	AM RLC / RLC re-establishment procedure	X	X	-
7.1.3.1.1.NR5GC	Maintenance of PDCP sequence numbers / User plane / 12-bit SN	X	X	-
7.1.3.1.2.NR5GC	Maintenance of PDCP sequence numbers / User plane / 18-bit SN	X	X	-
7.1.3.2.1.NR5GC	Integrity protection / Correct functionality of encryption algorithm SNOW3G / SRB / DRB	X	X	-
7.1.3.2.2.NR5GC	Integrity protection / Correct functionality of encryption algorithm AES / SRB / DRB	X	X	-
7.1.3.2.3.NR5GC	Integrity protection / Correct functionality of encryption algorithm ZUC / SRB / DRB	X	X	-
7.1.3.3.1.NR5GC	Ciphering and deciphering / Correct functionality of encryption algorithm SNOW3G / SRB / DRB	X	X	-
7.1.3.3.2.NR5GC	Ciphering and deciphering / Correct functionality of encryption algorithm AES / SRB / DRB	X	X	-
7.1.3.3.3.NR5GC	Ciphering and deciphering / Correct functionality of encryption algorithm ZUC / SRB / DRB	X	X	-
7.1.3.4.1.NR5GC	PDCP handover / Lossless handover / PDCP sequence number maintenance/PDCP status report to convey the information on missing or acknowledged PDCP SDUs at handover/ In-order delivery and duplicate elimination in the downlink	X	X	-
7.1.3.4.2.NR5GC	PDCP handover / Non-lossless handover / PDCP sequence number maintenance	X	X	-
7.1.3.5.1.NR5GC	PDCP Discard	X	X	-
7.1.3.5.2.NR5GC	PDCP Uplink Routing / Split DRB	-	-	X
7.1.3.5.4.NR5GC	PDCP reordering / Maximum re-ordering delay below t-Reordering / t-Reordering timer operations	X	X	-
7.1.4.1.NR5GC	SDAP Data Transfer and PDU Header Handling UL/DL	X	X	-
7.1.4.2.NR5GC	SDAP Data Transfer handling without Header UL/DL	X	X	-
8.1.1.1.1.NR5GC	RRC / Paging for connection / Multiple paging records	X	X	-
8.1.1.1.2.NR5GC	RRC / Paging for connection / Shared network environment	X	X	-
8.1.1.2.1.NR5GC	RRC connection establishment / Return to idle state after T300 expiry	X	X	-
8.1.1.2.3.NR5GC	RRC connection establishment / RRC Reject with wait time	X	X	-
8.1.1.2.4.NR5GC	RRC connection establishment / Extended and spare fields in SI	X	X	-
8.1.1.3.1.NR5GC	RRC connection release / Redirection to another NR frequency	X	X	-
8.1.1.3.2.NR5GC	RRC connection release / Redirection from NR to E-UTRAN	X	X	-
8.1.1.3.3.NR5GC	RRC connection release / Success / With priority information	X		-
8.1.1.3.4.NR5GC	RRC connection release / Success / With priority information / E-UTRA	X		-

8.1.1.3.7.NR5GC	RRC connection release / Success / Deprioritisation / Frequency / T325 expiry	X		-
8.1.1.3.7a.NR5GC	RRC connection release / Success / Deprioritisation / NR / T325 expiry	X		-
8.1.1.3.7b.NR5GC	RRC connection release / Success / Deprioritisation / Deletion of Stored deprioritisation request	X		-
8.1.1.4.1.NR5GC	RRC resume / Suspend-Resume / RNA update / Success	X	X	-
8.1.1.4.2.NR5GC	RRC resume / Suspend-Resume / RRC setup / T319 expiry	X	X	-
8.1.2.1.1.NR5GC	RRC reconfiguration / DRB / SRB / Establishment / Modification / Release / Success	X	X	-
8.1.2.1.2.NR5GC	RRC reconfiguration / RRC bearer establishment / uplinkTxDirectCurrentList	X	X	-
8.1.2.1.4.NR5GC	RRC reconfiguration / Dedicated RLF timer	X	X	-
8.1.2.1.5.1.NR5GC	NR CA / RRC reconfiguration / SCell addition / modification / release / Success / Intra-band Contiguous CA	X	X	-
8.1.2.1.5.2.NR5GC	NR CA / RRC reconfiguration / SCell addition / modification / release / Success / Inter-band CA	X		-
8.1.2.1.5.3.NR5GC	NR CA / RRC reconfiguration / SCell addition / modification / release / Success / Intra-band non-contiguous CA	X		-
8.1.3.1.1.NR5GC	Measurement configuration control and reporting / Intra NR measurements / Event A1 / Event A2	X		-
8.1.3.1.2.NR5GC	Measurement configuration control and reporting / Event A3 / Measurement of Neighbor NR cell / Intra-frequency measurements	X		-
8.1.3.1.3.NR5GC	Measurement configuration control and reporting / Event A3 / Measurement of Neighbor NR cell / Inter-frequency measurements	X		-
8.1.3.1.4.NR5GC	Measurement configuration control and reporting / Event A3 / Measurement of Neighbor NR cell / Inter-band measurements	X		-
8.1.3.1.5.NR5GC	Measurement configuration control and reporting / Event A4 / Measurement of Neighbor NR cell / Intra-frequency measurements	X		-
8.1.3.1.6.NR5GC	Measurement configuration control and reporting / Event A4 / Measurement of Neighbor NR cell / Inter-frequency measurements	X		-
8.1.3.1.7.NR5GC	Measurement configuration control and reporting / Event A4 / Measurement of Neighbor NR cell / Inter-band measurements	X		-
8.1.3.1.8.NR5GC	Measurement configuration control and reporting / Event A5 / Measurement of Neighbor NR cell / Intra-frequency measurements	X		-
8.1.3.1.9.NR5GC	Measurement configuration control and reporting / Event A5 / Measurement of Neighbor NR cell / Inter-frequency measurements	X		-
8.1.3.1.10.NR5GC	Measurement configuration control and reporting / Event A5 / Measurement of Neighbor NR cell / Inter-band measurements	X		-
8.1.3.1.11.NR5GC	Measurement configuration control and reporting / Intra NR measurements / Two simultaneous events A3 (intra and inter-frequency measurements) / RSRQ based measurements	X		-
8.1.3.1.12.NR5GC	Measurement configuration control and reporting / Intra NR measurements / Two simultaneous events A5 (intra and inter-frequency measurements) / SINR based measurements	X		-
8.1.3.1.15A.NR5GC	Measurement configuration control and reporting / Intra NR measurements / Blacklisting	X		-
8.1.3.1.16.NR5GC	Measurement configuration control and reporting / Intra NR measurements / Whitelisting	X		-
8.1.3.1.17.1.NR5GC	NR CA / Measurement configuration control and reporting / Intra NR measurements / Event A6 / Intra-band Contiguous CA	X		-
8.1.3.1.17.2.NR5GC	NR CA / Measurement configuration control and reporting / Intra NR measurements / Event A6 / Inter-band CA	X		-
8.1.3.1.17.3.NR5GC	NR CA / Measurement configuration control and reporting / Intra NR measurements / Event A6 / Intra-band non-Contiguous CA	X		-
8.1.3.1.18.1.NR5GC	NR CA / Measurement configuration control and reporting / Intra NR measurements / Additional measurement reporting / Intra-band Contiguous CA	X		-
8.1.3.1.18.2.NR5GC	NR CA / Measurement configuration control and reporting / Intra NR measurements / Additional measurement reporting / Inter-band CA	X		-
8.1.3.1.18.3.NR5GC	NR CA / Measurement configuration control and reporting / Intra NR measurements / Additional measurement reporting / Intra-band non-Contiguous CA	X		-
8.1.3.1.20.NR5GC	Measurement configuration control and reporting / Measurement Gaps / gapFR1	X		-
8.1.3.1.23.NR5GC	Measurement configuration control and reporting / Intra NR measurements / Continuation of the measurements after RRC Resume	X		-
8.1.3.2.1.NR5GC	Measurement configuration control and reporting / Inter-RAT measurements / Event B1 / Measurement of E-UTRA cells	X		-
8.1.3.2.2.NR5GC	Measurement configuration control and reporting / Inter-RAT measurements / Event B2 / Measurement of E-UTRA cells	X		-

8.1.3.2.3.NR5GC	Measurement configuration control and reporting / Inter-RAT measurements / Event B2 / Measurement of E-UTRA cells / RSRQ based measurements	X		-
8.1.3.2.4.NR5GC	Measurement configuration control and reporting / Inter-RAT measurements / Event B2 / Measurement of E-UTRA cells / SINR based measurements	X		-
8.1.3.3.1.NR5GC	Measurement configuration control and reporting / CGI reporting of NR cell	X		-
8.1.3.3.2.NR5GC	Measurement configuration control and reporting / CGI reporting of E-UTRA cell	X		-
8.1.4.1.2.NR5GC	Intra NR handover / Success / Inter-frequency	X		-
8.1.4.1.5.NR5GC	Intra NR handover / Failure / Re-establishment successful	X		-
8.1.4.1.6.NR5GC	Intra NR handover / Failure / Re-establishment failure	X		-
8.1.4.1.7.1.NR5GC	NR CA / Intra NR handover / Success / PCell Change and SCell addition / SCell release / Intra-band Contiguous CA	X		-
8.1.4.1.7.2.NR5GC	NR CA / Intra NR handover / Success / PCell Change and SCell addition / SCell release / Inter-band CA	X		
8.1.4.1.7.3.NR5GC	NR CA / Intra NR handover / Success / PCell Change and SCell addition / SCell release/ Intra-band non-contiguous CA	X		-
8.1.4.1.8.1.NR5GC	NR CA / Intra NR handover / Success / PCell Change / SCell no Change / Intra-band Contiguous CA	X		-
8.1.4.1.8.2.NR5GC	NR CA / Intra NR handover / Success / PCell Change / SCell no Change / Inter-band CA	X		
8.1.4.1.8.3.NR5GC	NR CA / Intra NR handover / Success / PCell Change / SCell no Change / Intra-band non-contiguous CA	X		-
8.1.4.1.9.1.NR5GC	NR CA / Intra NR handover / Failure / Re-establishment successful / Intra-band Contiguous CA	X		-
8.1.4.1.9.2.NR5GC	NR CA / Intra NR handover / Failure / Re-establishment successful / Inter-band CA	X		
8.1.4.1.9.3.NR5GC	NR CA / Intra NR handover / Failure / Re-establishment successful / Intra-band non-contiguous CA	X		-
8.1.4.2.1.1.NR5GC	Inter-RAT handover / From NR to E-UTRA / Success	X	X	-
8.1.4.2.1.2.NR5GC	Inter-RAT handover / From NR to EN-DC / Success	X		-
8.1.4.2.2.1.NR5GC	Inter-RAT handover / From E-UTRA to NR / Success	X	X	-
8.1.4.4.1.NR5GC	Conditional handover / Success / A3 / A5 / A3+A5	X		-
8.1.4.4.2.NR5GC	Conditional handover / modify conditional handover configuration	X		-
8.1.4.4.3.NR5GC	Conditional handover / Failure	X		-
8.1.4.4.4.NR5GC	Conditional handover / legacy Handover / legacy Handover Failure	X		-
8.1.5.1.1.NR5GC	UE capability transfer / Success	X	X	-
8.1.5.2.1.NR5GC	SI change / Notification of BCCH modification / Short message for SI update	X		-
8.1.5.2.2.NR5GC	SI change / Notification of BCCH modification / Short message for SI update in NR RRC_CONNECTED state	X	X	-
8.1.5.3.1.NR5GC	PWS notification / PWS reception in NR RRC_IDLE state	X	X	-
8.1.5.3.2.NR5GC	PWS notification / PWS reception in NR RRC_INACTIVE state	X	X	-
8.1.5.3.3.NR5GC	PWS notification / PWS reception in NR RRC_CONNECTED state	X	X	-
8.1.5.3.4.NR5GC	PWS notification / PWS reception using dedicatedSystemInformationDelivery	X	X	-
8.1.5.4.1.NR5GC	Counter check / Reception of CounterCheck message by the UE	X	X	-
8.1.5.5.1.NR5GC	Redirection to NR / From E-UTRA / Success	X		-
8.1.5.6.1.NR5GC	Radio link failure / RRC connection re-establishment success	X	X	-
8.1.5.6.3.NR5GC	Radio link failure / T311 expiry	X	X	-
8.1.5.6.5.1.NR5GC	NR CA / No Radio Link Failure on SCell / RRC Connection Continues on PCell / Intra-band Contiguous CA	X	X	-
8.1.5.6.5.2.NR5GC	NR CA / No Radio Link Failure on SCell / RRC Connection Continues on PCell / Inter-band CA	X		-
8.1.5.6.5.3.NR5GC	NR CA / No Radio Link Failure on SCell / RRC Connection Continues on PCell / Intra-band non-Contiguous CA	X		-
8.1.5.7.1.1.NR5GC	Failure information / RLC failure / MCG / Intra-band Contiguous CA	X		-
8.1.5.7.1.2.NR5GC	Failure information / RLC failure / MCG / Inter-band CA	X		
8.1.5.8.1.NR5GC	Processing delay / RRC_Idle to RRC_Connected / RRC_Inactive to RRC_Connected / Success / Latency check	X		
8.1.5.8.2.1.NR5GC	Processing delay / RRC_Inactive to RRC_Connected / Success / Latency check / SCell addition / Intra-band Contiguous CA	X		-
8.1.5.8.2.2.NR5GC	Processing delay / RRC_Inactive to RRC_Connected / Success / Latency check / SCell addition / Inter-band CA	X		-
8.1.5.8.2.3.NR5GC	Processing delay / RRC_Inactive to RRC_Connected / Success / Latency check / SCell addition / Intra-band non-Contiguous CA	X		-
8.1.5.9.1.NR5GC	RACS / UL Message Segment transfer / UECapabilityInformation	X		
8.1.5.10.1.NR5GC	UE Assistance Information / Release Preference	X		-

8.1.6.1.1.2.NR5GC	Immediate MDT / Measurement / Latency metrics for UL PDCP Packet Delay per DRB	X		-
8.1.6.1.1.1.NR5GC	Immediate MDT / Measurement reporting / Location information	X		-
8.1.6.1.2.1.NR5GC	Logged MDT / RRC_IDLE / Logging and reporting / Intra-frequency measurement	X		-
8.1.6.1.2.2.NR5GC	Logged MDT / RRC_INACTIVE / Logging and reporting / Inter-frequency measurement	X		
8.1.6.1.2.3.NR5GC	Logged MDT / RRC_IDLE / Logging and reporting / Limiting area scope	X		-
8.1.6.1.2.4.NR5GC	Logged MDT/ RRC_IDLE / Logging and reporting / periodic measurement trigger	X		-
8.1.6.1.2.5.NR5GC	Logged MDT/ RRC_IDLE / Logging and reporting / event-based trigger	X		-
8.1.6.1.2.6.NR5GC	Logged MDT/ RRC_IDLE / Logging and reporting / event-based trigger / out-of-coverage	X		-
8.1.6.1.2.7.NR5GC	Logged MDT / RRC_IDLE / Logging and reporting / Reporting at NR re-establishment	X		-
8.1.6.1.2.8.NR5GC	Logged MDT / Logging and reporting / Reporting at RRC reconfiguration	X		-
8.1.6.1.2.9.NR5GC	Logged MDT / Location information	X		-
8.1.6.1.2.10.NR5GC	Logged MDT / Maintaining logged measurement configuration / UE mobility	X		-
8.1.6.1.2.11.NR5GC	Logged MDT / Maintaining logged measurement configuration / UE state transitions	X		-
8.1.6.1.2.12.NR5GC	Logged MDT / Release of logged MDT measurement configuration / Expire of duration timer	X		-
8.1.6.1.2.13.NR5GC	Logged MDT / Release of logged MDT measurement configuration / Reception of new logged measurement configuration	X		-
8.1.6.1.3.1.NR5GC	Radio Link Failure / Reporting of Intra-frequency measurements	X		-
8.1.6.1.3.2.NR5GC	Radio Link Failure / Reporting of Inter-frequency measurements	X		-
8.1.6.1.3.3.NR5GC	Radio Link Failure / Reporting at RRC connection establishment and reestablishment	X		-
8.1.6.1.3.4.NR5GC	Radio Link Failure / Reporting at NR handover	X		-
8.1.6.1.3.5.NR5GC	Radio Link Failure / Location information	X		-
8.1.6.1.3.7.NR5GC	Radio Link Failure / Logging and reporting / Reporting at intra NR handover / PLMN list	X		-
8.1.6.1.4.1.NR5GC	Connection Establishment Failure / Logging and reporting / T300 expiry	X		-
8.1.6.1.4.2.NR5GC	Connection Establishment Failure / Logging and reporting / RRC Resume	X		-
8.1.6.1.4.3.NR5GC	Connection Establishment Failure / Logging and reporting / Reporting at intra-NR handover	X		-
8.1.6.1.4.4.NR5GC	Connection Establishment Failure / Logging and reporting / Reporting at RRC connection re-establishment	X		-
8.1.6.1.4.5.NR5GC	Connection Establishment Failure / Logging and reporting / Location Information	X		-
8.1.6.1.4.6.NR5GC	Connection Establishment Failure / Logging and reporting / Reporting of Intra-frequency measurements	X		-
8.1.6.1.4.7.NR5GC	Connection Establishment Failure / Logging and reporting / Reporting of Inter-frequency measurements	X		
8.1.6.1.4.8.NR5GC	Connection Establishment Failure / Logging and reporting / RACH failure report	X		-
8.1.6.2.1.NR5GC	Inter-RAT MDT / Immediate MDT / Periodic reporting of E-UTRAN/ Location information	X		-
8.1.6.2.4.NR5GC	Inter-RAT MDT / Connection Establishment Failure / Logging and reporting / Reporting of E-UTRA measurement	X		-
8.1.6.4.1.NR5GC	SON / RACH logging and reporting	X		-
8.2.2.4.2.NR5GC	PSCell addition, modification and release / SCG DRB / NR-DC	-	-	X
8.2.2.5.2.NR5GC	PSCell addition, modification and release / Split DRB / NR-DC	-	-	X
8.2.2.9.2.NR5GC	Bearer Modification / Uplink data path / Split DRB Reconfiguration / NR-DC	-	-	X
8.2.3.14.2.NR5GC	SCG change / Reconfiguration with sync / Split DRB / NR-DC	-	-	X
8.2.5.1.2.NR5GC	Radio link failure / Random access problem / NR-DC	-	-	X
8.2.5.2.2.NR5GC	Radio link failure / PSCell out of sync indication / NR-DC	-	-	X
8.2.5.3.2.NR5GC	Radio link failure / rlc-MaxNumRetx failure / NR-DC	-	-	X
8.2.5.4.2.NR5GC	Reconfiguration failure / SCG change failure / NR-DC	-	-	X
9.1.1.1.NR5GC	EAP based primary authentication and key agreement / EAP-AKA' related procedures	X	X	-
9.1.1.2.NR5GC	EAP based primary authentication and key agreement / Reject	X	X	-
9.1.1.3.NR5GC	EAP based primary authentication and key agreement / EAP message transport / Abnormal	X	X	-
9.1.1.4.NR5GC	5G AKA based primary authentication and key agreement / 5G-AKA related procedures	X	X	-
9.1.1.5.NR5GC	5G AKA based primary authentication and key agreement / Reject	X	X	-

9.1.1.6.NR5GC	5G AKA based primary authentication and key agreement / Abnormal	X	X	-
9.1.2.1.NR5GC	NAS security mode command	X	X	-
9.1.2.2.NR5GC	Protection of initial NAS signalling messages	X	X	-
9.1.2.3.NR5GC	Integrity protection / Correct functionality of 5G NAS integrity algorithm / SNOW3G	X	X	-
9.1.2.4.NR5GC	Integrity protection / Correct functionality of 5G NAS integrity algorithm / AES	X	X	-
9.1.2.5.NR5GC	Integrity protection / Correct functionality of 5G NAS integrity algorithm / ZUC	X	X	-
9.1.2.6.NR5GC	Ciphering and deciphering / Correct functionality of 5G NAS encryption algorithm / SNOW3G	X	X	-
9.1.2.7.NR5GC	Ciphering and deciphering / Correct functionality of 5G NAS encryption algorithm / AES	X	X	-
9.1.2.8.NR5GC	Ciphering and deciphering / Correct functionality of 5G NAS encryption algorithm / ZUC	X	X	-
9.1.3.1.NR5GC	Identification procedure	X	X	-
9.1.4.1.NR5GC	Generic UE configuration update / New 5G-GUTI, NITZ, registration requested, Network slicing indication, New Allowed NSSAI / acknowledgement from the UE	X		-
9.1.5.1.1.NR5GC	Initial registration / Success / 5G-GUTI reallocation, Last visited TAI	X		-
9.1.5.1.2.NR5GC	Initial registration / 5GS services / Equivalent PLMN list handling	X		-
9.1.5.1.3.NR5GC	Initial registration / 5GS services / NSSAI handling	X	X	-
9.1.5.1.3a.NR5GC	Initial registration / 5GS services / NSSAI handling / NSSAI Storage	X	X	-
9.1.5.1.5.NR5GC	Initial registration / Abnormal / Failure after 5 attempts	X	X	-
9.1.5.1.6.NR5GC	Initial registration / Rejected / Illegal UE	X	X	-
9.1.5.1.8.NR5GC	Initial registration / Rejected / Serving network not authorized	X		-
9.1.5.1.9.NR5GC	Initial registration / Abnormal / Change of cell into a new tracking area	X	X	-
9.1.5.1.10.NR5GC	Initial registration / Rejected / PLMN not allowed	X	X	-
9.1.5.1.11.NR5GC	Initial registration / Rejected / Tracking area not allowed	X	X	-
9.1.5.1.12.NR5GC	Initial registration / Rejected / Roaming not allowed in this tracking area	X		-
9.1.5.1.13.NR5GC	Initial registration / Rejected / No suitable cells in tracking area	X		-
9.1.5.1.14.NR5GC	Initial registration / Rejected / Congestion / Abnormal cases / T3346	X		-
9.1.5.1.15.NR5GC	Initial registration / Success / Extended and spare fields in UE network capability	X	X	-
9.1.5.2.1.NR5GC	Mobility registration update / TAI list handling	X	X	-
9.1.5.2.2.NR5GC	Periodic registration update / Accepted	X	X	-
9.1.5.2.4.NR5GC	Mobility registration update / The lower layer requests NAS signalling connection recovery	X	X	-
9.1.5.2.6.NR5GC	Mobility registration update / Registered slice(s) change	X		-
9.1.5.2.7.NR5GC	Mobility and periodic registration update / Rejected / UE identity cannot be derived by the network	X	X	-
9.1.5.2.8.NR5GC	Mobility and periodic registration update / Rejected / implicitly de-registered	X	X	-
9.1.5.2.9.NR5GC	Mobility and periodic registration update / Abnormal / Change of cell into a new tracking area, collision with generic UE configuration update procedure	X		-
9.1.6.1.1.NR5GC	UE-initiated de-registration / switch off / Abnormal / De-registration and 5GMM common procedure collision	X	X	-
9.1.6.1.2.NR5GC	UE-initiated de-registration / normal de-registration / Abnormal / Transmission failure without TAI change from lower layers, De-registration and 5GMM common procedure collision, T3521 timeout	X	X	-
9.1.6.1.3.NR5GC	UE-initiated de-registration / Abnormal / Change of cell into a new tracking area	X		-
9.1.6.1.4.NR5GC	UE-initiated de-registration / Abnormal / Transmission failure with TAI change from lower layers	X		-
9.1.6.2.1.NR5GC	Network-initiated de-registration / de-registration for 3GPP access / re-registration required	X		-
9.1.6.2.2.NR5GC	Network-initiated de-registration / de-registration for 3GPP access / re-registration not required	X	X	-
9.1.7.1.NR5GC	Service request / IDLE mode uplink user data transport / Rejected / Restricted service area, Abnormal / T3517 / T3525	X	X	-
9.1.7.2.NR5GC	Service request / CONNECTED mode user data transport / Abnormal / T3517	X	X	-
9.1.8.1.NR5GC	SMS over NAS / MO and MT SMS over NAS - Idle mode	X	X	-
9.1.8.2.NR5GC	SMS over NAS / Multiple MO and MT SMS over NAS - CONNECTED mode	X	X	-
9.1.9.1.NR5GC	RACS / Network assigned UE radio capability ID	X		-
9.1.9.2.NR5GC	RACS / UE configuration update / UE radio capability ID	X		-
9.1.9.3.NR5GC	RACS / PLMN change within registration area / From PLMN assigned to Manufacturer assigned UE Radio Capability ID	X		-
9.1.9.5.NR5GC	RACS / Handling of delete indication for NW assigned UE radio capability ID	X		-
9.1.10.1.NR5GC	NSSAA / EAP message transport / Success	X		-
9.1.10.2.NR5GC	"Network slice-specific authentication and authorization / EAP message transport / Abnormal	X		-

9.1.10.6.NR5GC	NSSAA / UE configuration update / Rejected NSSAI	X		-
9.3.1.1.NR5GC	Inter-system mobility registration update / Single-registration mode with N26 / 5GMM-IDLE / 5GC to EPC	X	X	-
9.3.1.2.NR5GC	Inter-system mobility registration update / Single-registration mode with N26 / 5GMM-IDLE / EPC to 5GC	X		-
9.3.1.3.NR5GC	Inter-system mobility and periodic registration update / Rejected / Single-registration mode with N26 / Handling of EPC relevant parameters	X	X	-
10.1.1.1.NR5GC	PDU session authentication and authorization / During the UE-requested PDU session procedure	X	X	-
10.1.1.2.NR5GC	PDU session authentication and authorization / After the UE-requested PDU session procedure	X	X	-
10.1.2.1.NR5GC	Network-requested PDU session modification / Accepted	X	X	-
10.1.2.2.NR5GC	Network-requested PDU session modification / Abnormal / PDU session in state PDU SESSION INACTIVE	X	X	-
10.1.3.2.NR5GC	Network-requested PDU session release / Accepted / Insufficient resources / T3396, Accepted / Insufficient resources for specific slice and DNN / T3584, Abnormal / No PDU session context active for the received PDU session ID	X	X	-
10.1.4.1.NR5GC	UE-requested PDU session establishment / Abnormal / T3580	X	X	-
10.1.5.1.NR5GC	UE-requested PDU session modification	X	X	-
10.1.6.1.NR5GC	UE-requested PDU session release / Abnormal / collision with network-requested PDU session modification procedure	X	X	-
10.1.6.2.NR5GC	UE-requested PDU session release / Abnormal / collision with network-requested PDU session release procedure	X	X	-
11.1.1.NR5GC	MO MMTEL voice call setup from NR RRC_IDLE / EPS Fallback with redirection / Single registration mode with N26 interface / Success	X		-
11.1.1a.NR5GC	MO MMTEL enhanced voice service call setup from NR RRC_IDLE / EPS Fallback with redirection / Single registration mode with N26 interface / Success	X		-
11.1.2.NR5GC	MO MMTEL voice call setup from NR RRC_IDLE / EPS Fallback with redirection / Single registration mode without N26 interface / Success	X		-
11.1.3.NR5GC	MO MMTEL voice call setup from NR RRC_CONNECTED / EPS Fallback with handover / Single registration mode with N26 interface / Success	X	X	-
11.1.3a.NR5GC	MO MMTEL enhanced voice service call setup from NR RRC_CONNECTED / EPS Fallback with handover / Single registration mode with N26 interface / Success	X		-
11.1.4.NR5GC	MO MMTEL voice call setup from NR RRC_CONNECTED / EPS Fallback with redirection / Single registration mode with N26 interface / E-UTRAN cell selection using cell status barred / Success	X		-
11.1.5.NR5GC	MO MMTEL voice call setup from NR RRC_CONNECTED / EPS Fallback with redirection / Single registration mode without N26 interface / E-UTRAN cell selection using cell status reservation / Success	X		-
11.1.6.NR5GC	MT MMTEL voice call setup from NR RRC_IDLE / EPS Fallback with redirection / Single registration mode without N26 interface / Success	X		-
11.1.7.NR5GC	Emergency call setup from NR RRC_IDLE / Emergency Services Fallback to EPS with redirection / Single registration mode with N26 interface / Success	X	X	-
11.1.8.NR5GC	MO MMTEL voice call setup from NR RRC_CONNECTED / EPS Fallback with handover / Single registration mode with N26 interface / voiceFallbackIndication	X		-
11.1.9.NR5GC	MO MMTEL voice call setup from NR RRC_IDLE / EPS Fallback with redirection / Single registration mode with N26 interface / voiceFallbackIndication	X		-
11.3.1.NR5GC	UAC / Access Identity 0 / 0% access probability / MTSI MO speech call/SMSoIP	X	X	-
11.3.1a.NR5GC	UAC / Access Identity 0 / 0% access probability / Uplink User data transfer / RRC_INACTIVE	X	X	
11.3.2.NR5GC	UAC / Access Identity 0 / 0% access probability / Paging for MT Access/Emergency Call	X		-
11.3.3.NR5GC	UAC / Access Identity 0 / AC8 / RRC_INACTIVE / RNAUpdate/RRC Resume	X	X	-
11.3.4.NR5GC	UAC / Access Identity 0 / Registration procedure for mobility and periodic registration update / BarringPerPLMN/Implicit AC Barring List	X		-
11.3.6.NR5GC	UAC / Access Identity 2 / New cell not in the country of its HPLMN/EHPLMN 0% access probability/MCS indicator / HPLMN/0%/100% accessibility AC7/RRC_INACTIVE	X		-
11.3.7.NR5GC	UAC / Access Identity 11..15 / High Priority Access / HPLMN/0% accessibility AC2/Emergency call	X	X	-
11.3.8.NR5GC	UAC / Access Identity 0 / NR RRC_IDLE / Cell re-selection while T390 is running	X		-
11.3.9.NR5GC	UAC / Access Identity 0 / ODAC / PLMN / RPLMN / not EPLMN	X		-

11.4.2.NR5GC	5GMM-DEREGISTERED.LIMITED-SERVICE / Emergency call / Utilisation of emergency numbers stored on the ME / Initial registration for emergency services / Handling of forbidden PLMNs	X	X	-
11.4.3.NR5GC	5GMM-DEREGISTERED.NO-SUPI / Emergency call / Utilisation of emergency numbers stored on the ME / Initial registration for emergency services	X		-
11.4.4.NR5GC	5GMM-REGISTERED.ATTEMPTING-REGISTRATION-UPDATE T3346 running / Emergency call establishment / 5GMM-REGISTERED.NORMAL-SERVICE / Emergency call establishment before T3396 expiry	X	X	-
11.4.5.NR5GC	5GMM-REGISTERED.LIMITED-SERVICE / 5GMM-IDLE / Emergency call establishment and release / Handling of 5GS forbidden tracking areas for roaming	X		-
11.4.6.NR5GC	5GMM-REGISTERED.NON-ALLOWED-SERVICE / Emergency call establishment and release / Handling of non-allowed tracking areas	X		-
11.4.7.NR5GC	Handling of Local and Extended emergency numbers / Mobility	X		-
11.4.8.NR5GC	Handling of Local and extended emergency numbers / Switch-off and maximum local numbers storage	X		-
11.4.9.NR5GC	5GMM-DEREGISTERED.LIMITED-SERVICE No suitable cells in tracking area / Emergency call establishment and release	X		-
11.6.1.NR5GC	Data Off / MO Voice Call	X		-
11.6.2.NR5GC	Data Off / MO Video Call	X		
11.6.3.NR5GC	Data Off / SMSoIP	X		-

Annex B: NR TBS tables

B.1 Downlink TBS (normative)

B.1.0 Introduction

The tables in this clause are depending on parameters provided by RRC signalling as described in subclause 7.1.2.2.4.1. L_{RBs} is limited according to the DL scheduling scheme in subclause 7.1.2.2.3.

B.1.1 Downlink TBS using MCS index table 5.1.3.1-1

B.1.1.1 Downlink TBS using MCS index table 5.1.3.1-1, dmrs-AdditionalPosition = 0, number of CDM groups = 1

Table B.1.1.1-1: Void

Table B.1.1.1-2: Void

**Table B.1.1.1-3: TBS for PDSCH using MCS index table 5.1.3.1-1 with dmrs-AdditionalPosition = 0,
number of CDM groups = 1, PDSCH-duration = 12**

TBS	L_{RBs}	MCS	TBS	L_{RBs}	MCS	TBS	L_{RBs}	MCS	TBS	L_{RBs}	MCS
32	1	0	576	11	2	2216	12	9	5760	10	23
40	1	1	608	14	1	2280	16	7	5888	14	19
48	1	2	640	15	1	2408	17	7	6016	17	16
64	2	0	672	16	1	2472	15	8	6144	8	28
80	2	1	704	5	7	2536	6	19	6272	15	19
96	3	0	736	17	1	2600	16	8	6400	17	18
104	2	2	768	11	3	2664	13	11	6656	16	19
120	3	1	808	15	2	2728	15	9	6784	11	24
128	4	0	848	16	2	2792	17	8	6912	15	20
136	1	7	888	17	2	2856	14	11	7040	17	19
152	3	2	928	11	4	2976	16	9	7296	16	20
160	5	0	984	14	3	3104	17	9	7424	15	21
168	4	1	1032	15	3	3240	16	11	7552	14	22
176	1	9	1064	4	13	3368	14	12	7680	11	26
192	6	0	1128	16	3	3496	17	11	7808	17	20
208	5	1	1160	17	3	3624	12	14	7936	16	21
224	7	0	1192	5	12	3752	16	12	8064	15	22
240	2	6	1224	12	5	3840	13	14	8456	17	21
256	8	0	1256	15	4	3904	11	16	8712	16	22
272	4	3	1288	9	7	3968	17	12	9224	17	22
288	9	0	1320	13	5	4032	7	23	9480	13	27
304	7	1	1352	16	4	4096	14	14	9992	17	23
320	10	0	1416	17	4	4224	16	13	10248	14	27
336	8	1	1480	14	5	4352	13	15	10504	17	24
352	11	0	1544	15	5	4480	17	13	10760	14	28
368	7	2	1608	13	6	4608	14	15	11016	15	27
384	12	0	1672	16	5	4736	16	14	11272	17	25
408	6	3	1736	17	5	4864	13	18	11528	15	28
432	13	0	1800	11	8	4992	17	14	11784	16	27
456	14	0	1864	15	6	5120	7	27	12040	17	26
480	15	0	1928	5	18	5248	16	15	12296	16	28
504	12	1	2024	16	6	5376	13	19	12552	17	27
528	16	0	2088	17	6	5504	12	20	13064	17	28
552	17	0	2152	15	7	5632	17	15			

B.1.1.2 Downlink TBS using MCS index table 5.1.3.1-1, dmrs-AdditionalPosition = 1, number of CDM groups = 1

Table B.1.1.2-1: Void

Table B.1.1.2-2: Void

**Table B.1.1.2-3: TBS for PDSCH using MCS index table 5.1.3.1-1 with dmrs-AdditionalPosition = 1,
number of CDM groups = 1, PDSCH-duration = 12**

TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS
24	1	0	552	11	2	2280	13	9	6016	15	19
40	1	1	576	14	1	2408	17	7	6144	17	18
48	1	2	608	15	1	2472	16	8	6272	10	25
56	2	0	640	16	1	2536	13	11	6400	16	19
64	1	3	672	5	7	2600	9	14	6528	15	20
72	1	4	704	17	1	2664	17	8	6656	14	21
80	2	1	736	9	4	2728	14	11	6784	17	19
88	3	0	768	15	2	2792	16	9	6912	11	25
96	2	2	808	16	2	2856	10	14	7040	16	20
112	1	6	848	17	2	2976	17	9	7168	15	21
120	4	0	888	11	4	3104	16	11	7296	10	28
128	2	3	928	14	3	3240	11	14	7424	17	20
144	3	2	984	15	3	3368	17	11	7552	16	21
152	5	0	1032	16	3	3496	12	14	7680	15	22
160	4	1	1064	9	6	3624	16	12	7808	14	23
168	1	9	1128	17	3	3752	13	14	8064	17	21
184	6	0	1160	10	6	3824	17	12	8192	16	22
192	4	2	1192	15	4	3840	7	23	8456	14	24
208	5	1	1224	9	7	3904	9	20	8712	17	22
224	7	0	1256	8	8	3968	14	14	8968	16	23
240	8	0	1288	16	4	4032	16	13	9224	13	27
256	5	2	1320	3	20	4096	13	15	9480	17	23
272	9	0	1352	17	4	4224	17	13	9736	14	27
288	7	1	1416	14	5	4352	13	16	9992	15	26
304	10	0	1480	15	5	4480	16	14	10248	17	24
320	8	1	1544	13	6	4608	13	18	10504	15	27
336	11	0	1608	16	5	4736	15	15	10760	17	25
352	7	2	1672	17	5	4864	17	14	11016	15	28
368	12	0	1736	15	6	4992	14	18	11272	16	27
384	6	3	1800	13	7	5120	16	15	11528	17	26
408	13	0	1864	16	6	5248	12	20	11784	16	28
432	14	0	1928	14	7	5376	17	15	12040	17	27
456	11	1	2024	17	6	5504	10	23	12552	17	28
480	15	0	2088	15	7	5632	14	19			
504	16	0	2152	16	7	5760	17	16			
528	17	0	2216	10	12	5888	10	24			

B.1.1.3 Downlink TBS using MCS index table 5.1.3.1-1, dmrs-AdditionalPosition = 2, number of CDM groups = 2, modulation order <= 2

NOTE: The major purpose of the tables in this clause is to cope with PDSCH transmissions being restricted to $Q_m \leq 2$ (QPSK) like PDSCH transmissions being scheduled with P-RNTI, RA-RNTI, SI-RNTI (see TS 38.214 clause 5.1.3.1 [22]).

Table B.1.1.3-1: Void

Table B.1.1.3-2: Void

Table B.1.1.3-3: TBS for PDSCH using MCS index table 5.1.3.1-1 with dmrs-AdditionalPosition = 2, number of CDM groups = 2, modulation order ≤ 2 , PDSCH-duration = 12

TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS
24	1	0	128	4	1	256	4	4	504	4	8
32	1	1	136	1	9	272	5	3	552	7	5
40	1	2	144	6	0	288	7	2	576	6	6
48	2	0	152	3	3	320	6	3	640	5	8
64	2	1	160	5	1	336	3	7	672	7	6
72	3	0	176	7	0	368	7	3	736	5	9
80	2	2	184	2	6	384	6	4	768	6	8
88	1	6	192	6	1	408	5	5	808	7	7
96	4	0	208	5	2	432	3	9	888	7	8
104	2	3	224	7	1	456	7	4	1032	7	9
120	5	0	240	6	2	480	6	5			

B.1.1.4 Downlink TBS using MCS index table 5.1.3.1-1, dmrs-AdditionalPosition = 2, number of CDM groups = 2

Table B.1.1.4-1: Void

Table B.1.1.4-2: Void

Table B.1.1.4-3: TBS for PDSCH using MCS index table 5.1.3.1-1 with dmrs-AdditionalPosition = 2,
number of CDM groups = 2, PDSCH-duration = 12

TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS
24	1	0	456	14	1	1800	16	7	4736	17	16
32	1	1	480	9	3	1864	13	9	4864	15	19
40	1	2	504	15	1	1928	17	7	4992	17	18
48	2	0	528	16	1	2024	16	8	5120	10	25
64	2	1	552	7	5	2088	13	11	5248	16	19
72	3	0	576	17	1	2152	17	8	5376	15	20
80	2	2	608	15	2	2216	14	11	5504	17	19
88	1	6	640	12	3	2280	16	9	5760	16	20
96	4	0	672	16	2	2408	15	11	5888	14	22
104	2	3	704	17	2	2472	17	9	6016	17	20
120	5	0	736	14	3	2536	16	11	6272	16	21
128	4	1	768	8	6	2600	14	12	6400	14	23
136	1	9	808	15	3	2664	13	13	6528	11	28
144	6	0	848	16	3	2728	17	11	6656	17	21
152	3	3	888	11	5	2792	12	14	6784	15	23
160	5	1	928	17	3	2856	11	15	6912	12	27
176	7	0	984	15	4	2976	16	12	7168	17	22
184	2	6	1032	16	4	3104	17	12	7296	16	23
192	6	1	1064	11	6	3240	11	18	7424	13	27
208	8	0	1128	17	4	3368	16	13	7680	17	23
224	9	0	1160	12	6	3496	17	13	7808	16	24
240	6	2	1192	15	5	3624	14	15	8064	14	27
256	10	0	1224	13	6	3752	16	14	8192	17	24
272	11	0	1256	6	13	3824	9	22	8456	14	28
288	7	2	1288	16	5	3840	14	16	8712	17	25
304	12	0	1320	14	6	3904	15	15	8968	15	28
320	8	2	1352	17	5	3968	17	14	9224	16	27
336	13	0	1416	15	6	4032	7	27	9480	17	26
352	14	0	1480	13	7	4096	16	15	9736	17	27
368	11	1	1544	16	6	4224	13	19	10248	17	28
384	15	0	1608	17	6	4352	17	15			
408	16	0	1672	15	7	4480	16	16			
432	17	0	1736	12	9	4608	14	19			

B.1.2 Void

B.2 Uplink TBS (informative)

B.2.0 Introduction

The tables in this clause are depending on parameters provided by RRC signalling as described in subclause 7.1.2.3.2. L_{RBs} is limited to the minimum value of $N_{BWP}=24$ in accordance to Table 5.3.2-1 of TS 38.101-1/2 [5, 6].

For selection of the L_{RBs} / I_{MCS} pair for a particular TBS, the same criteria are applied, as specified for the DL in subclause 7.1.2.2.4.2 paragraph ' L_{RBs} / I_{MCS} pair determination'.

B.2.1 Uplink TBS using MCS index table 5.1.3.1-1

B.2.1.1 Uplink TBS using MCS index table 5.1.3.1-1, dmrs-AdditionalPosition = 0, number of CDM groups = 1

**Table B.2.1.1-1: TBS for PUSCH using MCS index table 5.1.3.1-1 with dmrs-AdditionalPosition = 0,
number of CDM groups = 1, PUSCH-duration = 14**

TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS
32	1	0	848	23	0	3496	19	8	8192	22	15
40	1	1	888	24	0	3624	22	7	8456	21	16
56	1	2	928	19	1	3752	23	7	8712	23	15
72	2	0	984	20	1	3824	8	19	8968	24	15
88	2	1	1032	21	1	3840	24	7	9224	23	16
104	3	0	1064	22	1	3904	19	9	9480	24	16
112	2	2	1128	23	1	3968	15	12	9736	23	18
136	3	1	1160	24	1	4032	22	8	9992	21	19
144	4	0	1192	20	2	4096	20	9	10248	24	18
152	2	3	1224	16	3	4224	23	8	10504	22	19
160	1	7	1256	21	2	4352	24	8	10760	23	19
176	5	0	1288	22	2	4480	22	9	11016	18	22
184	4	1	1320	17	3	4608	20	11	11272	24	19
208	1	9	1352	23	2	4736	23	9	11528	19	22
224	6	0	1416	24	2	4864	21	11	11784	23	20
240	5	1	1480	19	3	4992	24	9	12040	20	22
256	7	0	1544	20	3	5120	13	17	12296	24	20
272	2	6	1608	21	3	5248	23	11	12552	19	23
288	8	0	1672	14	5	5376	18	13	12808	23	21
304	4	3	1736	22	3	5504	24	11	13064	20	23
320	2	7	1800	23	3	5632	19	13	13320	22	22
336	9	0	1864	24	3	5760	22	12	13576	24	21
352	6	2	1928	20	4	5888	20	13	13832	21	23
368	10	0	2024	21	4	6016	23	12	14088	23	22
384	8	1	2088	22	4	6144	13	19	14344	22	23
408	11	0	2152	23	4	6272	24	12	14600	24	22
432	12	0	2216	19	5	6400	19	14	14856	21	24
456	6	3	2280	24	4	6528	22	13	15112	23	23
480	13	0	2408	21	5	6656	20	14	15624	22	24
504	14	0	2472	18	6	6784	23	13	15880	24	23
528	11	1	2536	22	5	6912	8	28	16136	23	24
552	15	0	2600	19	6	7040	21	14	16392	22	25
576	12	1	2664	23	5	7168	24	13	16896	24	24
608	16	0	2728	20	6	7296	13	21	17424	23	25
640	17	0	2792	24	5	7424	22	14	17928	24	25
672	18	0	2856	21	6	7552	19	16	18432	23	26
704	19	0	2976	18	7	7680	23	14	18960	24	26
736	20	0	3104	22	6	7808	21	15	19968	24	27
768	21	0	3240	23	6	7936	20	16	21000	24	28
808	22	0	3368	24	6	8064	24	14			

Table B.2.1.1-2: Void

B.2.1.2 Uplink TBS using MCS index table 5.1.3.1-1,
dmrs-AdditionalPosition = 1, number of CDM groups = 1

Table B.2.1.2-1: TBS for PUSCH using MCS index table 5.1.3.1-1 with dmrs-AdditionalPosition = 1,
number of CDM groups = 1, PUSCH-duration = 14

TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS
32	1	0	848	23	0	3496	19	8	8192	22	15
40	1	1	888	24	0	3624	22	7	8456	21	16
56	1	2	928	19	1	3752	23	7	8712	23	15
72	2	0	984	20	1	3824	8	19	8968	24	15
88	2	1	1032	21	1	3840	24	7	9224	23	16
104	3	0	1064	22	1	3904	19	9	9480	24	16
112	2	2	1128	23	1	3968	15	12	9736	23	18
136	3	1	1160	24	1	4032	22	8	9992	21	19
144	4	0	1192	20	2	4096	20	9	10248	24	18
152	2	3	1224	16	3	4224	23	8	10504	22	19
160	1	7	1256	21	2	4352	24	8	10760	23	19
176	5	0	1288	22	2	4480	22	9	11016	18	22
184	4	1	1320	17	3	4608	20	11	11272	24	19
208	1	9	1352	23	2	4736	23	9	11528	19	22
224	6	0	1416	24	2	4864	21	11	11784	23	20
240	5	1	1480	19	3	4992	24	9	12040	20	22
256	7	0	1544	20	3	5120	13	17	12296	24	20
272	2	6	1608	21	3	5248	23	11	12552	19	23
288	8	0	1672	14	5	5376	18	13	12808	23	21
304	4	3	1736	22	3	5504	24	11	13064	20	23
320	2	7	1800	23	3	5632	19	13	13320	22	22
336	9	0	1864	24	3	5760	22	12	13576	24	21
352	6	2	1928	20	4	5888	20	13	13832	21	23
368	10	0	2024	21	4	6016	23	12	14088	23	22
384	8	1	2088	22	4	6144	13	19	14344	22	23
408	11	0	2152	23	4	6272	24	12	14600	24	22
432	12	0	2216	19	5	6400	19	14	14856	21	24
456	6	3	2280	24	4	6528	22	13	15112	23	23
480	13	0	2408	21	5	6656	20	14	15624	22	24
504	14	0	2472	18	6	6784	23	13	15880	24	23
528	11	1	2536	22	5	6912	8	28	16136	23	24
552	15	0	2600	19	6	7040	21	14	16392	22	25
576	12	1	2664	23	5	7168	24	13	16896	24	24
608	16	0	2728	20	6	7296	13	21	17424	23	25
640	17	0	2792	24	5	7424	22	14	17928	24	25
672	18	0	2856	21	6	7552	19	16	18432	23	26
704	19	0	2976	18	7	7680	23	14	18960	24	26
736	20	0	3104	22	6	7808	21	15	19968	24	27
768	21	0	3240	23	6	7936	20	16	21000	24	28
808	22	0	3368	24	6	8064	24	14			

Table B.2.1.2-2: Void

B.2.1.3 Void

B.2.1.4 Void

B.2.1.5 Uplink TBS using MCS index table 5.1.3.1-1,
dmrs-AdditionalPosition = 2, number of CDM groups = 2Table B.2.1.5-1: TBS for PUSCH using MCS index table 5.1.3.1-1 with dmrs-AdditionalPosition = 2,
number of CDM groups = 2, PUSCH-duration = 14

TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS	TBS	LRBs	IMCS
24	1	0	672	21	0	2856	21	7	7552	24	15
40	1	1	704	23	0	2976	22	7	7680	15	22
48	1	2	736	24	0	3104	23	7	7808	23	16
56	2	0	768	19	1	3240	24	7	7936	22	18
64	1	3	808	20	1	3368	19	9	8064	24	16
72	1	4	848	21	1	3496	22	8	8192	23	18
80	2	1	888	22	1	3624	23	8	8456	21	19
88	3	0	928	23	1	3752	24	8	8712	24	18
96	2	2	984	24	1	3824	17	12	8968	19	21
112	1	6	1032	20	2	3840	22	9	9224	23	19
120	4	0	1064	21	2	3904	20	11	9480	24	19
128	2	3	1128	22	2	3968	14	14	9736	22	20
144	3	2	1160	23	2	4032	23	9	9992	23	20
152	5	0	1192	24	2	4096	21	11	10248	20	22
160	4	1	1224	19	3	4224	24	9	10504	24	20
168	1	9	1256	8	8	4352	13	16	10760	21	22
184	6	0	1288	20	3	4480	23	11	11016	23	21
192	4	2	1320	3	20	4608	24	11	11272	22	22
208	5	1	1352	21	3	4736	21	12	11528	24	21
224	7	0	1416	22	3	4864	22	12	11784	23	22
240	8	0	1480	18	4	4992	20	13	12040	20	24
256	5	2	1544	23	3	5120	23	12	12296	24	22
272	9	0	1608	24	3	5248	21	13	12552	21	24
288	7	1	1672	21	4	5376	24	12	12808	23	23
304	10	0	1736	15	6	5504	22	13	13064	22	24
320	8	1	1800	22	4	5632	20	14	13320	24	23
336	11	0	1864	23	4	5760	23	13	13576	20	26
352	7	2	1928	24	4	5888	10	24	13832	23	24
368	12	0	2024	20	5	6016	24	13	14088	22	25
384	6	3	2088	21	5	6144	18	16	14344	24	24
408	13	0	2152	22	5	6272	22	14	14600	23	25
432	14	0	2216	19	6	6400	19	16	14856	22	26
456	11	1	2280	23	5	6528	23	14	15368	24	25
480	15	0	2408	24	5	6656	21	15	15624	23	26
504	16	0	2472	18	7	6784	24	14	16136	24	26
528	17	0	2536	22	6	6912	22	15	16896	24	27
552	18	0	2600	19	7	7040	21	16	17424	24	28
576	14	1	2664	23	6	7168	20	18			
608	19	0	2728	20	7	7296	23	15			
640	20	0	2792	24	6	7424	22	16			

Table B.2.1.5-2: Void

B.2.2 Void

B.2.3 Void

Annex C (informative): Style guide and design principles

C.1 Style guide

The style guide specified in TS 36.523-3 [12] Annex B applies to the present document.

C.2 Design principles

The design principles specified in TS 36.523-3 [12] Annex B apply to the present document.

Annex D (normative): TTCN-3 definitions

D.0 Introduction

The present Annex D specifies the TTCN-3 type definitions used at the system interface to configure and control the SS.

In case of discrepancy between the content of the present Annex D and the equivalent TTCN-3 definitions / semantic requirements found in the TTCN modules provided as attachments to the present specification, the latter shall take precedence.

NOTE: This annex is automatically generated from the TTCN-3 modules provided as attachment to the present specification and containing the listed TTCN-3 type definitions.

D.1 NR_ASP_TypeDefs

Type definitions for configuration of the system simulator;

Common design principles:

Semantics of OMIT: unless specified otherwise, for all TTCN-3 type definitions used in ASPs omit means "keep as it is" =>

- on initial configuration in general all fields shall be provided
- no default values for fields are foreseen
- if necessary non-existence of information shall be explicitly configured (e.g. with a union of "no configuration" and "configuration parameters")
- fields within structures imported from the core spec are excepted from this rule
- if a sub-structure is explicitly excluded from this rule all fields and sub-fields shall be fully specified for each (re-)configuration

D.1.1 ASN1_Container

Definitions containing ASN.1 types for backward compatibility

NR_ASN1_ARFCN_ValueNR_Type

TTCN-3 Union Type	
Name	NR_ASN1_ARFCN_ValueNR_Type
Comment	
R15	ARFCN_ValueNR

NR_ASN1_UL_AM_RLC_Type

TTCN-3 Union Type	
Name	NR_ASN1_UL_AM_RLC_Type
Comment	
R15	UL_AM_RLC

NR_ASN1_DL_AM_RLC_Type

TTCN-3 Union Type	
Name	NR_ASN1_DL_AM_RLC_Type
Comment	
R15	DL_AM_RLC

NR_ASN1_UL_UM_RLC_Type

TTCN-3 Union Type	
Name	NR_ASN1_UL_UM_RLC_Type
Comment	
R15	UL_UM_RLC

NR_ASN1_DL_UM_RLC_Type

TTCN-3 Union Type	
Name	NR_ASN1_DL_UM_RLC_Type
Comment	
R15	DL_UM_RLC

NR_ASN1_PDSCH_Config_Type

TTCN-3 Union Type	
Name	NR_ASN1_PDSCH_Config_Type
Comment	
R15	PDSCH_Config

NR_ASN1_PDSCH_ConfigCommon_Type

TTCN-3 Union Type	
Name	NR_ASN1_PDSCH_ConfigCommon_Type
Comment	
R15	PDSCH_ConfigCommon

NR_ASN1_SPS_Config_Type

TTCN-3 Union Type	
Name	NR_ASN1_SPS_Config_Type
Comment	
R15	SPS_Config
R16	SPS_Config_R16

NR_ASN1_TDD_UL_DL_ConfigCommon_Type

TTCN-3 Union Type	
Name	NR_ASN1_TDD_UL_DL_ConfigCommon_Type
Comment	
R15	TDD_UL_DL_ConfigCommon

NR_ASN1_TDD_UL_DL_SlotConfig_Type

TTCN-3 Union Type	
Name	NR_ASN1_TDD_UL_DL_SlotConfig_Type
Comment	
R15	TDD_UL_DL_SlotConfig

NR_ASN1_FrequencyInfoDL_Type

TTCN-3 Union Type	
Name	NR_ASN1_FrequencyInfoDL_Type
Comment	
R15	FrequencyInfoDL

NR_ASN1_FrequencyInfoUL_Type

TTCN-3 Union Type	
Name	NR_ASN1_FrequencyInfoUL_Type
Comment	
R15	FrequencyInfoUL

NR_ASN1_BWP_UplinkCommon_Type

TTCN-3 Union Type	
Name	NR_ASN1_BWP_UplinkCommon_Type
Comment	
R15	BWP_UplinkCommon

NR_ASN1_BWP_UplinkDedicated_Type

TTCN-3 Union Type	
Name	NR_ASN1_BWP_UplinkDedicated_Type
Comment	
R15	BWP_UplinkDedicated

NR_ASN1_RACH_ConfigDedicated_Type

TTCN-3 Union Type	
Name	NR_ASN1_RACH_ConfigDedicated_Type
Comment	
R15	RACH_ConfigDedicated

NR_ASN1_SI_RequestConfig_Type

TTCN-3 Union Type	
Name	NR_ASN1_SI_RequestConfig_Type
Comment	
R15	SI_RequestConfig

NR_ASN1_PDSCH_ServingCellConfig_Type

TTCN-3 Union Type	
Name	NR_ASN1_PDSCH_ServingCellConfig_Type
Comment	
R15	PDSCH_ServingCellConfig

NR_ASN1_PUSCH_ServingCellConfig_Type

TTCN-3 Union Type	
Name	NR_ASN1_PUSCH_ServingCellConfig_Type
Comment	
R15	PUSCH_ServingCellConfig

NR_ASN1_SearchSpace_Type

TTCN-3 Union Type	
Name	NR_ASN1_SearchSpace_Type
Comment	
R15	SearchSpace

NR_ASN1_ControlResourceSet_Type

TTCN-3 Union Type		
Name	NR_ASN1_ControlResourceSet_Type	
Comment		
R15	ControlResourceSet	

NR_ASN1_BWP_Type

TTCN-3 Union Type		
Name	NR_ASN1_BWP_Type	
Comment		
R15	BWP	

NR_ASN1_DRX_Config_Type

TTCN-3 Union Type		
Name	NR_ASN1_DRX_Config_Type	
Comment		
R15	DRX_Config	

NR_ASN1_MeasGapConfig_Type

TTCN-3 Union Type		
Name	NR_ASN1_MeasGapConfig_Type	
Comment		
R15	MeasGapConfig	

NR_ASN1_MAC_CellGroupConfig_Type

TTCN-3 Union Type		
Name	NR_ASN1_MAC_CellGroupConfig_Type	
Comment		
R15	MAC_CellGroupConfig	

NR_ASN1_PhysicalCellGroupConfig_Type

TTCN-3 Union Type		
Name	NR_ASN1_PhysicalCellGroupConfig_Type	
Comment		
R15	PhysicalCellGroupConfig	

NR_ASN1_RateMatchPattern_Type

TTCN-3 Union Type		
Name	NR_ASN1_RateMatchPattern_Type	
Comment		
R15	RateMatchPattern	

NR_ASN1_RateMatchPatternLTE_CRS_Type

TTCN-3 Union Type		
Name	NR_ASN1_RateMatchPatternLTE_CRS_Type	
Comment		
R15	RateMatchPatternLTE_CRS	

D.1.2 System_Configuration

Formal ASP Definitions for system configuration

NR_SystemRequest_Type

TTCN-3 Union Type		
Name	NR_SystemRequest_Type	
Comment		
Cell	NR_CellConfigRequest_Type	configure/release a cell
CellAttenuationList	NR_CellAttenuationList_Type	power attenuation for one or several cells; all cells included in the list shall be changed at the same time; all cells in the list shall reach the new cell power within a maximum of 100ms (10 frames) as according to TS 38.523-3 clause 7.1.4.2 CellId: In the common ASP part the CellId shall be set - to the cell the timing information refers to if activation time shall be applied - to nr_Cell_NonSpecific when there is no activation time TimingInfo: 'Now' (in general, but activation time may be used also)
RadioBearerList	NR_RadioBearerList_Type	configure/release one or several SRBs and/or DRBs at an SpCell NOTE: RBs are not configured in an SCell
EnquireTiming	Null_Type	get current timing information for the given cell TimingInfo : 'Now'
AS_Security	NR_AS_Security_Type	StartRestart/Release of AS security
SystemIndCtrl	NR_System_IndicationControl_Type	to configure SS to generate system indications
PdcpCount	NR_PDCP_CountReq_Type	to set or enquire PDCP COUNT for one or more RBs
DciTrigger	NR_DCI_Trigger_Type	to trigger a specific DCI to be transmitted on PDCCH (e.g. PDCCH order)
Paging	NR_PagingTrigger_Type	to trigger SS to send paging at the given paging occasion (as calculated in TTCN) NOTE: The SS shall use the DCI configuration as provided by NR_PcchConfig_Type; the DCI may or may not carry a short message but it in any case it shall indicate presence
MacCommandTrigger	NR_MAC_ControlElementDL_Type	to trigger a specific MAC control element to be transmitted to the UE
L1_TestMode	NR_L1_TestMode_Type	to Set L1/MAC in special Test modes e.g. DL CRC etc. per default (at initial configuration) no test mode is activated
PdcpHandoverControl	NR_PDCP_HandoverControlReq_Type	to inform the target cell about the handover (or PSCell change) procedure.
DeltaValues	NR_Band_SsbForDelta_Type	to provide the primary and secondary frequency info for deriving the delta values
SpsCg	NR_SPS_CG_ActDeact_Type	to configure/activate or release/deactivate DL SPS assignment or UL configured grant type 2 scheduling

NR_SystemConfirm_Type

TTCN-3 Union Type		
Name	NR_SystemConfirm_Type	
Comment	confirmations for system configuration; in general to be sent after the configuration has been done	
Cell	Null_Type	(no further parameters from SS)
CellAttenuationList	Null_Type	(no further parameters from SS) NOTE 1: the confirmation shall be sent when all cells have changed power levels NOTE 2: for the CellId in the common ASP part the same rules are applied as for the SYSTEM REQ
RadioBearerList	Null_Type	(no further parameters from SS)
EnquireTiming	Null_Type	the cell's timing information is contained in the TimingInfo of the ASP's common part
AS_Security	Null_Type	(no further parameters from SS)
SystemIndCtrl	Null_Type	(no further parameters from SS)
PdcpCount	NR_PDCP_CountCnf_Type	as response to 'Get' a list is returned containing COUNT information for the requested RBs
DciTrigger	Null_Type	(no further parameters from SS)
MacCommandTrigger	Null_Type	(no further parameters from SS)
L1_TestMode	Null_Type	confirmation for L1 test mode
PdcpHandoverControl	Null_Type	confirmation for PDCP handover control
DeltaValues	UE_NR_DeltaValues_Type	Delta values to be used for primary and secondary band
SpsCg	Null_Type	confirmation for DL SPS or UL configured grant type 2 Activation/Deactivation

NR_SystemIndication_Type

TTCN-3 Union Type		
Name	NR_SystemIndication_Type	
Comment		
Error	charstring	indicates an error situation in SS; is not explicitly handled in TTCN but causes an INCONC due to default behaviour; an additional error code can be signalled in the common part of the ASP; SS shall raise an error when in TS 38.523-3 or in any other ASP definitions
RlcDiscardInd	NR_RlcDiscardInd_Type	indicates discarded PDUs
MAC	NR_MAC_ControlElementUL_Type	indicates MAC control element being receive from the UE
RachPreamble	NR_RachPreamble_Type	RACH preamble being sent by the UE
SchedReq	Null_Type	indication for scheduling request sent by the UE
UL_HARQ	HARQ_Type	to report the UL HARQ as received on PUCCH or PUSCH for corresponding DL transmission
HarqError	NR_HarqError_Type	indicates detection of HARQ error: 1. HARQ CRC error for UL data 2. HARQ NACK from the UE unless SS is configured to report HARQ ACK/NACK

D.1.3 Cell_Configuration

Specific Info for Cell Configuration Primitive

D.1.3.1 Cell_Configuration_Common

NR_ASP_TypeDefs: Constant Definitions

TTCN-3 Basic Types			
tsc_NR_CellAttenuation_Off	NR_Attenuation_Type	{Off:=true}	

Cell_Configuration_Common: Basic Type Definitions

TTCN-3 Basic Types		
NR_InitialAttenuation_Type	NR_Attenuation_Type (tsc_NR_CellAttenuation_Off)	Attenuation restricted to 'Off'

NR_CellConfigRequest_Type

TTCN-3 Union Type		
Name	NR_CellConfigRequest_Type	
Comment		
AddOrReconfigure	NR_CellConfigInfo_Type	for cell configuration: TimingInfo : 'Now' for initial configuration; specific TimingInfo may be used for reconfiguration ControlInfo : FollowOnFlag:=false (unless explicitly specified otherwise in TS 38.523-3 clause 7)
Release	Null_Type	to remove a cell completely - CellId : identifier of the cell to be released; nr_Cell_NonSpecific, in case all cells shall be released TimingInfo : 'Now' ControlInfo : FollowOnFlag:=false

NR_CellConfigInfo_Type

TTCN-3 Record Type			
Name	NR_CellConfigInfo_Type		
Comment	common information for initial cell configuration or reconfiguration; in case of reconfiguration omit means 'keep configuration as it is'		
StaticResourceConfig	NR_SS_StaticCellResourceConfig_Type	opt	mandatory for the initial configuration; to be omitted afterwards
CellConfigCommon	NR_CellConfigCommon_Type	opt	common configuration parameters which are not specific to physical layer (or any other layer)
PhysicalLayer	NR_CellConfigPhysicalLayer_Type	opt	Physical layer configuration: physical channels, signals and BWPs for UL and DL; DCI
BcchConfig	NR_BcchConfig_Type	opt	configuration of BCCH/BCH; SS is triggered to configure RLC/MAC accordingly; BCCH data on the PDSCH is distinguished by the SI-RNTI PBCH: MIB; PDSCH: scheduling and resource allocation; SIBs
PcchConfig	NR_PcchConfig_Type	opt	configuration of PCCH/PCH; SS is triggered to configure RLC/MAC accordingly; PCCH data on the PDSCH is distinguished by the P-RNTI (needed even to modify SI => shall be configured for CELL_BROADCASTING)
RachProcedureConfig	NR_RachProcedureConfig_Type	opt	to configure the SS's behaviour for the RACH procedure; may be omitted at initial configuration e.g. in case that the cell shall not have an uplink; NOTE: there is no way to explicitly remove the RACH procedure configuration after it has been configured for a cell
DcchDtchConfig	NR_DcchDtchConfig_Type	opt	Parameters related to DCCH/DTCH in UL and DL
ServingCellConfig	NR_ServingCellConfig_Type	opt	To be configured at initial configuration of a cell: for non-CA scenarios it shall be either 'SpCell' or 'None' ('None' applies for pure neighbouring cells)

NR_SS_StaticCellResourceConfig_Type

TTCN-3 Record Type			
Name	NR_SS_StaticCellResourceConfig_Type		
Comment	capabilities of a cell according to the initial condition of a test case, to allow resource management at SS implementation (see TS 38.508-1 clause 6.3.3)		
CA_Capability	NR_CellCA_Capability_Type		capability of a cell in context of carrier aggregation

NR_CellCA_Capability_Type

TTCN-3 Enumerated Type	
Name	NR_CellCA_Capability_Type
Comment	static information about the cell's capability for carrier aggregation, not being changed during a test case; may be used for resource management at the SS; according to TS 38.508-1 clause 6.3.3.2
SpCell	Cell can be used as SpCell during a test case (primary cell of a master or secondary cell group; TS 37.340 clause 3.1); normal case i.e. applicable even when SpCell is the only cell of the cell group
Scell_Active	Active SCell: An NR cell that may become an SCell at any point of time during the test case and which, while being an SCell, may be activated
Scell_Inactive	Inactive SCell: An NR cell that may become an SCell at any point of time during the test case but is never activated while being an SCell
None	e.g. when a cell is not used for connected mode during a test case (pure neighbouring cell)

NR_CellConfigCommon_Type

TTCN-3 Record Type			
Name	NR_CellConfigCommon_Type		
Comment	common configuration parameters which are not specific to physical layer (or any other layer)		
C_RNTI	RNTI_Value_Type	opt	(pre-)configured C-RNTI used by physical layer and by MAC layer; affects scrambling of PDSCH/PUSCH and CRC of PDCCH(s); shall be used implicitly in RACH procedure (i.e. as CE in RAR)
CellTimingInfo	CellTimingInfo_Type	opt	
InitialCellPower	NR_InitialCellPower_Type	opt	reference cell power of each antenna in DL NOTE 1: the power of an antenna may be reduced by antenna specific configuration NOTE 2: in general the power may be adjusted on a per resource element basis => all physical channel/signal power settings shall be adjusted relatively to the reference cell power; if there are more than one TX antennas each one may have its own attenuation; independently from those relative power settings the cell power can easily be adjusted by just changing the reference power

NR_Attenuation_Type

TTCN-3 Union Type			
Name	NR_Attenuation_Type		
Comment	attenuation of the reference power		
Value	integer (0..149)		cell power reference power reduced by the given attenuation (value is in dB); corresponds to AbsoluteCellPower_Type
Off	Null_Type		=< -145dBm according to TS 38.508-1 Table 6.2.2.1-3

NR_InitialCellPower_Type

TTCN-3 Record Type			
Name	NR_InitialCellPower_Type		
Comment			
MaxReferencePower	NR_AbsoluteCellPower_Type		maximum value of cell reference power (in dBm/SCS as per TS 38.508-1, clause 6.2.2); a cell is initialised with this reference power; its value is the upper bound of the cell power during the test case
Attenuation	NR_InitialAttenuation_Type		initial attenuation

D.1.3.2 PhysicalLayer

NR_CellConfigPhysicalLayer_Type

TTCN-3 Record Type			
Name	NR_CellConfigPhysicalLayer_Type		
Comment	Common configuration of physical channels, signals and BWPs		
Common	NR_CellConfigPhysicalLayerCommon_Type	opt	Configuration common for UL and DL
Downlink	NR_CellConfigPhysicalLayerDownlink_Type	opt	DL configuration
Uplink	NR_CellConfigPhysicalLayerUplink_Type	opt	UL configuration; may be omitted at initial configuration e.g. in case that the cell shall not have an uplink; NOTE: there is no way to explicitly remove the uplink configuration after it has been configured for a cell

D.1.3.2.1 PhysicalLayer_Common

NR_CellConfigPhysicalLayerCommon_Type

TTCN-3 Record Type			
Name	NR_CellConfigPhysicalLayerCommon_Type		
Comment	Configuration common for UL and DL		
PhysicalCellId	PhysCellId	opt	Physical-layer cell identity according to 38.211 clause 7.4.2.1; EN-DC: corresponds to ServingCellConfigCommon.physCellId
DuplexMode	NR_DuplexMode_Type	opt	FDD or TDD; FDD/TDD specific parameters

NR_DuplexMode_Type

TTCN-3 Union Type			
Name	NR_DuplexMode_Type		
Comment	FDD/TDD and maybe other types of duplex mode; in general FDD/TDD mode is determined from the frequency band		
FDD	NR_FDD_Info_Type		
TDD	NR_TDD_Info_Type		

NR_FDD_Info_Type

TTCN-3 Record Type			
Name	NR_FDD_Info_Type		
Comment	FDD (paired spectrum) specific parameters: no further parameters defined for FDD		

NR_TDD_UL_DL_SlotConfigList_Type

TTCN-3 Record of Type			
Name	NR_TDD_UL_DL_SlotConfigList_Type		
Comment	corresponds to ServingCellConfig.tdd-UL-DL-ConfigurationDedicated		
record of NR_ASN1_TDD_UL_DL_SlotConfig_Type			

NR_TDD_Config_Type

TTCN-3 Record Type			
Name	NR_TDD_Config_Type		
Comment	Common and dedicated TDD configuration		
Common	NR_ASN1_TDD_UL_DL_ConfigCommon_Type	opt	Common TDD configuration as used in TS 38.213 clause 11 corresponding to ServingCellConfigCommon.tdd-UL-DL-ConfigurationCommon; shall be present for TDD at initial configuration
Dedicated	NR_TDD_UL_DL_SlotConfigList_Type	opt	Dedicated TDD configuration for single slots over-ruling the flexible slots of the common configuration; corresponds to ServingCellConfig.tdd-UL-DL-ConfigurationDedicated; shall be present for TDD at initial configuration: the list is empty when there is no dedicated slot configuration; (omit means "keep as it is"); NOTE: The dedicated configuration can only exist together with common configuration as a single slot configuration is related to the periodicity given by the common configuration (see TDD-UL-DL-SlotConfig field description for slotIndex in TS 38.331)

NR_TDD_Info_Type

TTCN-3 Union Type		
Name	NR_TDD_Info_Type	
Comment	cell specific parameters for TDD (unpaired spectrum)	
Config	NR_TDD_Config_Type	specific TDD configuration with sets of symbols for UL and DL and possibly flexible symbols which are not specified as UL or DL (corresponding to TDD-UL-DL-ConfigurationCommon and TDD-UL-DL-ConfigDedicated according to TS 38.213 clause 11.1)
FullFlexible	Null_Type	No TDD configuration is provided to the UE: all slots and symbols are considered as flexible according to TS 38.213 clause 11.1

D.1.3.2.2 PhysicalLayer_Downlink

PhysicalLayer_Downlink: Basic Type Definitions

TTCN-3 Basic Types		
NR_EPRES_Ratio_Type	integer	Energy per resource element relative to given reference signal or abstract reference cell power (dB)

NR_CellConfigPhysicalLayerDownlink_Type

TTCN-3 Record Type			
Name	NR_CellConfigPhysicalLayerDownlink_Type		
Comment	physical layer configuration at the SS for the downlink of a cell		
FrequencyInfoDL	NR_ASN1_FrequencyInfoDL_Type	opt	carries information about location of SSB and reference resource block (point A) in frequency domain and about associated frequency bands (list of FreqBandIndicatorNR)
SSPBCHBlock	NR_SSB_Config_Type	opt	Configuration of SS/PBCH-block transmission
PdschCellLevelConfig	NR_PDSCH_CellLevelConfig_Type	opt	Cell-level configuration of PDSCH being applicable independent from the BWP a PDSCH is associated to
BWPs	NR_DownlinkBWPs_Type	opt	Configuration of DL BWPs and their associated physical channels and signals
CsiConfig	NR_CSI_Config_Type	opt	Configuration of CSI Reference Signals

D.1.3.2.2.1 SS_PBCH_Block

SS/PBCH block configuration according to TS 38.213 clause 4.1:

SS/PBCH block consists of synchronisation Signals (PSS and SSS) and PBCH (see e.g. TS 38.300 figure 5.2.4-1); a demodulation reference signal (DM-RS) is frequency multiplexed on the PBCH symbols (TS 38.300 clause 5.2.4, TS 38.211 clause 7.4.1.4) and

the DM-RS sequence corresponds to the three LSBs of the SS/PBCH index (TS 38.213 clause 4.1 and TS 38.211 clause 7.4.1.4.1);

the SS/PBCH index needs to be maintained by the SS (as the system frame number);

the physical layer cell id is carried by PSS and SSS according to TS 38.211 clause 7.4.2

SS_PBCH_Block: Basic Type Definitions

TTCN-3 Basic Types		
NR_SSB_Periodicity_Type	ServingCellConfigCommon.ssb_periodicityServingCell	
NR_SSB_PositionsInBurst_Type	ServingCellConfigCommon.ssb_PositionsInBurst	

NR_SS_BlockPattern_Type

TTCN-3 Enumerated Type	
Name	NR_SS_BlockPattern_Type
Comment	TS 38.101-1 Table 5.4.3.3-1 specifies for a given operating band and SS Block subcarrier spacing which case of TS 38.213 clause 4.1 to be applied => first symbol indexes for candidate SS/PBCH blocks and the size of the bitmap are determined accordingly
caseA	15 kHz subcarrier spacing: 4 bits (<= 3GHz) or 8 bits (> 3GHz); first symbol indexes: {2,8} + 14*n
caseB	30 kHz subcarrier spacing: 4 bits (<= 3GHz) or 8 bits (> 3GHz); first symbol indexes: {4,8,16,20} + 28*n
caseC	30 kHz subcarrier spacing: 4 bits (<= 3GHz) or 8 bits (> 3GHz); first symbol indexes: {2,8} + 14*n
caseD	120 kHz subcarrier spacing: 64 bits (> 6GHz); first symbol indexes: {4,8,16,20} + 28*n
caseE	240 kHz subcarrier spacing: 64 bits (> 6GHz); first symbol indexes: {8,12,16,20,32,36,40,44} + 56*n

NR_SSB_Beam_Type

TTCN-3 Record Type			
Name	NR_SSB_Beam_Type		
Comment			
SsbIndex	integer	opt	SSB index starting at 0 according to TS 38.213 clause 4.1
Attenuation	integer	opt	Beam power: reference power for SSB transmissions relative to the actual reference cell power (MaxReferencePower - Attenuation of cell power); the beam power is reduced by 'Attenuation' relative to the actual reference cell power; the attenuation may be negative in which case the power level of the SSB transmission is higher than the actual cell power

NR_SSB_BeamArray_Type

TTCN-3 Record of Type	
Name	NR_SSB_BeamArray_Type
Comment	
record of NR_SSB_Beam_Type	

NR_SSB_BurstConfig_Type

TTCN-3 Record Type			
Name	NR_SSB_BurstConfig_Type		
Comment	To describe the SSB burst		
BlockPattern	NR_SS_BlockPattern_Type	opt	case A..E according to 38.213 clause 4.1; mandatory for initial configuration, "keep as it is" in case of omit otherwise
PositionsInBurst	NR_SSB_PositionsInBurst_Type	opt	"SSB-transmitted" parameter as used by the UE to rate-match around SSBs acc. 38.214 cl. 5.1; 4, 8 or 64 bits; mandatory for initial configuration, "keep as it is" in case of omit otherwise
BeamArray	NR_SSB_BeamArray_Type	opt	beam specific configuration: if omit, all SSBs as configured in 'Bitmap' shall be transmitted with no attenuation (i.e. using the actual reference cell power); if present only the SSBs contained in the array shall be transmitted (with beam power as according to their entry in the array); when the array contains beams with an SSB index not included in 'Bitmap', the SS may raise an error

NR_SSB_EPRES_Type

TTCN-3 Record Type			
Name	NR_SSB_EPRES_Type		
Comment	EPRE for PBCH and related signals relative to the reference power (EPRE_SSB#N) of an SSB (beam) given by SSB index N		
PbchToDmrs	NR_EPRE_Ratio_Type	opt	transmit power for resource elements (REs) being occupied by PBCH; EPRE ratio of PBCH to PBCH DMRS
PssToSss	NR_EPRE_Ratio_Type	opt	Primary synchronization signal; 38.211 clause 7.4.2.2; EPRE ratio of PSS to SSS
SssToSsbBeam	NR_EPRE_Ratio_Type	opt	Secondary synchronization signal; 38.211 clause 7.4.2.3; EPRE ratio of SSS to EPRE_SSB#N; in general the SSS power is the same as the reference beam power, i.e. SssToSsbBeam = 0dB
DmrsToSss	NR_EPRE_Ratio_Type	opt	DM-RS associated to PBCH (Demodulation reference signals for PBCH; 38.211 clause 7.4.1.4); EPRE ratio of PBCH DMRS to SSS

NR_SSB_Config_Type

TTCN-3 Record Type			
Name	NR_SSB_Config_Type		
Comment	Synchronization signals and PBCH; TS 38.211 clause 7.4.3, TS 38.300 clause 5.2.4; NOTE: SSB location in frequency domain is specified by NR_CellConfigPhysicalLayerDownlink_Type.FrequencyInfoDL.absoluteFrequencySSB		
SubCarrierSpacing	SubcarrierSpacing	opt	sub-carrier spacing for SS/PBCH block (as specified by ServingCellConfigCommon.subcarrierSpacing in case of non-initial access): According to comments for ServingCellConfigCommon.subcarrierSpacing "Only the values 15 or 30 kHz (<6GHz), 120 or 240 kHz (>6GHz) are applicable"; this corresponds to tables 13-1 .. 13.10 in TS 38.213 where only 15 or 30 kHz and 120 or 240 kHz are considered for SS/PBCH block sub-carrier spacing; and it corresponds to 38.211 clause 7.4.3.1 defining SS/PBCH block type A as numerology=0,1 and type B as numerology=3,4 (i.e. there is no numerology=2 for SS/PBCH block) NOTE 1: in contrast to SS/PBCH block sub-carrier spacing the sub-carrier spacing for SIB1, Msg.2/4 for initial access and broadcast SI-messages is restricted to 15kHz or 30kHz for carrier frequency <= 6 GHz and 60kHz or 120kHz for carrier frequency > 6 GHz (see comments for MIB.subCarrierSpacingCommon and TS 38.213 tables 13-1 .. 13.10) NOTE 2: As long as there is no sub-carrier spacing of 60kHz (numerology=2) for the SS/PBCH block acc. to TS 38.211 Table 4.2-1 there is no extended cyclic prefix either (even though Table 4.2-1 is mainly for BWP there is no indication for any extended cyclic prefix for SS/PBCH block) => there is no need to specify the cyclic prefix for SS/PBCH block configuration (normal cyclic prefix is assumed for all cases)
SubcarrierOffset	integer	opt	k_SSB as defined in TS 38.211 clause 7.4.3.1; needs to be consistent with absoluteFrequencySSB and absoluteFrequencyPointA as provided by FrequencyInfoDL to the UE and the SS
Periodicity	NR_SSB_Periodicity_Type	opt	in multiples of half frames (5ms)
HalfFrameOffset	integer	opt	to specify together the Periodicity the half-frames in which the SSB burst shall be transmitted: - for Periodicity = 5ms SSB burst in every half-frame - for a Periodicity >= 5ms SSB burst in frames with (SFN mod (Periodicity / 10)) = (HalfFrameOffset / 2) and in the - lower half-frame for (HalfFrameOffset mod 2) = 0 - higher half-frame for (HalfFrameOffset mod 2) = 1 Depending on the Periodicity the HalfFrameOffset has a range of 0 .. ((Periodicity / 5) - 1) Unless explicitly required by a test case the HalfFrameOffset is always 0
BurstConfig	NR_SSB_BurstConfig_Type	opt	to specify the burst configuration and a bitmap for the SS/PBCH block candidates which are eventually used for transmission of SS/PBCH blocks in a half frame
RelativeTxPower	NR_SSB_EPRES_Type	opt	transmit power for PBCH and SS/PBCH signals NOTE: Parameter SS-PBCHBlockPower is provided to the UE in SIB1.ss-PBCH-BlockPower, ServingCellConfigCommon.ss-PBCH-BlockPower) as referenceSignalPower; The UE uses referenceSignalPower to determine the transmission power of the PRACH (TS 38.213 clause 7.4) => For signalling tests there seems to be no need to provide this parameter to the SS (nevertheless the value provided to the UE shall not conflict with the power settings for the SSB at the SS)

D.1.3.2.2.2 CSI_Configuration

NR_CSI_RS_Periodicity_Type

TTCN-3 Union Type		
Name	NR_CSI_RS_Periodicity_Type	
Comment	NOTE: may be extended with 'Aperiodic' branch if needed	
PeriodicityAnd Offset	CSI_ResourcePeriodicityAndOffset	periodicity and slot offset as used by NZP-CSI-RS-Resource for periodic and semi-persistent configuration; the periodicity is given in the number of slots whereas CSI-RS-Resource-Mobility.slotConfig specifies the periodicity in milliseconds => to configure the CSI-RS configuration corresponding to CSI-RS-Resource-Mobility the periodicity needs to be converted in TTCN depending on the numerology

NR_NZP_CSI_RS_Config_Type

TTCN-3 Record Type			
Name	NR_NZP_CSI_RS_Config_Type		
Comment	Channel-state information reference signal (CSI) according to TS 38.211 clause 7.4.1.5, TS 38.214 clause 5.1.6.1 and clause 5.2.2.3; the UE may be configured with non-zero-power (NZP) CSI-RS by a) NZP-CSI-RS-Resource (contained in CSI-MeasConfig) or b) CSI-RS-Resource-Mobility (contained in MeasConfig) (according to TS 38.211 clause 7.4.1.5.1)		
ScramblingId	ScramblingId	opt	INTEGER(0..1023); Scrambling ID for CSI-RS as provided to the UE in NZP-CSI-RS-Resource.scramblingID or CSI-RS-Resource-Mobility.sequenceGenerationConfig
ResourceMapping	CSI_RS_ResourceMapping	opt	resource mapping as used in NZP-CSI-RS-Resource; there is the following mapping with CSI-RS-CellMobility - frequencyDomainAllocation: For CSI-RS-Resource-Mobility there are row1 or row2 only - nrofPorts: One port for CSI-RS-Resource-Mobility (according to TS 38.211 Table 7.4.1.5.3-1 for Row=1 and Row=2) - firstOFDMSymbolInTimeDomain (I0): same for CSI-RS-ResourceMapping and CSI-RS-Resource-Mobility - firstOFDMSymbolInTimeDomain2 (I1): Not present for CSI-RS-Resource-Mobility (there is no I1 for Row=1 and Row=2 in Table 7.4.1.5.3-1 of TS 38.211) - cdm-Type: No CDM for CSI-RS-Resource-Mobility (according to Row=1 and Row=2 in Table 7.4.1.5.3-1 of TS 38.211) - density: ENUMERATED {d1,d3} for CSI-RS-CellMobility to be mapped to CHOICE (one, three) of CSI-RS-ResourceMapping - freqBand: According to TS 38.331 a) CSI-FrequencyOccupation specifies the frequency range for CSI-RS relative to a given BWP (CSI-ResourceConfig.bwp-id) whereas b) CSI-RS-CellMobility specifies the position relative to point A (given by MeasObjectNR.refFreqCSI-RS) => As there is no equivalent to CSI-ResourceConfig.bwp-id for variant b), 'OffsetToFreqBand' is used to fully specify the frequency range (see below)
OffsetToFreqBand	integer	opt	The frequency band for CSI-RS starts at OffsetToFreqBand + ResourceMapping.freqBand.startingRB from point A. a) When the UE is configured with NZP-CSI-RS-Resource: ResourceMapping.freqBand shall be set to the same value as signalled to the UE and OffsetToFreqBand shall be set offsetToCarrier + BWP.RB_Start. (NOTE: in general RB_Start is 0 in BWP.locationAndBandwidth: i.e. BWP.RB_Start=0 => OffsetToFreqBand = offsetToCarrier) b) When the UE is configured with CSI-RS-CellMobility: OffsetToFreqBand and ResourceMapping.freqBand.startingRB shall be set so that OffsetToFreqBand + ResourceMapping.freqBand.startingRB = CSI-RS-CellMobility.csi-rs-MeasurementBW.startPRB. (NOTE: In general it shall be OffsetToFreqBand = offsetToCarrier and ResourceMapping.freqBand.startingRB = CSI-RS-CellMobility.csi-rs-MeasurementBW.startPRB - offsetToCarrier)
Periodicity	NR_CSI_RS_Periodicity_Type	opt	
Attenuation	integer	opt	Beam power: reference power for CSI-RS transmissions relative to the actual reference cell power (MaxReferencePower - Attenuation of cell power); see NR_SSB_Beam_Type

NR_NZP_CSI_RS_ConfigList_Type

TTCN-3 Record of Type	
Name	NR_NZP_CSI_RS_ConfigList_Type
Comment	Array with set of CSI reference signals; each CSI-RS may belong to a different beam
record of NR_NZP_CSI_RS_Config_Type	

NR_CSI_Config_Type

TTCN-3 Union Type		
Name	NR_CSI_Config_Type	
Comment	Primitive for configuration CSI at the SS NOTE: further branches may be added e.g. to support CSI-IM	
CSI_RS	NR_NZP_CSI_RS_ConfigList_Type	Configuration of CSI reference signals: Configuration of CSI reference signals does not necessarily mean that there is CSI reporting but CSI-RS is also needed for - link monitoring (beam failure scenarios) and - neighbouring cell measurement. For these cases periodic CSI-RS is used and may be started immediately (TimingInfo=Now) or at a specific point in time with periodicity as specified by Periodicity.PeriodicityAndOffset. Semi-persistent CSI-RS could be realised in the same way as periodic CSI-RS (but with specific TimingInfo). Aperiodic CSI-RS is not considered so far (NOTE: For simple cases of aperiodic CSI-RS NR_CSI_RS_Periodicity_Type may be extended with an 'Aperiodic' branch but e.g. combination of periodic and aperiodic CSI-RS would require a more complex approach, e.g. with explicit trigger for the transmission of the CSI-RS)
None	Null_Type	

D.1.3.2.2.3 Cell_Level_Configuration_PDSCH

Cell_Level_Configuration_PDSCH: Basic Type Definitions

TTCN-3 Basic Types		
NR_PDSCH_DMRS_TypeA_Position_Type	MIB.drms_TypeA_Position	same as ServingCellConfigCommon.drms-TypeA-Position

NR_PDSCH_CellLevelConfig_Type

TTCN-3 Record Type			
Name	NR_PDSCH_CellLevelConfig_Type		
Comment	cell-level parameters for PDSCH: in contrast to BWP specific parameters the cell-level parameters apply to any PDSCH independent from the BWP a PDSCH is associated to		
DMRS_TypeA_Position	NR_PDSCH_DMRS_TypeA_Position_Type	opt	Provided to the UE by MIB.drms-TypeA-Position or ServingCellConfigCommon.drms-TypeA-Position; dmrs-TypeA-Position defines position of the first DM-RS symbol in the sequence of DM-RS symbols according to TS 38.211 clause 7.4.1.1.
RateMatchPattern	NR_CellLevelRateMatchPattern_Type	opt	rate match pattern according to TS 38.214 clause 5.1.4
ServingCellConfig	NR_ASN1_PDSCH_ServingCellConfig_Type	opt	PDSCH related parameters not being BWP-specific; corresponds to ServingCellConfig.pdsch-ServingCellConfig

NR_RateMatchPatternList_Type

TTCN-3 Record of Type	
Name	NR_RateMatchPatternList_Type
Comment	
record of NR ASN1 RateMatchPattern_Type	

NR_RateMatchPatternLteCrslList_Type

TTCN-3 Record of Type	
Name	NR_RateMatchPatternLteCrslList_Type
Comment	
record of NR ASN1 RateMatchPatternLTE CRS_Type	

NR_CellLevelRateMatchPattern_Type

TTCN-3 Record Type			
Name	NR_CellLevelRateMatchPattern_Type		
Comment	configuration of rate match pattern on cell level (see TS 38.214 clause 5.1.4)		
PatternList	NR_RateMatchPatternList_Type	opt	up to 4 cell-level RateMatchPattern according to TS 38.214 clause 5.1.4 (L1 RateMatchPattern); corresponds to ServingCellConfigCommon.rateMatchPatternToAddModList/rateMatchPatternToReleaseList; empty list per default (i.e. at initial configuration)
PatternListLteCrsls	NR_RateMatchPatternLteCrslList_Type	opt	0 or 1 LTE CRS pattern to rate match around (see TS 38.214 clause 5.1.4.2) corresponds to ServingCellConfigCommon.lte-CRS-ToMatchAround; empty list per default (i.e. at initial configuration)

D.1.3.2.2.4 Downlink_BWP

NR_DownlinkBWP_Type

TTCN-3 Record Type			
Name	NR_DownlinkBWP_Type		
Comment	Configuration of single BWP at the SS		
Id	BWP_Id	opt	Initial BWP: 0 Dedicated BWP: 1..4
BWP	NR ASN1 BWP_Type	opt	Frequency domain location and bandwidth, subcarrier spacing, cyclic prefix
Pdccb	NR BWP PDCCH Configuration_Type	opt	
Pdsch	NR BWP PDSCH Configuration_Type	opt	
Sps	NR ASN1 SPS Config_Type	opt	BWP-DownlinkDedicated.SPS-Config

NR_DownlinkBWP_List_Type

TTCN-3 Record of Type	
Name	NR_DownlinkBWP_List_Type
Comment	configuration of BWPs: each entry shall have a distinct Id with ID=0 for the initial BWP; NOTE 1: Even though in general the BWP-Id corresponds to the index of the element within the array of BWPs, the SS shall not take this as assumption
record of NR_DownlinkBWP_Type	

NR_DownlinkBWPs_Type

TTCN-3 Record Type			
Name	NR_DownlinkBWPs_Type		
Comment	configuration of downlink BWPs		
ActiveBWP	BWP_Id	opt	Id of the currently active BWP (this does not need to be the same as the index) According to TS 38.211 clause 4.4.5: "A UE can be configured with up to four carrier bandwidth parts in the downlink with a single downlink carrier bandwidth part being active at a given time. The UE is not expected to receive PDSCH, PDCCH, CSI-RS, or TRS outside an active bandwidth part."
BwpArray	NR_DownlinkBWP_List_Type	opt	array of band width parts: initial BWP + up to 4 dedicated BWPs

SPS_Config_R16

TTCN-3 Record Type			
Name	SPS_Config_R16		
Comment			
sps_ConfigToAddModList_r16	SPS_ConfigToAddModList_r16	opt	
sps_ConfigToReleaseList_r16	SPS_ConfigToReleaseList_r16	opt	
sps_ConfigDeactivationStateList_r16	SPS_ConfigDeactivationStateList_r16	opt	

D.1.3.2.2.4.1 PDSCH_Configuration

Configuration of PDSCH and its related reference signals:

- DM-RS (Demodulation reference signal); TS 38.211 clause 7.4.1.1
- PT-RS (Phase-tracking reference signals for PDSCH); TS 38.211 clause 7.4.1.2

NR_BWP_PDSCH_Configuration_Type

TTCN-3 Record Type			
Name	NR_BWP_PDSCH_Configuration_Type		
Comment	PDSCH configuration at the SS for specific BWP		
ConfigCommon	NR_ASN1_PDSCH_Config_Common_Type	opt	
ConfigDedicated	NR_ASN1_PDSCH_Config_Type	opt	
RelativeTxPower	NR_PDSCH_EPRES_Type	opt	

NR_PDSCH_EPRES_Type

TTCN-3 Record Type			
Name	NR_PDSCH_EPRES_Type		
Comment	EPRE for PDSCH and related signals		
PdschToCell	NR_EPRE_Ratio_Type	opt	transmit power relative to given reference cell power for resource elements (REs) being occupied by PDSCH
PdschToDmrs	NR_EPRE_Ratio_Type	opt	EPRE power ratio of PDSCH to DM-RS being associated to the PDSCH according to TS 38.214 clause 4.1
PdschToPtrs	NR_EPRE_Ratio_Type	opt	EPRE power ratio of PDSCH to PT-RS being associated to the PDSCH according to TS 38.214 clause 4.1 NOTE: PT-RS need only to be considered when being present (TS 38.211 clause 7.4.1.2.2 according to TS 38.214 clause 4.1), i.e. the SS shall ignore the PT-RS's EPRE if no PT-RS is present

D.1.3.2.2.4.2 PDCCH_Configuration

Configuration of PDSCH and its related reference signals:

- DM-RS (Demodulation reference signal); TS 38.211 clause 7.4.1.3

NR_BWP_PDCCH_Configuration_Type

TTCN-3 Record Type			
Name	NR_BWP_PDCCH_Configuration_Type		
Comment	PDCCH configuration at the SS for specific BWP; NOTE: There are no fields for PDCCH-Config's "downlinkPreemption", "slotFormatIndicator", "tpc-PUSCH" and "tpc-PUCCH": This information is related to triggering DCI formats 2_X and shall be configured there (NR_DCI_Trigger_Type) according to test case requirements		
SearchSpaceArray	NR_BWP_SearchSpaceList_Type	opt	
CoresetArray	NR_BWP_CoresetList_Type	opt	
RelativeTxPower	NR_PDCCH_EPRES_Type	opt	
Coreset0_OffsetRBs	integer	opt	Number of Offset RBs as specified in 38.213 clause 13. Applied to CORESET#0 only

NR_BWP_CoresetList_Type

TTCN-3 Record of Type	
Name	NR_BWP_CoresetList_Type
Comment	list of CORESETs defined for a single BWP; according to TS 38.213 clause 10.1 "The control resource set configured for Type0-PDCCH common search space has control resource set index 0" NOTE: even though in general (array) index and controlResourceSetId are the same it is not clear what is meant by TS 38.213
record of NR_ASN1_ControlResourceSet_Type	

NR_BWP_SearchSpaceList_Type

TTCN-3 Record of Type	
Name	NR_BWP_SearchSpaceList_Type
Comment	list of search spaces defined for a single BWP; according to TS 38.213 clause 10.1 "The Type0-PDCCH common search space has search space index 0" NOTE: even though in general (array) index and searchSpaceId are the same it is not clear what is meant by TS 38.213
record of NR_BWP_SearchSpaceConfig_Type	

NR_PDCCH_EPRES_Type

TTCN-3 Record Type			
Name	NR_PDCCH_EPRES_Type		
Comment	EPRE for PDCCH and related signals		
PdcchToCell	NR_EPRE_Ratio_Type	opt	transmit power relative to given reference cell power for resource elements (REs) being occupied by PDCCH
PdcchToDmrs	NR_EPRE_Ratio_Type	opt	EPRE power ratio of PDCCH to DM-RS being associated to the PDCCH; further DMRS parameters are given by ASN.1 PDCCH-Config as signalled to the UE or by additional parameters of the initial BWP configuration

D.1.3.2.2.4.2.1 Search_Space_Configuration

Search_Space_Configuration: Basic Type Definitions

TTCN-3 Basic Types		
NR_SearchSpaceCandidatePriority_Type	UInt_Type	Priorities to be considered by the SS in order to choose the candidate of a search space not colliding with the candidate of some other search space; a value of 0 represents the highest priority, a value of 1 the second highest priority and so on. (see TS 38.523-3 clause 7.1.2.1.4 for further details)

NR_SearchSpaceType_Type

TTCN-3 Enumerated Type	
Name	NR_SearchSpaceType_Type
Comment	types of search spaces according to TS 38.213 clause 10.1; NOTE 1: In principle there could be more than one instance for the same kind of search space; if this is ever needed, this enumerated shall be enhanced by introduction of a second entry for a particular type. NOTE 2: For the USS UL and DL are distinguished as they may need different priority in terms of scheduling of DCIs
cssType0	Type0-PDCCH common search space for scheduling of SIB1 (SI-RNTI); the SS shall scramble the DCI format's CRC with SI-RNTI; aggregation level and number of candidates correspond to TS 38.213 Table 10.1-1; For stand-alone options parameters of search space and associated CORESET are according MIB.pdcch-ConfigSIB1 (TS 38.213 clause 13)
cssType0A	Type0A-PDCCH common search space for scheduling of other system information (SI-RNTI); the SS shall scramble the DCI format's CRC with SI-RNTI
cssType1	Type1-PDCCH common search space for scheduling of Msg2 or Msg4 of RACH procedure; the SS shall scramble the DCI format's CRC with RA-RNTI for Msg2 or with TC-RNTI for Msg4 (temporary C-RNTI) as configured for Msg4 (NR_TempC_RNTI_Type in NR_RAR_Payload_Type)
cssType2	Type2-PDCCH common search space for scheduling of Paging messages or short messages (P-RNTI); the SS shall scramble the DCI format's CRC with P-RNTI
cssType3	Type3-PDCCH common search space for other purpose DCIs (INT-RNTI, SFI-RNTI, TPC-PUSCH-RNTI, TPC-PUCCH-RNTI, TPC-SRS-RNTI, C-RNTI, CS-RNTI(s)); the SS shall scramble the DCI format's CRC with the RNTI-value as according to the ASP triggering the DCI to be sent
ussDL	UE-specific search space (C-RNTI, CS-RNTI(s)); the SS shall scramble the DCI format's CRC with the C-RNTI value as stored for the cell (NR_CellConfigCommon_Type)
ussUL	UE-specific search space: as USS_DL but in general with lower priority to give DL assignments precedence over periodic UL grants

NR_SearchSpaceTypeAndPriority_Type

TTCN-3 Record Type			
Name	NR_SearchSpaceTypeAndPriority_Type		
Comment			
Type	NR_SearchSpaceType_Type		
CandidatePriority	NR_SearchSpaceCandidatePriority_Type		priority to be considered when candidates of a different or the same search space overlap the same CCEs

NR_SearchSpaceTypeAndPriorityList_Type

TTCN-3 Record of Type	
Name	NR_SearchSpaceTypeAndPriorityList_Type
Comment	
record of NR_SearchSpaceTypeAndPriority_Type	

NR_PDCCH_CCE_AggregationLevel_Type

TTCN-3 Enumerated Type	
Name	NR_PDCCH_CCE_AggregationLevel_Type
Comment	Aggregation level for a search space
AggregationLevel1	
AggregationLevel2	
AggregationLevel4	
AggregationLevel8	
AggregationLevel16	

NR_BWP_SearchSpaceConfig_Type

TTCN-3 Record Type			
Name	NR_BWP_SearchSpaceConfig_Type		
Comment	configuration of a single search space at the SS: The position of a particular search space candidate in frequency and time domain depends on configuration of the search space and its associated CORESET (see TS 38.213 clause 10.1): - Common or UE-specific search space - aggregation level L - number of candidates per aggregation level - PDCCH monitoring periodicity and offset - frequency domain resources - number of symbols (time domain) in addition in case of UE-specific search space: - C-RNTI (as configured for the active cell) - carrier indicator field value (in case of cross carrier scheduling) all fields are mandatory as modification of a single field may cause inconsistencies		
TypeAndPriorityList	NR_SearchSpaceTypeAndPriorityList_Type		list of search space types (according to TS 38.213 clause 10.1) to be mapped to the given search space configuration. NOTE 1: In general the lists of search space types for different search spaces shall be mutual exclusive; NOTE 2: TS 38.213 clause 10.1 could be read as if the different types of search spaces use distinct instances of search spaces; nevertheless RRC type definitions allow use of different types in one and the same search space
AggregationLevel	NR_PDCCH_CCE_AggregationLevel_Type		aggregation level to be applied for an actual PDCCH of the given search space
SearchSpaceConfigAtUE	NR_ASN1_SearchSpace_Type		search space configuration as sent to the UE; contains searchSpaceId and controlResourceSetId referring to the associated CORESET; furthermore the SS may need e.g. the number of candidates to detect error situations in context of candidate selection

D.1.3.2.2.4.2.2 Search_Space_DCI_Assignment

NR_BWP_Id_List_Type

TTCN-3 Record of Type	
Name	NR_BWP_Id_List_Type
Comment	record of BWP_Id

NR_AssignedBWPs_Type

TTCN-3 Record Type			
Name	NR_AssignedBWPs_Type		
Comment	definition of a set of BWPs being assigned e.g. to system information scheduling or RACH procedures NOTE 1: there is no error when e.g. "ActiveBWP" is set and the currently active BWP is contained in DedicatedBWPs too NOTE 2: it is up to use of this type in TTCN to ensure that a specific BWP assignment makes sense, in most cases multiple BWPs may not be applicable		
ActiveBWP	Null_Type	opt	SS shall assign the currently active BWP
InitialBWP	Null_Type	opt	SS shall assign the initial BWP
DedicatedBWPs	NR_BWP_Id_List_Type		SS shall assign all BWPs as listed (on top of active or initial BWP if set); an empty list indicates that no (additional) BWPs are assigned

NR_SearchSpaceDIDciAssignment_Type

TTCN-3 Record Type			
Name	NR_SearchSpaceDIDciAssignment_Type		
Comment	configuration of DCI for a specific search space; in general the configuration belongs to a transport channel configuration (e.g. BCH, PCH, DL-SCH): the DCI is applied for DL transmission on the respective channel and can be explicitly initiated by TTCN (e.g. PCH, DL-SCH) or automatically by the SS (e.g. BCH or Msg2/Msg4 scheduling of RACH procedure); all fields are mandatory for the first configuration of an instance for modifications "omit" means "keep as it is"		
AssignedBWPs	NR_AssignedBWPs_Type	opt	BWP where given DCI shall be scheduled in given search space; NOTE 1: When there is no BWP according to configuration of AssignedBWPs, there is no DL assignment; this can be used e.g. to prevent automatic scheduling of system information; NOTE 2: In principle a DL assignment can happen simultaneously in more than one BWP e.g. if system information shall be scheduled in active and initial BWP; but as long as there is no use case for simultaneous DL assignments, configuration of AssignedBWPs shall be restricted to a maximum of one BWP
SearchSpaceType	NR_SearchSpaceType_Type	opt	search space to be used for sending of given DCI; when at the scheduled point in time of a DL transmission there is no such search space configured at the given BWP, the SS may raise an error
DciInfo	NR_DciDInfo_Type	opt	DCI to be used

NR_SearchSpaceUIDciAssignment_Type

TTCN-3 Record Type			
Name	NR_SearchSpaceUIDciAssignment_Type		
Comment	configuration of DCI for UL grants in the UL USS; in general the configuration belongs to a transport channel configuration (e.g. UL-SCH); all fields are mandatory for the first configuration of an instance for modifications "omit" means "keep as it is"		
AssignedBWPs	NR_AssignedBWPs_Type	opt	BWP where given DCI shall be scheduled in given search space; AssignedBWPs shall specify exactly one BWP (ActiveBWP in general); the SS may raise an error otherwise
SearchSpaceType	NR_SearchSpaceType_Type	opt	search space to be used for sending of given DCI; when at the scheduled point in time of a UL grant transmission there is no such search space configured at the given BWP, the SS may raise an error
DciInfo	NR_DciUInfo_Type	opt	DCI to be used

D.1.3.2.3 PhysicalLayer_Uplink

Uplink physical layer configuration: UL channels and BWPs

NR_CellConfigPhysicalLayerUplink_Type

TTCN-3 Record Type			
Name	NR_CellConfigPhysicalLayerUplink_Type		
Comment	physical layer configuration at the SS for the uplink of a cell		
Uplink	NR_Uplink_Type	opt	
Supplementary Uplink	NR_Uplink_Type	opt	
TimingAdvance	NR_SS_TimingAdvanceConfig_Type	opt	
PUSCH_ServingCellConfig	NR_ASN1_PUSCH_ServingCellConfig_Type	opt	
PUSCH_ServingCellConfigSUL	NR_ASN1_PUSCH_ServingCellConfig_Type	opt	

NR_Uplink_Type

TTCN-3 Union Type			
Name	NR_Uplink_Type		
Comment			
Config	NR_UplinkConfig_Type		
None	Null_Type		in case the uplink or supplementary uplink is not used/needed

NR_SS_TimingAdvanceConfig_Type

TTCN-3 Union Type			
Name	NR_SS_TimingAdvanceConfig_Type		
Comment			
InitialValue	NR_RACH_TimingAdvance_Type		initial 12 bit value corresponding to Timing Advance Command field of the Random Access Response (TS 38.321 clause 6.2.3); value of 0..3846 according to TS 38.213 clause 4.2; 0 in normal cases)
Relative	NR_TimingAdvanceIndex_Type		timing advance command to adjust changes of timing advance acc. to TS 38.213 clause 4.2; (range acc. 6 bit value: -31..32)

D.1.3.2.3.1 Uplink_BWP

NR_UplinkBWP_Type

TTCN-3 Record Type			
Name	NR_UplinkBWP_Type		
Comment	Configuration of single BWP at the SS; NOTE: for rel-15 this is the same as the ASN.1 type "BWP-Uplink" but nevertheless the TTCN type may be useful for future extensions		
Id	BWP_Id	opt	Initial BWP: 0 Dedicated BWP: 1..4
Common	NR ASN1 BWP UplinkCommon_Type	opt	contains common configuration for RACH, PUSCH, PUCCH configuration at the UE: - Initial BWP: -> ServingCellConfigCommon.uplinkConfigCommon.initialUplinkBWP ServingCellConfigCommon.supplementaryUplinkConfig.initialUplinkBWP -> SIB1.uplinkConfigCommon.initialUplinkBWP SIB1.supplementaryUplink.uplinkConfigCommon.initialUplinkBWP - Dedicated BWP: -> ServingCellConfig.uplinkConfig.uplinkBWP-ToAddModList[-].bwp-Common ServingCellConfig.supplementaryUplink.uplinkBWP-ToAddModList[-].bwp-Common
Dedicated	NR ASN1 BWP UplinkDedicated_Type	opt	contains dedicated configuration for PUCCH, PUSCH, ConfiguredGrant, SRS, BeamFailureRecovery configuration at the UE: - Initial BWP: -> ServingCellConfig.uplinkConfig.initialUplinkBWP ServingCellConfig.supplementaryUplink.initialUplinkBWP - Dedicated BWP: -> ServingCellConfig.uplinkConfig.uplinkBWP-ToAddModList[-].bwp-Dedicated ServingCellConfig.supplementaryUplink.uplinkBWP-ToAddModList[-].bwp-Dedicated

NR_UplinkBWP_List_Type

TTCN-3 Record of Type	
Name	NR_UplinkBWP_List_Type
Comment	configuration of BWPs: each entry shall have a distinct Id with ID=0 for the initial BWP NOTE: Even though in general the BWP-Id corresponds to the index of the element within the array of BWPs, the SS shall not take this as assumption
record of NR_UplinkBWP_Type	

NR_ActiveUplinkBWP_Id_Type

TTCN-3 Union Type		
Name	NR_ActiveUplinkBWP_Id_Type	
Comment		
Explicit	BWP_Id	in case that BWP-Id of active UL-BWP (and/or active UL-BWP of supplementary UL) is different than BWP-Id of active DL-BWP
SameIdAsDL	Null_Type	same BWP-Id as of the active DL-BWP

NR_UplinkBWPs_Type

TTCN-3 Record Type			
Name	NR_UplinkBWPs_Type		
Comment	configuration of uplink BWPs		
ActiveBWP	NR_ActiveUplinkBWP_Id_Type	opt	Id of the currently active BWP (this does not need to be the same as the index)
BwpArray	NR_UplinkBWP_List_Type	opt	array of band width parts: initial BWP + up to 4 dedicated BWPs

NR_UplinkConfig_Type

TTCN-3 Record Type			
Name	NR_UplinkConfig_Type		
Comment	configuration of a single uplink (uplink or supplementary uplink)		
FrequencyInfoUL	NR_ASN1_FrequencyInfoUL_Type	opt	carries information about location of reference resource block (point A) in frequency domain and about associated frequency bands (list of FreqBandIndicatorNR)
BWPs	NR_UplinkBWPs_Type	opt	
RACH_ConfigDedicated	NR_ASN1_RACH_ConfigDedicated_Type	opt	configuration at the UE: -> SpCellConfig.reconfigurationWithSync.rach-ConfigDedicated.uplink/supplementaryUplink
SI_RequestConfig	NR_ASN1_SI_RequestConfig_Type	opt	configuration of PRACH preamble(s) and PRACH resource(s) for si-RequestConfig configuration at the UE: -> in SIB1.si-SchedulingInfo.si-RequestConfig

D.1.3.2.4 DCI_Configuration

Definitions for resource assignment and DCI according to TS 38.212 clause 7.3 and TS 38.214 clause 5.1.2 and 6.1.2

D.1.3.2.4.1 Common_Fields

Common type definitions for DCI fields being used for UL and DL assignments (format 0_X and 1_X);
NOTE: in general fields of DCIs are defined as union in the first place to allow backward compatible enhancements, e.g. when a dynamic SS behaviour needs to replace the static value assignment

NR_DciCommon_CarrierIndicator_Type

TTCN-3 Union Type		
Name	NR_DciCommon_CarrierIndicator_Type	
Comment	Carrier indicator field (CIF) of DCI formats 0_1 and 1_1 according to TS 38.212 and TS 38.213 clause 10.1	
None	Null_Type	no cell index to be indicated in Carrier indicator field
CellIndex	B3_Type	3 bits cell index to be indicated in Carrier indicator field; applicable when the UE is configured with higher layer parameter CrossCarrierSchedulingConfig

NR_DciCommon_BWPIndicator_Type

TTCN-3 Union Type		
Name	NR_DciCommon_BWPIndicator_Type	
Comment	Bandwidth part indicator according to TS 38.212 Table 7.3.1.1.2-1; used to address RRC-configured BandwidthPart-Config; NOTE: in general the BWP configuration at the SS is static i.e. dedicated BWPs may be preconfigured in a test case preamble => a) BWP configuration at the SS is not always the same as at the UE and SS cannot determine the number of BWPs being configured at the UE from its BWP configuration. b) The number and order of BWPs may differ at SS and UE. c) The index used in the DCI's BWP indicator is not identical with the BWP-Id as the BWP indicator is the index in the UE's BWP array => in general the SS cannot determine the size and value of the DCI's BWP indicator but this need to be done in TTCN	
Index	bitstring	0, 1 or 2 bits

NR_DciCommon_TpcCommand_Type

TTCN-3 Union Type		
Name	NR_DciCommon_TpcCommand_Type	
Comment	TPC Command Field according to TS 38.213 Table 7.1.1-1 and Table 7.2.1-1	
Value	B2_Type	2 bits; default value: '01'B (0 dB; accumulated TPC)

NR_DciCommon_UL_SUL_Indicator_Type

TTCN-3 Union Type		
Name	NR_DciCommon_UL_SUL_Indicator_Type	
Comment	TS 38.212 clause 7.3.1.1.1/2: UL/SUL indicator	
None	Null_Type	to be used when no SUL is configured
Value	B1_Type	UL/SUL indicator according to TS 38.212 Table 7.3.1.1.1-1

NR_DciCommon_VrbPrbMapping_Type

TTCN-3 Union Type		
Name	NR_DciCommon_VrbPrbMapping_Type	
Comment	to specify how VRB-to-PRB mapping shall be controlled by DCI if applicable (see TS 38.212 Table 7.3.1.2.2-5 and where it is referred)	
None	Null_Type	0 bit, applicable for format 1_0 when only resource allocation type 0 is configured
Index	B1_Type	1 bit, index in TS 38.212 Table 7.3.1.2.2-5 indicating non-interleaved or interleaved VRB-to-PRB mapping according to TS 38.211 clause 6.3.1.7

NR_DciCommon_TimeDomainResourceAssignment_Type

TTCN-3 Union Type		
Name	NR_DciCommon_TimeDomainResourceAssignment_Type	
Comment	Common type definition for UL/DL Resource allocation in time domain according to TS 38.214 clause 5.1.2.1 and 6.1.2.1	
Index	bitstring	index of entry in SEQUENCE OF PUSCH/PDSCH-TimeDomainResourceAllocation provided e.g. by PUSCH/PDSCH-Config; number of bits in a particular DCI depends on the size of the SEQUENCE OF PUSCH/PDSCH-TimeDomainResourceAllocation (e.g. Time domain resource assignment is an empty bitstring ("B) when only one time-domain configuration is provided to the UE) NOTE: PDSCH/PUSCH-Config overrules list in PDSCH/PUSCH-ConfigCommon

NR_DciFormat_X_1_SrsRequest_Type

TTCN-3 Union Type		
Name	NR_DciFormat_X_1_SrsRequest_Type	
Comment	TS 38.212 clause 7.3.1.2: SRS request	
SingleUL	B2_Type	2 bits: Index of the SRS resource set to be used according to TS 38.212 Table 7.3.1.1.2-24
UL_SUL	B3_Type	3 bits: Index of the SRS resource set to be used according to TS 38.212 Table 7.3.1.1.2-24 plus first bit to distinguish UL/SUL

NR_DciCommon_DmrsSequenceInit_Type

TTCN-3 Union Type		
Name	NR_DciCommon_DmrsSequenceInit_Type	
Comment	TS 38.212 clause 7.3.1.1.2 (format 0_1), clause 7.3.1.1.3 (format 0_2), clause 7.3.1.2.2 (format 1_1) and clause 7.3.1.2.3 (format 1_2): DMRS sequence initialization	
None	Null_Type	0 bit - for format 0_1 if transform precoder is enabled; - for format 0_2 if dmrs-SequenceInitializationDCI-0-2 is not configured or if transform precoder is enabled; - for format 1_2 if dmrs-SequenceInitializationDCI-1-2 is not configured or if transform precoder is enabled
Value	B1_Type	1 bit else

NR_DciCommon_PriorityIndicator_Type

TTCN-3 Union Type		
Name	NR_DciCommon_PriorityIndicator_Type	
Comment	TS 38.212 clause 7.3.1.1.2 (format 0_1), clause 7.3.1.2.2 (format 1_1), clause 7.3.1.1.3 (format 0_2) and clause 7.3.1.2.3 (format 1_2): Priority indicator	
None	Null_Type	0 bit no Priority indicator, if higher layer parameter priorityIndicatorDCI-0-1/priorityIndicatorDCI-1-1/priorityIndicatorDCI-0-2/priorityIndicatorDCI-1-2 is not configured
Value	B1_Type	1 bit as defined in Clause 9 in TS 38.213.

NR_DciFormat_X_1_MinimumApplicableSchedulingOffset_Type

TTCN-3 Union Type		
Name	NR_DciFormat_X_1_MinimumApplicableSchedulingOffset_Type	
Comment	TS 38.212 clause 7.3.1.1.2 (format 0_1) and clause 7.3.1.2.2 (format 1_1): Minimum applicable scheduling offset indicator	
None	Null_Type	0 bit no Minimum applicable scheduling offset indicator
Value	B1_Type	1 bit if minimumSchedulingOffsetK2(format 0_1)/minimumSchedulingOffsetK0((format 1_1)) is configured. Set according to TS 38.212 according to TS 38.212 Table 7.3.1.1.2-33.

NR_DciFormat_X_1_SCellDormancyIndication_Type

TTCN-3 Union Type		
Name	NR_DciFormat_X_1_SCellDormancyIndication_Type	
Comment	TS 38.212 clause 7.3.1.1.2 (format 0_1) and clause 7.3.1.2.2 (format 1_1): SCell dormancy indication	
None	Null_Type	0 bit no SCell dormancy indication
Value	bitstring	1, 2, 3, 4 or 5 bits: determined according to dormancyGroupWithinActiveTime parameter

NR_DciFormat_X_0_ChannelAccessCPext_Type

TTCN-3 Union Type		
Name	NR_DciFormat_X_0_ChannelAccessCPext_Type	
Comment	TS 38.212 clause 7.3.1.1.1 and clause 7.3.1.2.1: ChannelAccess-CPext	
None	Null_Type	0 bit no ChannelAccess-CPext
Value	B2_Type	2 bits indicating combinations of channel access type and CP extension as defined in TS 38.212 Table 7.3.1.1.1-4 for operation in a cell with shared spectrum channel access.

NR_DciFormat_X_2_CarrierIndicator_Type

TTCN-3 Union Type		
Name	NR_DciFormat_X_2_CarrierIndicator_Type	
Comment	Carrier indicator field (CIF) of DCI formats 0_2 and 1_2 according to TS 38.212 and TS 38.213 clause 10.1	
None	Null_Type	no cell index to be indicated in Carrier indicator field
CellIndex	bitstring	1, 2 or 3 bits cell index to be indicated in carrierIndicatorSize_r16.carrierIndicatorSizeDCI_1_2_r16/carrierIndicatorSize_r16.carrierIndicatorSizeDCI_0_2_r16

NR_DciFormat_X_2_SrsRequest_Type

TTCN-3 Union Type		
Name	NR_DciFormat_X_2_SrsRequest_Type	
Comment	TS 38.212 clause 7.3.1.2.3 and clause 7.3.1.1.3: SRS Request	
None	Null_Type	srs-RequestDCI-0-2-r16/srs-RequestDCI-1-2-r16 is not present
Value	bitstring	1 or 2 or 3 as defined in 7.3.1.2.3/7.3.1.1.3

D.1.3.2.4.2 Resource_Allocation

Type definitions for resource allocation which do not correspond directly to DCI fields but are used to configure how the SS maintains resource allocation for a given DCI

Resource_Allocation: Basic Type Definitions

TTCN-3 Basic Types		
NR_ImcsValue_Type	integer (0..31)	Modulation and coding scheme index coding
NR_RedundancyVersion_Type	integer (0..255)	Redundancy Version (RV): - 2 bits if the number of scheduled PUSCH indicated by the Time domain resource assignment field is 1 - 2, 3, 4, 5, 6, 7 or 8 bits determined by the maximum number of schedulable PUSCHs among all entries in pusch-TimeDomainAllocationListForMultiPUSCH (TS 38.212 clause 7.3.1.1.2).

NR_ResourceAllocationType_Type

TTCN-3 Enumerated Type	
Name	NR_ResourceAllocationType_Type
Comment	to specify the format of the resource allocation type being used for frequency domain resource assignment in DCI; NOTE 1: For DCI Format 0_0 and 1_0 only resourceAllocationType1 is applicable (TS 38.214 clause 5.1.2.2 and 6.1.2.2) NOTE 2: The SS needs to determine based on RRC configuration whether MSB of the frequency domain resource assignment needs to be used as discriminator for type 0/1 (see TS 38.212 clause 7.3.1.1.2 and clause 7.3.1.2.2 and PUSCH/PDSCH-Config.resourceAllocation) NOTE 3: The SS shall raise an error if the DCI configuration conflicts with the configuration given by PUSCH/PDSCH-Config.resourceAllocation
resourceAllocationType0	resource allocation type 0 according to TS 38.214 clause 5.1.2.2.1 and 6.1.2.2.1: bitmap indicating the Resource Block Groups (RBGs) that are allocated; not applicable for DCI Format 0_0 and 1_0
resourceAllocationType1	resource allocation type 1 according to TS 38.214 clause 5.1.2.2.2 and 6.1.2.2.2: resource indication value (RIV) corresponding to a starting virtual resource block and a length in terms of contiguously allocated resource blocks

NR_ModulationSchemePDSCH_Type

TTCN-3 Enumerated Type	
Name	NR_ModulationSchemePDSCH_Type
Comment	Supported modulation schemes for PDSCH according to 38.211 Table 7.3.1.2-1
qpsk	
qam16	
qam64	
qam256	

NR_FreqDomainSchedulExplicit_Type

TTCN-3 Record Type		
Name	NR_FreqDomainSchedulExplicit_Type	
Comment	type used for explicit DL scheduling; Nprb is the exact number of RBs whereas in NR_FreqDomainSchedulCommon_Type MaxRbCnt is the upper bound	
FirstRbIndex	integer	index of the first resource block in frequency domain
Nprb	integer	number of resource blocks to be assigned

NR_FreqDomainSchedulCommonDL_Type

TTCN-3 Record Type		
Name	NR_FreqDomainSchedulCommonDL_Type	
Comment	common type to specify restrictions for frequency domain scheduling by a start index and a maximum range of RBs (similar to EUTRA, but for NR in general the frequency domain scheduling is not related to the whole frequency band but to a given band width part (BWP))	
FirstRbIndex	integer	index of the first (virtual) resource block in frequency domain
MaxRbCnt	integer	maximum number of resource-blocks to be used for a transport block; SS shall not assigned more than the given resource blocks; FirstRbIndex + MaxRbCnt shall not exceed the total number of available resource blocks in frequency domain; the SS shall raise an error otherwise

NR_FreqDomainResourceAssignmentDL_Type

TTCN-3 Union Type		
Name	NR_FreqDomainResourceAssignmentDL_Type	
Comment		
Automatic	NR_FreqDomainSchedulCommonDL_Type	The SS shall automatically do the resource assignment needed for a DL transmission based on TBS evaluation guideline given in Annex B.1 of 38.523-3
Explicit	NR_FreqDomainSchedulExplicit_Type	Frequency domain resource assignment is given explicitly by TTCN; the SS needs to calculate the RIV (resource allocation type 1) or generate the bitmap (resource allocation type 0). In case of resource allocation type 0 the allocation shall also be in consecutive RBGs. NOTE: So far there is no requirement for signalling tests to use non-consecutive RBGs ((neither for LTE nor for NR)

NR_RedundancyVersionList_Type

TTCN-3 Record of Type	
Name	NR_RedundancyVersionList_Type
Comment	There shall be as many entries in the list as re-transmissions are allowed; if there are not enough elements specified SS shall raise an error; In 4G at least in UL the array length corresponds to maxHARQ-Tx (i.e. up to 28 re-transmissions according to RRC ASN.1)
record of NR_RedundancyVersion_Type	

NR_TransportBlockSchedulingDL_Automatic_Type

TTCN-3 Record Type			
Name	NR_TransportBlockSchedulingDL_Automatic_Type		
Comment	transport block information for a DL transmission and potential retransmission in automatic mode		
TransportBlock 1	NR_ModulationSchemePDSCH_Type		
TransportBlock 2	NR_ModulationSchemePDSCH_Type	opt	MCS for 2nd transport block (if any); 'omit' means that there is no 2nd transport block; presence corresponds to PDSCH-Config.maxNrofCodeWordsScheduledByDCI
RedundancyVersionList	NR_RedundancyVersionList_Type	opt	list of Redundancy versions to be used for DL transmission and possible retransmissions; not present, if the DL transmission does not make use of harq processing (e.g. paging); in automatic mode the same list of redundancy versions is used for both transport blocks; if there are not enough elements to achieve successful DL transmission, SS shall raise an error

RetransmissionTiming_Type

TTCN-3 Union Type		
Name	RetransmissionTiming_Type	
Comment	to specify the timing of potential retransmissions related to the initial transmission. Rules in case of necessary UL or DL retransmissions: - When a transmission is scheduled with TimingInfo=Now, then any retransmission of a previous transmission takes precedence over the new transmission - Re-transmissions take precedence over periodic UL grants - The SS shall raise an error indication when - a retransmission collides with another UL or DL transmission which is scheduled by TTCN with specific TimingInfo for the same slot as the retransmission - a new DL transmission would take over an ongoing DL transmission - the retransmission is not possible at the given time for any other reason (e.g. due to slot format)	
SlotOffset	integer	the kth retransmission shall be $k * \text{SlotOffset}$ slots after the initial transmission: e.g. slots per subframe = N and initial transmission at subframeX and slotX => 1. retransmission at subframeX + (slotX + SlotOffset) / N and (slotX + SlotOffset) mod N 2. retransmission at subframeX + (slotX + 2*SlotOffset) / N and (slotX + 2*SlotOffset) mod N and so on
SubframeOffset	integer	the kth retransmission shall be $k * \text{SubframeOffset}$ subframes after the initial transmission in the same slot of subframe as for the initial transmission: e.g. initial transmission at subframeX and slotX 1. retransmission at subframeX + SubframeOffset and slotX 2. retransmission at subframeX + 2*SubframeOffset and slotX and so on
AnyTime	Null_Type	the SS shall autonomously determine the next possible Occasion for the retransmission

TransmissionTimingOffset_Type

TTCN-3 Union Type		
Name	TransmissionTimingOffset_Type	
Comment	Timing information for retransmissions	
None	Null_Type	initial transmission: no timing offset but timing info as according to common part of the ASP
Retransmission	RetransmissionTiming_Type	retransmission with timing offset relative to initial transmission

NR_TransportBlockSingleTransmission_Type

TTCN-3 Record Type		
Name	NR_TransportBlockSingleTransmission_Type	
Comment	TS 38.212 clause 7.3.1.2.1 and 7.3.1.2.2: parameters for transmission (or re-transmission) of a single transport block; used for explicit mode of DL transmission and for UL grants	
TimingOffset	TransmissionTimingOffset_Type	in general "None" in case of a new transmission (i.e. no timing offset) and "Retransmission" for any retransmission
ImcsValue	NR_ImcsValue_Type	Imcs value to be mapped to the Modulation and coding scheme field of DCI format 1_0 or 1_1
RedundancyVersion	NR_RedundancyVersion_Type	Redundancy version for a single transmission or re-transmission
ToggleNDI	boolean	"true" for transmission of a new transport block, "false" for a re-transmission; the NDI (New data indicator) itself is maintained by the SS and therefore not provided as configuration parameter

NR_TransportBlockRetransmissionList_Type

TTCN-3 Record of Type	
Name	NR_TransportBlockRetransmissionList_Type
Comment	list of (initial) transmission and potential retransmissions; used for explicit mode of DL transmission and for UL grants; in general the Imcs is the same for all (re-)transmissions and the NDI is not toggled for the retransmissions
record of NR_TransportBlockSingleTransmission_Type	

NR_TransportBlockSchedulingDL_Explicit_Type

TTCN-3 Record Type			
Name	NR_TransportBlockSchedulingDL_Explicit_Type		
Comment			
TransportBlock 1	NR_TransportBlockRetransmissionList_Type		list of transmission and retransmissions for transport block 1
TransportBlock 2	NR_TransportBlockRetransmissionList_Type	opt	'omit' means that there is no 2nd transport block; Presence corresponds to PDSCH-Config.maxNrofCodeWordsScheduledByDCI

NR_TransportBlockSchedulingDL_Type

TTCN-3 Union Type		
Name	NR_TransportBlockSchedulingDL_Type	
Comment		
Automatic	NR_TransportBlockSchedulingDL_Automatic_Type	
Explicit	NR_TransportBlockSchedulingDL_Explicit_Type	

NR_HarqProcessConfig_Type

TTCN-3 Union Type		
Name	NR_HarqProcessConfig_Type	
Comment	HARQ processes to be used automatically for UL grants or DL assignments	
None	Null_Type	when there is no HARQ for the given DCI (paging)
Broadcast	Null_Type	when the broadcast process shall be used
AnyProcess	Null_Type	The SS may choose any process for scheduling of the UL/DL data transfer
SpecificSubset	NR_HarqProcessList_Type	only the HARQ processes of this list shall be used automatically, other processes are excluded from automatic assignments; nevertheless for DL any HARQ processes may be addressed explicitly by NR_DRB_DataPerSlot_DL_Type.HarqProcess

D.1.3.2.4.3 PDSCH_Scheduling

NR_DciDlInfo_Type

TTCN-3 Record Type			
Name	NR_DciDlInfo_Type		
Comment	scheduling for CCCH/DCCH/DTCH mapped to DL-SCH mapped to PDSCH; for all parameters: mandatory for initial configuration of an instance, omit means "keep as it is" afterwards; definition is applicable for DCI format 1_X		
ResourceAssignment	NR_DciFormat_1_X_ResourceAssignment_Type	opt	resource assignment; to control setting of the following fields in DCI formats 1_X (TS 38.212 clause 7.3.1.2.X): Frequency domain resource assignment Time domain resource assignment Modulation and coding scheme New data indicator Redundancy version HARQ process number
VrbPrbMapping	NR_DciCommon_VrbPrbMapping_Type	opt	VRB-to-PRB mapping
Format	NR_DciFormat_1_X_SpecificInfo_Type	opt	DCI format and DCI format specific parameters

NR_DciFormat_1_X_ResourceAssignment_Type

TTCN-3 Record Type			
Name	NR_DciFormat_1_X_ResourceAssignment_Type		
Comment	Common definition to be used for resource scheduling in DL		
ResourceAllocationType	NR_ResourceAllocationType_Type	opt	resource allocation type to be used for the frequency domain resource assignment
FreqDomain	NR_FreqDomainResourceAssignmentDL_Type	opt	
TimeDomain	NR_DciCommon_TimeDomainResourceAssignment_Type	opt	
TransportBlockScheduling	NR_TransportBlockSchedulingDL_Type	opt	information about MCS and RV for one or two transport blocks
HarqProcessConfig	NR_HarqProcessConfig_Type	opt	configures which HARQ processes the SS may use; corresponds to "HARQ process number" in TS 38.212 clause 7.3.1.2.1 and 7.3.1.2.2

NR_DciFormat_1_X_SpecificInfo_Type

TTCN-3 Union Type			
Name	NR_DciFormat_1_X_SpecificInfo_Type		
Comment			
Format_1_0	NR_DciFormat_1_0_SpecificInfo_Type		
Format_1_0_P_RNTI	NR_DciFormat_1_0_P_RNTI_SpecificInfo_Type		
Format_1_0_SI_RNTI	NR_DciFormat_1_0_SI_RNTI_SpecificInfo_Type		
Format_1_0_RA_RNTI	NR_DciFormat_1_0_RA_RNTI_SpecificInfo_Type		
Format_1_1	NR_DciFormat_1_1_SpecificInfo_Type		
Format_1_2	NR_DciFormat_1_2_SpecificInfo_Type		

NR_DciFormat_1_0_SpecificInfo_Type

TTCN-3 Record Type			
Name	NR_DciFormat_1_0_SpecificInfo_Type		
Comment	TS 38.212 clause 7.3.1.2.1: scheduling of PDSCH in one DL cell; default parameters according to TS 38.508-1 clause 4.3.6.1.2.1		
DAI	NR_DciFormat_1_0_DAI_Type	opt	downlink assignment index
TpcCommandPucch	NR_DciCommon_TpcCommand_Type	opt	TPC command for scheduled PUCCH; to be set to 1 per default (0 dB; accumulated TPC)
PucchResourceIndicator	NR_DciFormat_1_X_Pucch_ResourceIndicator_Type	opt	PUCCH resource indicator
PdschHarqTimingIndicator	NR_DciFormat_1_X_Pdsch_HarqTimingIndicator_Type	opt	PDSCH-to-HARQ_feedback timing indicator
ChannelAccessCPext	NR_DciFormat_X_0_ChannelAccessCPext_Type	opt	ChannelAccess-CPext

NR_DciFormat_1_0_P_RNTI_SpecificInfo_Type

TTCN-3 Record Type			
Name	NR_DciFormat_1_0_P_RNTI_SpecificInfo_Type		
Comment	TS 38.212 clause 7.3.1.2.1: scheduling of PDSCH with DCI scrambled by P-RNTI; default parameters according to TS 38.508-1 clause 4.3.6.1.2.1		
ShortMessageIndicator	B2_Type	opt	Short Message Indicator according to TS 38.212 Table 7.3.1.2.1-1
ShortMessages	B8_Type	opt	Short Messages according to TS 38.331 Table 6.5-1
TbScaling	B2_Type	opt	Scaling factor according to TS 38.214 Table 5.1.3.2-2

NR_DciFormat_1_0_SI_RNTI_SpecificInfo_Type

TTCN-3 Record Type			
Name	NR_DciFormat_1_0_SI_RNTI_SpecificInfo_Type		
Comment	TS 38.212 clause 7.3.1.2.1: scheduling of PDSCH with DCI scrambled by SI-RNTI; default parameters according to TS 38.508-1 clause 4.3.6.1.2.1		
SystemInfoIndicator	B1_Type	opt	System information indicator according to TS 38.212 Table 7.3.1.2.1-2

NR_DciFormat_1_0_RA_RNTI_SpecificInfo_Type

TTCN-3 Record Type			
Name	NR_DciFormat_1_0_RA_RNTI_SpecificInfo_Type		
Comment	TS 38.212 clause 7.3.1.2.1: scheduling of PDSCH with DCI scrambled by RA-RNTI; default parameters according to TS 38.508-1 clause 4.3.6.1.2.1. FFS whether this is applicable to MsgB-RNTI		
TbScaling	B2_Type	opt	Scaling factor according to TS 38.214 Table 5.1.3.2-2
LSBsOfSFN	NR_DciFormat_1_0_LSBsOfSFN_Type	opt	LSBs of SFN

NR_DciFormat_1_1_SpecificInfo_Type

TTCN-3 Record Type			
Name	NR_DciFormat_1_1_SpecificInfo_Type		
Comment	TS 38.212 clause 7.3.1.2.2: scheduling of PDSCH in one cell; default parameters according to TS 38.508-1 clause 4.3.6.1.2.2 For all fields: 'omit' means that the information shall not be contained in the DCI on PDCCH		
CarrierIndicator	NR_DciCommon_CarrierIndicator_Type	opt	Carrier indicator - CIF value for Cross Carrier Scheduling; 'None' otherwise
BWPIndicator	NR_DciCommon_BWPIndicator_Type	opt	Bandwidth part indicator
PrbBundlingSizeIndicator	NR_DciFormat_1_X_PrBundlingSizeIndicator_Type	opt	PRB bundling size indicator
RateMatchingIndicator	NR_DciFormat_1_X_RateMatchingIndicator_Type	opt	Rate matching indicator
ZP_CSI_RS_Trigger	NR_DciFormat_1_X_ZP_CSI_RS_Trigger_Type	opt	ZP CSI-RS trigger
DAI	NR_DciFormat_1_1_DAI_Type	opt	downlink assignment index
TpcCommandPucch	NR_DciCommon_TpcCommand_Type	opt	TPC command for scheduled PUCCH; to be set to 1 per default (0 dB; accumulated TPC)
PucchResourceIndicator	NR_DciFormat_1_X_PucchResourceIndicator_Type	opt	PUCCH resource indicator
PdschHarqTimingIndicator	NR_DciFormat_1_X_PdschHarqTimingIndicator_Type	opt	PDSCH-to-HARQ_feedback timing indicator
OneShotHarqAckRequest	NR_DciFormat_1_1_OneShotHarqAckRequest_Type	opt	One-shot HARQ-ACK request
PdschGroupIndex	NR_DciFormat_1_1_PdschGroupIndex_Type	opt	PDSCH group index
NewFeedbackIndicator	NR_DciFormat_1_1_NewFeedbackIndicator_Type	opt	New feedback indicator
NumberRequestedPdschGroup	NR_DciFormat_1_1_NumberRequestedPdschGroup_Type	opt	Number of requested PDSCH group
AntennaPorts	NR_DciFormat_1_1_AntennaPorts_Type	opt	Antenna port(s)
TCI	NR_DciFormat_1_1_TCI_Type	opt	Transmission configuration indication
SrsRequest	NR_DciFormat_X_1_SrsRequest_Type	opt	SRS request
CBGTI	NR_DciFormat_1_1_CBGTI_Type	opt	CBG transmission information (CBGTI)
CBGFI	NR_DciFormat_1_1_CBGFI_Type	opt	CBG flushing out information (CBGFI)
DmrsSequenceInit	NR_DciCommon_DmrsSequenceInit_Type	opt	DMRS sequence initialization
PriorityIndicator	NR_DciCommon_PriorityIndicator_Type	opt	Priority indicator
ChannelAccessCPext	NR_DciFormat_1_1_ChannelAccessCPext_Type	opt	ChannelAccess-CPext
MinimumApplicableSchedulingOffset	NR_DciFormat_X_1_MinimumApplicableSchedulingOffset_Type	opt	Minimum applicable scheduling offset indicator
SCellDormancyIndication	NR_DciFormat_X_1_SCellDormancyIndication_Type	opt	SCell dormancy indication

NR_DciFormat_1_2_SpecificInfo_Type

TTCN-3 Record Type			
Name	NR_DciFormat_1_2_SpecificInfo_Type		
Comment	TS 38.212 clause 7.3.1.2.3: scheduling of PDSCH in one cell; default parameters according to TS 38.508-1 clause 4.3.6.1.2.3. For all fields: 'omit' means that the information shall not be contained in the DCI on PDCCH		
CarrierIndicator	NR_DciFormat_X_2_CarrierIndicator_Type	opt	Carrier indicator - CIF value for Cross Carrier Scheduling; 'None' otherwise
BWPIndicator	NR_DciCommon_BWPIndicator_Type	opt	Bandwidth part indicator
PrbBundlingSizeIndicator	NR_DciFormat_1_X_PrBundlingSizeIndicator_Type	opt	PRB bundling size indicator
RateMatchingIndicator	NR_DciFormat_1_X_RateMatchingIndicator_Type	opt	Rate matching indicator
ZP_CSI_RS_Trigger	NR_DciFormat_1_X_ZP_CSI_RS_Trigger_Type	opt	ZP CSI-RS trigger
DAI	NR_DciFormat_1_2_DAI_Type	opt	downlink assignment index
TpcCommandPucch	NR_DciCommon_TpcCommand_Type	opt	TPC command for scheduled PUCCH; to be set to 1 per default (0 dB; accumulated TPC)
PucchResourceIndicator	NR_DciFormat_1_2_PucchResourceIndicator_Type	opt	PUCCH resource indicator
PdschHarqTimingIndicator	NR_DciFormat_1_X_PdschHarqTimingIndicator_Type	opt	PDSCH-to-HARQ_feedback timing indicator
AntennaPorts	NR_DciFormat_1_2_AntennaPorts_Type	opt	Antenna port(s)
TCI	NR_DciFormat_1_2_TCI_Type	opt	Transmission configuration indication
SrsRequest	NR_DciFormat_X_2_SrsRequest_Type	opt	SRS request
DmrsSequenceInit	NR_DciCommon_DmrsSequenceInit_Type	opt	DMRS sequence initialization
PriorityIndicator	NR_DciCommon_PriorityIndicator_Type	opt	Priority indicator

NR_DciFormat_1_X_PucchResourceIndicator_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_X_PucchResourceIndicator_Type	
Comment	TS 38.212 clause 7.3.1.2.1/2: PUCCH resource indicator	
Value	B3_Type	3 bits as defined in TS 38.213 clause 9.2.3 or reserved bits; index to "PUCCH-ResourceSet" according to 38.213 clause 9.2.3 as provided by PUCCH-Config

NR_DciFormat_1_X_PdschHarqTimingIndicator_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_X_PdschHarqTimingIndicator_Type	
Comment	TS 38.212 clause 7.3.1.2.1/2: PDSCH-to-HARQ_feedback timing indicator (TS 38.213 clause 9.2.3)	
Value	bitstring	Format 1_0: 3 bits, addresses one of {1, 2, 3, 4, 5, 6, 7, 8} according to TS 38.213 clause 9.2.3; Format 1_1: 0..3 bits, addresses entry in table provided by PUCCH-Config.dl-DataToUL-ACK

NR_DciFormat_1_0_DAI_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_0_DAI_Type	
Comment	TS 38.212 clause 7.3.1.2.1: DAI (downlink assignment indicator)	
Index	DAI_B2_Type	2 bits according to TS 38.213 clause 9.1.3 or reserved bits

NR_DciFormat_1_0_LSBsOfSFN_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_0_LSBsOfSFN_Type	
Comment	TS 38.212 clause 7.3.1.2.1: LSBs of SFN	
None	Null_Type	no LSBs of SFN
Automatic	Null_Type	LSBs of SFN automatically assigned by SS; 2 bits

NR_DciFormat_1_X_PrBbundlingSizeIndicator_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_X_PrBbundlingSizeIndicator_Type	
Comment	TS 38.212 clause 7.3.1.2.X: PRB bundling size indicator	
None	Null_Type	no PRB bundling
Dynamic	B1_Type	when PDSCH-Config.prb-BundlingType is set to 'dynamicBundling'; indicates which set of PRG values to be used (see 38.214 clause 5.1.2.3)

NR_DciFormat_1_X_RateMatchingIndicator_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_X_RateMatchingIndicator_Type	
Comment	TS 38.212 clause 7.3.1.2.X: Rate matching indicator; rateMatchPatternGroup1/rateMatchPatternGroup1DCI-1-2 and rateMatchPatternGroup2/rateMatchPatternGroup2DCI-1-2 configured by PDSCH-Config	
Bitmap	bitstring	0, 1, or 2 bits: bitmap indicating rateMatchPatternGroup1/rateMatchPatternGroup1DCI-1-2 and/or rateMatchPatternGroup2/rateMatchPatternGroup2DCI-1-2 to be applied size depending on whether rateMatchPatternGroup1/rateMatchPatternGroup1DCI-1-2, rateMatchPatternGroup2/rateMatchPatternGroup2DCI-1-2 or both are configured by PDSCH-Config at the UE

NR_DciFormat_1_X_ZP_CSI_RS_Trigger_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_X_ZP_CSI_RS_Trigger_Type	
Comment	TS 38.212 clause 7.3.1.2.X: ZP CSI-RS trigger	
Index	bitstring	0, 1, or 2 bits: Index in list of ZP-CSI-RS-Resource as configured by PDSCH-Config at the UE

NR_DciFormat_1_1_DAI_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_1_DAI_Type	
Comment	TS 38.212 clause 7.3.1.2.2: DAI (downlink assignment indicator) - 6 bits if more than one serving cell are configured in the DL and the higher layer parameter NFI-TotalDAI-Included-r16 = enable - 4 bits if only one serving cell are configured in the DL and the higher layer parameter NFI-TotalDAI-Included-r16 = enable - 4 bits if more than one serving cell are configured in the DL, the higher layer parameter pdsch-HARQ-ACK-Codebook=dynamic or pdsch-HARQ-ACK-Codebook=enhancedDynamic-r16, and NFI-TotalDAI-Included-r16 is not configured - 4 bits if only one serving cell is configured in the DL, and the higher layer parameter pdsch-HARQ-ACK-Codebook=dynamic, and the UE is not provided CORESETPoolIndex or is provided CORESETPoolIndex with value 0 for one or more first CORESETs and is provided CORESETPoolIndex with value 1 for one or more second CORESETs, and is provided ACKNACKFeedbackMode = JointFeedback - 2 bits if only one serving cell is configured in the DL, the higher layer parameter pdsch-HARQ-ACK-Codebook=dynamic or pdsch-HARQ-ACK-Codebook=enhancedDynamic-r16, and NFI-TotalDAI-Included-r16 is not configured, when the UE is not configured with CORESETPoolIndex or the value of CORESETPoolIndex is the same for all CORESETs if CORESETPoolIndex is provided or the UE is not configured with ACKNACKFeedbackMode = JointFeedback	
None	Null_Type	no DAI
TwoBits	DAI_B2_Type	
FourBits	DAI_B4_Type	
SixBits	DAI_B6_Type	

NR_DciFormat_1_1_AntennaPorts_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_1_AntennaPorts_Type	
Comment	TS 38.212 clause 7.3.1.2.2: Antenna ports as defined by TS 38.212 Tables 7.3.1.2.2-1..4 and Tables 7.3.1.2.2-1A/2A/3A/4A	
Index	bitstring	bitstring presentation of index to TS 38.212 Tables 7.3.1.2.2-1..4 and Tables 7.3.1.2.2-1A/2A/3A/4A

NR_DciFormat_1_1_TCI_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_1_TCI_Type	
Comment	TS 38.212 clause 7.3.1.2.2: Transmission configuration indication (TCI)	
None	Null_Type	if ControlResourceSet.tci-PresentInDCI does not indicate 'enabled'
Value	B3_Type	if ControlResourceSet.tci-PresentInDCI=='enabled': TCI according to TS 38.213 clause 5.1.5/6

NR_DciFormat_1_1_CBGTI_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_1_CBGTI_Type	
Comment	TS 38.212 clause 7.3.1.2.2: CBG transmission information (CBGTI)	
Bitmap	bitstring	0, 2, 4, 6, or 8 bits according to PDSCH-CodeBlockGroupTransmission.maxCodeBlockGroupsPerTransportBlock and PDSCH-Config.maxNrofCodeWordsScheduledByDCI and TS 38.214 clause 5.1.7.2

NR_DciFormat_1_1_CBGFI_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_1_CBGFI_Type	
Comment	TS 38.212 clause 7.3.1.2.2: CBG flushing out information (CBGFI)	
None	Null_Type	no CBGFI
Flag	B1_Type	CBGFI flag, if codeBlockGroupTransmission is configured in PDSCH-ServingCellConfig with codeBlockGroupFlushIndicator set to true

NR_DciFormat_1_1_ChannelAccessCPext_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_1_ChannelAccessCPext_Type	
Comment	TS 38.212 clause 7.3.1.2.2: ChannelAccess-CPext	
None	Null_Type	no ChannelAccess-CPext
Value	bitstring	1, 2, 3 or 4 bits. Determined with dl-DCI-triggered-UL-ChannelAccess-CPext-r16 and from Table 7.3.1.2.2-6.

DAI_B1_Type

TTCN-3 Union Type		
Name	DAI_B1_Type	
Comment		
Index	B1_Type	1 bit DAI value
Automatic	Null_Type	DAI automatically assigned by SS according to clause 7.1.2.1.3.3

DAI_B2_Type

TTCN-3 Union Type		
Name	DAI_B2_Type	
Comment		
Index	B2_Type	2 bits DAI value
Automatic	Null_Type	DAI automatically assigned by SS according to clause 7.1.2.1.3.3

DAI_B4_Type

TTCN-3 Union Type		
Name	DAI_B4_Type	
Comment		
Index	B4_Type	4 bits DAI value
Automatic	Null_Type	DAI automatically assigned by SS according to clause 7.1.2.1.3.3

DAI_B6_Type

TTCN-3 Union Type		
Name	DAI_B6_Type	
Comment		
Index	B6_Type	6 bits DAI value
Automatic	Null_Type	DAI automatically assigned by SS according to clause 7.1.2.1.3.3

NR_DciFormat_1_1_OneShotHarqAckRequest_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_1_OneShotHarqAckRequest_Type	
Comment	TS 38.212 clause 7.3.1.2.2: One-shot HARQ-ACK request	
None	Null_Type	no One-shot HARQ-ACK request
Value	B1_Type	1 bit if higher layer parameter pdsch-HARQ-ACK-OneShotFeedback-r16 is configured

NR_DciFormat_1_1_PdschGroupIndex_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_1_PdschGroupIndex_Type	
Comment	TS 38.212 clause 7.3.1.2.2: PDSCH group index	
None	Null_Type	no PDSCH group index
Value	B1_Type	1 bit if the higher layer parameter pdsch-HARQ-ACK-Codebook = enhancedDynamic-r16

NR_DciFormat_1_1_NewFeedbackIndicator_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_1_NewFeedbackIndicator_Type	
Comment	TS 38.212 clause 7.3.1.2.2: New feedback indicator	
None	Null_Type	no New feedback indicator
Value	bitstring	1 or 2 bits if pdsch-HARQ-ACK-Codebook = enhancedDynamic-r16

NR_DciFormat_1_1_NumberRequestedPdschGroup_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_1_NumberRequestedPdschGroup_Type	
Comment	TS 38.212 clause 7.3.1.2.2: Number of requested PDSCH group(s)	
None	Null_Type	no Number of requested PDSCH group(s)
Value	B1_Type	if the higher layer parameter pdsch-HARQ-ACK-Codebook = enhancedDynamic-r16

NR_DciFormat_1_2_DAI_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_2_DAI_Type	
Comment	TS 38.212 clause 7.3.1.2.3: DAI (downlink assignment indicator) 0 bit if the higher layer parameter downlinkAssignmentIndexDCI-1-2 is not configured; 4 bits if more than one serving cell are configured in the DL and the higher layer parameter pdsch-HARQ-ACK-Codebook=dynamic, where the 2 MSB bits are the counter DAI and the 2 LSB bits are the total DAI 4 bits if one serving cell are configured in the DL and the higher layer parameter pdsch-HARQ-ACK-Codebook=dynamic, and the UE is not provided coresetPoolIndex or is provided coresetPoolIndex with value 0 for one or more first CORESETs and is provided coresetPoolIndex with value 1 for one or more second CORESETs, and is provided ackNackFeedbackMode = joint, where the 2 MSB bits are the counter DAI and the 2 LSB bits are the total DAI. 1 or 2 bits if only one serving cell is configured in the DL and the higher layer parameter pdsch-HARQ-ACK-Codebook=dynamic, when the UE is not configured with coresetPoolIndex or the value of coresetPoolIndex is the same for all CORESETs if coresetPoolIndex is provided or the UE is not configured with ackNackFeedbackMode = joint, where the 1 bit or 2 bits are the counter DAI.	
None	Null_Type	no DAI
OneBit	DAI_B1_Type	
TwoBits	DAI_B2_Type	
FourBits	DAI_B4_Type	

NR_DciFormat_1_2_PucchResourceIndicator_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_2_PucchResourceIndicator_Type	
Comment	TS 38.212 clause 7.3.1.2.3: PUCCH resource indicator	
None	Null_Type	Numberofbits-forPUCCHresourceindicator-ForDCIFormat1_2 is not present
Value	bitstring	1 or 2 or 3 bits determined by parameter Numberofbits-forPUCCHresourceindicator-ForDCIFormat1_2

NR_DciFormat_1_2_AntennaPorts_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_2_AntennaPorts_Type	
Comment	TS 38.212 clause 7.3.1.2.3: Antenna ports as defined by TS 38.212 Tables 7.3.1.2.2-6..26 and Tables 7.3.1.2.2-1A/2A/3A/4A	
None	Null_Type	antennaPortsFieldPresenceDCI-1-2 is not configured
Index	bitstring	2, 3, 4, or 5 bits, bitstring presentation of index to TS 38.212 Tables 7.3.1.2.2-6..26 and Tables 7.3.1.2.2-1A/2A/3A/4A

NR_DciFormat_1_2_TCI_Type

TTCN-3 Union Type		
Name	NR_DciFormat_1_2_TCI_Type	
Comment	TS 38.212 clause 7.3.1.2.3: Transmission configuration indication	
None	Null_Type	tci-PresentDCI-1-2-r16 is not present
Value	bitstring	1 or 2 or 3 bits determined by parameter tci-PresentDCI-1-2-r16

D.1.3.2.4.4 PUSCH_Scheduling

NR_DciUlInfo_Type

TTCN-3 Record Type			
Name	NR_DciUlInfo_Type		
Comment	scheduling for CCCH/DCCH/DTCH mapped to UL-SCH mapped to PUSCH; for all parameters: mandatory for initial configuration of an instance, omit means "keep as it is" afterwards		
ResourceAssignment	NR_DciFormat_0_X_ResourceAssignment_Type	opt	resource assignment; to control setting of the following fields in DCI formats 0_X (TS 38.212 clause 7.3.1.1.X): Frequency domain resource assignment Time domain resource assignment Modulation and coding scheme New data indicator Redundancy version HARQ process number
PuschHoppingCtrl	NR_DciFormat_0_X_PuschHoppingCtrl_Type	opt	control of frequency hopping in DCI formats (TS 38.212 Table 7.3.1.1.1-3)
TpcCommandPusch	NR_DciCommon_TpcCommand_Type	opt	TPC command for scheduled PUSCH; to be set to 1 per default (0 dB; accumulated TPC)
UL_SUL_Indicator	NR_DciCommon_UL_SUL_Indicator_Type	opt	to control use of supplementary UL by DCI
Format	NR_DciFormat_0_X_SpecificInfo_Type	opt	DCI format and DCI format specific parameters

NR_DciFormat_0_X_ResourceAssignment_Type

TTCN-3 Record Type			
Name	NR_DciFormat_0_X_ResourceAssignment_Type		
Comment	Common definition to be used for resource scheduling in UL		
ResourceAllocationType	NR_ResourceAllocationType_Type	opt	resource allocation type to be used for the frequency domain resource assignment
FreqDomain	NR_FreqDomainSchedulingExplicit_Type	opt	explicit resource assignment: first RB, number of RBs; corresponds to "Frequency domain resource assignment" in TS 38.212 clause 7.3.1.1.1 and 7.3.1.1.2
TimeDomain	NR_DciCommon_TimeDomainResourceAssignment_Type	opt	corresponds to "Time domain resource assignment" in TS 38.212 clause 7.3.1.1.1 and 7.3.1.1.2
TransportBlockScheduling	NR_TransportBlockRetransmissionList_Type	opt	information about MCS and RV for transport block transmission and possible re-transmissions; corresponds to "Modulation and coding scheme", "New data indicator" and "Redundancy version" in TS 38.212 clause 7.3.1.1.1 and 7.3.1.1.2
HarqProcessConfig	NR_HarqProcessConfig_Type	opt	HARQ process to be used for the scheduled UL data transfer corresponds to "HARQ process number" in TS 38.212 clause 7.3.1.1.1 and 7.3.1.1.2; NOTE: for 5G there is no synchronous HARQ anymore but HARQ is asynchronous even for UL (TS 38.300 clause 5.3.5.4; TS 38.212 clause 7.3.1: 4-bit HARQ process number included in all DCI Formats for UL)

NR_DciFormat_0_X_SpecificInfo_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_SpecificInfo_Type	
Comment		
Format_0_0	NR_DciFormat_0_0_SpecificInfo_Type	
Format_0_1	NR_DciFormat_0_1_SpecificInfo_Type	
Format_0_2	NR_DciFormat_0_2_SpecificInfo_Type	

NR_DciFormat_0_0_SpecificInfo_Type

TTCN-3 Record Type			
Name	NR_DciFormat_0_0_SpecificInfo_Type		
Comment	TS 38.212 clause 7.3.1.1: scheduling of PUSCH in one cell; default parameters according to TS 38.508-1 clause 4.3.6.1.1.1		
ChannelAccessCPext	NR_DciFormat_X_0_ChannelAccessCPext_Type	opt	ChannelAccess-CPext

NR_DciFormat_0_1_SpecificInfo_Type

TTCN-3 Record Type			
Name	NR_DciFormat_0_1_SpecificInfo_Type		
Comment	TS 38.212 clause 7.3.1.2: scheduling of PUSCH in one cell; default parameters according to TS 38.508-1 clause 4.3.6.1.1.2; for all parameters: mandatory for initial configuration of an instance, omit means "keep as it is" afterwards		
CarrierIndicator	NR_DciCommon_CarrierIndicator_Type	opt	Carrier indicator - CIF value for Cross Carrier Scheduling; 'None' otherwise
DfiFlag	NR_DciFormat_0_1_DfiFlag_Type	opt	DFI flag
BWPIndicator	NR_DciCommon_BWPIndicator_Type	opt	Bandwidth part indicator
FirstDAI	NR_DciFormat_0_X_FirstDAI_Type	opt	1st downlink assignment index
SecondDAI	NR_DciFormat_0_X_SecondDAI_Type	opt	2nd downlink assignment index
SrsResourceIndicator	NR_DciFormat_0_X_SrsResourceIndicator_Type	opt	SRS resource indicator
PrecodingInfo	NR_DciFormat_0_X_PrecodingInfo_Type	opt	Precoding information and number of layers
AntennaPorts	NR_DciFormat_0_X_AntennaPorts_Type	opt	Antenna ports
SrsRequest	NR_DciFormat_X_1_SrsRequest_Type	opt	SRS request
CsiRequest	NR_DciFormat_0_X_CsiRequest_Type	opt	CSI request
CBGTI	NR_DciFormat_0_1_CBGTI_Type	opt	CBG transmission information (CBGTI)
PtrsDmrsAssociation	NR_DciFormat_0_X_PtrsDmrsAssociation_Type	opt	PTRS-DMRS association
BetaOffsetIndicator	NR_DciFormat_0_X_BetaOffsetIndicator_Type	opt	beta_offset indicator
DmrsSequenceInit	NR_DciCommon_DmrsSequenceInit_Type	opt	DMRS sequence initialization
UlschIndicator	NR_DciFormat_0_X_UlschIndicator_Type	opt	UL-SCH indicator
ChannelAccessCPextCAPC	NR_DciFormat_0_1_ChannelAccessCPextCAPC_Type	opt	ChannelAccess-CPext-CAPC
OpenLoopPowerControl	NR_DciFormat_0_X_OpenLoopPowerControl_Type	opt	Open-loop power control parameter set indication
PriorityIndicator	NR_DciCommon_PriorityIndicator_Type	opt	Priority indicator
InvalidSymbolPatternIndicator	NR_DciFormat_0_X_InvalidSymbolPatternIndicator_Type	opt	Invalid symbol pattern indicator
MinimumApplicableSchedulingOffset	NR_DciFormat_X_1_MinimumApplicableSchedulingOffset_Type	opt	Minimum applicable scheduling offset indicator
SCellDormancyIndication	NR_DciFormat_X_1_SCellDormancyIndication_Type	opt	SCell dormancy indication
SidelinkAssignmentIndex	NR_DciFormat_0_1_SidelinkAssignmentIndex_Type	opt	Sidelink assignment index

NR_DciFormat_0_2_SpecificInfo_Type

TTCN-3 Record Type			
Name	NR_DciFormat_0_2_SpecificInfo_Type		
Comment	TS 38.212 clause 7.3.1.1.3: scheduling of PUSCH in one cell; default parameters according to TS 38.508-1 clause 4.3.6.1.1.3; for all parameters: mandatory for initial configuration of an instance, omit means "keep as it is" afterwards		
CarrierIndicator	NR_DciFormat_X_2_CarrierIndicator_Type	opt	Carrier indicator - CIF value for Cross Carrier Scheduling; 'None' otherwise
BWPIndicator	NR_DciCommon_BWPIndicator_Type	opt	Bandwidth part indicator
FirstDAI	NR_DciFormat_0_X_FirstDAI_Type	opt	1st downlink assignment index
SecondDAI	NR_DciFormat_0_X_SecondDAI_Type	opt	2nd downlink assignment index
SrsResourceIndicator	NR_DciFormat_0_X_SrsResourceIndicator_Type	opt	SRS resource indicator
PrecodingInfo	NR_DciFormat_0_X_PrecodingInfo_Type	opt	Precoding information and number of layers
AntennaPorts	NR_DciFormat_0_X_AntennaPorts_Type	opt	Antenna ports
SrsRequest	NR_DciFormat_X_2_SrsRequest_Type	opt	SRS request
CsiRequest	NR_DciFormat_0_X_CsiRequest_Type	opt	CSI request
PtrsDmrsAssociation	NR_DciFormat_0_X_PtrsDmrsAssociation_Type	opt	PTRS-DMRS association
BetaOffsetIndicator	NR_DciFormat_0_X_BetaOffsetIndicator_Type	opt	beta_offset indicator
DmrsSequenceInit	NR_DciCommon_DmrsSequenceInit_Type	opt	DMRS sequence initialization
UlschIndicator	NR_DciFormat_0_X_UlschIndicator_Type	opt	UL-SCH indicator
OpenLoopPowerControl	NR_DciFormat_0_X_OpenLoopPowerControl_Type	opt	Open-loop power control parameter set indication
PriorityIndicator	NR_DciCommon_PriorityIndicator_Type	opt	Priority indicator
InvalidSymbolPatternIndicator	NR_DciFormat_0_X_InvalidSymbolPatternIndicator_Type	opt	Invalid symbol pattern indicator

NR_DciFormat_0_X_PuschHoppingCtrl_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_PuschHoppingCtrl_Type	
Comment	TS 38.212 7.3.1.1.1 (format 0_0) and 7.3.1.1.2 (format 0_1)	
None	Null_Type	DCI format 0_1 only: 0 bit if only resource allocation type 0 is configured or PUSCH-Config.frequencyHopping is not configured
Flag	B1_Type	1 bit if resource allocation type 1 is configured (or type 0 and type 1) '1'B to indicate frequency hopping according to TS 38.214 clause 6.3

NR_DciFormat_0_X_FirstDAI_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_FirstDAI_Type	
Comment	TS 38.212 clause 7.3.1.1.X: First DAI (downlink assignment indicator) depending on PhysicalCellGroupConfig.pdsch-HARQ-ACK-Codebook	
SemiStaticCodebook	DAI_B1_Type	1 bit according to TS 38.213 clause 9.1.2.2 for Type-1 HARQ-ACK (pdsch-HARQ-ACK-codebook=semi-static)
DynamicCodebook	DAI_B2_Type	2 bits according to TS 38.213 Table 9.1.3-2 for Type-2 HARQ-ACK (pdsch-HARQ-ACK-codebook=dynamic or for enhanced dynamic HARQ-ACK codebook without UL-TotalDAI-Included-r16 configured)
EnhancedDynamicCodebook	DAI_B4_Type	Not applicable for DCI 0_2 - 4 bits for enhanced dynamic HARQ-ACK codebook and with UL-TotalDAI-Included-r16 = "enable".

NR_DciFormat_0_X_SecondDAI_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_SecondDAI_Type	
Comment	TS 38.212 clause 7.3.1.1.X: Second DAI (downlink assignment indicator) depending on PhysicalCellGroupConfig.pdsch-HARQ-ACK-Codebook	
None	Null_Type	no 2nd DAI
DynamicCodebook	DAI_B2_Type	2 bits according to TS 38.213 Table 9.1.3-2 for Type-2 HARQ-ACK (pdsch-HARQ-ACK-codebook=dynamic or for enhanced dynamic HARQ-ACK codebook with two HARQ-ACK sub-codebooks and without UL-TotalDAI-Included-r16 configured)
EnhancedDynamicCodebook	DAI_B4_Type	Not applicable for DCI 0_2 - 4 bits for enhanced dynamic HARQ-ACK codebook with two HARQ-ACK sub-codebooks and with UL-TotalDAI-Included-r16 = "enable"

NR_DciFormat_0_X_SrsResourceIndicator_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_SrsResourceIndicator_Type	
Comment	TS 38.212 clause 7.3.1.1.X: SRS resource indicator depending on PUSCH-Config.txConfig	
NonCodeBook	bitstring	txConfig==NonCodeBook: bitstring of 0..3 bits according to TS 38.212 Tables 7.3.1.1.2-28/29/30/31 (according to TS 38.331 clause 6.3.2 "SRS-Config" there are at most 4 entries with usage==nonCodebook)
CodeBook	bitstring	txConfig==CodeBook: - bitstring of 0 or 1 bits according to TS 38.212 Table 7.3.1.1.2-32 - bitstring of 4 bits according to TS 38.212 Table 7.3.1.1.2-32A/32B if ul-FullPowerTransmission-r16 is configured (according to TS 38.331 clause 6.3.2 "SRS-Config" there are at most 2 entries with usage==codebook)

NR_DciFormat_0_X_PrecodingInfo_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_PrecodingInfo_Type	
Comment	TS 38.212 clause 7.3.1.1.X: Precoding information and number of layers depending on PUSCH-Config.txConfig	
NonCodeBook	Null_Type	txConfig==NonCodeBook: 0 bits
CodeBook	bitstring	txConfig==CodeBook: bitstring according to TS 38.212 Tables 7.3.1.1.2-2..5A; empty string for one antenna port only

NR_DciFormat_0_X_AntennaPorts_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_AntennaPorts_Type	
Comment	TS 38.212 clause 7.3.1.1.X: Antenna ports depending (mainly) on - PUSCH-Config.transformPrecoder, - DMRS-UplinkConfig.dmr-Type, - DMRS-UplinkConfig.maxLength, - dmrs-UplinkTransformPrecoding-r16, - tp-pi2BPSK	
Index	bitstring	bitstring presentation of index to Tables 7.3.1.1.2-6..23
None	Null_Type	antennaPortsFieldPresenceDCI-0-2 is not present Not applicable for DCI format 0_1

NR_DciFormat_0_X_CsiRequest_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_CsiRequest_Type	
Comment	TS 38.212 clause 7.3.1.1.X: CSI request	
Index	bitstring	0, 1, 2, 3, 4, 5, or 6 bits determined by CSI-MeasConfig.reportTriggerSize/CSI-MeasConfig.reportTriggerSizeDCI-0-2; TS 38.214 clause 5.2.1.5.1)

NR_DciFormat_0_1_CBGTI_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_1_CBGTI_Type	
Comment	TS 38.212 clause 7.3.1.1.2: CBG transmission information (CBGTI)	
Index	bitstring	0, 2, 4, 6, or 8 bits determined by PUSCH-CodeBlockGroupTransmission.maxCodeBlockGroupsPerTransportBlock configured by PUSCH-ServingCellConfig

NR_DciFormat_0_X_PtrsDmrsAssociation_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_PtrsDmrsAssociation_Type	
Comment	TS 38.212 clause 7.3.1.1.X: PTRS-DMRS association	
None	Null_Type	0 bit PTRS-UplinkConfig is not configured in either dmrs-UplinkForPUSCH-MappingTypeA or dmrs-UplinkForPUSCH-MappingTypeB and transform precoder is disabled, or if transform precoder is enabled, or if maxRank=1
Value	B2_Type	2 bits according to TS 38.212 Table 7.3.1.1.2-25 and 7.3.1.1.2-26

NR_DciFormat_0_X_BetaOffsetIndicator_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_BetaOffsetIndicator_Type	
Comment	TS 38.212 clause 7.3.1.1.X: beta_offset indicator	
None	Null_Type	0 bit if uci-on-PUSCH != dynamic (ConfiguredGrantConfig.uci-OnPUSCH
Value	B2_Type	2 bits according to TS 38.213 Table 9.3-3 and Table 9.3-3A

NR_DciFormat_0_X_UlschIndicator_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_UlschIndicator_Type	
Comment	TS 38.212 clause 7.3.1.1.X: UL-SCH indicator	
None	Null_Type	0 bit if the number of scheduled PUSCH indicated by the Time domain resource assignment field is larger than 1 Not applicable for DCI format 0_2
Value	B1_Type	1 bit: "1" indicates UL-SCH shall be transmitted on the PUSCH, "0" indicates UL-SCH shall not be transmitted on the PUSCH. Except for DCI format 0_1 with CRC scrambled by SP-CSI-RNTI, a UE is not expected to receive a DCI format 0_1 with UL-SCH indicator of "0" and CSI request of all zero(s).

NR_DciFormat_0_1_DfiFlag_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_1_DfiFlag_Type	
Comment	TS 38.212 clause 7.3.1.1.2: DFI flag indicator	
None	Null_Type	0 bit no DFI flag indicator
Flag	B1_Type	1 bit: if the UE is configured to monitor DCI format 0_X with CRC scrambled by CS-RNTI and for operation in a cell with shared spectrum channel access.

NR_DciFormat_0_1_ChannelAccessCPextCAPC_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_1_ChannelAccessCPextCAPC_Type	
Comment	TS 38.212 clause 7.3.1.1.2: ChannelAccess-CPext-CAPC	
None	Null_Type	0 bit: no ChannelAccess-CPext-CAPC
Value	bitstring	1, 2, 3, 4, 5 or 6 bits. One or more entries from Table 7.3.1.1.2-35 are configured by the higher layer parameter ul-dci-triggered-UL-ChannelAccess-CPext-CAPC-r16

NR_DciFormat_0_X_OpenLoopPowerControl_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_OpenLoopPowerControl_Type	
Comment	TS 38.212 clause 7.3.1.1.X: Open-loop power control parameter set indication	
None	Null_Type	0 bit no Open-loop power control parameter set indication
Value	bitstring	1 or 2 bits - 1 bit if SRS resource indicator is present in the DCI format 0_X; - 1 or 2 bits as determined by higher layer parameter olpc-ParameterSetForDCI-Format0-X if SRS resource indicator is not present in the DCI format 0_X.

NR_DciFormat_0_X_InvalidSymbolPatternIndicator_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_X_InvalidSymbolPatternIndicator_Type	
Comment	TS 38.212 clause 7.3.1.1.X: Invalid symbol pattern indicator	
None	Null_Type	0 bit no Invalid symbol pattern indicator
Value	B1_Type	1 bit as defined in Clause 6.1.2.1 in TS 38.214

NR_DciFormat_0_1_SidelinkAssignmentIndex_Type

TTCN-3 Union Type		
Name	NR_DciFormat_0_1_SidelinkAssignmentIndex_Type	
Comment	TS 38.212 clause 7.3.1.1.2: Sidelink assignment index	
None	Null_Type	0 bit no Sidelink assignment index
Value	bitstring	1 or 2 bits: 1 bit if the UE is configured with pdsch-HARQ-ACK-Codebook = semi-static ; 2 bits if the UE is configured with pdsch-HARQ-ACK-Codebook = dynamic

D.1.3.3 MAC_Layer

Configuration for MAC procedures according to TS 38.321 clause 5 and related physical layer configuration

D.1.3.3.1 MAC_Layer_Common

MAC_Layer_Common: Basic Type Definitions

TTCN-3 Basic Types		
NR_TimingAdvanceIndex_Type	integer (0..63)	acc. to TS 38.321, clause 6.1.3.4 "Timing Advance Command MAC CE" and TS 38.213 clause 4.2 "Transmission timing adjustments"
NR_TimingAdvance_Period_Type	integer (400, 600, 1020, 1530, 2040, 4090, 8190)	the values correspond to 80 % of TimeAlignmentTimer (acc. to TS 38.523-3, clause 6.3.2): - TAG-Id=0 for the SpCell - TAG-Id as configured for an SCell the transmission shall be continuously until being stopped

NR_UplinkTimeAlignment_AutoSynch_Type

TTCN-3 Record Type		
Name	NR_UplinkTimeAlignment_AutoSynch_Type	
Comment	Parameters for automatic synchronisation of UL time alignment; The SS shall periodically transmit TA MAC control elements according to 38.321 clause 6.1.3.4 with - TAG-Id=0 for the SpCell - TAG-Id as configured for an SCell the transmission shall be continuously until being stopped	
TimingAdvance	NR_TimingAdvanceIndex_Type	amount of timing adjustment that MAC entity has to apply
TA_Period	NR_TimingAdvance_Period_Type	time period after which TA MAC control elements need to be automatically transmitted

NR_UplinkTimeAlignment_Synch_Type

TTCN-3 Union Type		
Name	NR_UplinkTimeAlignment_Synch_Type	
Comment	Configuration of Time Alignment of the UL	
None	Null_Type	no PUCCH Synchronisation applied
Auto	NR_UplinkTimeAlignment_AutoSynch_Type	SS automatically maintains PUCCH synchronization at UE

D.1.3.3.2 Random_Access_Procedure

NR_RachProcedureConfig_Type

TTCN-3 Record Type			
Name	NR_RachProcedureConfig_Type		
Comment	parameters to control the random access procedure; TS 38.321, clause 5.1. When SUL is configured, SS shall monitor UE RACH transmissions on both uplink and supplementary uplink carriers. NOTE: RACH-ConfigCommon and RACH-ConfigDedicated are contained in NR_UplinkBWP_Type already (RACH-ConfigCommon as part of BWP-UplinkCommon). When supplementary uplink is configured, RACH-ConfigCommon and RACH-ConfigDedicated are contained in the fields Uplink and SupplementaryUplink.		
RachProcedureList	NR_RachProcedureList_Type	opt	in normal cases there is one element which is used for any RA procedure

NR_RachProcedureList_Type

TTCN-3 Record of Type	
Name	NR_RachProcedureList_Type
Comment	to simulate RACH procedure with one or more than one attempt by the UE: There is one element in the list per PRACH Preamble attempt
record of NR_RachProcedure_Type	

NR_RachProcedure_Type

TTCN-3 Record Type			
Name	NR_RachProcedure_Type		
Comment			
RandomAccessResponse	NR_RandomAccessResponseConfig_Type	opt	configures how the SS shall react on a PRACH Preamble attempt, in general: - RAR with RAPID matching the RAPID of the UE's PRACH Preamble - RAR with RAPID not matching the RAPID of the UE's PRACH Preamble - BackoffIndicator - no response at all
ContentionResolution	NR_ContentionResolutionControl_Type	opt	Random Access Procedure may be 1. Contention free (Non-contention based) => no contention resolution 2. Contention based (see TS 38.321 clause 5.1.5): 2a) C-RNTI based: Msg3 contains MAC C-RNTI control element and in general contention resolution is done by assignment of an UL grant for this C-RNTI 2b) UE Contention Resolution Identity based: Msg3 contains RRC message to setup or restore RRC connection => contention resolution is done by sending of Msg4 with UE Contention Resolution Identity MAC CE

D.1.3.3.2.1 Random_Access_Response

Random_Access_Response: Basic Type Definitions

TTCN-3 Basic Types		
NR_RACH_TimingAdvance_Type	integer (0..3846)	12 bit value corresponding to Timing Advance Command field of the Random Access Response (TS 38.321 clause 6.2.3): 0..3846 according to TS 38.213 clause 4.2)
NR_RAR_BackoffIndicator_Type	integer (0..15)	MAC subPDU for Backoff Indicator only according to TS 38.321 clause 6.1.5

NR_RAR_UplinkGrant_Type

TTCN-3 Record Type		
Name	NR_RAR_UplinkGrant_Type	
Comment	27 bits according to TS 38.213 Table 8.2-1 and TS 38.321 Figure 6.2.3-1	
HoppingFlag	B1_Type	Hopping flag
Msg3FrequencyResourceAllocation	B14_Type	Msg3 PUSCH frequency resource allocation: RIV value as defined in TS 38.213 clause 8.2 and TS 38.214 clause 6.1.2.2.2
Msg3TimeResourceAllocation	B4_Type	Msg3 PUSCH time resource allocation similar to the Time-domain resource assignment field of DCI format 0_0: index addressing an entry of the applicable PUSCH time domain resource allocation table as specified in TS 38.214 clause 6.1.2.1.1; the timing between the RAR and Msg3 is given by K2 (as in the time domain resource allocation table) and a delta value as according to Table 6.1.2.1.1-5 in TS 38.214. It is the responsibility of SS implementation to send the RAR in an appropriate DL slot so that the corresponding Msg3 transmission is scheduled for a valid UL slot; it is responsibility of test specification to provide a correct K2 value for the given numerology.
MCS	B4_Type	Modulation and Coding Scheme: first sixteen indices of the applicable MCS index table for PUSCH (TS 38.214 Table 6.1.4.1-1)
TPC_Command	B3_Type	TPC command for Msg3 PUSCH
CQI_Req	B1_Type	CQI request

NR_TempC_RNTI_Type

TTCN-3 Union Type		
Name	NR_TempC_RNTI_Type	
Comment		
SameAsC_RNTI	Null_Type	in the RA response SS shall use the same C-RNTI as configured in NR_CellConfigCommon_Type; this is useful for initial random access
Explicit	RNTI_Value_Type	in the RA response SS shall use different value as configured in NR_CellConfigCommon_Type; this can be used when the UE already is in RRC_CONNECTED to have a temporary C-RNTI different from the one used by the UE; NOTE: when the UE is not in RRC_CONNECTED there shall be no explicit temp. C-RNTI since then the UE would assume this value as C-RNTI

NR_RAR_Payload_Type

TTCN-3 Record Type			
Name	NR_RAR_Payload_Type		
Comment	MAC payload for Random Access Response according to TS 38.321 clause 6.2.3		
TimingAdvance	NR_RACH_TimingAdvance_Type		timing advance: TS 38.321 clause 6.2.3 and TS 38.213 clause 4.2 NOTE: timing advance has impact not only on the RA procedure; SS in general needs to adjust its timing accordingly
UplinkGrant	NR_RAR_UplinkGrant_Type		initial UL grant
TempC_RNTI	NR_TempC_RNTI_Type		NOTE: In general for initial Random Access Procedure TempC_RNTI shall be 'SameAsC_RNTI' For Random Access Procedure in RRC_CONNECTED state the NW assigns a temporary C-RNTI which is replaced by the one stored at the UE; => TempC_RNTI may be 'SameAsC_RNTI' (in this case temp. C-RNTI and C-RNTI are equal what is not likely in a real network), or there is an explicit temp. C-RNTI what is used during RA procedure only (as in a real network)

NR_RAR_RapIdOnly_Type

TTCN-3 Record Type			
Name	NR_RAR_RapIdOnly_Type		
Comment	MAC subPDU for RAPID only (acknowledgment for SI request) according to TS 38.321 clause 6.1.5		
RapId	RAR_RapIdCtrl_Type		

NR_RAR_RapIdAndPayload_Type

TTCN-3 Record Type			
Name	NR_RAR_RapIdAndPayload_Type		
Comment	MAC subPDU for RAPID and RAR payload according to TS 38.321 clause 6.1.5		
RapId	RAR_RapIdCtrl_Type		
Payload	NR_RAR_Payload_Type		

NR_RAR_SubPdu_Type

TTCN-3 Union Type			
Name	NR_RAR_SubPdu_Type		
Comment	Random Access Response sub-PDU according to TS 38.321 clause 6.1.5		
BackoffIndicator	NR_RAR_BackoffIndicator_Type		
RapIdOnly	NR_RAR_RapIdOnly_Type		
RapIdAndPayload	NR_RAR_RapIdAndPayload_Type		

NR_RAR_SubPduList_Type

TTCN-3 Record of Type	
Name	NR_RAR_SubPduList_Type
Comment	list of MAC subPDUs; if a Backoff Indicator is included it has to be the first element (TS 38.321 clause 6.1.5)
	record of NR_RAR_SubPdu_Type

NR_RAR_MacPdu_Type

TTCN-3 Record Type			
Name	NR_RAR_MacPdu_Type		
Comment			
SubPduList	NR_RAR_SubPduList_Type	opt	list of Backoff Indicator (optional) and random access responses; empty list if no RAR shall be sent at all (omit means "keep as it is" as usual)
CrcError	boolean	opt	if set, MAC PDU shall transmitted with CRC bits (0-3) being toggled

NR_RandomAccessResponseConfig_Type

TTCN-3 Record Type			
Name	NR_RandomAccessResponseConfig_Type		
Comment	configuration for Random Access Response mapped to DL-SCH mapped to PDSCH		
SearchSpaceAndDci	NR_SearchSpaceDIDciAssignment_Type	opt	in general a RACH procedure is expected at the BWP currently being configured as active BWP at the SS; Type1-PDCCH common search space is used for scheduling of the Random Access Response (Msg2)
MacPdu	NR_RAR_MacPdu_Type	opt	MAC PDU to be sent automatically by the SS when there has been a RACH preamble

D.1.3.3.2.2 Contention_Resolution

NR_ContentionResolutionCtrl_Type

TTCN-3 Union Type			
Name	NR_ContentionResolutionCtrl_Type		
Comment			
None	Null_Type		no contention resolution: e.g. in case of contention free random access procedure or for special cases of contention based random access procedure
CRNTI_Based	NR_SearchSpaceUIDciAssignment_Type		contention resolution based on C-RNTI on PDCCH: The SS assigns UL grant on PDCCH; the UL grant is scrambled by C-RNTI and associated with the UE-specific search space
Msg4_Based	NR_RachProcedureMsg4_Type		contention resolution based on UE Contention Resolution Identity on DL-SCH

NR_RachProcedureMsg4_Type

TTCN-3 Record Type			
Name	NR_RachProcedureMsg4_Type		
Comment	Msg4 of the RACH procedure in case of contention resolution based on UE Contention Resolution Identity		
SearchSpaceAndDci	NR_SearchSpaceDIDciAssignment_Type	opt	DCI to be used for Msg4; the DCI is scrambled by the temporary C-RNTI and associated with the Type1-PDCCH common search space
ContentionResolutionId	NR_ContentionResolutionId_Type	opt	Contention Resolution Id contained in MAC PDU of Msg4
RrcPdu	NR_RachProcedureMsg4RrcMsg_Type	opt	RRC message to be contained in Msg4 of the RACH procedure
CrcError	boolean	opt	if set, MAC PDU shall transmitted with CRC bits (0-3) being toggled

NR_ContentionResolutionId_Type

TTCN-3 Union Type		
Name	NR_ContentionResolutionId_Type	
Comment		
XorMask	B48_Type	When SS receives Contention Resolution ID from the UE, SS shall XOR it with the given mask and use this as Contention Resolution ID; this allows to get an unmatching Contention Resolution ID; in normal cases mask shall be set to tsc_ContentionResolutionId_Unchanged (i.e. the Contention Resolution ID remains unchanged) NOTE: In case of UL_CCCH1_Message the contention resolution id shall be cut down to the first 48 bits according to TS 38.321 clause 6.1.3.3
None	Null_Type	MAC Contention Resolution Control Element is not contained in the MAC PDU sent out as response for Msg3

NR_RachProcedureMsg4RrcMsg_Type

TTCN-3 Union Type		
Name	NR_RachProcedureMsg4RrcMsg_Type	
Comment		
RrcCchMsg	octetstring	encoded RRC message for CCCH; LCID=000000 for CCCH
RrcDchMsg	octetstring	encoded RRC message for DCCH; the SS shall <ul style="list-style-type: none"> - apply integrity protection, - add a PDCP header accordingly, - add an AM RLC header, - use LCID=000001 corresponding to SRB1 as logical channel id
None	Null_Type	Msg4 does not contain any RRC message, e.g. when RRC message is sent stand-alone in separate DL transmission

D.1.3.4 System_Information_Control

Primitive to configuration scheduling of system information on BCCH/BCH

System_Information_Control: Basic Type Definitions

TTCN-3 Basic Types		
NR_BcchToPbchConfig_Type	Null_Type	place holder for BCCH mapped to BCH mapped to PBCH: MIB using fixed periodicity (80ms) and repetitions (80ms) according to TS 38.331 clause 5.2.1; the position of SS/PBCH blocks in frequency and time domain is specified in TS 38.211 clause 7.4.3 and TS 38.213 clause 4.1 the SS configuration for SS/PBCH blocks is defined by NR_SSB_Config_Type as part of physical layer configuration of a cell

NR_Sib1Schedul_Type

TTCN-3 Record Type			
Name	NR_Sib1Schedul_Type		
Comment	Scheduling of SIB1 (RMSI - Remaining Minimum SI, according to TS 38.300 clause 7.3): fixed scheduling in time domain according to TS 38.331 clause 5.2.1 (periodicity: 160ms according to TS 38.331 clause 5.2.1)		
SearchSpaceAndDci	NR_SearchSpaceDIDciAssignment_Type	opt	in general SIB scheduling is assigned to the initial BWP's Type0-PDCCH common search space (searchSpaceZero); in principle SIB scheduling can be configured to happen simultaneously in more than one BWP (e.g. initial BWP and active BWP); SIB1 scheduling may be stopped by not assigning any BWP (AssignedBWPs being empty)
Periodicity	integer	opt	SIB1 repetition transmission period in milliseconds. According to TS 38.331 clause 5.2.1 the SIB1 repetition transmission period is 20 ms in case of SSB and CORESET multiplexing pattern 1; for SSB and CORESET multiplexing pattern 2/3 it is the same as the SSB period
SlotOffsetList	IntegerList_Type	opt	List of slot offsets for SIB1: For single beam configuration there is exactly one offset corresponding to the SSB index of the beam. For multiple beam configuration with N beams, SIB1 may be scheduled per beam so that there can be up-to N SIB1-transmission per repetition period. The offsets correspond to the SSB index of the respective beam as according to TS 38.213 clause 13: For a repetition period of 20ms the offset is relative to start of frames with even SFN (i.e. SFN mod 2 = 0) => in terms of TS 38.213 clause 13 for a given SSB index the slot offset is n_0 when nO refers to a frame with even SFN $n_0 + (\text{number of slots per frame})$ when nO refers to a frame with odd SFN A repetition period other than 20ms is not considered as long as there is no test requirement. NOTE: the SIB1 scheduling for a given offset shall match the Type0-PDCCH common search space configuration as configured in the SearchSpaceArray of the BWP

NR_SingleSiSchedul_Type

TTCN-3 Record Type			
Name	NR_SingleSiSchedul_Type		
Comment	Scheduling for a single SI in its SI-window within a BWP (or even within several BWPs)		
SearchSpaceAndDci	NR_SearchSpaceDIDciAssignment_Type	opt	in general SIB scheduling is assigned to the initial BWP's Type0A-PDCCH common search space; nevertheless in principle scheduling can be configured to happen simultaneously in more than one BWP (e.g. initial BWP and active BWP)
SlotOffset	integer	opt	slot-offset within the SI-window

NR_OtherSiSchedul_Type

TTCN-3 Record Type			
Name	NR_OtherSiSchedul_Type		
Comment	Scheduling of other SI ("other SI" according to TS 38.300 clause 7.3): specifies for a specific SI the scheduling and repetitions within its SI window		
Periodicity	NR_SiPeriodicity_Type	opt	
Window	record of NR_SingleSiSchedul_Type	opt	one or more repetitions within the si-window

NR_OtherSiSchedulList_Type

TTCN-3 Record of Type	
Name	NR_OtherSiSchedulList_Type
Comment	
record of NR_OtherSiSchedul_Type	

NR_PosSiSchedul_Type

TTCN-3 Record Type			
Name	NR_PosSiSchedul_Type		
Comment	Scheduling of other SI ("other SI" according to TS 38.300 clause 7.3) including posSIBs: specifies for a specific SI the scheduling and repetitions within its SI window		
PosSI_Periodicity	NR_PosSI_Periodicity_Type	opt	
Window	record of NR_SingleSiSchedul_Type	opt	one or more repetitions within the si-window

NR_PosSiSchedulList_Type

TTCN-3 Record of Type	
Name	NR_PosSiSchedulList_Type
Comment	
record of NR_PosSiSchedul_Type	

PosSiSchedulInfo_Type

TTCN-3 Record Type			
Name	PosSiSchedulInfo_Type		
Comment			
OffsetToSI_Used	boolean	opt	If true: indicates that all the SI messages containing posSIBs are scheduled with an offset of 8 radio frames compared to SI messages provided in NR_AllOtherSiSchedul_Type. SiList and NR_AllOtherSiSchedul_Type.SegmentedSiList. If false: the SI messages containing posSIBs are scheduled after the other SI messages provided in NR_AllOtherSiSchedul_Type.SiList and NR_AllOtherSiSchedul_Type.SegmentedSiList. Corresponding to ASN.1 PosSchedulingInfo-r16.offsetToSI-Used-r16.
PosSiList	NR_PosSiSchedulList_Type	opt	list of scheduling info for the posSIBs containing one or more posSIBs

NR_AllOtherSiSchedul_Type

TTCN-3 Record Type			
Name	NR_AllOtherSiSchedul_Type		
Comment	Scheduling of (all) other SI (i.e. SIB2 and above according to TS 38.300 clause 7.3)		
WindowLength	NR_SiWindowLength_Type	opt	to calculate start of each SI window according to TS 38.331 clause 5.2.2.3.2
SiList	NR_OtherSiSchedulList_Type	opt	list of scheduling info for the SIs containing one or more SIBs
SegmentedSiList	NR_OtherSiSchedulList_Type	opt	list of scheduling info for segmented SIs (e.g. SI containing SIB7 or SIB8 or SIB12); corresponds to SegmentedSIs in NR_BcchInfo_Type: SS shall subsequently schedule the elements of the corresponding SegmentedSIs (NR_BcchInfo_Type); SegmentedSiList[i] provides scheduling info for BcchInfo_Type's SegmentedSIs[i] The kth element of SegmentedSIs[i] is sent at the following slot number from TO: SlotOffset + ((N+i)* WindowLength) + k*Periodicity with k : kth element in SegmentedSIs[i], i.e. SegmentedSIs[i][k] N : number of SI provided in SIs in NR_BcchInfo_Type TO: start of the modification period SlotOffset, Periodicity: scheduling info as given by SegmentedSiList[i] - in slots WindowLength: provided in NR_AllOtherSiSchedul_Type - in slots
PosSiSchedulInfo	PosSiSchedulInfo_Type	opt	list of scheduling info for SIs containing one or more posSIBs

NR_BcchToPdschConfig_Type

TTCN-3 Record Type			
Name	NR_BcchToPdschConfig_Type		
Comment	configuration for BCCH mapped to DL-SCH mapped to PDSCH		
Sib1Schedul	NR_Sib1Schedul_Type	opt	SIB1 scheduling
SiSchedul	NR_AllOtherSiSchedul_Type	opt	scheduling of other SI

NR_SI_List_Type

TTCN-3 Record of Type	
Name	NR_SI_List_Type
Comment	list of system information messages
record of BCCH_DL_SCH_Message	

NR_SegmentedSI_List_Type

TTCN-3 Record of Type	
Name	NR_SegmentedSI_List_Type
Comment	Each element is a list of segments; used for segmented SIBs Used for SIB7/SIB8/SIB12 segmentation
record of NR_SI_List_Type	

NR_PosSI_Type

TTCN-3 Union Type		
Name	NR_PosSI_Type	
Comment		
PosSI	BCCH_DL_SCH_Message	None of the AssistanceDataElement in the posSIBs in the SI are segmented.
SegmentedPosSIs	NR_SI_List_Type	List of SI containing posSIBs containing segments of AssistanceDataElement, according to TS 37.355 clause 7.3. SS shall schedule one element of the list (SegmentedPosSIs) in the si-window; PosSiSchedullInfo[i] provides scheduling info for PosSIs[i].SegmentedPosSIs

NR_PosSI_List_Type

TTCN-3 Record of Type	
Name	NR_PosSI_List_Type
Comment	Each element is an SI including posSIBs or a list of SI containing posSIBs containing segments of AssistanceDataElement.
record of NR_PosSI_Type	

NR_BcchInfo_Type

TTCN-3 Record Type			
Name	NR_BcchInfo_Type		
Comment	Configuration of system information message contents to be scheduled at the SS		
MIB	BCCH_BCH_Message	opt	TS 38.331, clause 6.2.1 BCCH-BCH-Message and clause 6.2.2 MIB; NOTE: the system frame number included in MIB needs to be handled and maintained by the system simulator; that means that the system frame number being setup by TTCN shall be ignored and overwritten by the SS
SIB1	BCCH_DL_SCH_Message	opt	TS 38.331, clause 6.2.1 BCCH-DL-SCH-Message and clause 6.2.2 SIB1
SIs	NR_SI_List_Type	opt	list of SIs corresponding to SiList of NR_AllOtherSiSchedul_Type (i.e. element i of NR_AllOtherSiSchedul_Type's SiList specifies the scheduling for SIs[i])
SegmentedSIs	NR_SegmentedSI_List_Type	opt	list of SIs containing segmented SIBs; corresponds to SegmentedSiList in NR_AllOtherSiSchedul_Type
PosSIs	NR_PosSI_List_Type	opt	list of SIs containing posSIBs corresponding to PosSiSchedullInfo of NR_AllOtherSiSchedul_Type (i.e. element i of NR_AllOtherSiSchedul_Type's PosSiSchedullInfo specifies the scheduling for posSIs[i])

NR_BcchConfig_Type

TTCN-3 Record Type			
Name	NR_BcchConfig_Type		
Comment	Configuration of system information scheduling and content at the SS		
Pbch	NR_BcchToPbchConfig_Type	opt	
Pdsch	NR_BcchToPdschConfig_Type	opt	
BcchInfo	NR_BcchInfo_Type	opt	

D.1.3.5 Paging_Control

Primitive to configuration PCCH/PCH

NR_PcchConfig_Type

TTCN-3 Record Type			
Name	NR_PcchConfig_Type		
Comment	configuration for PCCH mapped to PCH mapped to PDSCH		
SearchSpaceAndDci	NR_SearchSpaceDciAssignment_Type	opt	in general Paging happens at the BWP currently being configured as active BWP at the SS and Type2-PDCCH common search space is used for scheduling; NOTE 1: there is no use case to schedule Paging simultaneously in multiple BWPs NOTE 2: the DCI may or may not carry a short message but in any case it shall indicate presence of the paging (to send only a short message the "DciTrigger" primitive shall be used)

D.1.3.6 CCCH_DCCH_DTCH_Configuration

NR_DcchDtchConfigDL_Type

TTCN-3 Record Type			
Name	NR_DcchDtchConfigDL_Type		
Comment	configuration for DCCH/DTCH mapped to DL-SCH mapped to DL-SCH mapped to PDSCH; NOTE: in contrast to EUTRA the configuration of HARQ processes to be used is done as part of DCI configuration		
SearchSpaceAndDci	NR_SearchSpaceDciAssignment_Type	opt	in general DCCH/DTCH transmissions happen at the BWP currently being the active BWP at the SS and the UE specific search space is used for scheduling; DCI configuration for Msg2 of the RACH procedure is done as part of the RACH procedure configuration (NR_RandomAccessResponseConfig_Type)

NR_DcchDtchConfigUL_Type

TTCN-3 Record Type			
Name	NR_DcchDtchConfigUL_Type		
Comment	scheduling for DCCH/DTCH mapped to UL-SCH mapped to PUSCH		
SearchSpaceAndDci	NR_SearchSpaceUIDciAssignment_Type	opt	in general DCCH/DTCH transmissions happen at the BWP currently being the active BWP at the SS and the UE specific search space is used for scheduling
PUCCH_Synch	NR_UplinkTimeAlignment_Synch_Type	opt	parameters for automatic control of timing advance
GrantConfig	UL_GrantConfig_Type	opt	configuration how UL grant allocation is done (as response to scheduling request, periodically, etc.

NR_DrxCtrl_Type

TTCN-3 Union Type		
Name	NR_DrxCtrl_Type	
Comment	DRX configuration for connected mode (TS 38.321, clause 5.7)	
None	Null_Type	DRX not configured
Config	NR_ASN1_DRX_Config_Type	DRX is configured as signalled to the UE

NR_MeasGapCtrl_Type

TTCN-3 Union Type		
Name	NR_MeasGapCtrl_Type	
Comment	support of measurement gap configuration	
None	Null_Type	no measurement gap configuration
Config	NR_ASN1_MeasGapConfig_Type	measurement gap configuration acc. to TS 38.331, clause 5.5.2.9; NOTE: the release branch of MeasGapConfig in general is not used for configuration of the SS

NR_DcchDtchConfig_Type

TTCN-3 Record Type			
Name	NR_DcchDtchConfig_Type		
Comment			
DL	NR_DcchDtchConfigDL_Type	opt	Scheduling, parameters related to DCCH and DTCH in DL
UL	NR_DcchDtchConfigUL_Type	opt	Scheduling, parameters related to DCCH and DTCH in UL
DrxCtrl	NR_DrxCtrl_Type	opt	DRX configuration as sent to the UE (or 'None' when the UE does not support connected mode DRX)
MeasGapCtrl	NR_MeasGapCtrl_Type	opt	to tell the SS when no assignments/grants shall be assigned to the UE

D.1.3.7 Cell_Group_Configuration

Configuration of cell group(s) in terms of dual connectivity and carrier aggregation

Cell_Group_Configuration: Basic Type Definitions

TTCN-3 Basic Types		
NR_ServingCellIndex_Type	integer	corresponds to ASN.1 (v15.1.0) definitions SCellIndex (1..31) and ServCellIndex (0..maxNrofServingCells-1): According to ASN.1 "The value range is shared across the Cell Groups" and "the PCell of the Master Cell Group uses ID = 0"

NR_ServingCellConfig_Type

TTCN-3 Union Type		
Name	NR_ServingCellConfig_Type	
Comment	serving cell capabilities of a cell	
SpCell	NR_SpCellConfig_Type	parameters specific for an SpCell and cell group configuration
SCell	NR_SCellConfig_Type	parameters specific for an SCell
None	Null_Type	there is no serving cell at all (e.g. neighbouring cell only)

NR_SCellConfig_Type

TTCN-3 Record Type			
Name	NR_SCellConfig_Type		
Comment	cell parameters specific for an SCell; NOTE: the corresponding SpCell can be derived from the SpCell's SCellList; further parameters may be added according to test requirements for CA test cases		
ServingCellIndex	NR_ServingCellIndex_Type	opt	
TAG_Id	TAG_Id	opt	Id of the Timing Advance Group the SCell belongs to (according to TS 38.321 clause 6.1.3.4 the SpCell has the TAG Identity 0); the SS shall use the given TAG_Id e.g. for automatic time alignment in UL (see NR_UplinkTimeAlignment_AutoSynch_Type)

NR_SpCellConfig_Type

TTCN-3 Record Type			
Name	NR_SpCellConfig_Type		
Comment	cell parameters specific for an SpCell (PCell of the MCG or the PSCell of the SCG) and additional parameters of the cell group; further parameters may be added according to test requirements for CA test cases		
ServingCellIndex	NR_ServingCellIndex_Type	opt	
CellGroupConfig	NR_SpCell_CellGroupConfig_Type	opt	parameters of the cell group of which the cell is SpCell (PCell or PSCell); assigned to SpCell as in many test cases the cell group consists of the SpCell only and on the other hand every cell group has to have at least an SpCell

NR_SpCell_CellGroupConfig_Type

TTCN-3 Record Type			
Name	NR_SpCell_CellGroupConfig_Type		
Comment	Configuration of an NR cell group; NOTE 1: The type of cell group (MCG, SCG) may be derived from the CellGroupId (CellGroupId==0 => MCG, CellGroupId>0 => SCG) NOTE 2: Further cell group specific MAC and PHY parameters may be added corresponding to ASN.1 MAC-CellGroupConfig or may need to be added (but e.g. the DRX configuration is assigned to NR_CcchDcchDtchConfig_Type already i.e. there is no need to configure it here)		
CellGroupId	CellGroupId	opt	0 for MCG (i.e. EUTRA in EN-DC), 1 for SCG (NR in EN-DC); see comments to ASN.1 definition of CellGroupId (v15.1.0)
SCellList	NR_CellIdList_Type	opt	list of SCells belonging to the SpCell's cell group; shall be initialised as empty list
MAC_CellGroupConfig	NR_ASN1_MAC_CellGroupConfig_Type	opt	Cell group specific MAC parameters as sent to the UE in CellGroupConfig.MAC-CellGroupConfig
PhysicalCellGroupConfig	NR_ASN1_PhysicalCellGroupConfig_Type	opt	Cell group specific physical layer parameters as sent to the UE in CellGroupConfig.PhysicalCellGroupConfig

D.1.4 Cell_Power_Attenuation

NR_CellAttenuationConfig_Type

TTCN-3 Record Type			
Name	NR_CellAttenuationConfig_Type		
Comment			
CellId	NR_CellId_Type		
Attenuation	NR_Attenuation_Type		
TimingInfo	TimingInfo_Type	opt	

NR_CellAttenuationList_Type

TTCN-3 Record of Type	
Name	NR_CellAttenuationList_Type
Comment	
record of NR_CellAttenuationConfig_Type	

D.1.5 Radio_Bearer_Configuration

Radio Bearer Configuration: SRBs/DRBs

NOTE: Type definitions for PDCP configuration are in NR_PDCP_TypeDefs

NR_RlcBearerConfigInfo_Type

TTCN-3 Record Type			
Name	NR_RlcBearerConfigInfo_Type		
Comment	RLC bearer as defined in TS 37.340: RLC and MAC logical channel configuration of a radio bearer in one cell group		
Rlc	NR_RLC_Configuration_Type	opt	mandatory for initial configuration; omit means "keep as it is"
LogicalChannelId	NR_LogicalChannelId_Type	opt	DRBs: DTCH-LogicalChannelIdentity as for rb-MappingInfo in DRB-ToAddModifyList; SRBs: for SRBs specified configurations acc. to 38.331 clause 9.2.1 shall be applied: SRB1: ul-LogicalChannel-Identity = dl-LogicalChannel-Identity = 1 SRB2: ul-LogicalChannel-Identity = dl-LogicalChannel-Identity = 2 SRB3: ul-LogicalChannel-Identity = dl-LogicalChannel-Identity = 3 for SRB0 being mapped to CCCH the SS shall apply - LCID=0 for DL according to TS 38.321 Table 6.2.1-1 - LCID=0 or LCID=52 for UL according to TS 38.321 Table 6.2.1-2 depending on whether it is a CCCH1 or a CCCH message; For DRBs and SRBs - except SRB0: mandatory for initial configuration; omit means "keep as it is" For SRB0 LogicalChannelId is always omit and the SS shall apply the LCIDs according to TS 38.321
Mac	NR_MAC_Configuration_Type	opt	
DiscardULData	boolean	opt	if omitted: initial configuration: data is handed over to TTCN as usual re-configuration: "keep as it is" if set: true - SS shall discard any data in UL for this radio bearer false - (re)configuration back to normal mode NOTE: typically applicable for UM DRBs only

NR_RlcBearerConfig_Type

TTCN-3 Union Type		
Name	NR_RlcBearerConfig_Type	
Comment	configuration of RLC bearer below NR-PDCP	
Config	NR_RlcBearerConfigInfo_Type	"normal" configuration: there is an RLC bearer configured for the cell which is linked to the PDCP being configured at the cell (the PDCP can be either 'RBTerminating' or 'Proxy')
None	Null_Type	No RLC bearer is configured at NR below the NR-PDCP: NR_PDCP_Configuration_Type shall be 'RBTerminating' with LinkToOtherCellGroup indicating cell with RLC bearer to be used

NR_RadioBearerConfigInfo_Type

TTCN-3 Record Type			
Name	NR_RadioBearerConfigInfo_Type		
Comment			
Sdap	SDAP_Configuration_Type	opt	omitted for EN-DC, otherwise mandatory for initial configuration; omit means "keep as it is" for SRBs: Sdap.None:=true
Pdcp	NR_PDCP_Configuration_Type	opt	for SRB0: "Pdcp.None:=true" mandatory for initial configuration; omit means "keep as it is"
RlcBearer	NR_RlcBearerConfig_Type	opt	mandatory for initial configuration; omit means "keep as it is"

NR_RadioBearerConfig_Type

TTCN-3 Union Type		
Name	NR_RadioBearerConfig_Type	
Comment		
AddOrReconfigure	NR_RadioBearerConfigInfo_Type	add / re-configure RB
Release	Null_Type	release RB

NR_RadioBearer_Type

TTCN-3 Record Type			
Name	NR_RadioBearer_Type		
Comment			
Id	NR_RadioBearerId_Type		either for SRB or DRB
Config	NR_RadioBearerConfig_Type		

NR_RadioBearerList_Type

TTCN-3 Record of Type	
Name	NR_RadioBearerList_Type
Comment	array of SRBs and/or DRBs. TimingInfo: 'Now' in general; activation time may be used in special case for release and/or reconfiguration of one or several RBs; the following rules shall be considered: - release/Reconfiguration of an RB shall not be scheduled earlier than 5ms after a previous data transmission on this RB - subsequent release and reconfiguration(s) shall be scheduled with an interval of at least 5ms - a subsequent data transmission on an RB shall not be scheduled earlier than 5ms after the last reconfiguration of the RB the configuration shall be performed exactly at the given time ControllInfo : FollowOnFlag:=false (unless explicitly specified otherwise in TS 38.523-3 clause 7)
record of NR_RadioBearer_Type	

D.1.5.1 RLC_Configuration

RLC configuration: radio bearer specific

RLC_Configuration: Basic Type Definitions

TTCN-3 Basic Types		
NR_SS_RLC_TM_Type	Null_Type	TM to configure SRB0; no parameters to be defined

NR_RLC_ACK_Prohibit_Type

TTCN-3 Enumerated Type	
Name	NR_RLC_ACK_Prohibit_Type
Comment	As per 38.523-3 cl. 7.1.6.1
Prohibit	cause SS RLC layer to stop any ACK transmission for UL PDUs received from UE
Continue	bring back the SS RLC in normal mode, where ACK/NACK are transmitted at polling

NR_RLC_NotACK_NextRLC_PDU_Type

TTCN-3 Enumerated Type	
Name	NR_RLC_NotACK_NextRLC_PDU_Type
Comment	As per 38.523-3 cl. 7.1.6.1
Start	cause SS RLC layer not to ACK the next received RLC PDU; this is done regardless of whether the poll bit is set or not; Example [from UMTS]: when the UE gets new security information in a SECURITY MODE COMMAND the response (SECURITY MODE COMPLETE) sent by the UE is not acknowledged at the RLC level; this causes the UE to continue using the "old" security information

NR_RLC_TransparentMode

TTCN-3 Union Type		
Name	NR_RLC_TransparentMode	
Comment		
Umd	SN_FieldLengthUM	SN-FieldLengthUM ::= ENUMERATED {size6, size12} TS 38.331
Amd	SN_FieldLengthAM	SN-FieldLengthAM ::= ENUMERATED {size12, size18} TS 38.331

NR_RLC_TestModelInfo_Type

TTCN-3 Union Type		
Name	NR_RLC_TestModelInfo_Type	
Comment		
AckProhibit	NR_RLC_ACK_Prohibit_Type	valid only when the RLC is configured in AM
NotACK_NextRLC_PDU	NR_RLC_NotACK_NextRLC_PDU_Type	valid only when the RLC is configured in AM
TransparentMode	NR_RLC_TransparentMode	

NR_RLC_TestModeConfig_Type

TTCN-3 Union Type		
Name	NR_RLC_TestModeConfig_Type	
Comment		
None	Null_Type	
Info	NR_RLC_TestModelInfo_Type	

NR_SS_RLC_AM_Type

TTCN-3 Record Type			
Name	NR_SS_RLC_AM_Type		
Comment			
Tx	NR_ASN1_UL_AM_RLC_Type	opt	the UE's UL setting to be used in SS's tx direction
Rx	NR_ASN1_DL_AM_RLC_Type	opt	the UE's DL setting to be used in SS's rx direction

NR_SS_RLC_UM_Type

TTCN-3 Record Type			
Name	NR_SS_RLC_UM_Type		
Comment			
Tx	NR_ASN1_UL_UM_RLC_Type	opt	the UE's UL setting to be used in SS's tx direction
Rx	NR_ASN1_DL_UM_RLC_Type	opt	the UE's DL setting to be used in SS's rx direction

NR_RLC_RbConfig_Type

TTCN-3 Union Type			
Name	NR_RLC_RbConfig_Type		
Comment			
AM	NR_SS_RLC_AM_Type		
UM	NR_SS_RLC_UM_Type		
TM	NR_SS_RLC_TM_Type		normally SRB0 only; may be used for test purposes also

NR_RLC_Configuration_Type

TTCN-3 Record Type			
Name	NR_RLC_Configuration_Type		
Comment			
Rb	NR_RLC_RbConfig_Type	opt	mandatory for initial configuration; omit means "keep as it is"
TestMode	NR_RLC_TestModeConfig_Type	opt	mandatory for initial configuration; omit means "keep as it is"

D.1.5.2 MAC_Configuration

MAC configuration: radio bearer specific configuration

MAC_Configuration: Basic Type Definitions

TTCN-3 Basic Types		
NR_LogicalChannelId_Type	UInt_Type	

NR_MAC_Test_DLLogChID_Type

TTCN-3 Union Type		
Name	NR_MAC_Test_DLLogChID_Type	
Comment		
LogChId	NR_LogicalChannelId_Type	Specifies to over write the logical channel ID in MAC header in all the DL messages sent on the configured logical channel
ConfigLchId	Null_Type	Specifies that the normal mode of correct logical channel ID to be used in DL MAC header. This will be the default mode, when SS is initially configured.

NR_MAC_Test_SCH_NoHeaderManipulation_Type

TTCN-3 Enumerated Type	
Name	NR_MAC_Test_SCH_NoHeaderManipulation_Type
Comment	
NormalMode	MAC header is fully controlled by the SS
DL_SCH_Only	TTCN can submit a final MAC PDU including header and payloads; SS does not do anything with this MAC PDU i.e. no header is added for the DL SCH transport channel. It is possible that data belonging to multiple DRBs is sent in one MAC PDU and from one special RB configured. NOTE: SRBs shall work as in normal mode and data can be sent/received on SRBs but sending on SRBs shall be in different TTIs than sending data PDUs.
DL_UL_SCH	In UL and DL the SS' MAC layer is transparent i.e. SS does not add or remove any MAC header

NR_MAC_TestModelInfo_Type

TTCN-3 Record Type		
Name	NR_MAC_TestModelInfo_Type	
Comment	Parameters/Configuration for MAC tests	
DiffLogChld	NR_MAC_Test_DLLogChlD_Type	to be used in test cases 7.1.1.1 and 7.1.1.2 for using a different logical channel ID in MAC-header on DL-SCH channel
No_HeaderManipulation	NR_MAC_Test_SCH_NoHeaderManipulation_Type	to configure mode for no header manipulation in SS MAC layer for DL/UL SCH

NR_MAC_TestModeConfig_Type

TTCN-3 Union Type		
Name	NR_MAC_TestModeConfig_Type	
Comment		
None	Null_Type	
Info	NR_MAC_TestModelInfo_Type	

NR_MAC_LogicalChannelConfig_Type

TTCN-3 Record Type		
Name	NR_MAC_LogicalChannelConfig_Type	
Comment		
Priority	integer	logical channel priority for the DL as described in TS 38.321, clause 5.4.3.1 for the UL
PrioritizedBitRate	NR_PrioritizedBitRate_Type	PBR as described for the UL; probably not needed at SS

NR_MAC_Configuration_Type

TTCN-3 Record Type			
Name	NR_MAC_Configuration_Type		
Comment			
LogicalChannel	NR_MAC_LogicalChannelConfig_Type	opt	mandatory for initial configuration; omit means "keep as it is"
TestMode	NR_MAC_TestModeConfig_Type	opt	mandatory for initial configuration; omit means "keep as it is"; for none MAC tests "TestMode.None:=true"

D.1.6 AS_Security

Primitive for control of AS security

NR_PdcpSQN_Type

TTCN-3 Record Type			
Name	NR_PdcpSQN_Type		
Comment			
Format	NR_PdcpCountFormat_Type		12 bit or 18 bit SQN
Value	integer		SQN value (12 bit or 18 bit SQN) NOTE: in TTCN the test case writer is responsible to deal with potential overflows (e.g. there shall be a "mod 32", "mod 128" or "mod 4096" according to the format)

NR_PDCP_ActTime_Type

TTCN-3 Union Type			
Name	NR_PDCP_ActTime_Type		
Comment	The sequence number in UL and DL for SRB1 should be one more than the present SQN, as Ciphering starts in UL and DL soon after SMC and SMComp; For other SRB/DRB it should be the present SQN.		
None	Null_Type		No Activation time; to be used if Ciphering is not applied
SQN	NR_PdcpSQN_Type		PDCP sequence number

NR_SecurityActTime_Type

TTCN-3 Record Type			
Name	NR_SecurityActTime_Type		
Comment			
RadioBearerId	NR_RadioBearerId_Type		
UL	NR_PDCP_ActTime_Type		
DL	NR_PDCP_ActTime_Type		

NR_SecurityActTimeList_Type

TTCN-3 Record of Type			
Name	NR_SecurityActTimeList_Type		
Comment			
	record of NR_SecurityActTime_Type		

NR_AS_IntegrityInfo_Type

TTCN-3 Record Type			
Name	NR_AS_IntegrityInfo_Type		
Comment	for initial configuration activation time is not needed for integrity protection as all messages in DL after security activation are integrity protected; this means this ASP is invoked before transmission of Security mode command; if there is a integrity violation in UL SS shall set the IndicationStatus in the common ASP part to flag the integrity error (IndicationStatus.Error.Integrity.Pdcp := true); integrity to be provided for each SRB as per core spec		
Algorithm	IntegrityProtAlgorithm		IntegrityProtAlgorithm being defined in RRC ASN.1
KRRCint	B128_Key_Type		
KUPint	B128_Key_Type	opt	Not used when UE connected to EPS (i.e. set to omit for EPS)
ActTimeList	NR_SecurityActTimeList_Type	opt	omit for initial configuration (i.e. all SRBs to be integrity protected immediately); in HO scenarios activation time may be needed e.g. for SRB1

NR_AS_CipheringInfo_Type

TTCN-3 Record Type			
Name	NR_AS_CipheringInfo_Type		
Comment			
Algorithm	CipheringAlgorithm		CipheringAlgorithm_Type being defined in RRC ASN.1
KRRCenc	B128_Key_Type		
KUPenc	B128_Key_Type		KUPenc is mandatory; and SS uses it when DRB are configured
ActTimeList	NR_SecurityActTimeList_Type		

NR_AS_SecStartRestart_Type

TTCN-3 Record Type			
Name	NR_AS_SecStartRestart_Type		
Comment			
Integrity	NR_AS_IntegrityInfo_Type	opt	optional to allow separated activation of integrity and ciphering; omit: keep as it is
Ciphering	NR_AS_CipheringInfo_Type	opt	optional to allow separated activation of integrity and ciphering; omit: keep as it is

NR_AS_Security_Type

TTCN-3 Union Type			
Name	NR_AS_Security_Type		
Comment	Security mode command procedure (TS 38.331, clause 5.3.4)		
StartRestart	NR_AS_SecStartRestart_Type		information to start/restart AS security protection in the PDCP TimingInfo : 'Now' (in general) NOTE: "activation time" may be specified in the primitive based on PDCP SQN
Release	Null_Type		to release AS security protection in the PDCP (if any; if there is no AS security the SS does not need to do anything) TimingInfo : 'Now' (in general) NOTE: "activation time" may be specified in the primitive based on PDCP SQN

D.1.7 Paging_Trigger

NR_SlotOffsetList_Type

TTCN-3 Record of Type	
Name	NR_SlotOffsetList_Type
Comment	
record length (1..infinity) of integer	

NR_PagingTrigger_Type

TTCN-3 Record Type			
Name	NR_PagingTrigger_Type		
Comment	to trigger transmission of a paging message on the PCCH at a calculated paging occasion (TS 38.304, clause 7); the paging occasion is calculated by TTCN and activation time is applied TimingInfo : Calculated paging occasion		
Paging	PCCH_Message		paging to be send out at paging occasion and being announced on PDCCH using P-RNTI SS shall add the necessary padding bits as specified in TS 38.331, clause 8.5
SlotOffsetList	NR_SlotOffsetList_Type	opt	list of slot offsets relative to the absolute timing information given in the common part of the ASP; if present, multiple pagings are sent out at all occasions given by the list; if omitted only a single paging is sent at the occasion given by the timing information in the common part of the ASP

D.1.8 Delta_Value_Trigger**NR_Band_SsbForDelta_Type**

TTCN-3 Record Type			
Name	NR_Band_SsbForDelta_Type		
Comment	Primary and secondary bands for requesting Delta values CellId: nr_Cell_NonSpecific TimingInfo : 'Now'		
DeltaPrimary	Band_SsbInfo_Type		
DeltaSecondary	Band_SsbInfo_Type		

Band_SsbInfo_Type

TTCN-3 Record Type			
Name	Band_SsbInfo_Type		
Comment	Band and SSB Frequency value for which Delta values are requested		
DeltaBand	FreqBandIndicatorNR		
Ssb_NRf1	NR_ASN1_ARFCN_ValueNR_Type	opt	
Ssb_NRf2	NR_ASN1_ARFCN_ValueNR_Type	opt	
Ssb_NRf3	NR_ASN1_ARFCN_ValueNR_Type	opt	
Ssb_NRf4	NR_ASN1_ARFCN_ValueNR_Type	opt	

D.1.9 System_Indication_Control

Primitive for control of system indications for special purposes

NR_System_IndicationControl_Type

TTCN-3 Record Type			
Name	NR_System_IndicationControl_Type		
Comment	Initially all indications apart from "Error" are disabled in SS (i.e. it shall not be necessary in 'normal' test cases to use this primitive but only if a specific indication is needed); omit means indication mode is not changed. TimingInfo : 'Now' (in general)		
RLC_Discard	IndicationAndControlMode_Type	opt	To enable/disable reporting of discarded RLC PDUs
MAC_BSR	IndicationAndControlMode_Type	opt	To enable/disable reporting of short/long BSR
MAC_PHR	IndicationAndControlMode_Type	opt	To enable/disable reporting of short/long PHR
RachPreamble	IndicationAndControlMode_Type	opt	To enable/disable reporting of PRACH preamble
SchedReq	IndicationAndControlMode_Type	opt	To enable/disable reporting of Scheduling Request
UL_HARQ	IndicationAndControlMode_Type	opt	To enable/disable reporting of reception of HARQ ACK/NACK
HarqError	IndicationAndControlMode_Type	opt	To enable/disable reporting of HARQ errors
Recommended BitRate	IndicationAndControlMode_Type	opt	To enable/disable reporting of Recommended bit rate MAC CE received in UL MAC PDU

D.1.10 PDCP_Count

Primitives to enquire PDCP COUNT

NR_PdcpCountFormat_Type

TTCN-3 Enumerated Type	
Name	NR_PdcpCountFormat_Type
Comment	
PdcpCount_Srb	20 bit HFN; 12 bit SQN
PdcpCount_DrbSQN 12	20 bit HFN; 12 bit SQN
PdcpCount_DrbSQN 18	14 bit HFN; 18 bit SQN

NR_PdcpCount_Type

TTCN-3 Record Type			
Name	NR_PdcpCount_Type		
Comment			
Format	NR_PdcpCountFormat_Type		
Value	PdcpCountValue_Type		

NR_PdcpCountInfo_Type

TTCN-3 Record Type			
Name	NR_PdcpCountInfo_Type		
Comment			
RadioBearerId	NR_RadioBearerId_Type		
UL	NR_PdcpCount_Type	opt	omit: keep as it is
DL	NR_PdcpCount_Type	opt	omit: keep as it is

NR_PdcpCountInfoList_Type

TTCN-3 Record of Type	
Name	NR_PdcpCountInfoList_Type
Comment	
record of NR_PdcpCountInfo_Type	

NR_PdcpCountGetReq_Type

TTCN-3 Union Type		
Name	NR_PdcpCountGetReq_Type	
Comment		
AllRBs	Null_Type	return COUNT values for all RBs being configured with Pdcp.RBTerminating in the NR Cell.
SingleRB	NR_RadioBearerId_Type	

NR_PDCP_CountReq_Type

TTCN-3 Union Type		
Name	NR_PDCP_CountReq_Type	
Comment		
Get	NR_PdcpCountGetReq_Type	Request PDCP count for one or all RBs being configured at the PDCP TimingInfo: 'Now'
Set	NR_PdcpCountInfoList_Type	Set PDCP count for one or all RBs being configured at the PDCP; list for RBs which's COUNT shall be manipulated TimingInfo: 'Now' (in general) activation time may be used in case of CA inter cell handover to set the PdcpCount

NR_PDCP_CountCnf_Type

TTCN-3 Union Type		
Name	NR_PDCP_CountCnf_Type	
Comment		
Get	NR_PdcpCountInfoList_Type	RBs in ascending order; SRBs first
Set	Null_Type	

D.1.11 PDCP_Handover

Primitives to control PDCP regarding handover

NR_PDCP_HandoverInit_Type

TTCN-3 Record Type		
Name	NR_PDCP_HandoverInit_Type	
Comment		
SourceCellId	NR_CellId_Type	

NR_PDCP_HandoverControlReq_Type

TTCN-3 Union Type		
Name	NR_PDCP_HandoverControlReq_Type	
Comment		
HandoverInit	NR_PDCP_HandoverInit_Type	to inform SS that a handover (or PSCell change) will follow, for SS handling of PDCP context from the source cell to the target cell. CellId : In the common ASP part the CellId shall be set to the id of the target cell TimingInfo : 'Now'
HandoverComplete	Null_Type	to inform SS that the handover (or PSCell change) has successfully been performed by the UE; this shall trigger the SS to send a PDCP Status Report on AM DRB(s) to the UE; CellId : the CellId shall be set to the id of the target cell TimingInfo : 'Now'

D.1.12 L1_Test_Mode

Primitive for control of L1 Test Modes

NR_L1_TestMode_Type

TTCN-3 Record Type		
Name	NR_L1_TestMode_Type	
Comment	TimingInfo : depends on the test mode; activation time is used e.g. for manipulation of the CRC	
DL_SCH_CRC	NR_DL_SCH_CRC_Type	Manipulation of CRC bit generation for DL-SCH

NR_MAC_Test_DL_SCH_CRC_Mode_Type

TTCN-3 Enumerated Type	
Name	NR_MAC_Test_DL_SCH_CRC_Mode_Type
Comment	
Normal	default mode, the CRC generation is correct
Erroneous	SS shall generate CRC error by toggling CRC bits; the CRC error shall be applied for all PDUs of the given RNTI and their retransmission until SS is configured back to 'normal' operation
Error1AndNormal	the SS generates wrong CRC for first transmission and correct CRC on first retransmission. Later SS operates in normal mode. The retransmission is automatically triggered by reception of HARQ NACK

NR_DL_SCH_CRC_Type

TTCN-3 Union Type		
Name	NR_DL_SCH_CRC_Type	
Comment	NOTE: CRC error mode for RA_RNTI is not addressed as it will be configured in RACHProcedureConfig	
C_RNTI	NR_MAC_Test_DL_SCH_CRC_Mode_Type	to configure mode for CRC bit for all MAC PDUs for which C-RNTI is used in PDCCH transmission
SI_RNTI	NR_MAC_Test_DL_SCH_CRC_Mode_Type	to configure mode for CRC bit for all MAC PDUs for which SI-RNTI is used in PDCCH transmission
CS_RNTI	NR_MAC_Test_DL_SCH_CRC_Mode_Type	to configure mode for CRC bit for all MAC PDUs for which CS-RNTI is used in PDCCH transmission

D.1.13 DCI_Trigger

Primitive to trigger SS to send specific DCI (e.g. PDCCH order) which is not associated with any PDSCH or PUSCH transmission

NR_DCI_Trigger_Type

TTCN-3 Record Type		
Name	NR_DCI_Trigger_Type	
Comment	TimingInfo : 'Now' or specific activation time	
AssignedBWPs	NR_AssignedBWPs_Type	BWP which shall be used to schedule the DCI
SearchSpaceType	NR_SearchSpaceType_Type	search space to be used for sending of given DCI; the SS may raise an error when there is no such search space at the scheduled point in time
DciFormat	NR_DCI_TriggerFormat_Type	

NR_DCI_TriggerFormat_Type

TTCN-3 Union Type		
Name	NR_DCI_TriggerFormat_Type	
Comment		
PdcchOrder	NR_PDCCH_Order_Type	
ShortMessage	NR_DciWithShortMessageOnly_Type	
DciFormat_2_0	NR_DciFormat_2_0_Type	
DciFormat_2_1	NR_DciFormat_2_1_Type	
DciFormat_2_2	NR_DciFormat_2_2_Type	
DciFormat_2_3	NR_DciFormat_2_3_Type	
DciFormat_2_6	NR_DciFormat_2_6_Type	

NR_DciWithShortMessageOnly_Type

TTCN-3 Record Type		
Name	NR_DciWithShortMessageOnly_Type	
Comment	"stand-alone" DCI with CRC scrambled by P-RNTI with no PCCH-Message being associated; => all fields apart from the ones listed in this record are reserved (see TS 38.212 clause 7.3.1.2.1)	
ShortMessageIndicator	B2_Type	Short Message Indicator according to TS 38.212 Table 7.3.1.2.1-1; to be set to '10'B indicating that only short message is present in the DCI
ShortMessages	B8_Type	Short Messages according to TS 38.331 Table 6.5-1
SlotOffsetList	NR_SlotOffsetList_Type	opt list of slot offsets relative to the absolute timing information given in the common part of the ASP; if present, multiple short messages are sent out at all occasions given by the list; if omitted only a single short message is sent at the occasion given by the timing information in the common part of the ASP

NR_PDCCH_Order_Type

TTCN-3 Record Type			
Name	NR_PDCCH_Order_Type		
Comment	PDCCH order according to TS 38.212 clause 7.3.1.2.1 to initiate RA procedure (TS 38.321, clause 5.1.1): DCI format 1_0 with CRC scrambled by C-RNTI and the "Frequency domain resource assignment" field are of all ones		
RA_PreambleIndex	B6_Type		ra-PreambleIndex according to TS 38.321 clause 5.1.2
UL_SUL_Indicator	NR_DciCommon_UL_SUL_Indicator_Type		indicates which UL carrier in the cell to transmit the PRACH if the UE is configured with SUL in the cell and RA_PreambleIndex != '000000'B; "None" otherwise
SSB_Index	B6_Type		indicates the SS/PBCH that shall be used to determine the RACH occasion for the PRACH transmission if RA_PreambleIndex != '000000'B; '000000'B (reserved) otherwise
PrachMaskIndex	B4_Type		indicates the RACH occasion associated with the SS/PBCH indicated by "SS/PBCH index" for the PRACH transmission, according to TS 38.321 clause 5.1.1; '0000'B (reserved) otherwise

NR_DciFormat_2_0_SfiList_Type

TTCN-3 Record of Type	
Name	NR_DciFormat_2_0_SfiList_Type
Comment	list of SFI-indexes as used as slotFormatCombinationId in SlotFormatCombination (see TS 38.331): Each index addresses the SlotFormatCombination for a serving cell in SlotFormatCombinationsPerCell (the position is given by 'positionInDCI'); the size of each SFI-index depends on the maximum value of slotFormatCombinationIds (maxSFIindex) in the sequence of SlotFormatCombinations: SFI-index-length = MAX(CEIL(log2(maxSFIindex+1)), 1); see TS 38.213 clause 11.1.1; !!!! NR OPEN ISSUE: it is not fully clear whether the maximum slotFormatCombinationId is determined per Cell or over all cells !!!! !!!! ASSUMPTION: it is per cell and therefore different SFI-indexes may use bitstrings of different length !!!!
record of bitstring	

NR_DciFormat_2_0_Type

TTCN-3 Record Type	
Name	NR_DciFormat_2_0_Type
Comment	TS 38.212 clause 7.3.1.3.1: for notifying the slot format; default parameters according to TS 38.508-1 clause 4.3.6.1.3.1
SfiList	NR_DciFormat_2_0_SfiList_Type

NR_DciFormat_2_1_IntValueList_Type

TTCN-3 Record of Type	
Name	NR_DciFormat_2_1_IntValueList_Type
Comment	list of 14 bit INT values per serving cell (see DownlinkPreemption, INT-ConfigurationPerServingCell in TS 38.331 and TS 38.213 clause 11.2)
record length (1..9) of B14_Type	

NR_DciFormat_2_1_Type

TTCN-3 Record Type	
Name	NR_DciFormat_2_1_Type
Comment	TS 38.212 clause 7.3.1.3.2: notifying the PRB(s) and OFDM symbol(s) where UE may assume no transmission is intended for the UE; default parameters according to TS 38.508-1 clause 4.3.6.1.3.2
IntValueList	NR_DciFormat_2_1_IntValueList_Type

NR_DciFormat_2_2_ClosedLoopIndicator_Type

TTCN-3 Record Type	
Name	NR_DciFormat_2_2_ClosedLoopIndicator_Type
Comment	TS 38.212 clause 7.3.1.3.3: Closed loop indicator
None	Null_Type 0 bit if the UE is not configured with higher layer parameter twoPUSCH-PC-AdjustmentStates
Index	B1_Type 1 bit otherwise

NR_DciFormat_2_2_TpcBlock_Type

TTCN-3 Union Type	
Name	NR_DciFormat_2_2_TpcBlock_Type
Comment	TS 38.212 clause 7.3.1.3.3: single TPC block
ClosedLoopIndicator	NR_DciFormat_2_2_ClosedLoopIndicator_Type
TpcCommand	NR_DciCommon_TpcCommand_Type

NR_DciFormat_2_2_TpcBlockList_Type

TTCN-3 Record of Type	
Name	NR_DciFormat_2_2_TpcBlockList_Type
Comment	list of TPC blocks according to TS 38.212 clause 7.3.1.3.3; beginning of each block is configured at the UE by tpc-IndexPCell or tpc-IndexPUCCH-SCell for PUCCH and by tpc-Index or tpc-IndexSUL for PUCCH (see PUCCH-TPC-CommandConfig and PUSCH-TPC-CommandConfig in TS 38.331 and TS 38.213 clause 11.3)
	record of NR_DciFormat_2_2_TpcBlock_Type

NR_DciFormat_2_2_Type

TTCN-3 Record Type	
Name	NR_DciFormat_2_2_Type
Comment	TS 38.212 clause 7.3.1.3.3: for the transmission of TPC commands for PUCCH and PUSCH; default parameters according to TS 38.508-1 clause 4.3.6.1.3.3
TpcBlockList	NR_DciFormat_2_2_TpcBlockList_Type

NR_DciFormat_2_3_SrsRequest_Type

TTCN-3 Record Type	
Name	NR_DciFormat_2_3_SrsRequest_Type
Comment	TS 38.212 clause 7.3.1.3.4: according to TS 38.213 clause 11.4 the presence of SRS request(s) depends on fieldTypeFormat2-3 (see SRS-TPC-CommandConfig in TS 38.331)
None	Null_Type 0 bit: no SRS request
SrsRequestValue	B2_Type 2 bits: Index of the SRS resource set to be used according to TS 38.212 Table 7.3.1.1.2-24

NR_DciCommon_TpcCommandList_Type

TTCN-3 Record of Type	
Name	NR_DciCommon_TpcCommandList_Type
Comment	
record of NR_DciCommon_TpcCommand_Type	

NR_DciFormat_2_3_TypeA_Type

TTCN-3 Record Type	
Name	NR_DciFormat_2_3_TypeA_Type
Comment	TS 38.212 clause 7.3.1.3.4: srs-TPC-PDCCH-Group = typeA (see SRS-CarrierSwitching in TS 38.331)
SrsRequest	NR_DciFormat_2_3_SrsRequest_Type
TpcCommandList	NR_DciCommon_TpcCommandList_Type

NR_DciFormat_2_3_SingleBlockTypeB_Type

TTCN-3 Record Type	
Name	NR_DciFormat_2_3_SingleBlockTypeB_Type
Comment	TS 38.212 clause 7.3.1.3.4: srs-TPC-PDCCH-Group = typeB (see SRS-CarrierSwitching in TS 38.331)
SrsRequest	NR_DciFormat_2_3_SrsRequest_Type
TpcCommand	NR_DciCommon_TpcCommand_Type

NR_DciFormat_2_3_TypeB_Type

TTCN-3 Record of Type	
Name	NR_DciFormat_2_3_TypeB_Type
Comment	
record of NR_DciFormat_2_3_SingleBlockTypeB_Type	

NR_DciFormat_2_3_TypeA_B_Type

TTCN-3 Union Type	
Name	NR_DciFormat_2_3_TypeA_B_Type
Comment	
TypeA	NR_DciFormat_2_3_TypeA_Type Type-A as indicated in srs-TPC-PDCCH-Group (see SRS-CarrierSwitching in TS 38.331)
TypeB	NR_DciFormat_2_3_TypeB_Type Type-B as indicated in srs-TPC-PDCCH-Group (see SRS-CarrierSwitching in TS 38.331)

NR_DciFormat_2_3_Type

TTCN-3 Record Type	
Name	NR_DciFormat_2_3_Type
Comment	TS 38.212 clause 7.3.1.3.4: for the transmission of a group of TPC commands for SRS transmissions by one or more UEs; default parameters according to TS 38.508-1 clause 4.3.6.1.3.4
TypeA_B	NR_DciFormat_2_3_TypeA_B_Type

NR_DciFormat_2_6_Block_Type

TTCN-3 Record Type			
Name	NR_DciFormat_2_6_Block_Type		
Comment			
WakeupIndication	B1_Type		
SCellDormancyIndication	NR_DciFormat_X_1_SCellDormancyIndication_Type		

NR_DciFormat_2_6_Block_List_Type

TTCN-3 Record of Type	
Name	NR_DciFormat_2_6_Block_List_Type
Comment	
record of NR_DciFormat_2_6_Block_Type	

NR_DciFormat_2_6_Type

TTCN-3 Record Type			
Name	NR_DciFormat_2_6_Type		
Comment	TS 38.212 clause 7.3.1.3.7: DCI format 2_6 is used for notifying the power saving information outside DRX Active Time for one or more UEs		
BlockList	NR_DciFormat_2_6_Block_List_Type		

D.1.14 Configured_Scheduling

Primitive for control of DL SPS assignment and UL Configured Grant Type 2 configuration

NR_SPS_CG_ActDeact_Type

TTCN-3 Union Type		
Name	NR_SPS_CG_ActDeact_Type	
Comment		
Activate	NR_SpsCgActivateInfo_Type	CellId : identifier of the cell where the UE is active RoutingInfo : None RlcBearerRouting : 'None' TimingInfo : activation time for DL SPS assignment or UL configured grant type 2 transmission; ControlInfo : CnfFlag:=false; FollowOnFlag:=false
Deactivate	NR_SpsCgDeactivateInfo_Type	CellId : identifier of the cell where the UE is active RoutingInfo : None RlcBearerRouting : 'None' TimingInfo : activation time for DL SPS assignment or UL configured grant type 2 release indicated by PDCCCH transmission or SS local deactivation ControlInfo : CnfFlag:=false; FollowOnFlag:=false

NR_SpsCgActivateInfo_Type

TTCN-3 Record Type			
Name	NR_SpsCgActivateInfo_Type		
Comment	<p>Even though DL SPS assignment or UL configured grant type 2 is pre-configured at the UE, it needs to be activated by L1 signalling => SS shall 'activate' DL SPS assignment or UL configured grant type 2 by sending appropriate assignments/grants to the UE; this shall be done with an activation time. If DL SPS assignment or UL configured grant type 2 is already configured and new Activate command is received, with ConfigIndex not included (i.e. Rel-15 operation), at the activation time SS locally deactivates old configuration, sends UE a PDCCH assignment for new DL SPS assignment or UL configured grant type 2 and locally activates new SPS configuration. In DL, in addition to SS SPS assignment configuration with activation time 'T', TTCN writer shall also schedule a DL MAC PDU with same activation time 'T' and at every DL assignment periodicity (NOTE: in general it is an error when TTCN does not provide data for a periodicity; SS shall send no data in this case). The SS sends the MAC PDU in 'T+ PDSCH slot offset (K0)'</p>		
UplinkConfiguredGrant	NR_UL_ConfiguredGrant_Type	opt	
DownlinkSpsAssignment	NR_DL_SpsAssignment_Type	opt	

NR_UL_ConfiguredGrant_Type

TTCN-3 Record Type			
Name	NR_UL_ConfiguredGrant_Type		
Comment	information to assign UL configured grant type schedules in UL		
DciInfo	NR_DciUlInfo_Type	opt	to apply an UL grant
SetNDI_1	Null_Type	opt	if present then NDI is set as 1 indicating a retransmission; If absent then NDI is set as 0 indicating a new transmission
ConfiguredGrantConfigIndex	ConfiguredGrantConfigIndex_r16	opt	if not present SS shall follow Rel-15 operation. If present indicates Rel-16 or later operation and as per TS 38.213 clause 10.2 SS shall use this value in HARQ process ID field in DCI

NR_DL_SpsAssignment_Type

TTCN-3 Record Type			
Name	NR_DL_SpsAssignment_Type		
Comment	information to assign semi-persistent scheduling in DL		
DciInfo	NR_DciDlInfo_Type	opt	to apply a DL assignment
SetNDI_1	Null_Type	opt	if present then NDI is set as 1 indicating a retransmission; If absent then NDI is set as 0 indicating a new transmission
SPS_ConfigIndex	SPS_ConfigIndex_r16		if not present SS shall follow Rel-15 operation. If present indicates Rel-16 or later operation and as per TS 38.213 clause 10.2 SS shall use this value in HARQ process ID field in DCI

NR_SPS_CG_ReleasePdcchDciFormat_Type

TTCN-3 Enumerated Type	
Name	NR_SPS_CG_ReleasePdcchDciFormat_Type
Comment	DCI format to be used for DL SPS assignment and UL configured grant type 2 acc. to TS 38.213, Table 10.2-X
dci_0_0	
dci_0_1	
dci_0_2	
dci_1_0	
dci_1_1	
dci_1_2	

NR_SpsCgDeactivateInfo_Type

TTCN-3 Union Type		
Name	NR_SpsCgDeactivateInfo_Type	
Comment		
LocalRelease	Null_Type	DL SPS assignment and UL configured grant type 2 configuration shall be released at the SS, that means as well that the SS shall not address CS-RNTI anymore from the given TimingInfo onward; NOTE: there is no DL SPS or UL configured grant type 2 release to be signalled on PDCCH (this is done with PdcchExplicitRelease - see below)
PdcchExplicitRelease	NR_SPS_CG_ReleasePdcchDciFormat_Type	SS transmits PDCCH content indicating DL SPS assignment or UL configured grant type 2 release but holds the local configuration until it is locally released
PdcchExplicitRelease_Extn	NR_PdcchExplicitRelease_Extn_Type	Indicates Rel-16 or later operation. SS transmits PDCCH content indicating DL SPS assignment or UL configured grant type 2 release but holds the local configuration until it is locally released

NR_PdcchExplicitRelease_Extn_Type

TTCN-3 Record Type			
Name	NR_PdcchExplicitRelease_Extn_Type		
Comment			
DciFormat	NR_SPS_CG_ReleasePdcchDciFormat_Type		
SPS_ConfigIndex	SPS_ConfigIndex_r16	opt	Explicit release of DL SPS grant with config index; SS shall use this config index as HARQ process ID in DCI, ref TS 38.213 clause 10.2
ConfiguredGrantConfigIndex	ConfiguredGrantConfigIndex_r16	opt	Explicit release of UL configured grant type 2 with config index; SS shall use this config index as HARQ process ID in DCI, ref TS 38.213 clause 10.2

D.1.15 System_Indications

Primitives for System indications

NR_HarqProcessInfo_Type

TTCN-3 Record Type			
Name	NR_HarqProcessInfo_Type		
Comment			
Id	NR_HarqProcessId_Type		

NR_HarqError_Type

TTCN-3 Union Type		
Name	NR_HarqError_Type	
Comment		
UL	NR_HarqProcessInfo_Type	indicates HARQ error detected at the SS side (error at UL transmission)
DL	NR_HarqProcessInfo_Type	indicates HARQ NACK sent by the UE (error at DL transmission)

NR_RachPreamble_Type

TTCN-3 Record Type			
Name	NR_RachPreamble_Type		
Comment			
RAPID	integer		indicates the RAPID of the preamble (integer (0..63))

NR_RlcDiscardInd_Type

TTCN-3 Record Type		
Name	NR_RlcDiscardInd_Type	
Comment	SS shall send this indication if it discards a received RLC AMD PDU as specified in TS 38.322 cl. 5.2.3.2.2	
SequenceNumber	integer	sequence number of the PDU being discarded

D.1.16 System_Interface

NR_SYSTEM_CTRL_REQ

TTCN-3 Record Type		
Name	NR_SYSTEM_CTRL_REQ	
Comment		
Common	NR_RegAspCommonPart_Type	Unless specified otherwise for a particular primitive, the following applies: CellId: identifier of the cell RoutingInfo : 'None' RlcBearerRouting : 'None' MacBearerRouting : 'omit' TimingInfo : 'Now' or specific activation time, depends on respective primitive ControllInfo : CnfFlag: depends on TimingInfo; in general 'false' when specific activation time is used, 'true' for 'Now' FollowOnFlag 'false'
Request	NR_SystemRequest_Type	

NR_SYSTEM_CTRL_CNF

TTCN-3 Record Type		
Name	NR_SYSTEM_CTRL_CNF	
Comment		
Common	NR_CnfAspCommonPart_Type	TimingInfo is ignored by TTCN (apart from EnquireTiming) => SS may set TimingInfo to "None"
Confirm	NR_SystemConfirm_Type	

NR_SYSTEM_IND

TTCN-3 Record Type	
Name	NR_SYSTEM_IND
Comment	
Common	NR_IndAspCommonPart_Type CellId : identifier of the cell RoutingInfo : 'none' RoutingInfoSUL: 'omit' RlcBearerRouting : 'none' MacBearerRouting : 'omit' TimingInfo : The SS shall provide TimingInfo depending on the respective indication (see below)
Indication	NR_SystemIndication_Type - Error TimingInfo: related to the error (if available) - RlcDiscardInd TimingInfo: slot in which the RLC PDU has been received - MAC TimingInfo: slot in which the MAC PDU has been received containing the MAC CE being indicated - RachPreamble TimingInfo: start of the RACH preamble - SchedReq TimingInfo: slot containing the SR - UL_HARQ TimingInfo: slot containing the UL HARQ - HarqError TimingInfo: slot containing the UL HARQ

NR_SYSTEM_PORT

TTCN-3 Port Type	
Name	NR_SYSTEM_PORT
Comment	NR PTC: Port for system configuration
out	NR_SYSTEM_CTRL_REQ
in	NR_SYSTEM_CTRL_CNF

NR_SYSIND_PORT

TTCN-3 Port Type	
Name	NR_SYSIND_PORT
Comment	NR PTC: Port for system indications
in	NR_SYSTEM_IND

D.2 NR_ASP_DrbDefs

ASP interface for DRBs

D.2.1 PDU_TypeDefs

D.2.1.1 MAC_PDU

NR_MAC_PDU_DL_Type

TTCN-3 Record Type			
Name	NR_MAC_PDU_DL_Type		
Comment			
CE_SubPDUList	NR_MAC_CE_SubPDU_DL_List_Type	opt	list of subPDUs with MAC CE
SDU_SubPDUList	NR_MAC_SDU_SubPDU_List_Type	opt	list of subPDUs with MAC SDU
Padding_SubPDU	NR_MAC_Padding_SubPDU_Type	opt	subPDU with padding

NR_MAC_PDU_UL_Type

TTCN-3 Record Type			
Name	NR_MAC_PDU_UL_Type		
Comment			
SDU_SubPDUList	NR_MAC_SDU_SubPDU_List_Type	opt	list of subPDUs with MAC SDU
CE_SubPDUList	NR_MAC_CE_SubPDU_UL_List_Type	opt	list of subPDUs with MAC CE
Padding_SubPDU	NR_MAC_Padding_SubPDU_Type	opt	subPDU with padding

NR_MAC_PDU_Type

TTCN-3 Union Type		
Name	NR_MAC_PDU_Type	
Comment		
DL	NR_MAC_PDU_DL_Type	
UL	NR_MAC_PDU_UL_Type	

NR_MAC_PDUList_Type

TTCN-3 Record of Type	
Name	NR_MAC_PDUList_Type
Comment	
record of NR_MAC_PDU_Type	

D.2.1.1.1 MAC_PDU_SubPDU

MAC subPDU (TS 38.321 clause 6.1.2)

MAC_PDU_SubPDU: Basic Type Definitions

TTCN-3 Basic Types		
B8_16_Type	bitstring length(8..16)	NOTE: length restriction can only be a range but not two distinct lengths
NR_MAC_SDU_Type	octetstring	

NR_MAC_PDU_SubHeader_Type

TTCN-3 Record Type			
Name	NR_MAC_PDU_SubHeader_Type		
Comment	MAC PDU SubHeader (TS 38.321 clause 6.1.2)		
Reserved	B1_Type		Reserved bit
Format	B1_Type		F: The Format field indicates the size of the Length field according to TS 38.321 clause 6.2.1: value 0 => 8 bits, value 1 => 16 bits. In case of MAC subheader for fixed sized MAC CE or padding (R/LCID MAC subheader) this field is reserved (i.e. treated as another R field)
LCID	B6_Type		LCID: Logical Channel ID field according to TS 38.321 Tables 6.2.1-1 and 6.2.1-2
ELCID	B8_16_Type	opt	eLCID: The extended Logical Channel ID field according to TS 38.321 Tables 6.2.1-1a, 6.2.1-1b, 6.2.1-2a and 6.2.1-2b for the DL-SCH and UL-SCH respectively. The size of the eLCID field is either 8 bits or 16 bits.
Length	B8_16_Type	opt	Either omit (fixed-sized MAC CE) or 8 bits (F=0) or 16 bits (F=1)

NR_MAC_CE_SubPDU_DL_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SubPDU_DL_Type		
Comment	MAC DL subPPU with MAC subheader only (in case of MAC CE with fixed size of zero bits) or MAC subheader + MAC CE		
SubHeader	NR_MAC_PDU_SubHeader_Type		
ControlElement	NR_MAC_ControlElementDL_Type	opt	omit if MAC CE has fixed size of zero bits

NR_MAC_CE_SubPDU_DL_List_Type

TTCN-3 Set of Type	
Name	NR_MAC_CE_SubPDU_DL_List_Type
Comment	
set of NR_MAC_CE_SubPDU_DL_Type	

NR_MAC_CE_SubPDU_UL_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SubPDU_UL_Type		
Comment	MAC UL subPPU with MAC subheader only (in case of MAC CE with fixed size of zero bits) or MAC subheader + MAC CE		
SubHeader	NR_MAC_PDU_SubHeader_Type		
ControlElement	NR_MAC_ControlElementUL_Type	opt	omit if MAC CE has fixed size of zero bits

NR_MAC_CE_SubPDU_UL_List_Type

TTCN-3 Set of Type	
Name	NR_MAC_CE_SubPDU_UL_List_Type
Comment	
set of NR_MAC_CE_SubPDU_UL_Type	

NR_MAC_SDU_SubPDU_Type

TTCN-3 Record Type			
Name	NR_MAC_SDU_SubPDU_Type		
Comment	MAC subPPU with MAC subheader + MAC SDU		
SubHeader	NR_MAC_PDU_SubHeader_Type		
SDU	NR_MAC_SDU_Type		

NR_MAC_SDU_SubPDU_List_Type

TTCN-3 Set of Type	
Name	NR_MAC_SDU_SubPDU_List_Type
Comment	set of NR_MAC_SDU_SubPDU_Type

NR_MAC_Padding_SubPDU_Type

TTCN-3 Record Type			
Name	NR_MAC_Padding_SubPDU_Type		
Comment	MAC subPPU with MAC subheader + Padding		
SubHeader	NR_MAC_PDU_SubHeader_Type		
Padding	octetstring		0 or more octets padding

D.2.1.1.2 MAC_ControlElements

MAC Control Elements (CEs) (TS 38.321 clause 6.1.3)

NR_MAC_ControlElementDL_Type

TTCN-3 Union Type		
Name	NR_MAC_ControlElementDL_Type	
Comment	TimingInfo : 'Now' or specific activation time	
ContentionResolutionID	NR_MAC_CE_ContentionResolutionID_Type	TS 38.321 clause 6.1.3.3
TimingAdvance	NR_MAC_CE_TimingAdvance_Type	TS 38.321 clause 6.1.3.4
SCellActDeact	NR_MAC_CE_SCellActDeact_Type	TS 38.321 clause 6.1.3.10
DuplicationActDeact	NR_MAC_CE_DuplicationActDeact_Type	TS 38.321 clause 6.1.3.11
SP_ResourceSetActDeact	NR_MAC_CE_SP_ResourceSetActDeact_Type	TS 38.321 clause 6.1.3.12
CSI_TriggerStateSubselection	NR_MAC_CE_CSI_TriggerStateSubselection_Type	TS 38.321 clause 6.1.3.13
TCI_StatesActDeact	NR_MAC_CE_TCI_StatesActDeact_Type	TS 38.321 clause 6.1.3.14
TCI_StateIndication	NR_MAC_CE_TCI_StateIndication_Type	TS 38.321 clause 6.1.3.15
SP_CSI_ReportingActDeact	NR_MAC_CE_SP_CSI_ReportingActDeact_Type	TS 38.321 clause 6.1.3.16
SP_SRS_ActDeact	NR_MAC_CE_SP_SRS_ActDeact_Type	TS 38.321 clause 6.1.3.17
PUCCH_SpatialRelationActDeact	NR_MAC_CE_PUCCH_SpatialRelationActDeact_Type	TS 38.321 clause 6.1.3.18
SP_ZP_ResourceSetActDeact	NR_MAC_CE_SP_ZP_ResourceSetActDeact_Type	TS 38.321 clause 6.1.3.19
RecommendedBitrate	NR_MAC_CE_RecommendedBitrate_Type	TS 38.321 clause 6.1.3.20
RLCDuplicationActDeact	NR_MAC_CE_RLC_DuplicationActDeact_Type	TS 38.321 clause 6.1.3.32

NR_MAC_ControlElementUL_Type

TTCN-3 Union Type		
Name	NR_MAC_ControlElementUL_Type	
Comment		
ShortBSR	NR_MAC_CE_ShortBSR_Type	TS 38.321 clause 6.1.3.1
LongBSR	NR_MAC_CE_LongBSR_Type	TS 38.321 clause 6.1.3.1
C_RNTI	RNTI_B16_Type	TS 38.321 clause 6.1.3.2
SingleEntryPHR	NR_MAC_CE_SingleEntryPHR_Type	TS 38.321 clause 6.1.3.8
MultiEntryPHR	NR_MAC_CE_MultiEntryPHR_Type	TS 38.321 clause 6.1.3.9
RecommendedBitrate	NR_MAC_CE_RecommendedBitrate_Type	TS 38.321 clause 6.1.3.20

D.2.1.1.2.1 MAC_ControlElement_Common

NR_MAC_CE_SCellFlags_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SCellFlags_Type		
Comment	bitmap to indicate presence of SCell with SCellIndex according to TS 38.331 either SCellIndex7_1 is present only or all octets are present		
SCellIndex7_1	B8_Type		leftmost bit corresponds to SCellIndex7, 2nd bit from the right corresponds to SCellIndex1, rightmost bit is reserved
SCellIndex15_8	B8_Type	opt	leftmost bit corresponds to SCellIndex15, rightmost bit corresponds to SCellIndex8
SCellIndex23_16	B8_Type	opt	leftmost bit corresponds to SCellIndex23, rightmost bit corresponds to SCellIndex16
SCellIndex31_24	B8_Type	opt	leftmost bit corresponds to SCellIndex31, rightmost bit corresponds to SCellIndex24

NR_MAC_CE_ServCellId_Bwpld_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_ServCellId_Bwpld_Type		
Comment	Common definition for first octet of CEs defined in TS 38.321 clause 6.1.3.12 .. TS 38.321 clause 6.1.3.19		
Field1	B1_Type		A/D field for NR_MAC_CE_SP_ResourceSetActDeact_Type and NR_MAC_CE_SP_SRS_ActDeact_Type or CORESET Pool ID for NR_MAC_CE_TCI_StatesActDeact_Type reserved (set to 0) otherwise
ServCellId	B5_Type		identity of the Serving Cell for which the MAC CE applies
Bwpld	B2_Type		BWP-Id (as specified in TS 38.331) of the uplink/downlink bandwidth part for which the MAC CE applies

D.2.1.1.2.2 MAC_ControlElement_BSR

TS 38.321 clause 6.1.3.1 (Buffer Status Report MAC CEs)

MAC_ControlElement_BSR: Basic Type Definitions

TTCN-3 Basic Types		
NR_MAC_LongBSR_BufferSize_Type	O1_Type	

NR_MAC_CE_ShortBSR_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_ShortBSR_Type		
Comment	Short BSR and Short Truncated BSR MAC CE according to TS 38.321 Figure 6.1.3.1-1		
LCG	B3_Type		
BufferSize	B5_Type		

NR_MAC_LongBSR_BufferSizeList_Type

TTCN-3 Record of Type	
Name	NR_MAC_LongBSR_BufferSizeList_Type
Comment	record length (0..8) of NR_MAC_LongBSR_BufferSize_Type

NR_MAC_CE_LongBSR_Type

TTCN-3 Record Type		
Name	NR_MAC_CE_LongBSR_Type	
Comment	Long BSR, Long Truncated BSR and Pre-emptive BSR MAC CE according to TS 38.321 Figure 6.1.3.1-2	
LCG_Presence	B8_Type	"1" indicates that the Buffer Size field for a logical channel group i is reported, with i = 7 for the leftmost bit and i = 0 for the rightmost
BufferSizeList	NR_MAC_LongBSR_BufferSizeList_Type	According to TS 38.321 clause 6.1.3.1 the Buffer Size fields are included in ascending order based on the LCGi

D.2.1.1.2.3 **MAC_ControlElement_ContentionResolutionId**

TS 38.321 clause 6.1.3.3 (UE Contention Resolution Identity MAC CE)

MAC_ControlElement_ContentionResolutionId: Basic Type Definitions

TTCN-3 Basic Types		
NR_MAC_CE_ContentionResolutionId_Type	B48_Type	TS 38.321 Figure 6.1.3.3-1; fix size of 48 bits

D.2.1.1.2.4 **MAC_ControlElement_TimingAdvance**

TS 38.321 clause 6.1.3.4 (Timing Advance Command MAC CE)

NR_MAC_CE_TimingAdvance_Type

TTCN-3 Record Type		
Name	NR_MAC_CE_TimingAdvance_Type	
Comment	TS 38.321 Figure 6.1.3.4-1	
TAG_ID	B2_Type	TAG Identity of the addressed TAG
TimingAdvanceCommand	B6_Type	index value TA (0..63) used to control the amount of timing adjustment that MAC entity has to apply (as specified in TS 38.213)

D.2.1.1.2.5 **MAC_ControlElement_PHR**

TS 38.321 clause 6.1.3.8 (Single Entry PHR) and 6.1.3.9 (Multiple Entry PHR)

MAC_ControlElement_PHR: Basic Type Definitions

TTCN-3 Basic Types		
NR_MAC_CE_SingleEntryPHR_Type	NR_MAC_CE_PH_Record_Type	TS 38.321 Figure 6.1.3.8-1

NR_MAC_CE_PH_Record_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_PH_Record_Type		
Comment			
P_Bit	B1_Type		P bit: 1 indicates the UE applies power backoff due to power management; For Single Entry PHR MAC CE: If mpe-Reporting is configured indicates the applied power backoff to meet MPE requirements.
V_Bit	B1_Type		V bit: Indicates when the PH value is based on a real transmission or a reference format; reserved (R = '0'B) for Single Entry PHR MAC CE
Value	B6_Type		The power headroom level. Ph Type 2 (if configured) for PCell and Type 1 for PCell and SCell
MPE_or_R	B2_Type	opt	2 reserved bits or MPE (Maximum Permissible Exposure); present if V=0
PCMaxc	B6_Type	opt	present if V=0

NR_MAC_CE_MultiEntryPHR_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_MultiEntryPHR_Type		
Comment	TS 38.321 Figure 6.1.3.9-1 and Figure 6.1.3.9-2		
PHFieldPresent ForSCell	NR_MAC_CE_SCellFlags_Type		to indicate presence of PH field for particular SCell
PH_Record	record of NR_MAC_CE_PH_Record_Type		list of PH_Records for PCell and SCells as described in TS 38.321 clause 6.1.3.9

D.2.1.1.2.6 **MAC_ControlElement_SCellActivationDeactivation**

TS 38.321 clause 6.1.3.10 (SCell Activation/Deactivation MAC CEs)

MAC_ControlElement_SCellActivationDeactivation: Basic Type Definitions

TTCN-3 Basic Types		
NR_MAC_CE_SCellActDeact_Type	NR_MAC_CE_SCellFlags_Type	TS 38.321 Figure 6.1.3.10-1 and Figure 6.1.3.10-2

D.2.1.1.2.7 **MAC_ControlElement_DuplicationActivationDeactivation**

TS 38.321 clause 6.1.3.11 (Duplication Activation/Deactivation MAC CE)

MAC_ControlElement_DuplicationActivationDeactivation: Basic Type Definitions

TTCN-3 Basic Types		
NR_MAC_CE_DuplicationActDeact_Type	B8_Type	TS 38.321 Figure 6.1.3.11-1

D.2.1.1.2.8 **MAC_ControlElement_SP_ResourceSetActivationDeactivation**

TS 38.321 clause 6.1.3.12 (SP CSI-RS / CSI-IM Resource Set Activation/Deactivation MAC CE)

NR_MAC_CE_SP_ResourceSetActDeact_Octet2_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SP_ResourceSetActDeact_Octet2_Type		
Comment			
Reserved	B1_Type		
IM	B1_Type		indicates whether or not octet 3 is present
CSI_RS_ResourceSetId	B6_Type		

NR_MAC_CE_SP_ResourceSetActDeact_Octet3_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SP_ResourceSetActDeact_Octet3_Type		
Comment			
Reserved	B2_Type		
CSI_IM_ResourceSetId	B6_Type		

NR_MAC_CE_SP_ResourceSetActDeact_TciStateId_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SP_ResourceSetActDeact_TciStateId_Type		
Comment			
Reserved	B1_Type		
Id	B7_Type		

NR_MAC_CE_SP_ResourceSetActDeact_TciStateIdList_Type

TTCN-3 Record of Type	
Name	NR_MAC_CE_SP_ResourceSetActDeact_TciStateIdList_Type
Comment	record of NR_MAC_CE_SP_ResourceSetActDeact_TciStateId_Type Id_Type

NR_MAC_CE_SP_ResourceSetActDeact_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SP_ResourceSetActDeact_Type		
Comment	TS 38.321 Figure 6.1.3.12-1		
Octet1	NR_MAC_CE_ServCellId BwpId_Type		Field1: A/D field
Octet2	NR_MAC_CE_SP_ResourceSetActDeact_Octet2_Type		
Octet3	NR_MAC_CE_SP_ResourceSetActDeact_Octet3_Type	opt	present if IM=1 in octet 2
IdList	NR_MAC_CE_SP_ResourceSetActDeact_TciStateIdList_Type		

D.2.1.1.2.9 **MAC_ControlElement_CSI_TriggerStateSubselection**

TS 38.321 clause 6.1.3.13 (Aperiodic CSI Trigger State Subselection MAC CE)

NR_MAC_CE_CSI_TriggerStateSubselection_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_CSI_TriggerStateSubselection_Type		
Comment	TS 38.321 Figure 6.1.3.13-1		
Octet1	NR_MAC_CE_ServCellId Bwpld_Type		Field1: reserved
Selection	B8_List_Type		

D.2.1.1.2.10 MAC_ControlElement_TCI_StatesActivationDeactivation

TS 38.321 clause 6.1.3.14 (TCI States Activation/Deactivation for UE-specific PDSCH MAC CE)

NR_MAC_CE_TCI_StatesActDeact_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_TCI_StatesActDeact_Type		
Comment	TS 38.321 Figure 6.1.3.14-1		
Octet1	NR_MAC_CE_ServCellId Bwpld_Type		Field1: CORESET Pool ID field
Status	B8_List_Type		

D.2.1.1.2.11 MAC_ControlElement_TCI_StateIndication

TS 38.321 clause 6.1.3.15 (TCI State Indication for UE-specific PDCCH MAC CE)

NR_MAC_CE_TCI_StateIndication_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_TCI_StateIndication_Type		
Comment	TS 38.321 Figure 6.1.3.15-1		
ServCellId	B5_Type		identity of the Serving Cell for which the MAC CE applies
CoresetId	B4_Type		ControlResourceSetId for which the TCI State is being indicated
TciStateId	B7_Type		TCI-StateId applicable to the Control Resource Set identified by CORESET ID field

D.2.1.1.2.12 MAC_ControlElement_SP_CSI_ReportingActivationDeactivation

TS 38.321 clause 6.1.3.16 (SP CSI reporting on PUCCH Activation/Deactivation MAC CE)

NR_MAC_CE_SP_CSI_ReportingActDeact_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SP_CSI_ReportingActDeact_Type		
Comment	TS 38.321 Figure 6.1.3.16-1		
Octet1	NR_MAC_CE_ServCellId Bwpld_Type		Field1: reserved
Reserved	B4_Type		
ConfigState	B4_Type		

D.2.1.1.2.13 MAC_ControlElement_SP_SRS_ActivationDeactivation

NR_MAC_CE_SP_SRS_ActDeact_Octet2_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SP_SRS_ActDeact_Octet2_Type		
Comment	TS 38.321 clause 6.1.3.17 (SP SRS Activation/Deactivation MAC CE)		
Reserved	B2_Type		
C	B1_Type		
SUL	B1_Type		
SRS_Resource setId	B4_Type		

NR_MAC_CE_SP_SRS_ActDeact_ResourceId_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SP_SRS_ActDeact_ResourceId_Type		
Comment			
F	B1_Type		
Id	B7_Type		

NR_MAC_CE_SP_SRS_ActDeact_ResourceIdList_Type

TTCN-3 Record of Type			
Name	NR_MAC_CE_SP_SRS_ActDeact_ResourceIdList_Type		
Comment			
record of NR_MAC_CE_SP_SRS_ActDeact_ResourceId_Type			

NR_MAC_CE_SP_SRS_ActDeact_ResourceInfo_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SP_SRS_ActDeact_ResourceInfo_Type		
Comment			
Reserved	B1_Type		
ServingCellId	B5_Type		
BwpId	B2_Type		

NR_MAC_CE_SP_SRS_ActDeact_ResourceInfoList_Type

TTCN-3 Record of Type			
Name	NR_MAC_CE_SP_SRS_ActDeact_ResourceInfoList_Type		
Comment			
record of NR_MAC_CE_SP_SRS_ActDeact_ResourceInfo_Type			

NR_MAC_CE_SP_SRS_ActDeact_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SP_SRS_ActDeact_Type		
Comment	TS 38.321 Figure 6.1.3.17-1		
Octet1	NR_MAC_CE_ServCellId_Bwpld_Type		Field1: A/D field
Octet2	NR_MAC_CE_SP_SRS_ActDeact_Octet2_Type		
ResourceIdList	NR_MAC_CE_SP_SRS_ActDeact_ResourceIdList_Type		
ResourceInfoList	NR_MAC_CE_SP_SRS_ActDeact_ResourceInfoList_Type		empty list when C=0

D.2.1.1.2.14 MAC_ControlElement_PUCCH_SpatialRelationActivationDeactivation

TS 38.321 clause 6.1.3.18 (PUCCH spatial relation Activation/Deactivation MAC CE)

NR_MAC_CE_PUCCH_SpatialRelationActDeact_Octet2_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_PUCCH_SpatialRelationActDeact_Octet2_Type		
Comment			
Reserved	B1_Type		
ResourceId	B7_Type		

NR_MAC_CE_PUCCH_SpatialRelationActDeact_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_PUCCH_SpatialRelationActDeact_Type		
Comment	TS 38.321 Figure 6.1.3.18-1		
Octet1	NR_MAC_CE_ServCellId_Bwpld_Type		Field1: reserved
Octet2	NR_MAC_CE_PUCCH_SpatialRelationActDeact_Octet2_Type		
ActivationStatus	B8_Type		

D.2.1.1.2.15 MAC_ControlElement_ZP_ResourceSetActivationDeactivation

TS 38.321 clause 6.1.3.19 (SP ZP CSI-RS Resource Set Activation/Deactivation MAC CE)

NR_MAC_CE_SP_ZP_ResourceSetActDeact_Octet2_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SP_ZP_ResourceSetActDeact_Octet2_Type		
Comment			
Reserved	B4_Type		
Id	B4_Type		

NR_MAC_CE_SP_ZP_ResourceSetActDeact_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_SP_ZP_ResourceSetActDeact_Type		
Comment	TS 38.321 Figure 6.1.3.19-1		
Octet1	NR_MAC_CE_ServCellId Bwpld_Type		Field1: A/D field
Octet2	NR_MAC_CE_SP_ZP_ResourceSetActDeact_Octet2 Type		

D.2.1.1.2.16 MAC_ControlElement_RecommendedBitrate

TS 38.321 clause 6.1.3.20 (Recommended bit rate MAC CE)

NR_MAC_CE_RecommendedBitrate_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_RecommendedBitrate_Type		
Comment	TS 38.321 Figure 6.1.3.20-1		
LCID	B6_Type		
UL_DL	B1_Type		
Bitrate	B6_Type		
X	B1_Type		Bit rate multiplier
Reserved	B2_Type		

D.2.1.1.2.17 MAC_ControlElement_CE_RLC_DuplicationActDeact

NR_MAC_CE_RLC_DuplicationActDeact_Type

TTCN-3 Record Type			
Name	NR_MAC_CE_RLC_DuplicationActDeact_Type		
Comment			
Drbld	B5_Type		
Rlc2	B1_Type		
Rlc1	B1_Type		
Rlc0	B1_Type		

D.2.1.2 RLC_PDU

RLC_PDU: Basic Type Definitions

TTCN-3 Basic Types		
NR_RLC_SDU_Type	octetstring	

NR_RLC_PDU_Type

TTCN-3 Union Type		
Name	NR_RLC_PDU_Type	
Comment		
TMD	NR_RLC_TMD_PDU_Type	
UMD	NR_RLC_UMD_PDU_Type	
AMD	NR_RLC_AMD_PDU_Type	
Status	NR_RLC_AM_StatusPDU_Type	

NR_RLC_PDUList_Type

TTCN-3 Record of Type	
Name	NR_RLC_PDUList_Type
Comment	
record of NR_RLC_PDU_Type	

NR_RLC_SDUList_Type

TTCN-3 Record of Type	
Name	NR_RLC_SDUList_Type
Comment	
record of NR_RLC_SDU_Type	

D.2.1.2.1 Common

RLC PDU definition: common AM/UM field definitions

Common: Basic Type Definitions

TTCN-3 Basic Types		
NR_RLC_SegmentationInfo_Type	B2_Type	Segmentation Info (SI) field (TS 38.322, clause 6.2.3.4) 00 - Data field contains all bytes of an RLC SDU 01 - Data field contains the first segment of an RLC SDU 10 - Data field contains the last segment of an RLC SDU 11 - Data field contains neither the first nor last segment of an RLC SDU
NR_RLC_SegmentOffset_Type	B16_Type	Segment Offset (SO) field (TS 38.322, 6.2.3.5)

D.2.1.2.2 TM_Data

RLC PDU definition: UM (TS 38.322, clause 6.2.2.2)

TM_Data: Basic Type Definitions

TTCN-3 Basic Types		
NR_RLC_TMD_PDU_Type	octetstring	TS 38.322, clause 6.2.2.2

D.2.1.2.3 UM_Data

RLC PDU definition: UM (TS 38.322, clause 6.2.2.3)

UM_Data: Basic Type Definitions

TTCN-3 Basic Types		
NR_RLC_UMD_Data_Type	octetstring	TS 38.322, clause 6.2.2.3

NR_RLC_UMD_HeaderNoSN_Type

TTCN-3 Record Type			
Name	NR_RLC_UMD_HeaderNoSN_Type		
Comment	TS 38.322, clause 6.2.2.3 (Figure 6.2.2.3-1); one octet		
SegmentationInfo	NR_RLC_SegmentationInfo_Type		
Reserved	B6_Type		

NR_RLC_UMD_PduNoSN_Type

TTCN-3 Record Type			
Name	NR_RLC_UMD_PduNoSN_Type		
Comment	TS 38.322, clause 6.2.2.3 (Figure 6.2.2.3-1); one octet		
Header	NR_RLC_UMD_HeaderNoSN_Type		
Data	NR_RLC_UMD_Data_Type		

NR_RLC_UMD_HeaderSN6Bit_Type

TTCN-3 Record Type			
Name	NR_RLC_UMD_HeaderSN6Bit_Type		
Comment	TS 38.322, clause 6.2.2.3 (6.2.2.3-2, 6.2.2.3-4); one octet		
SegmentationInfo	NR_RLC_SegmentationInfo_Type		2 bits SI
SequenceNumber	B6_Type		6 bits SN
SegmentOffset	NR_RLC_SegmentOffset_Type	opt	16 bits SO; included in case of segmentation but not for the first segment (TS 38.322 clause 6.2.2.3)

NR_RLC_UMD_PduSN6Bit_Type

TTCN-3 Record Type			
Name	NR_RLC_UMD_PduSN6Bit_Type		
Comment	TS 38.322, clause 6.2.2.3 (6.2.2.3-2, 6.2.2.3-4); one octet		
Header	NR_RLC_UMD_HeaderSN6Bit_Type		
Data	NR_RLC_UMD_Data_Type		

NR_RLC_UMD_HeaderSN12Bit_Type

TTCN-3 Record Type			
Name	NR_RLC_UMD_HeaderSN12Bit_Type		
Comment	TS 38.322, clause 6.2.2.3 (Figure 6.2.2.3-3, 6.2.2.3-5); two octets		
SegmentationInfo	NR_RLC_SegmentationInfo_Type		2 bits SI
Reserved	B2_Type		2 bits reserved
SequenceNumber	B12_Type		12 bits SN
SegmentOffset	NR_RLC_SegmentOffset_Type	opt	16 bits SO; included in case of segmentation but not for the first segment (TS 38.322 clause 6.2.2.3)

NR_RLC_UMD_PduSN12Bit_Type

TTCN-3 Record Type	
Name	NR_RLC_UMD_PduSN12Bit_Type
Comment	TS 38.322, clause 6.2.2.3 (Figure 6.2.2.3-3, 6.2.2.3-5); two octets
Header	NR_RLC_UMD_HeaderSN12Bit_Type
Data	NR_RLC_UMD_Data_Type

NR_RLC_UMD_PDU_Type

TTCN-3 Union Type	
Name	NR_RLC_UMD_PDU_Type
Comment	
NoSN	NR_RLC_UMD_PduNoSN_Type
SN6Bit	NR_RLC_UMD_PduSN6Bit_Type
SN12Bit	NR_RLC_UMD_PduSN12Bit_Type

D.2.1.2.4 AM_Data

RLC PDU definition: AM (TS 38.322, clause 6.2.2.4)

AM_Data: Basic Type Definitions

TTCN-3 Basic Types		
NR_RLC_AMD_Data_Type	octetstring	TS 38.322, clause 6.2.2.4

NR_RLC_AMD_HeaderSN12Bit_Type

TTCN-3 Record Type		
Name	NR_RLC_AMD_HeaderSN12Bit_Type	
Comment	TS 38.322, clause 6.2.2.4 (Figure 6.2.2.4-1, 6.2.2.4-3)	
D_C	B1_Type	1 bit, '1'B for Data PDU
Poll	B1_Type	1 bit, '0'B - Status report not requested '1'B - Status report is requested
SegmentationInfo	NR_RLC_SegmentationInfo_Type	2 bits SI
SequenceNumber	B12_Type	12 bits SN
SegmentOffset	NR_RLC_SegmentOffset_Type	opt 16 bits SO; included in case of segmentation but not for the first segment (TS 38.322 clause 6.2.2.4)

NR_RLC_AMD_PduSN12Bit_Type

TTCN-3 Record Type	
Name	NR_RLC_AMD_PduSN12Bit_Type
Comment	TS 38.322, clause 6.2.2.4 (Figure 6.2.2.4-1, 6.2.2.4-3)
Header	NR_RLC_AMD_HeaderSN12Bit_Type
Data	NR_RLC_AMD_Data_Type

NR_RLC_AMD_HeaderSN18Bit_Type

TTCN-3 Record Type			
Name	NR_RLC_AMD_HeaderSN18Bit_Type		
Comment	TS 38.322, clause 6.2.2.4 (Figure 6.2.2.4-2, 6.2.2.4-4)		
D_C	B1_Type		1 bit, '1'B for Data PDU
Poll	B1_Type		1 bit, 0 - Status report not requested 1 - Status report is requested
SegmentationInfo	NR_RLC_SegmentationInfo_Type		2 bits SI
Reserved	B2_Type		2 bits reserved
SequenceNumber	B18_Type		18 bits SN
SegmentOffset	NR_RLC_SegmentOffset_Type	opt	16 bits SO; included in case of segmentation but not for the first segment (TS 38.322 clause 6.2.2.4)

NR_RLC_AMD_PduSN18Bit_Type

TTCN-3 Record Type			
Name	NR_RLC_AMD_PduSN18Bit_Type		
Comment	TS 38.322, clause 6.2.2.4 Figure 6.2.2.4-2, 6.2.2.4-4)		
Header	NR_RLC_AMD_HeaderSN18Bit_Type		
Data	NR_RLC_AMD_Data_Type		

NR_RLC_AMD_PDU_Type

TTCN-3 Union Type			
Name	NR_RLC_AMD_PDU_Type		
Comment	TS 38.322, clause 6.2.2.4		
SN12Bit	NR_RLC_AMD_PduSN12Bit_Type		
SN18Bit	NR_RLC_AMD_PduSN18Bit_Type		

D.2.1.2.5 AM_Status

AM Status PDU (TS 36.322, clause 6.2.1.6)

AM_Status: Basic Type Definitions

TTCN-3 Basic Types		
NR_RLC_Status_ExtensionBit1_Type	B1_Type	TS 38.322, clause 6.2.3.11 Extension bit 1 (E1) field: '0'B A set of NACK_SN, E1, E2 and E3 does not follow. '1'B A set of NACK_SN, E1, E2 and E3 follows.
NR_RLC_Status_ExtensionBit2_Type	B1_Type	TS 38.322, clause 6.2.3.13 Extension bit 2 (E2) field: '0'B A set of SOstart and SOend does not follow for this NACK_SN. '1'B A set of SOstart and SOend follows for this NACK_SN.
NR_RLC_Status_ExtensionBit3_Type	B1_Type	TS 38.322, clause 6.2.3.16 Extension bit 3 (E3) field: '0'B A set of NACK_SN, E1, E2 and E3 follows. '1'B NACK range field follows for this NACK_SN.

NR_RLC_Status_NackSN12Bit_Type

TTCN-3 Record Type			
Name	NR_RLC_Status_NackSN12Bit_Type		
Comment	TS 38.322, clause 6.2.2.5 (Figure 6.2.2.5-1)		
SequenceNumberNACK	B12_Type		12 bits SN
E1	NR_RLC_Status_Extension Bit1_Type		1 bit E1 field; set if further NACK set follows
E2	NR_RLC_Status_Extension Bit2_Type		1 bit E2 field
E3	NR_RLC_Status_Extension Bit3_Type		1 bit E3 field
Reserved	B1_Type		1 bit reserved
SOstart	NR_RLC_SegmentOffset_Type	opt	segment offset (start), present only if E2 is set to '1'B
SOstop	NR_RLC_SegmentOffset_Type	opt	segment offset (stop), present only if E2 is set to '1'B
NACKrange	B8_Type	opt	NACK range, present only if E3 is set to '1'B

NR_RLC_Status_NackListSN12Bit_Type

TTCN-3 Record of Type	
Name	NR_RLC_Status_NackListSN12Bit_Type
Comment	
record of NR_RLC_Status_NackSN12Bit_Type	

NR_RLC_StatusPduSN12Bit_Type

TTCN-3 Record Type			
Name	NR_RLC_StatusPduSN12Bit_Type		
Comment	TS 38.322, clause 6.2.2.5 (Figure 6.2.2.5-1)		
D_C	B1_Type		1 bit, '0'B for Control PDU
CPT	B3_Type		3 bits, TS 38.322, clause 6.2.3.9 Control PDU Type (CPT) field: '000'B STATUS PDU ELSE reserved
SequenceNumberACK	B12_Type		12 bits SN
E1	NR_RLC_Status_Extension Bit1_Type		1 bit E1 field
Reserved	B7_Type		7 bits reserved
NackList	NR_RLC_Status_NackListSN12Bit_Type	opt	zero or more sets of a NACK_SN, E1, E2 and E3 and possibly a pair of SOstart/SOend or NACK range field for each NACK_SN

NR_RLC_Status_NackSN18Bit_Type

TTCN-3 Record Type			
Name	NR_RLC_Status_NackSN18Bit_Type		
Comment	TS 38.322, clause 6.2.2.5 (Figure 6.2.2.5-1)		
SequenceNumberNACK	B18_Type		18 bits SN
E1	NR_RLC_Status_ExtensionBit1_Type		1 bit E1 field; set if further NACK set follows
E2	NR_RLC_Status_ExtensionBit2_Type		1 bit E2 field
E3	NR_RLC_Status_ExtensionBit3_Type		1 bit E3 field
Reserved	B3_Type		3 bits reserved
SOstart	NR_RLC_SegmentOffset_Type	opt	segment offset (start), present only if E2 is set to '1'B
SOstop	NR_RLC_SegmentOffset_Type	opt	segment offset (stop), present only if E2 is set to '1'B
NACKrange	B8_Type	opt	NACK range, present only if E3 is set to '1'B

NR_RLC_Status_NackListSN18Bit_Type

TTCN-3 Record of Type	
Name	NR_RLC_Status_NackListSN18Bit_Type
Comment	
record of NR_RLC_Status_NackSN18Bit_Type	

NR_RLC_StatusPduSN18Bit_Type

TTCN-3 Record Type			
Name	NR_RLC_StatusPduSN18Bit_Type		
Comment	TS 38.322, clause 6.2.2.5 (Figure 6.2.2.5-1)		
D_C	B1_Type		1 bit, '0'B for Control PDU
CPT	B3_Type		3 bits, TS 38.322, clause 6.2.3.9 Control PDU Type (CPT) field: '000'B STATUS PDU ELSE reserved
SequenceNumberACK	B18_Type		18 bits SN
E1	NR_RLC_Status_ExtensionBit1_Type		1 bit E1 field
Reserved	B1_Type		1 bit reserved
NackList	NR_RLC_Status_NackListSN18Bit_Type	opt	zero or more sets of a NACK_SN, E1, E2 and E3 and possibly a pair of SOstart/SOend or NACK range field for each NACK_SN

NR_RLC_AM_StatusPDU_Type

TTCN-3 Union Type		
Name	NR_RLC_AM_StatusPDU_Type	
Comment	TS 38.322, clause 6.2.254	
SN12Bit	NR_RLC_StatusPduSN12Bit_Type	
SN18Bit	NR_RLC_StatusPduSN18Bit_Type	

D.2.2 DRB_Primitive_Definitions

Primitive definitions to send/receive data PDUs over DRB's

D.2.2.1 DRB_Common

NR_L2DataList_Type

TTCN-3 Union Type		
Name	NR_L2DataList_Type	
Comment	MAC: acc. to rel-15 protocols there is exactly one MAC PDU per TB but in case of spatial multiplexing there can be one or more TB per HARQ process; any MAC PDU is completely included in one slot (TTI) RLC: one or more RLC PDUs per slot (TTI) (e.g. RLC Data + Status PDU on a logical channel; more than one RLC Data PDU in one MAC PDU is valid too) any RLC PDU is completely included in one slot (TTI) PDCP: one or more PDUs per slot (TTI); one PDCP PDU may be included in more than one slot (TTI)	
MacPdu	NR_MAC_PDUList_Type	SS configuration: RLC TM mode, MAC no header removal (PDCP is not configured)
RlcPdu	NR_RLC_PDUList_Type	SS configuration: RLC TM mode, MAC header removal (PDCP is not configured)
RlcSdu	NR_RLC_SDUList_Type	SS configuration: RLC UM mode with no PDCP
PdcpPdu	NR_PDCP_PDUList_Type	SS configuration: RLC AM/UM mode, no handling of PDCP header
PdcpSdu	NR_PDCP_SDUList_Type	SS configuration: RLC AM/UM mode, PDCP normal mode (automatic handling of PDCP header)
SdapPdu	SDAP_PDUList_Type	SS configuration: RLC AM/UM mode, PDCP normal mode (automatic handling of PDCP header), no handling of SDAP header
SdapSdu	SDAP_SDUList_Type	SS configuration: RLC AM/UM mode, PDCP normal mode (automatic handling of PDCP header), automatic handling of SDAP header

NR_HarqProcessAssignment_Type

TTCN-3 Union Type		
Name	NR_HarqProcessAssignment_Type	
Comment	in DL the HARQ process id may be specified by the test case or automatically assigned by SS	
Id	NR_HarqProcessId_Type	HARQ process as specified by the test case NOTE1: the scope of this type is only for data being sent in one slot (TTI); if data needs more than one slot (TTI) the HarqProcessId is undefined for the 2nd TTI onward what shall be handled as an error at the SS; SS may send a SYSTEM_IND indicating an error in this case; NOTE2: The initial value of the NDI shall be the same for all HARQ processes and cells
Automatic	Null_Type	HARQ process id automatically assigned by SS

D.2.2.2 Downlink

NR_DRB_DataPerSlot_DL_Type

TTCN-3 Record Type			
Name	NR_DRB_DataPerSlot_DL_Type		
Comment	<p>common definition for one or several PDUs/SDUs; in NR the DL data is sent in the slot given by the slot offset NOTE 1: For MAC and RLC PDUs a single PDU is always sent in one slot; SS shall raise an error indication (using SYSTEM_IND) when that is not possible NOTE 2: For PDCP the data may be spread over more than one slot (segmented by the RLC); the TTCN implementation is responsible to calculate appropriate offsets accordingly; the exact timing depends on (and is exactly specified by) configuration of the DL scheduling; SS shall raise an error when there is any conflict</p>		
SlotOffset	integer		<p>NR: Slot offset relative to the absolute timing information given in the common part of the ASP; NOTE: if a PDCP PDU or SDU takes more than one slot, SlotOffset specifies the first slot (TTI)</p>
HarqProcess	NR_HarqProcessAssignment_Type	opt	<p>HARQ process to be used: specific value or automatically assigned by SS; in automatic mode SS chooses HARQ process out of the set configured by DcchDtchConfig.DL.SearchSpaceAndDci.DciInfo.ResourceAssignment.HarqProcessConfig NOTE: for PDCP SDUs or PDUs automatic mode shall be used; otherwise SS shall raise an error</p>
PduSduList	NR_L2DataList_Type		list of PDUs/SDUs to be sent in one slot (TTI)

NR_DRB_DataPerSlotList_DL_Type

TTCN-3 Record of Type			
Name	NR_DRB_DataPerSlotList_DL_Type		
Comment	<p>list of user plane data to be sent in slots given by the SlotOffset in the single elements of the list; Timing: the start time for the whole sequence is given by the timing info of the ASP (common information); the timing for the respective data pdus is given by the SlotOffset relative to the common timing info; design consideration: repetitions of this sequence are not foreseen (in which case the slot offset could not be related to the timing info of the ASP)</p>		
record of NR_DRB_DataPerSlot_DL_Type			

NR_L2Data_Request_Type

TTCN-3 Record Type			
Name	NR_L2Data_Request_Type		
Comment	NOTE: formal type definition to allow later enhancements		
SlotDataList	NR_DRB_DataPerSlotList_DL_Type		

D.2.2.3 Uplink

NR_DRB_DataPerSlot_UL_Type

TTCN-3 Record Type			
Name	NR_DRB_DataPerSlot_UL_Type		
Comment	common definition for one or several PDUs/SDUs being received in one slot or to receive one PDCP PDU or SDU being spread over more than one slot (TTI); NOTE: There is a fix relation between HARQ process id and slot in UL => it is not necessary to include HARQ process id for UL data		
PduSduList	NR_L2DataList_Type		list of PDUs/SDUs being received in one TTI; elements of the list appear in the same order as the PDUs/SDUs in the MAC PDU; for PDCP when a PDU or SDU takes more than one TTI the list only contains this PDU or SDU
NoOfTTIs	integer		in case of PDCP: number of TTIs the SDU or PDU has taken NOTE 1: for the time being the NoOfTTIs is not checked by TTCN-3 and may be set to 1 by SS; NOTE 2: the timing info in common part of the ASP refers to the last TTI NOTE 3: when NoOfTTIs > 1 => PduSduList shall only contain one PDCP PDU or SDU in case of MAC or RLC PDUs: NoOfTTIs shall always be 1

NR_L2Data_Indication_Type

TTCN-3 Record Type			
Name	NR_L2Data_Indication_Type		
Comment	NOTE: formal type definition to allow later enhancements; L2Data_Indication_Type defines data being received in a single slot i.e. PDUs of subsequent TTIs are indicated in separated ASPs		
SlotData	NR_DRB_DataPerSlot_UL_Type		

D.2.3 System_Interface

NR_DRB_COMMON_REQ

TTCN-3 Record Type		
Name	NR_DRB_COMMON_REQ	
Comment	common ASP to send PDUs to DRBs	
Common	NR_ReqAspCommonPart_Type	<p>CellId : identifier of the cell</p> <p>RoutingInfo : QosFlow when SDAP is configured in non-transparent mode at the SS, else DRB id</p> <p>RlcBearerRouting : TTCN provides the id of the cell hosting the RLC bearer, which the SS shall use to send the data out to the UE (for non-split bearers in general same as CellId)</p> <p>MacBearerRouting : If NR CA is configured, TTCN provides the id of the cell hosting the physical layer, which the SS shall use to send the data out to the UE. Else 'omit'</p> <p>TimingInfo : starting point when to start sending sequence of data PDUs</p> <p>e.g.</p> <p>SFN = X, subframe number = x; slot number = slot_i</p> <p>depending on numerology</p> <p>U_Plane.SubframeDataList[i].SlotOffset := offset_i;</p> <p>=> U_Plane.SubframeDataList[0].PduSduList shall be sent out at (X, x, i)</p> <p>U_Plane.SubframeDataList[i].PduSduList shall be sent out offset_i slots after U_Plane.SubframeDataList[0].PduSduList (depending on the numerology)</p> <p>NOTE: In case of K0>0 (K0 according to 38.214 clause 5.1.2.1) the timing specifies the PDCCH assignment (rather than the PDSCH transmission)</p> <p>ControllInfo : Cnfflag:=false; FollowOnFlag:=false</p>
U_Plane	NR_L2Data_Request_Type	
SuppressPdcch ForC_RNTI	Null_Type	opt
		<p>By default all DRB_COMMON_REQ scheduled DL PDU's are associated with an appropriate explicit configured or SS selected DL assignment allocation on PDCCH.</p> <p>For SuppressPdcch:=true in the sub frame in which DL PDU's are transmitted, there is no associated DL assignment allocation for configured C-RNTI. This will be used for SPS assignment based transmission or in any error scenarios;</p> <p>NOTE: this flag has no impact on PDCCH messages required for SPS activation</p>

NR_DRB_COMMON_IND

TTCN-3 Record Type	
Name	NR_DRB_COMMON_IND
Comment	common ASP to receive PDUs from DRBs
Common	<p>NR_IndAspCommonPart_Type</p> <p>CellId : identifier of the cell RoutingInfo : QosFlow when SDAP is configured in non-transparent mode at the SS, else DRB id RoutingInfoSUL : The SS shall include this field when data is received from SUL carrier. Else 'omit'. RlcBearerRouting : The SS shall provide the id of the cell hosting the RLC bearer in which the data has been received from the UE MacBearerRouting : If NR CA is configured, the SS shall provide the id of the cell hosting the physical layer in which the data has been received from the UE. Else 'omit' TimingInfo : time when message has been received NOTE 1: For MAC and RLC PDUs per definition L2Data_Indication_Type corresponds to exactly one slot => TimingInfo refers to this slot NOTE 2: For PDCP a single PDU or SDU may take more than one TTI => TimingInfo refers to the end of the PDU/SDU and the length is given by NoOfTTIs in L2Data_Indication_Type (the end of the PDU/SDU is the last RLC PDU being received; in case of retransmissions this is not necessarily the RLC PDU with the last SN)</p>
U_Plane	NR_L2Data_Indication_Type

NR_DRB_PORT

TTCN-3 Port Type	
Name	NR_DRB_PORT
Comment	
out	NR_DRB_COMMON_REQ
in	NR_DRB_COMMON_IND

D.3 NR_ASP_SrbDefs

D.3.1 SRB_DATA_ASPs

ASP Definitions to send/receive peer-to-peer messages on SRBs

NR_C_Plane_Request_Type

TTCN-3 Record Type			
Name	NR_C_Plane_Request_Type		
Comment	RRC and/or NAS PDU to be send to the UE; Note: it may be necessary to allow more than one NAS PDU (-> "record of")		
Rrc	NR_RRC_MSG_Request_Type	opt	omit: NAS message shall be present; NAS message shall be sent in DLInformationTransfer present: if NAS message is present also, (piggybacked) NAS PDU shall be security protected (if necessary) and inserted in RRC PDU's DedicatedInfoNAS
Nas	NG_NAS_MSG_RequestList_Type	opt	omit: RRC message shall be present; RRC message does not contain (piggybacked) NAS PDU present: if RRC message is omitted => NAS message shall be sent embedded in DLInformationTransfer if RRC message is present => NAS message is piggybacked in RRC message in case of RRC message is sent on CCCH, NAS message shall be omitted

NR_C_Plane_Indication_Type

TTCN-3 Record Type			
Name	NR_C_Plane_Indication_Type		
Comment	RRC and/or NAS PDU to be received from the UE; Note: it may be necessary to allow more than one NAS PDU (-> "record of")		
Rrc	NR_RRC_MSG_Indication_Type	opt	omit: NAS message shall be present; NAS message is received in ULInformationTransfer present: if NAS message is present also, DedicatedInfoNAS contains unstructured and ciphered NAS message and the NAS message is the deciphered message in structured format
Nas	NG_NAS_MSG_IndicationList_Type	opt	omit: RRC message shall be present; RRC message does not contain (piggybacked) NAS PDU present: if RRC message is omitted => NAS message has been received in ULInformationTransfer if RRC message is present => NAS message has been piggybacked in RRC message NOTE: even though currently (DEC 08 ASN.1) there is no RRC PDU in UL containing more than one DedicatedInfoNAS we provide a list to allow extendability

NR_SRB_COMMON_REQ

TTCN-3 Record Type	
Name	NR_SRB_COMMON_REQ
Comment	common ASP to send PDUs to SRB0, SRB1 or SRB2
Common	<p>NR_ReqAspCommonPart_Type</p> <p>CellId : identifier of the cell RoutingInfo : SRB0, SRB1, SRB2, SRB3 RlcBearerRouting : TTCN provides the id of the cell hosting the RLC bearer which the SS shall use to send the data out to the UE (for non-split bearers in general same as CellId) MacBearerRouting : If NR CA is configured, TTCN provides the id of the cell hosting the physical layer, which the SS shall use to send the data out to the UE. Else 'omit' TimingInfo : Now in normal cases; For latency tests TimingInfo can be set to the SFN/subframe in which the RRC messages shall be sent out (in this case and if the RRC PDU is too long to be sent in one TTI the TimingInfo corresponds to the first TTI) ControllInfo CnfFlag:=false; FollowOnFlag true: Indicates that the message(s) to be sent on the same TTI will follow NOTE 1: When FollowOnFlag is true, TimingInfo shall always be "Now". Otherwise SS shall produce an error NOTE 2: the FollowOnFlag applies only for messages of the same SRB false: Indicates that no more message(s) will follow</p>
Signalling	NR_C Plane Request Type

NR_SRB_COMMON_IND

TTCN-3 Record Type	
Name	NR_SRB_COMMON_IND
Comment	common ASP to receive PDUs from SRB0, SRB1 or SRB2
Common	<p>NR_IndAspCommonPart_Type</p> <p>CellId : identifier of the cell RoutingInfo : SRB0, SRB1, SRB2, SRB3 RoutingInfoSUL : The SS shall include this field when data is received from SUL carrier. Else 'omit'. RlcBearerRouting : The SS shall provide the id of the cell hosting the RLC bearer in which the data has been received from the UE MacBearerRouting : If NR CA is configured, the SS shall provide the id of the cell hosting the physical layer in which the data has been received from the UE. Else 'omit' TimingInfo : time when message has been received (as received from the SS by the NAS emulator)</p>
Signalling	NR_C Plane Indication Type

D.3.2 Port_Definitions

NR_SRB_PORT

TTCN-3 Port Type	
Name	NR_SRB_PORT
Comment	NR PTC: Port for Sending/Receiving data on SRBs
out	NR_SRB_COMMON_REQ
in	NR_SRB_COMMON_IND

NASEMU_NR_SRB_PORT

TTCN-3 Port Type	
Name	NASEMU_NR_SRB_PORT
Comment	NASEMU PTC: Port for Sending/Receiving data on SRBs (interface to NR PTC)
out	NR_SRB_COMMON_IND
in	NR_SRB_COMMON_REQ

D.4 NR_CommonDefs

D.4.1 Common_Types

Common_Types: Basic Type Definitions

TTCN-3 Basic Types		
NR_HarqProcessId_Type	integer	HARQ process id; NOTE: there seems to be no need for any value restriction
NR_AbsoluteCellPower_Type	integer (-150..0)	absolute cell power (dBm)

NR_RRC_MSG_Request_Type

TTCN-3 Union Type	
Name	NR_RRC_MSG_Request_Type
Comment	DL RRC PDU on CCCH or DCCH
Ccch	DL_CCCH_Message
Dcch	DL_DCCH_Message

NR_RRC_MSG_Indication_Type

TTCN-3 Union Type	
Name	NR_RRC_MSG_Indication_Type
Comment	UL RRC PDU on CCCH or DCCH
Ccch	UL_CCCH_Message
Ccch1	UL_CCCH1_Message
Dcch	UL_DCCH_Message

NR_HarqProcessList_Type

TTCN-3 Record of Type	
Name	NR_HarqProcessList_Type
Comment	list of HARQ processes: each element shall be unique; NOTE: there seems to be no need for any length restriction
record of NR_HarqProcessId_Type	

D.4.2 RRC_Nested_Types

RRC_Nested_Types: Basic Type Definitions

TTCN-3 Basic Types		
NR_PrioritizedBitRate_Type	LogicalChannelConfig.ul_SpecificParameters.prioritisedBitRate	
NR_SiPeriodicity_Type	SchedulingInfo.si_Periodicity	
NR_PosSI_Periodicity_Type	PosSchedulingInfo_r16.posSI_Periodicity_r16	
NR_SiWindowLength_Type	SI_SchedulingInfo.si_WindowLength	

D.4.3 ASP_CommonPart

Definition of ASP common parts for REQ-, CNF- and IND-ASPs

D.4.3.1 ASP_CommonPart_Definitions

D.4.3.1.1 Routing_Info

Routing_Info: Basic Type Definitions

TTCN-3 Basic Types		
NR_RoutingInfoSUL_Type	Null_Type	

NR_RadioBearerId_Type

TTCN-3 Union Type		
Name	NR_RadioBearerId_Type	
Comment		
Srb	SRB_Identity_Type	
Drb	DRB_Identity	

NR_RoutingInfo_Type

TTCN-3 Union Type		
Name	NR_RoutingInfo_Type	
Comment		
None	Null_Type	
RadioBearerId	NR_RadioBearerId_Type	routing of signalling and user plane data when SDAP is not configured at the SS for the DRB or it is configured in transparent mode
QosFlow	QosFlow_Identification_Type	routing of user plane data with SDAP being configured in non-transparent mode at the SS

MacBearerRouting_Type

TTCN-3 Record Type		
Name	MacBearerRouting_Type	
Comment	Physical layer cell data routing. Applicable for NR CA, multi-RAT Dual Connectivity (MR-DC) with NR CA as well as single-RAT Dual Connectivity with NR CA	
NR	NR_CellId_Type	

D.4.3.2 REQ_ASP_CommonPart

NR_ReqAspCommonPart_Type

TTCN-3 Record Type			
Name	NR_ReqAspCommonPart_Type		
Comment			
CellId	NR_CellId_Type		
RoutingInfo	NR_RoutingInfo_Type		
RlcBearerRouting	RlcBearerRouting_Type		
MacBearerRouting	MacBearerRouting_Type	opt	
TimingInfo	TimingInfo_Type		
ControllInfo	ReqAspControllInfo_Type		

D.4.3.3 CNF_ASP_CommonPart

NR_CnfAspCommonPart_Type

TTCN-3 Record Type			
Name	NR_CnfAspCommonPart_Type		
Comment			
CellId	NR_CellId_Type		
RoutingInfo	NR_RoutingInfo_Type		
TimingInfo	TimingInfo_Type		
Result	ConfirmationResult_Type		

D.4.3.4 IND_ASP_CommonPart

NR_IndAspCommonPart_Type

TTCN-3 Record Type			
Name	NR_IndAspCommonPart_Type		
Comment			
CellId	NR_CellId_Type		
RoutingInfo	NR_RoutingInfo_Type		
RoutingInfoSUL	NR_RoutingInfoSUL_Type	opt	
RlcBearerRouting	RlcBearerRouting_Type		
MacBearerRouting	MacBearerRouting_Type	opt	
TimingInfo	TimingInfo_Type		
Status	IndicationStatus_Type		

D.5 IP_ASP_TypeDefs

General Notes:

NOTE 1:

In general the handling of IP data shall be independent from the RAT being used on lower layers.

NOTE 2:

It shall be possible for SS implementation to reuse existing IP stack implementations in the system adaptor; therefore the well-known concept of socket programming shall be supported (regardless of whether those are used in the system adaptor implementation or not)

NOTE 3:

Since in general at the network side there are several different IP addresses the SS needs to simulate more than one IP

address;
that can be based on a concept of multiple virtual network adaptors

NOTE 4:

There is no easy way to control the routing of IP data for an IP connection from above the IP stack
i.e. there are no parameters at the socket interface to determine e.g. cell id and DRB id
=> another independent logical entity (DRB-MUX) is needed below the IP stack which is responsible to control the routing of IP packets from/to DRBs in different cells of different RATs

Reference:

An introduction to socket programming can be found in
UNIX Network Programming Volume 1, Third Edition: The Sockets Networking API
by W. Richard Stevens, Bill Fenner, Andrew M. Rudoff

D.5.1 IP_Common

IP_Common: Basic Type Definitions

TTCN-3 Basic Types	
PortNumber_Type	UInt16_Type

IPv4_AddrInfo_Type

TTCN-3 Record Type	
Name	IPv4_AddrInfo_Type
Comment	IPv4 specific info of the socket addr (AF_INET)
Addr	charstring IP Address as string (IP v4 dot notation) to be converted to 32-bit unsigned integer

IPv6_AddrInfo_Type

TTCN-3 Record Type	
Name	IPv6_AddrInfo_Type
Comment	IPv6 specific info of the socket addr (AF_INET6); NOTE: sin6_flowinfo can be ignored and set to 0
Addr	charstring to be converted to sin6_addr
Scopeld	UInt32_Type opt sin6_scope_id in general an IPv6 address is like "fe80::1%eth0" with eth0 being the network adaptor mapped to a scope id (Unix) assumption: for UE conformance testing it is not necessary to distinguish different scopes and the scope id in general can be determined by the system adaptor => omit

IP_AddrInfo_Type

TTCN-3 Union Type	
Name	IP_AddrInfo_Type
Comment	
V4	IPv4_AddrInfo_Type
V6	IPv6_AddrInfo_Type

IP_Socket_Type

TTCN-3 Record Type	
Name	IP_Socket_Type
Comment	Socket
IpAddr	IP_AddrInfo_Type opt IP address
Port	PortNumber_Type opt port number

InternetProtocol_Type

TTCN-3 Enumerated Type	
Name	InternetProtocol_Type
Comment	
udp	
tcp	
icmp	
icmpv6	

IP_Connection_Type

TTCN-3 Record Type			
Name	IP_Connection_Type		
Comment	A connection between peer-to-peer entities is unambiguously defined by the protocol (udp/tcp/icmp/icmpv4), the local socket and the remote socket		
Protocol	InternetProtocol_Type		
Local	IP_Socket_Type	opt	
Remote	IP_Socket_Type	opt	

D.5.2 IP_Config

Configuration of the routing table managed by the system adaptor's DRB-MUX:

foreach IP connection it is specified which

- RAT
- Cell
- DRB

to be used.

The IP connection does not need to be fully specified depending on the role SS plays (e.g. in case of a server role the port number of the remote side is not known in advance).

The configurations of DRBs within the same cell shall be mutual exclusive.

With the configuration of the IP routing the DRB is configured either in IP or in raw mode:

either there are entries for the DRB in the routing table (IP mode) or not (raw mode)

=> It is not necessary to reconfigure this for the respective RAT.

Behaviour of the DRB-MUX in UL:

- SS gets data packet from the lower layers (e.g. PDCP SDU)
- SS checks whether there is any IP connection configured for this DRB (identified by {RAT, CellId, DrbId})
 - if YES => packet is routed to the IP stack (IP mode)
 - if NO => packet is handed over to the DRB port (raw mode)

NOTE 1:

If there is any entry for a DRB in the routing table this DRB is considered as being in IP mode and all UL IP packets are sent to the IP stack regardless of whether their addresses match the DRB's routing entries or not (in general 'unknown' packets are discarded by the IP stack)

=> a DRB can be either in IP or in raw mode

NOTE 2:

=> The SS does not need to evaluate any IP headers to decide whether data shall be routed to the DRB port or to the IP stack (i.e. there is no conflict with unstructured loopback data)

Behaviour of the DRB-MUX in DL:

- SS gets IP packets from the IP stack for an IP connection
- SS compares the IP connection (protocol, local/remote IP Addr) against the IP routing table and checks whether the corresponding protocol stack is configured at the lower layers =>

1. no match:

no entry in the routing table fits to the address in the IP packet
or the corresponding RB is not configured

=> SS shall raise an error (DRBMUX_COMMON_IND_CNF.Error)

2. one match:

There is exactly one possibility to route the IP packet

=> SS shall send the packet to this RB

3. several matches:

There are more than one DRBs, cells or RATs to which the packet may be routed

=> SS shall raise an error if there is more than one DRB in one cell matching;
if the DRBs belong to different cells or RATs SS shall send the data to all of them
(whether this may occur in test cases is FFS)

General notes:

NOTE 1:

SS may use the information of the routing table to determine which network adaptors it needs to simulate (implementation dependent);

in general there will be more than one IP address at the network side.

NOTE 2:

In general the routing table is a simplified DL TFT implementation

NOTE 3:

When the routing table is empty all DRBs are in raw mode; this shall be the initial condition at the DRB-MUX;

=> for L2 testing in general (and apart from the preamble) there is no need to use/configure the IP_PTC; the configuration of the RAT specific U-plane stacks is not affected

IP_DataMode_Type

TTCN-3 Enumerated Type	
Name	IP_DataMode_Type
Comment	
discard	
loopbackRTP	
loopbackRTCP	
IPsecTunnel	

IP_RoutingInfo_Type

TTCN-3 Record Type			
Name	IP_RoutingInfo_Type		
Comment			
IpInfo	IP_Connection_Type		<p>IP connection tuple: protocol, local socket, remote socket depending on the role the SS plays the following information may be provided (informative; even less information can be sufficient):</p> <ol style="list-style-type: none"> 1. TCP/UDP server <ul style="list-style-type: none"> - local IP addr -- provided - local port -- provided - remote IP addr -- omit - remote port -- omit 2. TCP/UDP client <ul style="list-style-type: none"> - local IP addr -- provided (to inform SS about the local IP addr for this service) - local port -- omit; for UDP a well-defined port may be defined (protocol dependent, e.g. DHCP) - remote IP addr -- provided - remote port -- provided 3. ICMP (in general ICMP may be mapped only to a single DRB) <ul style="list-style-type: none"> - local IP addr -- provided (to inform SS about the local IP addr for this service) - local port -- n/a (shall be set to omit) - remote IP addr -- omit - remote port -- n/a (shall be set to omit) <p>NOTE: In case of broadcasts in UL the broadcast address shall match any local IP address; in DL for broadcast services typically no remote IP address is specified in the routing table</p>
DRB	IP_DrbInfo_Type		
DataMode	IP_DataMode_Type	opt	present when IP packets matching this entry shall be discarded or be looped back to the UE as defined for RTP or RTCP

IP_RoutingTable_Type

TTCN-3 Record of Type	
Name	IP_RoutingTable_Type
Comment	NOTE: configurations of DRBs within the same cell shall be mutual exclusive
record of IP_RoutingInfo_Type	

D.5.3 IPsec_Config

IP_ASP_TypeDefs: Constant Definitions

TTCN-3 Basic Types			
tsc_IPsec_SPI_Max	integer	4294967295	

IPsec_Config: Basic Type Definitions

TTCN-3 Basic Types		
IPsec_SPI_Type	integer (0.. tsc_IPsec_SPI_Max)	security parameter index for IPsec; According to RFC 2406, SPI values from 0 to 255 are reserved

IPsec_IntegrityAlgorithm_Type

TTCN-3 Enumerated Type	
Name	IPsec_IntegrityAlgorithm_Type
Comment	
hmac_md5_96	
hmac_sha_1_96	

IPsec_CipheringAlgorithm_Type

TTCN-3 Enumerated Type	
Name	IPsec_CipheringAlgorithm_Type
Comment	
des_ed3_cbc	
aes_cbc	
nociph	no ciphering

IPsec_SecurityKeys_Type

TTCN-3 Record Type			
Name	IPsec_SecurityKeys_Type		
Comment	to install the security keys		
MD5_96Key	bitstring length (128)		
SHA_1_96Key	bitstring length (160)		
DES_EDE3_C BCKey	bitstring length (192)		
AES_CBCKey	bitstring length (128)		

IPsec_SecurityAssociation_Type

TTCN-3 Record Type			
Name	IPsec_SecurityAssociation_Type		
Comment	single security association (SA); for configuration of an SA at the SS all fields are mandatory; to release an SA the optional information is omitted		
SPI	IPsec_SPI_Type		
SrcAddress	charstring		
DestAddress	charstring		
SrcPort	UInt16_Type		
DestPort	UInt16_Type		
IntegrityAlgorith m	IPsec_IntegrityAlgorithm_T ype	opt	mandatory to set-up an SA
CipheringAlgori thm	IPsec_CipheringAlgorithm_ Type	opt	mandatory to set-up an SA

IPsec_SecurityAssociationList_Type

TTCN-3 Record of Type	
Name	IPsec_SecurityAssociationList_Type
Comment	
	record of IPsec_SecurityAssociation_Type

IPsec_Configure_Type

TTCN-3 Record Type	
Name	IPsec_Configure_Type
Comment	add new security associations; existing SAs are not affected
SA_List	IPsec_SecurityAssociationList_Type
SecurityKeys	IPsec_SecurityKeys_Type

IPsec_Release_Type

TTCN-3 Record Type	
Name	IPsec_Release_Type
Comment	release security associations; NOTE: in context with multiple PDNs it cannot be ensured that all SPIs are unique; e.g. the UE may use the same SPI values in different PDNs in which case uniqueness cannot be achieved furthermore it depends on the system implementation how entries in the IPsec SAD and SPD are administrated => to release SAs the SS gets the same information as for configuration but without the security algorithms
SA_List	IPsec_SecurityAssociationList_Type

D.5.4 IP_SocketHandling

Handling of IP data and IP connections

NOTE 1:

In general IP connections are distinguished by the tuple {protocol, local socket, remote socket}; this information is used at the interface between TTCN and the system adaptor.

It is up to the system adaptor implementation to associate the IP connection with the internal socket (file descriptor; implementation dependent)

NOTE 2:

In general the association of the IP connections to (internal) sockets and the routing table for the DRB mapping (as configured with IP_RoutingTable_Type) are independent from each other

D.5.4.1 Socket_Common

IP_SockOpt_Type

TTCN-3 Union Type	
Name	IP_SockOpt_Type
Comment	socket options acc. to the setsockopt system call (i.e. for level=SOL_SOCKET in case of Berkeley socket API); NOTE: only options being relevant for a specific applications (upon a socket) are configured by TTCN other options (e.g. SO_REUSEADDR) are out of TTCN and therefore a matter of system adaptor implementation
SO_BROADCAST	boolean set to true when IP broadcast messages shall be allowed for a port; this is required e.g. in case of DHCP
IP_MTU_SIZE	integer MTU size to be used for IP data; NOTES: - Even though the MTU size is defined as socket option it shall be the same for all sockets of a given interface (i.e. at least within one PDN the MTU size shall be the same) - in general a PIXIT is used as constant value for all sockets

IP_SockOptList_Type

TTCN-3 Record of Type	
Name	IP_SockOptList_Type
Comment	
record of IP_SockOpt_Type	

IP_SocketError_Type

TTCN-3 Union Type		
Name	IP_SocketError_Type	
Comment	used to indicate errors related to sockets; the IP_Connection shall contain as much address information as available at the system adaptor	
InvalidAddress	Null_Type	TTCN error: e.g. invalid or incomplete address information
System	integer	system error caused by system call; the integer value may be used for validation but shall not be evaluated by TTCN

D.5.4.2 Socket_Datagram

Socket_Datagram: Basic Type Definitions

TTCN-3 Basic Types		
Datagram_Content_Type	octetstring	data as sent/received with sendto()/recvfrom() on UDP or ICMP socket; NOTE: For ICMP the data may depend on the socket options; in general it does not include the IP header and the checksum of the ICMP packet needs to be calculated/checked in TTCN

Datagram_DL_Type

TTCN-3 Record Type		
Name	Datagram_DL_Type	
Comment	datagram to be sent at a UDP or ICMP socket	
Buffer	Datagram_Content_Type	content of the IP packet

Datagram_UL_Type

TTCN-3 Record Type		
Name	Datagram_UL_Type	
Comment	datagram as received on a UDP or ICMP socket	
Buffer	Datagram_Content_Type	content of the IP packet
DrbInfo	IP_DrbInfo_Type	opt "interface id" where the data comes from in case of broadcast or multicast packets: for the LTE test model this is the DRB on which the IP packet has been received; the information is necessary when the SS cannot resolve an IP address being assigned to that DRB. => when the SS provides a broadcast or multicast address as local address in the ConnectionId of the ASP, the SS shall provide the DRB information in this field When the ConnectionId of the ASP is fully specified and unique (unicast address at least for local address) the DrbId is ignored by TTCN

D.5.4.3 TCP_Socket

TCP primitives used on the IP port

TCP_Socket: Basic Type Definitions

TTCN-3 Basic Types		
TCP_Data_Type	octetstring	data as sent/received with send()/recv() on a TCP socket

InternetApplication_Type

TTCN-3 Enumerated Type	
Name	InternetApplication_Type
Comment	as TCP is stream oriented SS may need information about which criteria to be applied to get start/end of an application message
ims	
http	
msrp	

TLS_CIPHER_Type

TTCN-3 Enumerated Type	
Name	TLS_CIPHER_Type
Comment	Cipher suite to be used for TLS
TLS_PSK_WITH_RC4_128_SHA	RFC 4279
TLS_PSK_WITH_3DES_EDE_CBC_SHA	RFC 4279
TLS_PSK_WITH_AES_128_CBC_SHA	RFC 4279
TLS_PSK_WITH_AES_256_CBC_SHA	RFC 4279
TLS_PSK_WITH_AES_128_CBC_SHA256	RFC 5487
TLS_RSA_WITH_NULL_MD5	RFC 5246
TLS_RSA_WITH_NULL_SHA	RFC 5246
TLS_RSA_WITH_NULL_SHA256	RFC 5246
TLS_RSA_WITH_RC4_128_MD5	RFC 5246
TLS_RSA_WITH_RC4_128_SHA	RFC 5246
TLS_RSA_WITH_3DES_EDE_CBC_SHA	RFC 5246
TLS_RSA_WITH_AES_128_CBC_SHA	RFC 5246
TLS_RSA_WITH_AES_256_CBC_SHA	RFC 5246
TLS_RSA_WITH_AES_128_CBC_SHA256	RFC 5246
TLS_RSA_WITH_AES_256_CBC_SHA256	RFC 5246

PSK_BootstrappingInfo_Type

TTCN-3 Record Type			
Name	PSK_BootstrappingInfo_Type		
Comment	bootstrapping information as defined in 24.109		
BTid	charstring		
Ks_NAF	bitstring		

TLS_PSK_Info_Type

TTCN-3 Record Type			
Name	TLS_PSK_Info_Type		
Comment	configuration information for PSK TLS		
IdentityHint	charstring		
BootstrappingInfo	PSK_BootstrappingInfo_Type		

TLS_CipherSuiteInfo_Type

TTCN-3 Union Type			
Name	TLS_CipherSuiteInfo_Type		
Comment			
psk	TLS_PSK_Info_Type		

TLSPSKInfo_Type

TTCN-3 Record Type			
Name	TLSPSKInfo_Type		
Comment			
cipherSuite	TLS_CIPHER_Type		Cipher suite to be used
cipherSuiteInfo	TLS_CipherSuiteInfo_Type		parameters for the respective cipher suite

TLSCertificateInfo_Type

TTCN-3 Record Type			
Name	TLSCertificateInfo_Type		
Comment			
certificate	charstring		name or file location of the certificate to be used by the SS; in general provided by a PIXIT: the PIXIT contains the SS implementation specific information for the SS to identify the certificate to be used for a particular TLS connection; in case of only one certificate being used by TTCN, the string may be empty
cipherSuite	TLS_CIPHER_Type		(non-PSK) cipher suite to be used for the TLS tunnel; the SS shall raise an error when it detects that the UE does not support the configured cipher suite

TLSConfig_Type

TTCN-3 Union Type			
Name	TLSConfig_Type		
Comment			
pskinfo	TLSPSKInfo_Type		Used in the case of PSK
certificateInfo	TLSCertificateInfo_Type		Used in the case of certificate based TLS

TCP_ConnectRequest_Type

TTCN-3 Record Type			
Name	TCP_ConnectRequest_Type		
Comment	TCP client: -> 'connect' system call		
SockOptList	IP_SockOptList_Type		when there are no options to configure the list is empty
Application	InternetApplication_Type		to specify start/end criteria for application messages

TCP_Listen_Type

TTCN-3 Record Type			
Name	TCP_Listen_Type		
Comment	TCP server: -> 'listen' system call		
SockOptList	IP_SockOptList_Type		when there are no options to configure the list is empty
Application	InternetApplication_Type		to specify start/end criteria for application messages
TLSConfig	TLSConfig_Type	opt	to support TLS for HTTP server implementation

TCP_CtrlRequest_Type

TTCN-3 Union Type		
Name	TCP_CtrlRequest_Type	
Comment		
ConnectReq	TCP_ConnectRequest_Type	<p>request a 'connect' to a remote server</p> <p>system calls (informative) socket -- get file descriptor (setsockopt) -- normally not needed bind -- assign local IP addr (to cope with multiple IP addresses) and dedicated port number (if local port is given) connect -- connect to the client</p> <p>IP_Connection: protocol -- tcp local IP addr -- mandatory to distinguish different network adaptors local port -- omit (ephemeral port will be assigned by the system) or specific port to be used for this connection (e.g. to bind a given port number to the IMS client) remote IP addr -- mandatory remote port -- mandatory</p>
Listen	TCP_Listen_Type	<p>establish a server at the local (SS) side</p> <p>system calls (informative) socket -- get file descriptor (setsockopt) -- if needed bind -- assign local IP addr and port listen -- await incoming connection</p> <p>IP_Connection: protocol -- tcp local IP addr -- mandatory to distinguish different network adaptors local port -- mandatory remote IP addr -- omit remote port -- omit</p>
Close	Null_Type	<p>close a connection</p> <p>system calls (informative): close</p> <p>IP_Connection: protocol -- tcp local IP addr -- mandatory local port -- mandatory remote IP addr -- mandatory for TCP connections, omit for TCP server remote port -- mandatory for TCP connections, omit for TCP server</p>

TCP_DataRequest_Type

TTCN-3 Union Type		
Name	TCP_DataRequest_Type	
Comment		
Send	TCP_Data_Type	send data system calls (informative): send or write IP_Connection: protocol -- tcp local IP addr -- mandatory local port -- mandatory remote IP addr -- mandatory remote port -- mandatory

TCP_CtrlIndication_Type

TTCN-3 Union Type		
Name	TCP_CtrlIndication_Type	
Comment		
ConnectCnf	Null_Type	<p>confirm a 'connect' to a remote server</p> <p>system calls (informative): getsockname -- get local port (ephemeral port assigned by the system)</p> <p>IP_Connection: protocol -- tcp local IP addr -- mandatory (as in corresponding TCP_ConnectRequest) local port -- mandatory (if there is more than one connection to the same server the local port is necessary to distinguish the connections) remote IP addr -- mandatory (as in corresponding TCP_ConnectRequest) remote port -- mandatory (as in corresponding TCP_ConnectRequest)</p>
Accept	Null_Type	<p>sent by the SS when it 'accepts' an incoming connection</p> <p>system calls (informative): accept</p> <p>IP_Connection: protocol -- tcp local IP addr -- mandatory (as in corresponding TCP_ListenRequest) local port -- mandatory (as in corresponding TCP_ListenRequest) remote IP addr -- mandatory (as gotten from 'accept') remote port -- mandatory (as gotten from 'accept')</p>
Close	Null_Type	<p>indicate 'close' by the remote side</p> <p>system calls (informative): indicated by recv or read</p> <p>IP_Connection: protocol -- tcp local IP addr -- mandatory local port -- mandatory remote IP addr -- mandatory remote port -- mandatory</p>
CloseCnf	Null_Type	<p>Confirmation for 'close' request; necessary since for TCP there are IP packets to release the connection</p> <p>system calls (informative): close</p> <p>IP_Connection: protocol -- tcp local IP addr -- mandatory local port -- mandatory remote IP addr -- mandatory for TCP connections, omit for TCP server remote port -- mandatory for TCP connections, omit for TCP server</p>

TCP_DataIndication_Type

TTCN-3 Union Type		
Name	TCP_DataIndication_Type	
Comment		
Recv	TCP_Data_Type	receive data system calls (informative): recv or read IP_Connection: protocol -- tcp local IP addr -- mandatory local port -- mandatory remote IP addr -- mandatory remote port -- mandatory

D.5.4.4 UDP_Socket

UDP primitives used on the IP port

NOTE:

In principle a UDP socket may communicate with different remote entities;
 therefore the system adaptor may associate the socket handle with the local socket only
 (local IP address and local port)

UDP_SocketReq_Type

TTCN-3 Record Type		
Name	UDP_SocketReq_Type	
Comment	to establish a UDP server or to bind local port number	
SockOptList	IP_SockOptList_Type	e.g. to allow broadcast messages; when there are no options to configure the list is empty

UDP_CtrlRequest_Type

TTCN-3 Union Type		
Name	UDP_CtrlRequest_Type	
Comment		
SocketReq	UDP_SocketReq_Type	<p>request the system adaptor to bind a socket to a local address; this is needed in general when the system adaptor acts as</p> <ol style="list-style-type: none"> 1. UDP server 2. UDP client when it uses a well-known port rather than an ephemeral port (this is e.g. for DHCP) 3. UDP client when a local address needs to be bond (e.g. when there are several local addresses) <p>system calls (informative): socket -- get file descriptor (setsockopt) -- needed e.g. to allow broad cast message bind -- assign local IP address (to cope with multiple IP addresses) and local port (in case of well-known local port)</p> <p>IP_Connection: protocol -- udp local IP addr -- mandatory (to distinguish multiple IP addresses) local port -- optional (mandatory in case of a UDP server) remote IP addr -- omit remote port -- omit</p>
Close	Null_Type	<p>release local socket</p> <p>system calls (informative): close</p> <p>IP_Connection: protocol -- udp local IP addr -- mandatory (to identify local socket) local port -- mandatory (to identify local socket) remote IP addr -- omit remote port -- omit</p>

UDP_DataRequest_Type

TTCN-3 Union Type		
Name	UDP_DataRequest_Type	
Comment		
SendTo	Datagram_DL_Type	<p>send data to (any) remote socket;</p> <p>NOTE: To simplify implementation of the system adaptor the local socket shall be bond in any case (using 'SocketReq') to specify the local IP address before sending data; (in general the sendto system call can be used without explicitly binding the socket before; in this case the port gets implicitly bond to an ephemeral port and the default IP address is used)</p> <p>system calls (informative): sendto</p> <p>IP_Connection: protocol -- udp local IP addr -- mandatory (to identify local socket) local port -- mandatory (to identify local socket) remote IP addr -- mandatory (to address remote socket) remote port -- mandatory (to address remote socket)</p>

UDP_CtrlIndication_Type

TTCN-3 Union Type		
Name	UDP_CtrlIndication_Type	
Comment		
SocketCnf	Null_Type	<p>confirm 'SocketReq' and tell TTCN about assignment of ephemeral port;</p> <p>system calls (informative): getsockname -- get local port (ephemeral port assigned by the system; not needed if local port is well-known)</p> <p>IP_Connection: protocol -- udp local IP addr -- mandatory local port -- mandatory (well-known or ephemeral port assigned by the system) remote IP addr -- omit remote port -- omit</p>

UDP_DataIndication_Type

TTCN-3 Union Type		
Name	UDP_DataIndication_Type	
Comment		
RecvFrom	Datagram_UL_Type	<p>receive data;</p> <p>system calls (informative): recvfrom -- get data and src addr</p> <p>IP_Connection: protocol -- udp local IP addr -- mandatory (see note) local port -- mandatory remote IP addr -- mandatory (as gotten from recvfrom) remote port -- mandatory (as gotten from recvfrom)</p> <p>NOTE: The UE may send a UDP packet as broadcast (IP Addr 255.255.255.255 - e.g. in case of DHCP) or multicast (e.g. ICMPv6) SS shall consider a broadcast address as matching every IP for UL and DL; the SS shall not replace the broadcast/multicast address by the local unicast address, but shall provide DRB information in RecvFrom; example: - SS gets DHCPDISCOVER with DEST_Addr=255.255.255.255 DEST_Port=67, SRC_Addr=0.0.0.0 SRC_Port=68 - TTCN gets DHCPDISCOVER with local Addr=(255.255.255.255 Port=67), remote Addr=(0.0.0.0 Port=68), Drbld=(LTE, cell1, DRB1) - TTCN sends DHCPOFFER with local Addr=(local IP Addr Port=67), remote Addr=(255.255.255.255 Port=68)</p>

D.5.4.5 ICMP_Socket

ICMP primitives used on the IP port

NOTE:

the local side is identified by the protocol and in general by the local IP address

ICMP_SocketReq_Type

TTCN-3 Record Type		
Name	ICMP_SocketReq_Type	
Comment	to establish a raw socket to send/receive ICMP packets	
SockOptList	IP_SockOptList_Type	e.g. to set the IP_HDRINCL socket option (to include the IP header in the data buffer) when there are no options to configure the list is empty

ICMP_CtrlRequest_Type

TTCN-3 Union Type		
Name	ICMP_CtrlRequest_Type	
Comment		
SocketReq	ICMP_SocketReq_Type	request the system adaptor to open a raw socket (IPv4 or IPv6) system calls (informative): socket -- get file descriptor (IPPROTO_ICMP or IPPROTO_IPV6); (setsockopt) -- optional; to set socket options bind -- assign local IP address (to cope with multiple IP addresses) IP_Connection: protocol -- icmp or icmpv6 local IP addr -- mandatory (to distinguish multiple IP addresses) local port -- omit (not applicable for ICMP) remote IP addr -- omit remote port -- omit (not applicable for ICMP)
Close	Null_Type	release local socket system calls (informative): close IP_Connection: protocol -- icmp or icmpv6 local IP addr -- mandatory (to identify local socket) local port -- omit remote IP addr -- omit remote port -- omit

ICMP_DataRequest_Type

TTCN-3 Union Type		
Name	ICMP_DataRequest_Type	
Comment		
SendTo	Datagram_DL_Type	send datagram system calls (informative): sendto IP_Connection: protocol -- icmp or icmpv6 local IP addr -- mandatory (to identify local socket) local port -- omit remote IP addr -- mandatory remote port -- omit

ICMP_CtrlIndication_Type

TTCN-3 Union Type		
Name	ICMP_CtrlIndication_Type	
Comment		
SocketCnf	Null_Type	<p>confirm 'SocketReq'</p> <p>system calls (informative): (SocketCnf is sent when all system calls for SocketReq have been successful)</p> <p>IP_Connection: protocol -- icmp or icmpv6 local IP addr -- mandatory local port -- omit remote IP addr -- omit remote port -- omit</p>

ICMP_DataIndication_Type

TTCN-3 Union Type		
Name	ICMP_DataIndication_Type	
Comment		
RecvFrom	Datagram_UL_Type	<p>receive datagram</p> <p>system calls (informative): recvfrom -- get data and src addr</p> <p>IP_Connection: protocol -- icmp or icmpv6 local IP addr -- mandatory (see note) local port -- omit remote IP addr -- mandatory (as gotten from recvfrom) remote port -- omit</p> <p>NOTE: As for UDP there may be multicast/broadcast packets. In this case - as for UDP - the SS shall provide the DRB information in RecvFrom.</p>

D.5.4.6 Socket_Primitives**IP_CtrlRequest_Type**

TTCN-3 Union Type		
Name	IP_CtrlRequest_Type	
Comment		
TCP	TCP_CtrlRequest_Type	
UDP	UDP_CtrlRequest_Type	
ICMP	ICMP_CtrlRequest_Type	

IP_DataRequest_Type

TTCN-3 Union Type		
Name	IP_DataRequest_Type	
Comment		
TCP	TCP_DataRequest_Type	
UDP	UDP_DataRequest_Type	
ICMP	ICMP_DataRequest_Type	

IP_CtrlIndication_Type

TTCN-3 Union Type		
Name	IP_CtrlIndication_Type	
Comment		
TCP	TCP_CtrlIndication_Type	
UDP	UDP_CtrlIndication_Type	
ICMP	ICMP_CtrlIndication_Type	
Error	IP_SocketError_Type	

IP_DataIndication_Type

TTCN-3 Union Type		
Name	IP_DataIndication_Type	
Comment		
TCP	TCP_DataIndication_Type	
UDP	UDP_DataIndication_Type	
ICMP	ICMP_DataIndication_Type	

D.5.5 System_Interface

DRBMUX_CONFIG_REQ

TTCN-3 Union Type		
Name	DRBMUX_CONFIG_REQ	
Comment	<p>NOTE 1: There is just one primitive to configure the whole routing table. It is not foreseen to add, remove or manipulate single entries but the table is managed in TTCN and completely configured on any change; (otherwise it might get complicated to identify single entries)</p> <p>NOTE 2: the SS's routing table shall be empty at the beginning and can be cleared by an empty record (DRBMUX_CONFIG_REQ.RoutingInfo = {})</p> <p>NOTE 3: In general a reconfiguration of the routing table during a test case would be necessary only if an ephemeral port is needed to distinguish different routing (e.g. when there are several TCP connections of the same service routed to different DRBs)</p>	
RoutingInfo	IP_RoutingTable_Type	

DRBMUX_COMMON_IND_CNF

TTCN-3 Union Type		
Name	DRBMUX_COMMON_IND_CNF	
Comment		
Confirm	Null_Type	confirm DRBMUX_CONFIG_REQ
Error	Null_Type	<p>indication of errors at the DRB-MUX: An Error shall be raised by the DRB-MUX e.g. in the following cases:</p> <ul style="list-style-type: none"> - in DL when there are IP packets which cannot be routed to any DRB i.e. the IP packet does not match to any entry in the routing table or the corresponding RB is not configured - in DL when there are several DRBs possible for routing in the same cell

IPSEC_CONFIG_REQ

TTCN-3 Union Type		
Name	IPSEC_CONFIG_REQ	
Comment		
Configure	IPsec_Configure_Type	
Release	IPsec_Release_Type	

IPSEC_CONFIG_CNF

TTCN-3 Union Type		
Name	IPSEC_CONFIG_CNF	
Comment		
Confirm	Null_Type	confirm IPSEC_CONFIG_REQ
Error	Null_Type	to indicate invalid configuration of IPsec

IP_SOCKET_CTRL_REQ

TTCN-3 Record Type		
Name	IP_SOCKET_CTRL_REQ	
Comment		
ConnectionId	IP_Connection_Type	
Req	IP_CtrlRequest_Type	

IP_SOCKET_DATA_REQ

TTCN-3 Record Type		
Name	IP_SOCKET_DATA_REQ	
Comment		
ConnectionId	IP_Connection_Type	
Req	IP_DataRequest_Type	

IP_SOCKET_CTRL_IND

TTCN-3 Record Type			
Name	IP_SOCKET_CTRL_IND		
Comment			
ConnectionId	IP_Connection_Type	opt	shall be present at the system interface; maybe omit only internally in inter-PTC coordination
Ind	IP_CtrlIndication_Type	opt	shall be present at the system interface; maybe omit only internally in inter-PTC coordination

IP_SOCKET_DATA_IND

TTCN-3 Record Type		
Name	IP_SOCKET_DATA_IND	
Comment		
ConnectionId	IP_Connection_Type	
Ind	IP_DataIndication_Type	

IP_SOCKET_REQ

TTCN-3 Union Type		
Name	IP_SOCKET_REQ	
Comment		
CTRL	IP_SOCKET_CTRL_REQ	
DATA	IP_SOCKET_DATA_REQ	

IP_SOCKET_IND

TTCN-3 Union Type	
Name	IP_SOCKET_IND
Comment	
CTRL	IP_SOCKET_CTRL_IND
DATA	IP_SOCKET_DATA_IND

IP_CONTROL_PORT

TTCN-3 Port Type	
Name	IP_CONTROL_PORT
Comment	
out	DRBMUX_CONFIG_REQ
in	DRBMUX_COMMON_IND_CNF

IPSEC_CONTROL_PORT

TTCN-3 Port Type	
Name	IPSEC_CONTROL_PORT
Comment	
out	IPSEC_CONFIG_REQ
in	IPSEC_CONFIG_CNF

IP_SOCKET_PORT

TTCN-3 Port Type	
Name	IP_SOCKET_PORT
Comment	
out	IP_SOCKET_REQ
in	IP_SOCKET_IND

D.6 NR_PDCP_TypeDefs

D.6.1 NR_PDCP_Config_Parameters

Parameters defined in or related to NR ASN.1 type PDCP-Config

NR_PDCP_SN_Size_Type

TTCN-3 Enumerated Type	
Name	NR_PDCP_SN_Size_Type
Comment	PDCP Sequence Number
PDCP_SNLength12	TS 38.323 clause 6.2.2.1 and clause 6.2.2.2
PDCP_SNLength18	TS 38.323 clause 6.2.2.3

NR_PDCP_DRB_HeaderCompression_Type

TTCN-3 Union Type	
Name	NR_PDCP_DRB_HeaderCompression_Type
Comment	place holder for header compression
None	Null_Type

NR_PDCP_DRB_Config_Parameters_Type

TTCN-3 Record Type			
Name	NR_PDCP_DRB_Config_Parameters_Type		
Comment	parameters corresponding to NR ASN.1 PDCP-Config.drb; the following parameter are not included and may be added if needed: - integer DiscardTimer (timer value in milliseconds) - boolean StatusReportRequired - boolean OutOfOrderDelivery		
SN_SizeUL	NR_PDCP_SN_Size_Type		PDCP-Config.drb.pdcp-SN-SizeUL
SN_SizeDL	NR_PDCP_SN_Size_Type		PDCP-Config.drb.pdcp-SN-SizeDL
HeaderCompression	NR_PDCP_DRB_HeaderCompression_Type		PDCP-Config.drb.headerCompression
IntegrityProtectionEnabled	boolean		PDCP-Config.drb.integrityProtection

NR_PDCP_RB_Config_Parameters_Type

TTCN-3 Union Type			
Name	NR_PDCP_RB_Config_Parameters_Type		
Comment			
Srb	Null_Type		no SRB specific parameters in NR ASN.1 PDCP-Config
Drb	NR_PDCP_DRB_Config_Parameters_Type		DRB specific parameters corresponding to NR ASN.1 PDCP-Config.drb

NR_PDCP_Config_Parameters_Type

TTCN-3 Record Type			
Name	NR_PDCP_Config_Parameters_Type		
Comment	parameters corresponding to NR ASN.1 PDCP-Config; the following parameter are not included and may be added if needed: - integer TReorderingTimer (timer value in milliseconds)		
Rb	NR_PDCP_RB_Config_Parameters_Type		
DuplicateDiscarding	boolean	opt	if omitted: initial configuration: duplicate discarding function operates as normal re-configuration: "keep as it is" if set: false - SS shall disable the duplicate discarding function of the receiving PDCP entity: a PDCP PDU, using the same SN as a previously received PDCP PDU, shall not be discarded and the resulting PDCP SDU shall be delivered to the upper layer. true - (re)configuration of duplicate discarding function back to normal operation.

D.6.2 NR_PDCP_Configuration

NR_PDCP_TransparentMode

TTCN-3 Record Type			
Name	NR_PDCP_TransparentMode		
Comment			
SN_Size	NR_PDCP_SN_Size_Type		

NR_PDCP_RbConfig_Type

TTCN-3 Union Type		
Name	NR_PDCP_RbConfig_Type	
Comment		
Params	NR_PDCP_Config_Parameters_Type	PDCP configuration parameters corresponding to UE configuration
TransparentMode	NR_PDCP_TransparentMode	PDCP configuration for transparent (test) mode: used for PDCP tests (TS 38.523-3, cl. 5.1.2.1): the SS does not apply ciphering, not apply integrity protection and does not maintain PDCP sequence numbers and state variables; ROHC is not applied by the SS. Note: a reconfiguration of a RB from transparent mode to 'normal' mode is not foreseen (i.e. there is no mechanism to restore Ciphering, PDCP sequence numbers and state variables at the SS) (in UL PDCP PDUs are decoded depending on SN_Size)

NR_PDCP_RBTerminating_Type

TTCN-3 Record Type			
Name	NR_PDCP_RBTerminating_Type		
Comment	RB terminating PDCP configuration: the PDCP may be linked - to a local RLC bearer: RLC bearer is configured for the same cell - to the RLC bearer of some other cell group: LinkToOtherCellGroup is not "None" - the both (in case of split bearer): RLC bearer is configured for the same cell and LinkToOtherCellGroup is not "None"		
RbConfig	NR_PDCP_RbConfig_Type	opt	mandatory for initial configuration; omit means "keep as it is"
LinkToOtherCellGroup	RlcBearerRouting_Type	opt	mandatory for initial configuration; omit means "keep as it is" None: no link to other cell group (normal case, non-split bearer) RAT/cellId: PDCP is linked to RLC bearer of another cell group (same or other RAT): split bearer or PDCP and RLC bearer being configured at different cells NOTE: applicable also for PDCP split bearer test cases when PDCP is in transparent mode => test case body may be implemented at one PTC

NR_PDCP_Proxy_Type

TTCN-3 Record Type			
Name	NR_PDCP_Proxy_Type		
Comment	proxy to route PDCP data between terminating PDCP entity and RLC bearer of another cell (group)		
LinkToOtherNode	RlcBearerRouting_Type		RAT/cellId to address the radio bearer terminating node (PDCP) (None is not applicable)

NR_PDCP_Configuration_Type

TTCN-3 Union Type		
Name	NR_PDCP_Configuration_Type	
Comment		
None	Null_Type	for SRB0 no PDCP is configured; furthermore the PDCP may not be configured e.g. for DRBs tested in RLC or MAC test cases
RBTerminating	NR_PDCP_RBTerminating_Type	PDCP entity at the terminating node: handling of PDCP protocol for the given bearer (normal or split bearer)
Proxy	NR_PDCP_Proxy_Type	proxy to be configured above RLC instead of a normal PDCP entity when the RLC bearer is not in the same cell (group) as the terminating PDCP entity

D.6.3 NR_PDCP_DrbDefs

NR_PDCP_DrbDefs: Basic Type Definitions

TTCN-3 Basic Types		
NR_PDCP_SDU_Type	octetstring	
NR_PDCP_CtrlPduType_Type	B3_Type	PDU type according to TS 38.323 clause 6.3.8: 000 PDCP status report 001 Interspersed ROHC feedback 010 EHC feedback 011-111 Reserved

NR_PDCP_SDUList_Type

TTCN-3 Record of Type	
Name	NR_PDCP_SDUList_Type
Comment	record of NR_PDCP_SDU_Type

NR_PDCP_DataPduSN12Bits_Type

TTCN-3 Record Type			
Name	NR_PDCP_DataPduSN12Bits_Type		
Comment	Data PDU for DRBs with 12 bits PDCP SN (TS 38.323, clause 6.2.2.2)		
D_C	B1_Type		1 bit, '1'B for Data PDU
Reserved	B3_Type		3 bits reserved
SequenceNumber	B12_Type		12 bits sequence number
SDU	NR_PDCP_SDU_Type		content (octetstring)
MAC_I	B32_Type	opt	message authentication code according to TS 38.323, clause 6.3.4; MAC-I field is present only when the DRB is configured with integrity protection; in this case it is up to TTCN to provide the valid MAC_I in DL and to check it in UL

NR_PDCP_DataPduSN18Bits_Type

TTCN-3 Record Type			
Name	NR_PDCP_DataPduSN18Bits_Type		
Comment	Data PDU for DRBs with 18 bits PDCP SN (TS 38.323, clause 6.2.2.3)		
D_C	B1_Type		1 bit, '1'B for Data PDU
Reserved	B5_Type		5 bits reserved
SequenceNumber	B18_Type		18 bits sequence number
SDU	NR_PDCP_SDU_Type		content (octetstring)
MAC_I	B32_Type	opt	message authentication code according to TS 38.323, clause 6.3.4; MAC-I field is present only when the DRB is configured with integrity protection; in this case it is up to TTCN to provide the valid MAC_I in DL and to check it in UL

NR_PDCP_CtrlPduStatus_Type

TTCN-3 Record Type			
Name	NR_PDCP_CtrlPduStatus_Type		
Comment	Control PDU for PDCP status report (TS 38.323, clause 6.2.3.1)		
D_C	B1_Type		1 bit, '0'B for Ctrl PDU
PDU_Type	NR_PDCP_CtrlPduType_Type		3 bits, '000'B for PDCP status report
Reserved	B4_Type		4 bits reserved
FirstMissingCount	B32_Type		32 bits, TS 38.323, clause 6.3.9 FMC
Bitmap	octetstring	opt	Bitmap according to TS 38.323, clause 6.3.10

NR_PDCP_CtrlPduRohcFeedback_Type

TTCN-3 Record Type			
Name	NR_PDCP_CtrlPduRohcFeedback_Type		
Comment	Control PDU for Interspersed ROHC feedback (TS 38.323, clause 6.2.3.2)		
D_C	B1_Type		1 bit, '0'B for Ctrl PDU
PDU_Type	NR_PDCP_CtrlPduType_Type		3 bits, '001'B for Interspersed ROHC feedback
Reserved	B4_Type		4 bits reserved
RohcFeedback	octetstring		ROHC packet that is not associated with a PDCP SDU

NR_PDCP_CtrlPduEhcFeedbackCID7Bits_Type

TTCN-3 Record Type			
Name	NR_PDCP_CtrlPduEhcFeedbackCID7Bits_Type		
Comment			
D_C	B1_Type		1 bit, '0'B for Ctrl PDU
PDU_Type	NR_PDCP_CtrlPduType_Type		3 bits, '101'B for EHC feedback
Reserved	B4_Type		4 bits reserved
Reserved2	B1_Type		1 bit reserved
CID	B7_Type		7 bits CID

NR_PDCP_CtrlPduEhcFeedbackCID15Bits_Type

TTCN-3 Record Type			
Name	NR_PDCP_CtrlPduEhcFeedbackCID15Bits_Type		
Comment			
D_C	B1_Type		1 bit, '0'B for Ctrl PDU
PDU_Type	NR_PDCP_CtrlPduType_Type		3 bits, '101'B for EHC feedback
Reserved	B4_Type		4 bits reserved
Reserved2	B1_Type		1 bit reserved
CID	B15_Type		15 bits CID

NR_PDCP_PDU_Type

TTCN-3 Union Type	
Name	NR_PDCP_PDU_Type
Comment	
DataPduSN12 Bits	NR_PDCP_DataPduSN12Bits_Type
DataPduSN18 Bits	NR_PDCP_DataPduSN18Bits_Type
CtrlPduStatus	NR_PDCP_CtrlPduStatus_Type
CtrlPduRohcFeedback	NR_PDCP_CtrlPduRohcFeedback_Type
CtrlPduEhcFeedbackCID7Bits	NR_PDCP_CtrlPduEhcFeedbackCID7Bits_Type
CtrlPduEhcFeedbackCID15Bits	NR_PDCP_CtrlPduEhcFeedbackCID15Bits_Type

NR_PDCP_PDUList_Type

TTCN-3 Record of Type	
Name	NR_PDCP_PDUList_Type
Comment	
record of NR_PDCP_PDU_Type	

D.7 SDAP_TypeDefs

D.7.1 SDAP_Configuration

SDAP_Header_Type

TTCN-3 Enumerated Type	
Name	SDAP_Header_Type
Comment	
Present	
Absent	

QFI_List_Type

TTCN-3 Record of Type	
Name	QFI_List_Type
Comment	
record of integer	

SdapConfig_Type

TTCN-3 Record Type			
Name	SdapConfig_Type		
Comment			
Pdu_SessionId	integer		
Sdap_HeaderDL	SDAP_Header_Type	opt	mandatory for initial configuration; omit means "keep as it is" when set to 'Present', unless specifically triggered otherwise, the SS shall set the RDI and RQI fields to 0
Sdap_HeaderUL	SDAP_Header_Type	opt	mandatory for initial configuration; omit means "keep as it is"
MappedQoS_Flows	QFI_List_Type	opt	mandatory for initial configuration; omit means "keep as it is"

SdapTransparentMode_Type

TTCN-3 Record Type			
Name	SdapTransparentMode_Type		
Comment			
Sdap_HeaderUL	SDAP_Header_Type		Indicates to the SS if the UE has been configured to include SDAP UL header

SdapConfigInfo_Type

TTCN-3 Union Type		
Name	SdapConfigInfo_Type	
Comment		
SdapConfig	SdapConfig_Type	SDAP configuration parameters for the DRB
TransparentMode	SdapTransparentMode_Type	SDAP configuration for transparent (test) mode, used for SDAP tests: SS does not add any SDAP headers in DL and does not remove any SDAP headers in UL

SDAP_Configuration_Type

TTCN-3 Union Type		
Name	SDAP_Configuration_Type	
Comment		
None	Null_Type	
Config	SdapConfigInfo_Type	

D.7.2 SDAP_DrbDefs**SDAP_DrbDefs: Basic Type Definitions**

TTCN-3 Basic Types		
SDAP_SDU_Type	octetstring	

SDAP_SDUList_Type

TTCN-3 Record of Type	
Name	SDAP_SDUList_Type
Comment	
record of SDAP_SDU_Type	

SDAP_DL_PduHeader_Type

TTCN-3 Record Type			
Name	SDAP_DL_PduHeader_Type		
Comment	TS 37.324 Figure 6.2.2.2-1		
RDI	B1_Type		TS 37.324 Figure 6.3.7: The RDI bit indicates whether QoS flow to DRB mapping rule should be updated 1 bit: '0'B No action '1'B To store QoS flow to DRB mapping rule
RQI	B1_Type		TS 37.324 clause 6.3.6: The RQI bit indicates whether NAS should be informed of the updated of SDF to QoS flow mapping rules 1 bit: '0'B No action '1'B To inform NAS that RQI bit is set to 1
QFI	B6_Type		TS 37.324 clause 6.3.4: The QFI field indicates the ID of the QoS flow to which the SDAP SDU belongs

SDAP_UL_PduHeader_Type

TTCN-3 Record Type			
Name	SDAP_UL_PduHeader_Type		
Comment	TS 37.324 Figure 6.2.2.3-1 or 6.2.3-1		
DC	B1_Type		TS 37.324 clause 6.3.3: The D/C bit indicates whether the SDAP PDU is an SDAP Data PDU or an SDAP Control PDU 1 bit: '0'B Control PDU '1'B Data PDU
R	B1_Type		TS 37.324 clause 6.3.5: Reserved. In this version of the specification reserved bits shall be set to 0. Reserved bits shall be ignored by the receiver
QFI	B6_Type		QFI (UL) or PQFI (SL) TS 37.324 clause 6.3.4: The QFI field indicates the ID of the QoS flow to which the SDAP SDU belongs, or TS 37.324 clause 6.3.8: The PQFI field indicates the ID of the PC5 QoS flow to which the SDAP PDU belongs

SDAP_PDU_DL_Type

TTCN-3 Record Type			
Name	SDAP_PDU_DL_Type		
Comment	TS 37.324 clause 6.2.2 Data PDU		
Header	SDAP_DL_PduHeader_Type	opt	present for DL Data PDU with SDAP header (clause 6.2.2.2), omitted for Data PDU without SDAP header (clause 6.2.2.1)
Data	SDAP_SDU_Type		

SDAP_PDU_UL_Type

TTCN-3 Record Type			
Name	SDAP_PDU_UL_Type		
Comment	TS 37.324 clause 6.2.2 Data PDU or clause 6.2.3 End-Marker Control PDU		
Header	SDAP_UL_PduHeader_Type	opt	present for: UL Data PDU in default DRB or UL Data PDU with SDAP header in a non-default DRB (clause 6.2.2.3) or End-Marker Control PDU (clause 6.2.3); omitted for UL Data PDU without SDAP header in a non-default DRB (clause 6.2.2.1)
Data	SDAP_SDU_Type	opt	present for UL Data PDU (clause 6.2.2.1 or 6.2.2.3), omitted for End-Marker Control PDU (clause 6.2.3)

SDAP_PDU_Type

TTCN-3 Union Type		
Name	SDAP_PDU_Type	
Comment	TS 37.324 clause 6.2.2 Data PDU or 6.2.3 End-Marker Control PDU	
DL	SDAP_PDU_DL_Type	Data PDU in DL
UL	SDAP_PDU_UL_Type	Data PDU in UL or End-Marker Control PDU

SDAP_PDUList_Type

TTCN-3 Record of Type	
Name	SDAP_PDUList_Type
Comment	
record of SDAP_PDU_Type	

D.8 NR_ASP_VirtualNoiseDefs

ASP definitions for virtual noise generation in NR cells:

- A VNG instance, upon creation, is always associated with an already configured NR cell. This VNG instance therefore operates on the same frequency as the associated NR cell's frequency.
- A VNG instance generates AWGN (Additive white Gaussian noise):
 - Frequency domain: on the whole carrier bandwidth defined for the frequency of the associated NR cell.
 - Time domain: in every slot.
- The AWGN power level is defined as an EPRE in dBm/SCS, corresponding to the 'Noc' value provided in the test case prose.

NR_ASP_VirtualNoiseDefs: Basic Type Definitions

TTCN-3 Basic Types	
NR_VngConfigConfirm_Type	Null_Type

NR_VngConfigInfo_Type

TTCN-3 Union Type		
Name	NR_VngConfigInfo_Type	
Comment		
CellNocLevel	integer	CellNocLevel - EPRE level in dBm/SCS for AWGN transmission to model a noise source. The SS shall apply AWGN to the whole carrier bandwidth of the associated NR cell and in every slot

NR_VngConfigRequest_Type

TTCN-3 Union Type		
Name	NR_VngConfigRequest_Type	
Comment	configure/activate noise for a given cell; NOTE: it is assumed the associated NR cell has been created beforehand	
Configure	NR_VngConfigInfo_Type	configuration of the virtual noise generator; regardless of the power level the noise generator is off before it gets activated for this cell; in case the configuration needs to be changed during a test, the noise generator shall be deactivated for this cell
Activate	Null_Type	noise is activated (switched on) for the given cell acc. to the previous configuration; while being active the configuration shall not be modified
Deactivate	Null_Type	deactivate noise for given cell

NR_VNG_CTRL_REQ

TTCN-3 Record Type			
Name	NR_VNG_CTRL_REQ		
Comment			
Common	NR_ReqAspCommonPart_Type		CellId : as for the associated NR cell RoutingInfo : None RlcBearerRouting : None MacBearerRouting : 'omit' TimingInfo : Now ControlInfo : CnfFlag:=true; FollowOnFlag:=false
Request	NR_VngConfigRequest_Type		

NR_VNG_CTRL_CNF

TTCN-3 Record Type			
Name	NR_VNG_CTRL_CNF		
Comment			
Common	NR_CnfAspCommonPart_Type		TimingInfo is ignored by TTCN => SS may set TimingInfo to "None"
Confirm	NR_VngConfigConfirm_Type		

NR_VNG_PORT

TTCN-3 Port Type			
Name	NR_VNG_PORT		
Comment	NR BASE PTC: Port for virtual noise generator		
out	NR_VNG_CTRL_REQ		
in	NR_VNG_CTRL_CNF		

D.9 CommonDefs

CommonDefs: Constant Definitions

TTCN-3 Basic Types			
tsc_UInt16Max	integer	65535	
tsc_UInt32Max	integer	4294967295	

CommonDefs: Basic Type Definitions

TTCN-3 Basic Types		
B1_Type	bitstring length(1)	
B2_Type	bitstring length(2)	
B3_Type	bitstring length(3)	
B4_Type	bitstring length(4)	
B5_Type	bitstring length(5)	
B6_Type	bitstring length(6)	
B7_Type	bitstring length(7)	
B8_Type	bitstring length(8)	
B12_Type	bitstring length(12)	
B14_Type	bitstring length(14)	
B15_Type	bitstring length(15)	
B16_Type	bitstring length(16)	
B18_Type	bitstring length(18)	
B24_Type	bitstring length(24)	
B32_Type	bitstring length(32)	
B48_Type	bitstring length(48)	
B128_Type	bitstring length(128)	
B128_Key_Type	B128_Type	128 bit security key
O1_Type	octetstring length(1)	
Null_Type	boolean (true)	dummy type for 'typeless' fields in unions
UInt_Type	integer (0 .. infinity)	
UInt16_Type	integer (0 .. tsc UInt16Max)	
UInt32_Type	integer (0 .. tsc UInt32Max)	
IP_Drbld_Type	integer	DRB identity type common for all RATs: - for EUTRA it corresponds to the ASN.1 type DRB-Identity - for UTRAN it corresponds to the ASN.1 type RB-Identity and values are as defined in TS 34.123-3 Table 8.2.4.1 - for GERAN the NSAPI value (type record NSAPI) may be used NOTE: this is introduced to simplify the dependencies (i.e. to keep IP_ASP_TypeDefs independent from any RAT specific type definitions)
PdcpCountValue_Type	B32_Type	
RNTI_Value_Type	UInt16_Type	corresponds to NR ASN.1: RNTI-Value ::= INTEGER (0..65535)
RNTI_B16_Type	B16_Type	

B8_List_Type

TTCN-3 Record of Type	
Name	B8_List_Type
Comment	record of B8_Type

IntegerList_Type

TTCN-3 Record of Type	
Name	IntegerList_Type
Comment	record of integer

IndicationAndControlMode_Type

TTCN-3 Enumerated Type	
Name	IndicationAndControlMode_Type
Comment	
enable	
disable	

NR_CellId_Type

TTCN-3 Enumerated Type	
Name	NR_CellId_Type
Comment	
nr_Cell_NonSpecific	
nr_Cell1	
nr_Cell2	
nr_Cell3	
nr_Cell4	
nr_Cell6	
nr_Cell10	
nr_Cell11	
nr_Cell12	
nr_Cell13	
nr_Cell14	
nr_Cell23	
nr_Cell28	
nr_Cell29	
nr_Cell30	
nr_Cell31	

NR_CellIdList_Type

TTCN-3 Record of Type	
Name	NR_CellIdList_Type
Comment	NOTE: there seems to be no need for any length restriction
record of NR_CellId_Type	

EUTRA_CellId_Type

TTCN-3 Enumerated Type	
Name	EUTRA_CellId_Type
Comment	
eutra_Cell_NonSpecific	
eutra_Cell1	
eutra_Cell2	
eutra_Cell3	
eutra_Cell4	
eutra_Cell6	
eutra_Cell10	
eutra_Cell11	
eutra_Cell12	
eutra_Cell13	
eutra_Cell14	
eutra_Cell23	
eutra_Cell28	
eutra_Cell29	
eutra_Cell30	
eutra_Cell31	
eutra_CellA	
eutra_CellB	
eutra_CellC	
eutra_CellD	
eutra_CellE	
eutra_CellG	
eutra_CellH	
eutra_CellI	
eutra_CellJ	
eutra_CellK	
eutra_CellL	
eutra_CellM	

UE_NR_DeltaValues_Type

TTCN-3 Record Type	
Name	UE_NR_DeltaValues_Type
Comment	
DeltaPrimaryBand	DeltaValues_Type
DeltaSecondaryBand	DeltaValues_Type

DeltaValues_Type

TTCN-3 Record Type	
Name	DeltaValues_Type
Comment	Delta value for each frequency, by default for FR1 or when the frequency is not available the Delta value is set to 0.
DeltaNRf1	integer
DeltaNRf2	integer
DeltaNRf3	integer
DeltaNRf4	integer

IP_EUTRA_DrbInfo_Type

TTCN-3 Record Type			
Name	IP_EUTRA_DrbInfo_Type		
Comment			
CellId	EUTRA_CellId_Type		data is routed to a specific cell regardless of whether the same DRB is configured in any other cell
DrbId	IP_DrbId_Type	opt	mandatory at the system interface

IP_UTRAN_GERAN_DrbInfo_Type

TTCN-3 Record Type			
Name	IP_UTRAN_GERAN_DrbInfo_Type		
Comment			
CellId	integer		
DrbId	IP_DrbId_Type	opt	mandatory at the system interface

IP_WLAN_DrbInfo_Type

TTCN-3 Record Type			
Name	IP_WLAN_DrbInfo_Type		
Comment			
CellId	integer		

IP_ePDG_IPsecTunnelInfo_Type

TTCN-3 Record Type			
Name	IP_ePDG_IPsecTunnelInfo_Type		
Comment			
PdnId	PDN_Index_Type		'index name' of PDN associated to the IPsec tunnel, e.g. for SS to distinguish routing of IP packets in case of more than one IPsec tunnel NOTE: In general only 'ePDG_XXX' values shall be used

QosFlow_Identification_Type

TTCN-3 Record Type			
Name	QosFlow_Identification_Type		
Comment			
PDU_SessionId	integer		TS 24.007 clause 11.2.3.1b
QFI	integer		TS 24.501 Table 11.2.3.1c.1

IP_NR_QosFlowInfo_Type

TTCN-3 Record Type			
Name	IP_NR_QosFlowInfo_Type		
Comment			
CellId	NR_CellId_Type		data is routed to a specific cell regardless of whether the same DRB is configured in any other cell
QosFlow	QosFlow_Identification_Type	opt	mandatory at the system interface

IP_EUTRA_QosFlowInfo_Type

TTCN-3 Record Type			
Name	IP_EUTRA_QosFlowInfo_Type		
Comment			
CellId	EUTRA_CellId_Type		data is routed to a specific cell regardless of whether the same DRB is configured in any other cell
QosFlow	QosFlow_Identification_Type	opt	mandatory at the system interface

IP_NR_DrbInfo_Type

TTCN-3 Record Type			
Name	IP_NR_DrbInfo_Type		
Comment			
CellId	NR_CellId_Type		
DrbId	IP_DrbId_Type	opt	mandatory at the system interface

IP_DrbInfo_Type

TTCN-3 Union Type			
Name	IP_DrbInfo_Type		
Comment			
Eutra	IP_EUTRA_DrbInfo_Type		
Eutra5GC	IP_EUTRA_QosFlowInfo_Type		used when SDAP is configured in non-transparent mode at the SS
Utran	IP_UTRAN_GERAN_DrbInfo_Type		
Geran	IP_UTRAN_GERAN_DrbInfo_Type		
Nr5GC	IP_NR_QosFlowInfo_Type		used when SDAP is configured in non-transparent mode at the SS
NrEPC	IP_NR_DrbInfo_Type		used when NR is connected to EPC (S1-U interface) or when SDAP is configured in transparent mode at the SS
Wlan	IP_WLAN_DrbInfo_Type		
IPsecTunnel	IP_ePDG_IPsecTunnelInfo_Type		

PDN_Index_Type

TTCN-3 Enumerated Type	
Name	PDN_Index_Type
Comment	'index name' associated to a PDN: The major purpose is to associate a PDN specific set of IP addresses to the given PDN (e.g. UE addresses, P-CSCF address etc.); in general there are one or two PDNs configured at the same time and - from TTCN point of view - the IMS PDN is considered to be the first one; a second PDN may be configured in case of emergency call or e.g. for XCAP signalling; the 'internet PDN' (according to TS 36.508 clause 4.5.2) is considered as (optional) second PDN during initial registration and gets released after initial registration; in case of WLAN a separate group of index names is used to distinguish the different configuration of the emulated IP network
PDN_1	"default" PDN being kept connected to during a test case (in case of LTE in general the IMS PDN)
PDN_2	second PDN: during initial registration (TS 36.508 clause 4.5.2) for LTE and "multiple PDN" this is the internet PDN; after initial registration it is used if needed according to the test purpose (e.g. emergency call)
PDN_2a	used for the special case when the UE IP address of the second PDN changes in a test case
PDN_Internet	mainly used as alias for PDN2 during initial registration
ePDG_IMS1	WLAN: PDN for 'normal' IMS
ePDG_IMS2	WLAN: PDN for emergency IMS (in general)
ePDG_XCAP	WLAN: PDN for XCAP in case of XCAP server being part of 3GPP-network NOTE: In contrast to LTE for WLAN there is a different IP architecture to be consider by TTCN for XCAP and IMS emergency
ePDG_Internet	place-holder for WLAN-offload scenarios
nrPDN_Internet	mainly used as alias during initial registration in ENDC
PDN_3	used in ENDC and 5GC for the third PDN
PDN_4	used in 5GC for the URLLC PDN
PDN_5	used in 5GC for the MIoT PDN
PDN_6	used in 5GC for the V2X PDN

D.10 CommonAspDefs

D.10.1 Cell_Configuration_Common

CellTimingInfo_Type

TTCN-3 Record Type			
Name	CellTimingInfo_Type		
Comment	Cell Timing		
TcOffset	integer (0..63)	opt	For NR according to TS 38.211 clause 4.1 $T_s/T_c = 64$ with $T_c = 1/(480000 * 4096)$ and $T_s = 1/(15000 * 2048)$ as for EUTRA; => for NR to specify granularity per T_c ; for EUTRA to be set to 0 (and/or to be ignored by the SS)
Tcell	integer (0..307199)		frame duration $T_f = 307200 * T_s = 10ms$; System Time Unit $T_s = 1/(15000 * 2048)$
SfnOffset	integer (0..1023)		
HsfOffset	integer (0..1023)		

D.10.2 MAC_Layer

ULGrant_Period_Type

TTCN-3 Union Type		
Name	ULGrant_Period_Type	
Comment		
OnlyOnce	Null_Type	grant is sent out only once; no period
Duration	integer (1..infinity)	duration of the grant period in number of sub-frames (1ms) for EUTRA and number of slots for NR

TransmissionRepetition_Type

TTCN-3 Union Type		
Name	TransmissionRepetition_Type	
Comment		
Continuous	Null_Type	
NumOfCycles	integer (1..infinity)	

PeriodicGrant_Type

TTCN-3 Record Type		
Name	PeriodicGrant_Type	
Comment		
Period	ULGrant_Period_Type	time period after which UL Grant need to be automatically transmitted or 'OnlyOnce'
NoOfRepetitions	TransmissionRepetition_Type	number of UL Grant repetitions to be automatically transmitted or continuous repetition

UL_GrantConfig_Type

TTCN-3 Union Type		
Name	UL_GrantConfig_Type	
Comment		
OnSR_Reception	Null_Type	SS transmits UL Grant as configured by DciInfoUL_Type at every reception of SR; to be used in non L2 Test
Periodic	PeriodicGrant_Type	SS transmits UL Grant as configured by DciInfoUL_Type periodically; to be used in L2 tests; MAC tests testing Grants might set the period as infinite and num grant as 1
PeriodicOnSR_Reception	PeriodicGrant_Type	SS transmits UL Grant as configured by DciInfoUL_Type periodically; the periodic grant transmission is started/restarted on reception of a SR from UE to be used in non L2 Test to enable large UL data transmission for lower category UEs (Cat<=1)
None	Null_Type	disable any grant transmission

RAR_RapIdCtrl_Type

TTCN-3 Union Type		
Name	RAR_RapIdCtrl_Type	
Comment		
Automatic	Null_Type	SS shall automatically use same RAPID as received from the UE
Unmatched	Null_Type	SS shall use RAPID being different from preamble sent by the UE; SS shall calculate this RAPID acc. to $RAPID := (RAPID + 3..63) \bmod 64$ if single RAR is transmitted in a MAC PDU then only 3 is added if multiple RAR's are transmitted in MAC PDU, then for first unmatched RAR 3 is added, second unmatched 4 is added, third unmatched 5 is added and so on

D.10.3 System_Indications

HARQ_Type

TTCN-3 Enumerated Type	
Name	HARQ_Type
Comment	ack represents HARQ ACK; nack represents HARQ NACK
ack	
nack	

D.10.4 ASP_CommonPart

Definition of ASP common parts for REQ-, CNF- and IND-ASPs

D.10.4.1 ASP_CommonPart_Definitions

D.10.4.1.1 Routing_Info

CommonAspDefs: Constant Definitions

TTCN-3 Basic Types			
tsc_SRB0	integer	0	
tsc_SRB1	integer	1	
tsc_SRB2	integer	2	
tsc_SRB3	integer	3	
tsc_SRB4	integer	4	

Routing_Info: Basic Type Definitions

TTCN-3 Basic Types	
SRB_Identity_Type	integer (tsc_SRB0 , tsc_SRB1 , tsc_SRB2 , tsc_SRB3 , tsc_SRB4)

RlcBearerRouting_Type

TTCN-3 Union Type		
Name	RlcBearerRouting_Type	
Comment	data routing e.g. in case of split bearer (split DRB or split SRB); applicable for multi-RAT Dual Connectivity (MR-DC) as well as single-RAT Dual Connectivity	
EUTRA	EUTRA_CellId_Type	
NR	NR_CellId_Type	
None	Null_Type	normal case: PDCP and RLC are configured at the same cell

D.10.4.1.2 Timing_Info

Timing_Info: Basic Type Definitions

TTCN-3 Basic Types		
SystemFrameNumber_Type	integer (0..1023)	
SubFrameNumber_Type	integer (0..9)	
HyperSystemFrameNumberInfo_Type	SystemFrameNumberInfo_Type	

SubFrameInfo_Type

TTCN-3 Union Type		
Name	SubFrameInfo_Type	
Comment		
Number	SubFrameNumber_Type	
Any	Null_Type	no specific sub-frame, in which case the SS may choose the next available subframe (valid for REQ ASPs only)

SystemFrameNumberInfo_Type

TTCN-3 Union Type		
Name	SystemFrameNumberInfo_Type	
Comment		
Number	SystemFrameNumber_Type	
Any	Null_Type	no specific frame number, in which case the SS may choose the next available SFN (valid for REQ ASPs only)

SlotOffset_Type

TTCN-3 Union Type		
Name	SlotOffset_Type	
Comment	slots per subframe according to TS 38.211 Table 4.3.2-1	
Numerology0	Null_Type	mu=0; only one slot per subframe
Numerology1	integer (0..1)	mu=1; 2 slots per subframe
Numerology2	integer (0..3)	mu=2; 4 slots per subframe
Numerology3	integer (0..7)	mu=3; 8 slots per subframe
Numerology4	integer (0..15)	mu=4; 16 slots per subframe

SlotTimingInfo_Type

TTCN-3 Union Type		
Name	SlotTimingInfo_Type	
Comment	EUTRA, NBIOT: REQ ASPs: TTCN shall set the SlotTimingInfo to "FirstSlot" for EUTRA, NBIOT addressing the whole subframe IND ASPs: TTCN shall ignore the SlotTimingInfo sent by the SS for EUTRA, NBIOT NR: REQ ASPs: Any:=true only if the slot number is not relevant, in which case the SS may choose the next available slot of the given subframe IND ASPs: Any:=true only if there is no slot information available for the particular kind of indication	
SlotOffset	SlotOffset_Type	to address a particular slot in a subframe
FirstSlot	Null_Type	to address the first slot independent from the numerology (REQ ASPs only) or for REQ ASPs in EUTRA and NBIOT
Any	Null_Type	for IND ASPs in EUTRA and NBIOT or if slot number is not relevant or not available

SubFrameTiming_Type

TTCN-3 Record Type			
Name	SubFrameTiming_Type		
Comment			
SFN	SystemFrameNumberInfo_Type		
Subframe	SubFrameInfo_Type		
HSFN	HyperSystemFrameNumberInfo_Type		
Slot	SlotTimingInfo_Type		

TimingInfo_Type

TTCN-3 Union Type		
Name	TimingInfo_Type	
Comment		
SubFrame	SubFrameTiming_Type	
Now	Null_Type	to be used in REQ ASPs when there is no 'activation time'
None	Null_Type	only to be used in SYSTEM_CTRL_CNF or NR_SYSTEM_CTRL_CNF but not for EnquireTiming

D.10.4.2 REQ_ASP_CommonPart

ReqAspControllInfo_Type

TTCN-3 Record Type		
Name	ReqAspControllInfo_Type	
Comment		
CnfFlag	boolean	<p>true => SS shall send CNF: when the REQ is with no timing information (no activation time), SS shall send the confirmation when the configuration is done, i.e. when the test case may continue. Example: when there is a configuration followed by a send event it shall not be necessary to have a wait timer in between but the CNF triggers the send event. If there are other triggers e.g. like the UE sending a message, CnfFlag shall be set to false by the test case to avoid racing conditions with the CNF and the signalling message. When there is an activation time SS shall send the CNF after the configuration has been scheduled; that means SS shall not wait until the activation time has been expired. When FollowOnFlag is true, CnfFlag shall be set to false.</p>
FollowOnFlag	boolean	<p>false => no further (related) information true: further related information will be sent to SS (semantics depending on respective ASP)</p>

D.10.4.3 CNF_ASP_CommonPart

ConfirmationResult_Type

TTCN-3 Union Type		
Name	ConfirmationResult_Type	
Comment		
Success	Null_Type	
Error	integer	may contain SS specific error code; this will not be evaluated by TTCN

D.10.4.4 IND_ASP_CommonPart

IntegrityErrorIndication_Type

TTCN-3 Record Type		
Name	IntegrityErrorIndication_Type	
Comment		
Nas	boolean	NAS Integrity: set to true when received MAC does not match calculated MAC
Pdcp	boolean	PDCCP Integrity: set to true when received MAC does not match calculated MAC

ErrorIndication_Type

TTCN-3 Record Type			
Name	ErrorIndication_Type		
Comment			
Integrity	IntegrityErrorIndication_Type		Integrity error: received MAC does not match calculated MAC
System	integer		any other error: may be SS specific error code; this will not be evaluated by TTCN; e.g. an error shall be raised when the UE requests retransmission of an RLC PDU

IndicationStatus_Type

TTCN-3 Union Type			
Name	IndicationStatus_Type		
Comment			
Ok	Null_Type		
Error	ErrorIndication_Type		

D.11 NR_SideLink_ASP_TypeDefs

D.11.1 NR_SL_CommonPart

NR_SideLink_ASP_TypeDefs: Constant Definitions

TTCN-3 Basic Types			
tsc_SL_SRB0	integer	0	
tsc_SL_SRB1	integer	1	
tsc_SL_SRB2	integer	2	
tsc_SL_SRB3	integer	3	

NR_SL_CommonPart: Basic Type Definitions

TTCN-3 Basic Types			
NR_SL_SRB_Identity_Type	integer	(tsc_SL_SRB0 , tsc_SL_SRB1 , tsc_SL_SRB2 , tsc_SL_SRB3)	

NR_SL_ReqAspCommonPart_Type

TTCN-3 Record Type			
Name	NR_SL_ReqAspCommonPart_Type		
Comment			
SS_UE_Id	SS_UE_Id_Type		
RoutingInfo	NR_SL_RoutingInfo_Type		
TimingInfo	NR_SL_TimingInfo_Type		
ControllInfo	ReqAspControllInfo_Type		

NR_SL_CnfAspCommonPart_Type

TTCN-3 Record Type			
Name	NR_SL_CnfAspCommonPart_Type		
Comment			
SS_UE_Id	SS_UE_Id_Type		
RoutingInfo	NR_SL_RoutingInfo_Type		
TimingInfo	NR_SL_TimingInfo_Type		
Result	NR_SL_SystemConfirm_Type		

NR_SL_IndAspCommonPart_Type

TTCN-3 Record Type			
Name	NR_SL_IndAspCommonPart_Type		
Comment			
SS_UE_Id	SS_UE_Id_Type		
RoutingInfo	NR_SL_RoutingInfo_Type		
TimingInfo	NR_SL_TimingInfo_Type		
Layer2Id	NR_SL_Layer2Ids_Type		Source and Destination Layer-2 ids received together with the data
Status	IndicationStatus_Type		

NR_SL_Layer2Ids_Type

TTCN-3 Record Type			
Name	NR_SL_Layer2Ids_Type		
Comment			
SourceLaye2Id	B24_Type		
DestinationLaye2Id	B24_Type		

NR_SL_TimingInfo_Type

TTCN-3 Union Type			
Name	NR_SL_TimingInfo_Type		
Comment			
DirectSubFrame	DirectSubFrameTiming_Type		
Now	Null_Type		to be used in REQ ASPs when there is no 'activation time'
None	Null_Type		to be used in CNF ASPs but not for EnquireTiming

DirectSubFrameTiming_Type

TTCN-3 Record Type			
Name	DirectSubFrameTiming_Type		
Comment			
DFN	SystemFrameNumberInfo_Type		
Subframe	SubFrameInfo_Type		
Slot	SlotTimingInfo_Type		

NR_SL_RoutingInfo_Type

TTCN-3 Union Type		
Name	NR_SL_RoutingInfo_Type	
Comment		
None	Null_Type	
RadioBearerId	NR_SL_RadioBearerId_Type	
SL_QosFlow	NR_SL_QosFlow_Identification_Type	routing of data with SDAP being configured in non-transparent mode at the NR-SS-UE

NR_SL_RadioBearerId_Type

TTCN-3 Union Type		
Name	NR_SL_RadioBearerId_Type	
Comment	Transparent mode FFS	
SL_Srb	NR_SL_SRB_Identity_Type	routing for SL-SRB 0-3 for unicast
SL_Drb	integer	routing for SL-DRBs

NR_SL_QosFlow_Identification_Type

TTCN-3 Record Type			
Name	NR_SL_QosFlow_Identification_Type		
Comment			
SdaplId	integer		
PQFI	integer	opt	Optional for broadcast and groupcast - Mandatory for unicast

D.11.2 NR_SidelinkUE_Configuration

D.11.2.1 NR_SL_System_Configuration

NR_SL_SystemRequest_Type

TTCN-3 Union Type		
Name	NR_SL_SystemRequest_Type	
Comment		
SS_UE_Config	NR_SL_ConfigRequest_Type	Configure/release a NR-SS-UE
EnquireTiming	Null_Type	Get DFN/subframe/slot number for this NR-SS-UE
SystemIndCtrl	NR_SL_System_IndicationControl_Type	Configure SS to generate system indications
RadioBearerList	NR_SL_RadioBearerList_Type	Configure/release one or several SL-SRBs and/or SL-DRB
SL_Security	NR_SL_Security_Type	Start/Restart/Release of SLRB security - Applicable for unicast only
PdcpCount	NR_SL_PDCP_CountReq_Type	Set or enquire PDCP COUNT for one or more SL-RBs
SciTrigger	NR_SL_SCI_Trigger_Type	To trigger a specific SCI format 1-A and SCI format 2-A or 2-B to be transmitted respectively on PSCCH and PSSCH

NR_SL_SystemConfirm_Type

TTCN-3 Union Type		
Name	NR_SL_SystemConfirm_Type	
Comment	Confirmations for NR_SL_SYSTEM_CTRL_REQ system configuration; in general to be sent after the configuration has been done	
SS_UE_Config	Null_Type	Confirmation for NR-SS-UE configuration
EnquireTiming	Null_Type	Confirmation for EnquireTiming
SystemIndCtrl	Null_Type	Confirmation for SystemIndCtrl
RadioBearerList	Null_Type	Confirmation for SystemIndCtrl
SL_Security	Null_Type	(no further parameters from NR-SS-UE)
PdcpCount	NR_SL_PDCP_CountCnf_Type	as response to 'Get' a list is returned containing COUNT information for the requested SL-RBs
SciTrigger	Null_Type	Confirmation for SystemIndCtrl

NR_SL_SystemIndication_Type

TTCN-3 Union Type		
Name	NR_SL_SystemIndication_Type	
Comment		
Error	charstring	indicates an error situation in NR-SS-UE; is not explicitly handled in TTCN but causes an INCONC due to default behaviour; an additional error code can be signalled in the common part of the ASP; SS shall raise an error in case of - Invalid TimingInfo - Invalid data scheduling (NOTE: additional cases may occur)
SyncRefReporting	NR_SL_SyncRefReporting_Type	Indication for S-SS/MasterInformationBlockSidelink sent by UE
PSSCH_SciReporting	NR_SL_PSSCH_SciReporting_Type	Indication for reception of SCI format 2-A or SCI format 2-B sent by UE
MAC_CE	NR_SL_MAC_ControlElement_Type	Indication for reception of MAC control element sent by UE

D.11.2.2 NR_SL_SS_UE_Config

NR_SL_SS_UE_Config: Basic Type Definitions

TTCN-3 Basic Types		
NR_SL_SCS_SpecificCarrierList_Type	SL_FreqConfigCommon_r16.sl_SCS_SpecificCarrierList_r16	
NR_FrequencyShift7p5kHzSL_Type	SL_FreqConfigCommon_r16.frequencyShift7p5kHzSL_r16	
NR_ValueN_Type	SL_FreqConfigCommon_r16.valueN_r16	
NR_SL_PSCCH_Config_Type	SL_ResourcePool_r16.sl_PSCCH_Config_r16	
NR_SL_PSSCH_Config_Type	SL_ResourcePool_r16.sl_PSSCH_Config_r16	
NR_SL_PSFCH_Config_Type	SL_ResourcePool_r16.sl_PSFCH_Config_r16	
NR_SL_SubchannelSize_Type	SL_ResourcePool_r16.sl_SubchannelSize_r16	
NR_SL_StartRB_Subchannel_Type	SL_ResourcePool_r16.sl_StartRB_Subchannel_r16	
NR_SL_NumSubchannel_Type	SL_ResourcePool_r16.sl_NumSubchannel_r16	
NR_SL_Additional_MCS_Table_Type	SL_ResourcePool_r16.sl_Additional_MCS_Table_r16	
NR_SL_PTRS_Config_Type	SL_ResourcePool_r16.sl_PTRS_Config_r16	
NR_SL_RB_Number_Type	SL_ResourcePool_r16.sl_RB_Number_r16	
NR_SL_TimeResource_Type	SL_ResourcePool_r16.sl_TimeResource_r16	
NR_SL_X_Overhead_Type	SL_ResourcePool_r16.sl_X_Overhead_r16	
NR_SL_MaxNumPerReserve_Type	SL_UE_SelectedConfigRP_r16.sl_MaxNumPerReserve_r16	
NR_SL_MultiReserveResource_Type	SL_UE_SelectedConfigRP_r16.sl_MultiReserveResource_r16	
NR_SL_ResourceReservePeriodList_Type	SL_UE_SelectedConfigRP_r16.sl_ResourceReservePeriodList_r16	
NR_ASN1_SL_LatencyBoundCSI_Report_Type	RRCReconfigurationSidelink_IEs_r16.sl_LatencyBoundCSI_Report_r16	
NR_SidelinkChannelPower_Type	integer	see TS 38.213, clause 16.2
SL_SSId_Type	SL_SyncConfig_r16.sl_SSID_r16	

NR_SL_ConfigRequest_Type

TTCN-3 Union Type		
Name	NR_SL_ConfigRequest_Type	
Comment		
AddOrReconfigure	NR_SL_ConfigInfo_Type	For one NR-SS-UE configuration: SS_UE_Id : identifier of the NR-SS-UE to be configured RoutingInfo : None TimingInfo : 'Now' for initial configuration; specific TimingInfo may be used for reconfiguration ControllInfo : FollowOnFlag:=false
Release	Null_Type	To remove all NR-SS-UEs completely SS_UE_Id : ss_UE_NonSpecific RoutingInfo : None TimingInfo : Now ControllInfo : FollowOnFlag:=false

NR_SL_ConfigInfo_Type

TTCN-3 Record Type			
Name	NR_SL_ConfigInfo_Type		
Comment			
TimingSyncSource	NR_SynchronisationTiming_Type	opt	Mandatory at initial NR-SS-UE configuration
Power	NR_SS_UE_Power_Type	opt	Reference power for the RS of each antenna in Tx Initially configured as switched OFF
SL_BWP_PoolConfigList	NR_SL_BWP_PoolConfigList_Type	opt	Mandatory at initial NR-SS-UE configuration. In release 16 only one entry can be configured

NR_SS_UE_Power_Type

TTCN-3 Record Type			
Name	NR_SS_UE_Power_Type		
Comment			
MaxReferencePower	NR_AbsoluteCellPower_Type	opt	Maximum value of NR-SS-UE reference power (in dBm/15kHz as per TS 38.508-1 clause 6.2.1.3) NR-SS-UE is initialised with this reference power; its value can't be reconfigured during test execution, attenuation is used to change NR-SS-UE power level its value is the upper bound of the NR-SS-UE power during the test case
Attenuation	NR_Attenuation_Type		Initial attenuation: Off

NR_SL_BWP_PoolConfigList_Type

TTCN-3 Record of Type	
Name	NR_SL_BWP_PoolConfigList_Type
Comment	record of NR_SL_BWP_PoolConfig_Type

NR_SL_BWP_PoolConfig_Type

TTCN-3 Record Type			
Name	NR_SL_BWP_PoolConfig_Type		
Comment			
SL_FrequencyInfo	NR_SL_Frequency_Type	opt	mandatory at first configuration
SL_BWP_ConfigList	NR_SL_BWP_ConfigList_Type	opt	mandatory at first configuration
SyncConfig	NR_SL_SyncConfig_Type	opt	mandatory at first configuration

NR_SL_Frequency_Type

TTCN-3 Record Type			
Name	NR_SL_Frequency_Type		
Comment			
Band	integer	opt	
SL_SCS_SpecificCarrierList	NR_SL_SCS_SpecificCarrierList_Type	opt	
SL_AbsoluteFrequencyPointA	NR_ASN1_ARFCN_ValueN_Type	opt	
SL_AbsoluteFrequencySSB	NR_ASN1_ARFCN_ValueN_Type	opt	
FrequencyShift7p5kHzSL	NR_FrequencyShift7p5kHzSL_Type	opt	As per TS 38.101-1 clause 5.4E.2.1
ValueN	NR_ValueN_Type	opt	

NR_SL_BWP_ConfigList_Type

TTCN-3 Record of Type			
Name	NR_SL_BWP_ConfigList_Type		
Comment			
record of NR_SL_BWP_Config_Type			

NR_SL_BWP_Config_Type

TTCN-3 Record Type			
Name	NR_SL_BWP_Config_Type		
Comment			
SL_BWP_Id	BWP_Id		
ActiveBwp	boolean	opt	Indicates to NR-SS-UE which BWP is currently used - only one active at a time
SL_PreconfigGeneral	NR_ASN1_SL_PreconfigGeneral	opt	mandatory at first configuration
SL_BWP_Generics	NR_ASN1_SL_BWP_Generics_Type	opt	mandatory at first configuration
SL_RxPool	NR_SL_RxPoolConfig_Type	opt	
SL_TxPool	NR_SL_TxPoolConfig_Type	opt	

NR_ASN1_SL_PreconfigGeneral

TTCN-3 Record Type			
Name	NR_ASN1_SL_PreconfigGeneral		
Comment			
R16	SL_PreconfigGeneral_r16		

NR_SL_RxPoolConfig_Type

TTCN-3 Record Type			
Name	NR_SL_RxPoolConfig_Type		
Comment			
SL_ResourcePool	NR_SL_ResourcePool_Type	opt	
SL_CSI_RS	NR_SL_CSI_RS_ConfigRx_Type	opt	Configuration for sidelink CSI reception

NR_SL_TxPoolConfig_Type

TTCN-3 Record Type			
Name	NR_SL_TxPoolConfig_Type		
Comment			
SL_ResourcePool	NR_SL_ResourcePool_Type	opt	
SL_SCI	NR_SL_SCI_Tx_Type	opt	
RelativePscchPsschTxPower	NR_SL_RelativeTxPower_Type	opt	
SL_CSI_RS	NR_SL_CSI_RS_ConfigTx_Type	opt	Configuration for sidelink CSI transmission

NR_ASN1_SL_BWP_Generic_Type

TTCN-3 Union Type	
Name	NR_ASN1_SL_BWP_Generic_Type
Comment	
R16	SL_BWP_Generic_r16

NR_ASN1_SL_PSSCH_TxParameters_r16

TTCN-3 Record Type	
Name	NR_ASN1_SL_PSSCH_TxParameters_r16
Comment	
R16	SL_PSSCH_TxParameters_r16

NR_SL_ResourcePool_Type

TTCN-3 Record Type	
Name	NR_SL_ResourcePool_Type
Comment	
SL_PSCCH_Config	NR_SL_PSCCH_Config_Type opt
SL_PSSCH_Config	NR_SL_PSSCH_Config_Type opt
SL_PSSCH_TxParameters	NR_ASN1_SL_PSSCH_TxParameters_r16 opt In reception: set according to UE applied transmission parameters. In transmission: set to the NR-SS-UE transmission parameters to be selected acc to TS 38.321 clause 5.22.1.1
SL_PSFCH_Config	NR_SL_PSFCH_Config_Type opt
SL_SubchannelSize	NR_SL_SubchannelSize_Type opt
SL_StartRB_Subchannel	NR_SL_StartRB_Subchannel_Type opt
SL_NumSubchannel	NR_SL_NumSubchannel_Type opt
SL_Additional_MCS_Table	NR_SL_Additional_MCS_Table_Type opt
SL_PTRS_Config	NR_SL_PTRS_Config_Type opt
SL_MultiReserveResource	NR_SL_MultiReserveResource_Type opt
SL_MaxNumPerReserve	NR_SL_MaxNumPerReserve_Type opt
SL_ResourceReservePeriodList	NR_SL_ResourceReservePeriodList_Type opt
SL_RB_Number	NR_SL_RB_Number_Type opt
SL_TimeResource	NR_SL_TimeResource_Type opt
SL_X_Overhead	NR_SL_X_Overhead_Type opt

NR_SL_SCI_Tx_Type

TTCN-3 Record Type	
Name	NR_SL_SCI_Tx_Type
Comment	
PSCCH_Sci	NR_SL_PSCCH_Sci_Tx_Type opt 1st-stage SCI formats
PSSCH_Sci	NR_SL_PSSCH_Sci_Tx_Type opt 2nd-stage SCI formats

NR_SL_PSCCH_Sci_Tx_Type

TTCN-3 Union Type		
Name	NR_SL_PSCCH_Sci_Tx_Type	
Comment		
SciFormat1A	NR_SL_SciFormat1A_Type	Acc to TS 38.212 cl 8.3.1.1 SCI format 1-A

NR_SL_ResourceReservationPeriod_Type

TTCN-3 Union Type		
Name	NR_SL_ResourceReservationPeriod_Type	
Comment	TS 38.212 clause 8.3.1.1	
None	Null_Type	0 bit no Resource reservation period, if higher layer parameter sl-MultiReserveResource is not configured
Value	integer	number of bits depending on the number of entries in the higher layer parameter sl-ResourceReservePeriodList

NR_SL_AdditionalMCS_Type

TTCN-3 Union Type		
Name	NR_SL_AdditionalMCS_Type	
Comment	TS 38.212 clause 8.3.1.1 Additional MCS table indicator	
None	Null_Type	0 bit if 2 bits if two MCS tables is not configured by higher layer parameter sl-Additional-MCS-Table
Value	integer	as defined in clause 8.1.3.1 of TS 38.214: 1 bit if one MCS table is configured by higher layer parameter sl-Additional-MCS-Table; 2 bits if two MCS tables are configured by higher layer parameter sl-Additional-MCS-Table

NR_SL_PSFCH_OverheadIndication_Type

TTCN-3 Union Type		
Name	NR_SL_PSFCH_OverheadIndication_Type	
Comment	TS 38.212 cl 8.3.1.1 PSFCH overhead indication	
None	Null_Type	0 bit if sl-PSFCH-Period different from 2 and 4
Value	integer	1 bit as defined clause 8.1.3.2 of TS 38.214 if higher layer parameter sl-PSFCH-Period = 2 or 4
Automatic	Null_Type	1 bit as defined in TS 38.214 clause 8.1.3.2. Applicable when PSFCH is configured in the resource pool. Value set automatically by NR-SS-UE according to TS 38.214 clause 8.1.3.2 and TS 38.213 clause 16.3.

NR_SL_FreqResourceAssignment_Type

TTCN-3 Record Type		
Name	NR_SL_FreqResourceAssignment_Type	
Comment	TS 38.214 clause 8.1.5 The SS shall automatically do the resource assignment needed for a transmission	
FirstSubchanne l	integer	The starting sub-channel index of the first resource
MaxSubchanne ls	integer	maximum number of sub-channels to be used

NR_SL_SciFormat1A_Type

TTCN-3 Record Type			
Name	NR_SL_SciFormat1A_Type		
Comment	Acc to TS 38.212 cl 8.3.1.1 SCI format 1-A For all fields: 'omit' means that the information shall not be contained in the SCI		
Priority	B3_Type	opt	Priority - 3 bits as specified in clause 5.4.3.3 of [12, TS 23.287] and clause 5.22.1.3.1 of [8, TS 38.321]
FreqResource Assignment	NR_SL_FreqResourceAssignment_Type	opt	Frequency resource assignment - Number of bits depending on sl-MaxNumPerReserve
TimeResource Assignment	integer	opt	Time resource assignment
ResourceReservationPeriod	NR_SL_ResourceReservationPeriod_Type	opt	Resource reservation period - present if higher layer parameter sl-MultiReserveResource is configured; 0 bit otherwise.
Dmrs_Pattern	integer	opt	DMRS pattern
SecondStageSCI_Format	B2_Type	opt	2nd-stage SCI format - 2 bits as defined in Table 8.3.1.1-1.
Beta_offset	B2_Type	opt	Beta_offset indicator - 2 bits as provided by higher layer parameter sl-BetaOffsets2ndSCI and Table 8.3.1.1-2.
NumberDMRS_Port	B1_Type	opt	Number of DMRS port - 1bit as defined in Table 8.3.1.1-3.
AdditionalMCS	NR_SL_AdditionalMCS_Type	opt	Additional MCS table indicator
PSFCH_OverheadIndication	NR_SL_PSFCH_OverheadIndication_Type	opt	PSFCH overhead indication

NR_SL_PSSCH_Sci_Tx_Type

TTCN-3 Union Type			
Name	NR_SL_PSSCH_Sci_Tx_Type		
Comment			
SciFormat2A	NR_SL_SciFormat2A_Type	Acc to TS 38.212 cl 8.4.1.1 SCI format 2-A	
SciFormat2B	NR_SL_SciFormat2B_Type	Acc to TS 38.212 cl 8.4.1.2 SCI format 2-B	

NR_SL_SciFormat2A_Type

TTCN-3 Record Type			
Name	NR_SL_SciFormat2A_Type		
Comment	Acc to TS 38.212 cl 8.4.1.1 SCI format 2-A Source ID and Destination ID provided in NR_SL_MAC_LogicalChannelConfig_Type		
HarqProcessConfig	NR_HarqProcessConfig_Type	opt	configures which HARQ processes the NR-SS-UE may use; corresponds to HARQ process number - 4 bits. Acc to TS 38.321 clause 5.22.1.3.1: The maximum number of transmitting Sidelink processes associated with the Sidelink HARQ Entity is 16.
ToggleNDI	boolean	opt	for NR-SS-UE configured in Tx else NA "true" for transmission of a new transport block, "false" for a re-transmission; Not present for automatic mode: the NDI (New data indicator) itself is maintained by the NR-SS-UE and therefore not provided as configuration parameter
RedundancyVersionList	NR_RedundancyVersionList_Type	opt	Redundancy version - 2 bits as defined in TS 38.212 Table 7.3.1.1.1-2. list of Redundancy versions to be used for DL transmission and possible retransmissions; if there are not enough elements to achieve successful DL transmission, SS shall raise an error
HarqFeedback	B1_Type	opt	HARQ feedback enabled/disabled indicator - 1 bit as defined in TS 38.213 clause 16.3
CastType	B2_Type	opt	Cast type indicator - 2 bits as defined in TS 38.212 Table 8.4.1.1-1 and in TS 38.214 clause 8.1
CSI_Request	B1_Type	opt	CSI request - 1 bit as defined in TS 38.214 cl 8.2.1 and 8.1.

NR_SL_SciFormat2B_Type

TTCN-3 Record Type			
Name	NR_SL_SciFormat2B_Type		
Comment	Ac to TS 38.212 clause 8.4.1.2 SCI format 2-B Source ID and Destination ID provided in NR_SL_MAC_LogicalChannelConfig_Type		
HarqProcessConfig	NR_HarqProcessConfig_Type	opt	configures which HARQ processes the NR-SS-UE may use; corresponds to HARQ process number - 4 bits. Acc to TS 38.321 clause 5.22.1.3.1: The maximum number of transmitting Sidelink processes associated with the Sidelink HARQ Entity is 16.
ToggleNDI	boolean	opt	for NR-SS-UE configured in Tx else NA "true" for transmission of a new transport block, "false" for a re-transmission; Not present for automatic mode: the NDI (New data indicator) itself is maintained by the NR-SS-UE and therefore not provided as configuration parameter
RedundancyVersionList	NR_RedundancyVersionList_Type	opt	Redundancy version - 2 bits as defined in TS 38.212 Table 7.3.1.1.1-2. list of Redundancy versions to be used for DL transmission and possible retransmissions; if there are not enough elements to achieve successful DL transmission, SS shall raise an error
HarqFeedback	B1_Type	opt	HARQ feedback enabled/disabled indicator - 1 bit as defined in TS 38.213 clause 16.3
ZoneID	B12_Type	opt	Zone ID - 12 bits as defined in clause 5.8.11 of TS 38.331.
CommunicationRangeReq	B4_Type	opt	Communication range requirement - 4 bits determined by higher layer parameter sl-ZoneConfigMCR-Index

NR_SL_RelativeTxPower_Type

TTCN-3 Record Type			
Name	NR_SL_RelativeTxPower_Type		
Comment	Power allocation for OFDM symbols and reference signals - TS 38.508-1 Table 6.2.1.3-1		
SssbRelativeTxPower	NR_SL_SSSB_EPRES_Type	opt	
PscchRelativeTxPower	NR_SL_PSCCH_EPRES_Type	opt	
PsschRelativeTxPower	NR_SL_PSSCH_EPRES_Type	opt	
SICsiRsRelativeTxPower	NR_SL_CSIRS_EPRES_Type	opt	

NR_SL_SSSB_EPRES_Type

TTCN-3 Record Type			
Name	NR_SL_SSSB_EPRES_Type		
Comment			
SsssToNRSSUE	NR_EPRES_Ratio_Type	opt	EPRE ratio of S-SSS to EPRE of NR-SS-UE
SpssToSsss	NR_EPRES_Ratio_Type	opt	EPRE ratio of S-PSS to S-SSS
PsbchDmrsToSsss	NR_EPRES_Ratio_Type	opt	EPRE ratio of PSBCH DMRS to S-SSS
PsbchToPsbchDmrs	NR_EPRES_Ratio_Type	opt	EPRE ratio of PSBCH to PSBCH DMRS

NR_SL_PSCCH_EPRES_Type

TTCN-3 Record Type			
Name	NR_SL_PSCCH_EPRES_Type		
Comment			
PscchToNRSS UE	NR_EPRES_Ratio_Type	opt	EPRE ratio of PSCCH DMRS to EPRE or NR-SS-UE
PscchToDmrs	NR_EPRES_Ratio_Type	opt	EPRE ratio of PSCCH to PSCCH DMRS

NR_SL_PSSCH_EPRES_Type

TTCN-3 Record Type			
Name	NR_SL_PSSCH_EPRES_Type		
Comment			
PsschToNRSS UE	NR_EPRES_Ratio_Type	opt	EPRE ratio of PSSCH DMRS to EPRE of NR-SS-UE
PsschToDmrs	NR_EPRES_Ratio_Type	opt	EPRE ratio of PSSCH to PSSCH DMRS
PsschTpPtrs	NR_EPRES_Ratio_Type	opt	EPRE ratio of SL PT-RS to PSSCH
PsfchToPssch	NR_EPRES_Ratio_Type	opt	EPRE ratio of PSFCH to PSSCH

NR_SL_CSIRS_EPRES_Type

TTCN-3 Record Type			
Name	NR_SL_CSIRS_EPRES_Type		
Comment			
SISciRsToNRS SUE	NR_EPRES_Ratio_Type		EPRE ratio of SL CSI-RS to EPRE of NR-SS-UE

NR_SL_CSI_RS_ConfigRx_Type

TTCN-3 Union Type		
Name	NR_SL_CSI_RS_ConfigRx_Type	
Comment	NR-SS-UE configured for reception of CSI-RS signal, CSI report trigger in SCI format 2-A and for transmission of sidelink CSI report.	
AddOrReconfigure	NR_SL_CSI_RS_ConfigParamRx_Type	Add/re-configure SL-CSI reception
Release	Null_Type	Stop transmission or reception
None	Null_Type	

NR_SL_CSI_RS_ConfigParamRx_Type

TTCN-3 Record Type			
Name	NR_SL_CSI_RS_ConfigParamRx_Type		
Comment	According to TS 38.321 clause 5.22.1.7 and TS 38.214 clause 8.5. The MAC CE containing sidelink CSI Report (SidelinkCSI_Reporting) shall be transmitted by NR-SS-UE after reception of SCI format 2-A with CSI request set to '1'B. The Sidelink CSI report shall be transmitted at LatencyBoundCSI_Report slots after reception of the SCI format 2-A.		
CSI_RS_Config	NR_ASN1_SL_CSI_RS_Config		
LatencyBoundCSI_Report	NR_ASN1_SL_LatencyBoundCSI_Report_Type		Offset between the SCI format 2-A with CSI request set to '1'B and the transmitted sidelink CSI report provided in SidelinkCSI_Reporting
SidelinkCSI_Reporting	NR_SL_MAC_CE_SidelinkCSI_Reporting_Type		Sidelink CSI report to be transmitted by NR-SS-UE - TS 38.321 clause 6.1.3.35

NR_SL_CSI_RS_ConfigTx_Type

TTCN-3 Union Type		
Name	NR_SL_CSI_RS_ConfigTx_Type	
Comment		
AddOrReconfigure	NR_SL_CSI_RS_ConfigParamTx_Type	Add/re-configure sidelink CSI for transmission
Release	Null_Type	Stop transmission or reception
None	Null_Type	

NR_SL_CSI_RS_ConfigParamTx_Type

TTCN-3 Record Type		
Name	NR_SL_CSI_RS_ConfigParamTx_Type	
Comment	According to TS 38.214 clause 8.5.2.2. CSI-RS shall be transmitted when SCI format 2-A with SCI request set to '1' is transmitted. SICsiRsRelativeTxPower shall be provided in NR_SL_SSSB_EPRES_Type.	
SL_CSI_RS_Config	NR_ASN1_SL_CSI_RS_Config	

NR_ASN1_SL_CSI_RS_Config

TTCN-3 Record Type		
Name	NR_ASN1_SL_CSI_RS_Config	
Comment		
R16	SL_CSI_RS_Config_r16	

NR_SynchronisationTiming_Type

TTCN-3 Union Type		
Name	NR_SynchronisationTiming_Type	
Comment	To configure/reconfigure NR-SS-UE with the timing for synchronisation	
InCoverage	NR_InCoverageConfig_Type	To configure NR-SS-UE to synchronise on NR Cell
UTC_GNSS_Synchronised	NR_UTC_SynchronisedConfig_Type	To configure NR-SS-UE to synchronise on UTC of a GNSS signal
OutOfCoverageTiming	NR_OutOfCoverageTiming_Type	To configure NR-SS-UE out of coverage - no synchronisation source
SyncRefUE	Null_Type	NR-SS-UE synchronises using UE under test - NR-SS-UE configured in SyncConfigRxMode

NR_InCoverageConfig_Type

TTCN-3 Record Type		
Name	NR_InCoverageConfig_Type	
Comment		
NR_CellId	NR_CellId_Type	NR cell Identity on which NR-SS-UE shall synchronise

NR_UTC_SynchronisedConfig_Type

TTCN-3 Record Type		
Name	NR_UTC_SynchronisedConfig_Type	
Comment	NR-SS-UE selects GNSS as the synchronization reference source - As per TS 38.331 clause 5.8.12	
SL_OffsetDFN	integer	

NR_OutOfCoverageTiming_Type

TTCN-3 Record Type			
Name	NR_OutOfCoverageTiming_Type		
Comment			
TcOffset	integer (0..63)	opt	For NR according to TS 38.211 clause 4.1 $T_s/T_c = 64$ with $T_c = 1/(480000 * 4096)$ and $T_s = 1/(15000 * 2048)$;
Tcell	integer (0..307199)	opt	Frame duration $T_f = 307200 * T_s = 10\text{ms}$; System Time Unit $T_s = 1/(15000 * 2048)$
DfnOffset	integer (0..1023)	opt	

NR_SL_SyncConfig_Type

TTCN-3 Record Type			
Name	NR_SL_SyncConfig_Type		
Comment	To configure NR-SS-UE for SLSS and MasterInformationBlockSidelink transmission/reception		
SyncConfigTx Mode	NR_SL_SyncConfigTxModeList_Type	opt	A list needed in case one NR-SS-UE is configured to transmit different PSBCH
SyncConfigRx Mode	NR_SL_SyncConfigRxMode_Type	opt	

NR_SL_SyncConfigTxModeList_Type

TTCN-3 Record of Type	
Name	NR_SL_SyncConfigTxModeList_Type
Comment	
record of NR_SL_SyncConfigTxMode_Type	

NR_SL_SyncConfigTxMode_Type

TTCN-3 Union Type		
Name	NR_SL_SyncConfigTxMode_Type	
Comment		
None	Null_Type	NR-SS-UE not configured for S-SS/PSBCH transmission - Used only for initial configuration when no transmission is required
SyncConfigTx	NR_SL_SyncConfigTx_Type	

NR_SL_SyncConfigTx_Type

TTCN-3 Union Type		
Name	NR_SL_SyncConfigTx_Type	
Comment	To configure/reconfigure NR-SS-UE to start or stop transmitting SLSS and MasterInformationBlockSidelink	
AddOrReconfigure	NR_SL_SyncTx_Type	Add/re-configure S-SS/PSBCH
Release	Null_Type	Stop transmission

NR_SL_SyncTx_Type

TTCN-3 Record Type			
Name	NR_SL_SyncTx_Type		
Comment	To configure NR-SS-UE to transmit Reference signal, S-SS and MasterInformationBlockSidelink acc to TS 38.211 clause 8.4, TS 38.212 clause 8.1, TS 38.213 clause 8.4.3.1. Acc to TS 38.213 cl 16.1 S-PSS symbol, a S-SSS symbol, and a PSBCH symbol have a same transmission power NR-SS-UE is configured in transmission mode with the associated SL_TxPool		
TxSyncConfig	NR_TxSyncRefParam_Type	opt	
SL_TDD_Configuration	TDD_UL_DL_ConfigComm on	opt	Corresponding SL-ResourcePool-r16.sl-RxParametersNcell-r16.sl-TDD-Configuration-r16
Spss	NR_SidelinkPrimarySyncSignal_Type	opt	SL primary synchronization signals (S-PSS)
Ssss	NR_SidelinkSecondarySyncSignal_Type	opt	SL secondary synchronization signals (S-SSS)
Psbch	NR_PsbchConfig_Type	opt	PSBCH blocks

NR_TxSyncRefParam_Type

TTCN-3 Record Type			
Name	NR_TxSyncRefParam_Type		
Comment			
SL_SSID	SL_SyncConfig_r16.sl_SSID_r16		
MasterInformationBlockSidelink	MasterInformationBlockSidelink	opt	directFrameNumber and slotIndex set to a dummy value - to be set by NR-SS-UE MasterInformationBlockSidelink using fixed periodicity (16ms) to TS 38.213 clause 16.1; The position of S-SS/PSBCH blocks in frequency and time domain is specified in TS 38.211 clause 8.4.3 and TS 38.213 clause 16.1. The SS configuration for S-SS/PSBCH blocks is defined by SL_SSB_TimeAllocation_r16 and NR_SL_Frequency_Type
SL_SSB_TimeAllocation	SL_SSB_TimeAllocation_r16	opt	

NR_SidelinkPrimarySyncSignal_Type

TTCN-3 Record Type			
Name	NR_SidelinkPrimarySyncSignal_Type		
Comment			
RelativeTxPower	NR_SidelinkChannelPower_Type	opt	Power for S-PSS relative to the NR-SS-UE power level - value in dB

NR_SidelinkSecondarySyncSignal_Type

TTCN-3 Record Type			
Name	NR_SidelinkSecondarySyncSignal_Type		
Comment			
RelativeTxPower	NR_SidelinkChannelPower_Type	opt	Power for S-SSS relative to the NR-SS-UE power level - value in dB

NR_PsbchConfig_Type

TTCN-3 Record Type			
Name	NR_PsbchConfig_Type		
Comment			
RelativeTxPower	NR_SidelinkChannelPower_Type	opt	Power for PSBCH relative to the NR-SS-UE power level - value in dB

NR_SL_SyncConfigRxMode_Type

TTCN-3 Union Type		
Name	NR_SL_SyncConfigRxMode_Type	
Comment		
None	Null_Type	NR-SS-UE not configured for S-SS/PSBCH reception - Used only for initial configuration when no reception is required
SyncConfigRx	NR_SL_SyncConfigRx_Type	

NR_SL_SyncConfigRx_Type

TTCN-3 Union Type		
Name	NR_SL_SyncConfigRx_Type	
Comment	to configure/reconfigure NR-SS-UE to start or stop receiving S-SS/PSBCH - FFS is a list is needed	
AddOrReconfigure	NR_SL_SyncRx_Type	Add/re-configure reception of SLSSID
Release	Null_Type	Stop SLSS and SBCCH reception

NR_SL_SyncRx_Type

TTCN-3 Record Type			
Name	NR_SL_SyncRx_Type		
Comment	To configure NR-SS-UE for reception of S-SS/PSBCH with one or two synchronisation SSB Time allocation sources.		
SL_SSID	NR_SL_SSID_Type	opt	
SL_SSB_TimeAllocation	NR_SL_SSB_TimeAllocation_Type	opt	List of the SSB_TimeAllocation to be used by UE

NR_SL_SSB_TimeAllocation_Type

TTCN-3 Union Type		
Name	NR_SL_SSB_TimeAllocation_Type	
Comment		
SL_SSB_TimeAllocationList	NR_SL_SSB_TimeAllocationList_Type	List of the SSB_TimeAllocation to be used by UE
AnyValue	Null_Type	Any value is expected

NR_SL_SSB_TimeAllocationList_Type

TTCN-3 Record of Type	
Name	NR_SL_SSB_TimeAllocationList_Type
Comment	
record length(1..2) of SL_SSB_TimeAllocation_r16	

NR_SL_SSID_Type

TTCN-3 Union Type		
Name	NR_SL_SSID_Type	
Comment		
SL_SSID_Value	SL_SSID_Type	As per TS 38.211 clause 8.4.2.1
AnyValue	Null_Type	Any value is expected

NR_SL_System_IndicationControl_Type

TTCN-3 Union Type		
Name	NR_SL_System_IndicationControl_Type	
Comment	Initially all indications are disabled in NR-SS-UE (i.e. it shall not be necessary in 'normal' test cases to use this primitive but only if a specific indication is needed); omit means indication mode is not changed. TimingInfo : 'Now' (in general)	
SyncRefReporting	IndicationAndControlMode_Type	To enable/disable reporting of start and stop of reception of NR sidelink S-SS/PSBCH. NOTE: this is applicable when NR-SS-UE is configured with SyncConfigRx SS reports an indication every time when SLSSID/MasterInformationBlockSidelink reception from UE has toggled in the subframes configured for SLSS/MasterInformationBlockSidelink reception
PSSCH_SciReporting	IndicationAndControlMode_Type	To enable/disable reporting of reception of NR PSSCH SCI-2A or SCI-2B NOTE: SS reports an indication every time an SCI format 2-A or SCI format 2-B is received
SidelinkCSIReportingMAC_CE	IndicationAndControlMode_Type	To enable/disable reporting of Sidelink CSI Reporting MAC CE received from UE

D.11.2.3 NR_SL_RadioBearerConfig

D.11.2.3.1 NR_SL_RadioBearerConfigGeneric

NR_SL_RadioBearerConfigInfo_Type

TTCN-3 Record Type			
Name	NR_SL_RadioBearerConfigInfo_Type		
Comment			
Sdap	NR_SL_SDAP_Configuration_Type	opt	mandatory for initial configuration; omit means "keep as it is" for SL-SRBs: Sdap.None:=true
Pdcp	NR_SL_PDCP_Configuration_Type	opt	mandatory for initial configuration; omit means "keep as it is"
RlcBearer	NR_SL_RlcBearerConfig_Type	opt	mandatory for initial configuration; omit means "keep as it is"

NR_SL_RadioBearerConfig_Type

TTCN-3 Union Type		
Name	NR_SL_RadioBearerConfig_Type	
Comment		
AddOrReconfigure	NR_SL_RadioBearerConfigInfo_Type	add / re-configure SL-RB
Release	Null_Type	release SL-RB

NR_SL_RadioBearer_Type

TTCN-3 Record Type			
Name	NR_SL_RadioBearer_Type		
Comment			
Id	NR_SL_RadioBearerId_Type		
Config	NR_SL_RadioBearerConfig_Type		

NR_SL_RadioBearerList_Type

TTCN-3 Record of Type	
Name	NR_SL_RadioBearerList_Type
Comment	array of SL-SRBs and/or SL-DRBs. TimingInfo: 'Now' in general; activation time may be used in special case for release and/or reconfiguration of one or several SL-RBs; the following rules shall be considered: - release/Reconfiguration of an SL-RB shall not be scheduled earlier than 5ms after a previous data transmission on this SL-RB - subsequent release and reconfiguration(s) shall be scheduled with an interval of at least 5ms - a subsequent data transmission on an SL-RB shall not be scheduled earlier than 5ms after the last reconfiguration of the SL-RB the configuration shall be performed exactly at the given time ControlInfo : FollowOnFlag:=false
record of NR_SL_RadioBearer_Type	

D.11.2.3.2 SDAP_Configuration

SDAP_Configuration: Basic Type Definitions

TTCN-3 Basic Types		
NR_SL_SDAP_Header_Type	SL_SDAP_Config_r16.sl_SDAP_Header_r16	

PQFI_List_Type

TTCN-3 Record of Type	
Name	PQFI_List_Type
Comment	
record of integer	

NR_SL_SdapConfig_Type

TTCN-3 Record Type			
Name	NR_SL_SdapConfig_Type		
Comment			
SdapId	integer		Sdap identity used in NR-SS-UE as route identity the SL-DRB and route data
Sdap_Header	NR_SL_SDAP_Header_Type	opt	mandatory for initial configuration; omit means "keep as it is"
MappedQoS_Flows	PQFI_List_Type	opt	mandatory for initial configuration; omit means "keep as it is"

NR_SL_SdapTransparentMode_Type

TTCN-3 Record Type			
Name	NR_SL_SdapTransparentMode_Type		
Comment			
Sdap_Header	NR_SL_SDAP_Header_Type		Indicates to the SS if the UE has been configured to include SDAP header

NR_SL_SdapConfigInfo_Type

TTCN-3 Union Type			
Name	NR_SL_SdapConfigInfo_Type		
Comment			
SdapConfig	NR_SL_SdapConfig_Type		SDAP configuration parameters for the SL-DRB
TransparentMode	NR_SL_SdapTransparentMode_Type		SDAP configuration for transparent (test) mode, used for SDAP tests: SS does not add any SDAP headers in DL and does not remove any SDAP headers in UL

NR_SL_SDAP_Configuration_Type

TTCN-3 Union Type			
Name	NR_SL_SDAP_Configuration_Type		
Comment			
None	Null_Type		
Config	NR_SL_SdapConfigInfo_Type		

D.11.2.3.3 PDCP_Configuration

PDCP_Configuration: Basic Type Definitions

TTCN-3 Basic Types			
NR_SL_PDCP_SN_Size_Type	SL_PDCP_Config_r16.sl_PDCP_SN_Size_r16		
NR_SL_PDCP_SDU_Type	B3_Type		Acc to TS 38.323 cl 6.3.12

NR_CastType_Type

TTCN-3 Enumerated Type			
Name	NR_CastType_Type		
Comment			
broadcast			
groupcast			
unicast			

NR_SL_PDCP_DRB_Config_Parameters_Type

TTCN-3 Record Type			
Name	NR_SL_PDCP_DRB_Config_Parameters_Type		
Comment	parameters corresponding to NR ASN.1 SL-PDCP-Config		
SN_Size	NR_SL_PDCP_SN_Size_Type		SL-PDCP-Config.sl-PDCP-SN-Size-r16
PDCP_SDU_Data	NR_SL_PDCP_SDU_Type	opt	Only applicable to SL-DRB Corresponds to the V2X data type: IP/non-IP
CastType	NR_CastType_Type	opt	Only applicable to SL-DRB

NR_SL_PDCP_TransparentMode

TTCN-3 Record Type	
Name	NR_SL_PDCP_TransparentMode
Comment	
SN_Size	NR_SL_PDCP_SN_Size_Type

NR_SL_PDCP_RbConfig_Type

TTCN-3 Union Type	
Name	NR_SL_PDCP_RbConfig_Type
Comment	
Params	NR_SL_PDCP_DRB_Config_Parameters_Type PDCP configuration parameters corresponding to UE configuration
TransparentMode	NR_SL_PDCP_TransparentMode PDCP configuration for transparent (test) mode: FFS

NR_SL_PDCP_Configuration_Type

TTCN-3 Union Type	
Name	NR_SL_PDCP_Configuration_Type
Comment	
None	Null_Type the PDCP may not be configured e.g. for SL-DRBs tested in RLC or MAC test cases
SLRB	NR_SL_PDCP_RbConfig_Type

D.11.2.3.4 RLC_Configuration

RLC_Configuration: Basic Type Definitions

TTCN-3 Basic Types	
NR_SL_UM_RLC_Type	SL_RLC_Config_r16.sl_UM_RLC_r16
NR_SL_AM_RLC_Type	SL_RLC_Config_r16.sl_AM_RLC_r16

NR_SL_RLC_TestModeConfig_Type

TTCN-3 Union Type	
Name	NR_SL_RLC_TestModeConfig_Type
Comment	
None	Null_Type

NR_SL_AM_Config_Type

TTCN-3 Union Type	
Name	NR_SL_AM_Config_Type
Comment	
None	Null_Type
AM	NR_SL_AM_RLC_Type

NR_SL_RLC_AM_Type

TTCN-3 Record Type	
Name	NR_SL_RLC_AM_Type
Comment	
Tx	NR_SL_AM_Config_Type opt
Rx	NR_SL_AM_Config_Type opt

NR_SL_UM_Config_Type

TTCN-3 Union Type		
Name	NR_SL_UM_Config_Type	
Comment		
None	Null_Type	
UM	NR_SL_UM_RLC_Type	For groupcast and broadcast of NR sidelink communication, only 6 bit SN length is configured

NR_SL_RLC_UM_Type

TTCN-3 Record Type			
Name	NR_SL_RLC_UM_Type		
Comment			
Tx	NR_SL_UM_Config_Type	opt	
Rx	NR_SL_UM_Config_Type	opt	

NR_SL_RLC_RbConfig_Type

TTCN-3 Union Type		
Name	NR_SL_RLC_RbConfig_Type	
Comment	For groupcast and broadcast only uni-directional UM mode is supported	
RlcAM	NR_SL_RLC_AM_Type	
RlcUM	NR_SL_RLC_UM_Type	

NR_SL_RLC_Configuration_Type

TTCN-3 Record Type			
Name	NR_SL_RLC_Configuration_Type		
Comment			
Rb	NR_SL_RLC_RbConfig_Type	opt	mandatory for initial configuration; omit means "keep as it is"
TestMode	NR_SL_RLC_TestModeConfiguration_Type	opt	mandatory for initial configuration; omit means "keep as it is"

NR_SL_LogicalChannelIdentity_Type

TTCN-3 Union Type		
Name	NR_SL_LogicalChannelIdentity_Type	
Comment		
LCID	integer	Refer to 38.321 Table 6.2.4-1
AnyValue	Null_Type	Any value allowed from 4 to 19 - Used for NR-SS-UE reception - Acc to 38.331 clause 9.1.1.5: Selected by the transmitting UE, up to UE implementation

NR_SL_RlcBearerConfig_Type

TTCN-3 Record Type			
Name	NR_SL_RlcBearerConfig_Type		
Comment			
Rlc	NR_SL_RLC_Configuration_Type	opt	mandatory for initial configuration; omit means "keep as it is"
LogicalChannelId	NR_SL_LogicalChannelIdentity_Type	opt	As per TS 38.321 Table 6.2.4-1 Values of LCID for SL-SCH
Mac	NR_SL_MAC_Configuration_Type	opt	

D.11.2.3.5 MAC_Configuration

MAC configuration: radio bearer specific configuration

MAC_Configuration: Basic Type Definitions

TTCN-3 Basic Types		
NR_SL_Priority_Type	SL_LogicalChannelConfig_r16.sl_Priority_r16	
NR_SL_PrioritisedBitRate_Type	SL_LogicalChannelConfig_r16.sl_PrioritisedBitRate_r16	
NR_SL_HARQ_Feedback_Enabled_Type	SL_LogicalChannelConfig_r16.sl_HARQ_FeedbackEnabled_r16	

NR_SL_Layer2Id_Type

TTCN-3 Union Type		
Name	NR_SL_Layer2Id_Type	
Comment		
AnyValue	Null_Type	Any value. Used only when NR-SS-UE is configured in reception
Value	B24_Type	Mandatory when NR-SS-UE is configured in transmission

NR_SL_MAC_LogicalChannelConfig_Type

TTCN-3 Record Type			
Name	NR_SL_MAC_LogicalChannelConfig_Type		
Comment			
Priority	NR_SL_Priority_Type	opt	Logical channel priority for the DL as described in TS 38.321, clause 5.4.3.1 for the Tx
PrioritizedBitRate	NR_SL_PrioritisedBitRate_Type	opt	PBR as described for the Tx; probably not needed at SS
HARQ_Feedback_Enabled	NR_SL_HARQ_Feedback_Enabled_Type	opt	Indicate the HARQ feedback enabled/disabled restriction in LCP for this sidelink logical channel. According to TS 38.321 clause 5.22.1.1 and 5.22.1.3.
NR_SS_UE_Layer2Identity	NR_SL_Layer2Id_Type	opt	The Layer-2 Identity of the NR-SS-UE - Corresponding to the source Layer-2 Id for NR-SS-UE transmission and to the destination Layer-2 Id for NR-SS-UE reception
UE_Layer2Identity	NR_SL_Layer2Id_Type	opt	The UE under test Layer 2 Identity - Corresponding to the source Layer-2 Id for NR-SS-UE reception and to the destination Layer-2 Id for NR-SS-UE transmission

NR_SL_MAC_Configuration_Type

TTCN-3 Record Type			
Name	NR_SL_MAC_Configuration_Type		
Comment			
LogicalChannelConfig	NR_SL_MAC_LogicalChannelConfig_Type	opt	mandatory for initial configuration; omit means "keep as it is"
TestMode	Null_Type	opt	FFS

D.11.2.4 NR_SL_Security

NR_SL_PDCP_ActTime_Type

TTCN-3 Union Type		
Name	NR_SL_PDCP_ActTime_Type	
Comment		
None	Null_Type	No Activation time; to be used if Null Cipherng is applied
SQN	NR_PdcpSQN_Type	PDCP sequence number

NR_SL_SecurityActTime_Type

TTCN-3 Record Type			
Name	NR_SL_SecurityActTime_Type		
Comment			
RadioBearerId	NR_SL_RadioBearerId_Type		
Tx	NR_SL_PDCP_ActTime_Type		
Rx	NR_SL_PDCP_ActTime_Type		

NR_SL_SecurityActTimeList_Type

TTCN-3 Record of Type	
Name	NR_SL_SecurityActTimeList_Type
Comment	
record of NR_SL_SecurityActTime_Type	

NR_SL_IntegrityProtAlgorithm

TTCN-3 Enumerated Type	
Name	NR_SL_IntegrityProtAlgorithm
Comment	Defined in TS 24.587 cl. 8.4.18 s15G_IA0 is applied
s15G_IA0	
s128_5G_IA1	
s128_5G_IA2	
s128_5G_IA3	
s15G_IA4	
s15G_IA5	
s15G_IA6	
s15G_IA7	

NR_SL_IntegrityInfo_Type

TTCN-3 Record Type			
Name	NR_SL_IntegrityInfo_Type		
Comment	for initial configuration activation time is not needed for integrity protection as all messages in Tx and Rx after security activation are integrity protected; this means this ASP is invoked before transmission of Direct link security mode command; if there is a integrity violation in Rx SS shall set the IndicationStatus in the common ASP part to flag the integrity error (IndicationStatus.Error.Integrity.Pdcp := true); integrity to be provided for each SL-SRB and SL-DRB as per core spec Null integrity algorithm is applied and therefore no keys are provided to NR-SS-UE		
Algorithm	NR_SL_IntegrityProtAlgorithm		Integrity Algorithm being defined in TS 24.587
ActTimeList	NR_SL_SecurityActTimeList_Type	opt	omit for initial configuration (i.e. all SL-SRBs and SL-DRBs to be integrity protected immediately)

NR_SL_CipheringAlgorithmtypes

TTCN-3 Enumerated Type	
Name	NR_SL_CipheringAlgorithmtypes
Comment	Defined in TS 24.587 cl. 8.4.18 s15G_EA0 is applied
s15G_EA0	
s1128_5G_EA1	
s1128_5G_EA2	
s1128_5G_EA3	
s15G_EA4	
s15G_EA5	
s15G_EA6	
s15G_EA7	

NR_SL_CipheringInfo_Type

TTCN-3 Record Type	
Name	NR_SL_CipheringInfo_Type
Comment	Null integrity algorithm is applied and therefore no keys are provided to NR-SS-UE
Algorithm	NR_SL_CipheringAlgorithmtypes Ciphering Algorithm being defined in TS 24.587
ActTimeList	NR_SL_SecurityActTimeList_Type

NR_SL_SecStartRestart_Type

TTCN-3 Record Type	
Name	NR_SL_SecStartRestart_Type
Comment	
Integrity	NR_SL_IntegrityInfo_Type opt optional to allow separated activation of integrity and ciphering; omit: keep as it is
Ciphering	NR_SL_CipheringInfo_Type opt optional to allow separated activation of integrity and ciphering; omit: keep as it is

NR_SL_Security_Type

TTCN-3 Union Type	
Name	NR_SL_Security_Type
Comment	Security mode command procedure (TS 25.587, clause 6.1.2.7) - Applied for unicast only
StartRestart	NR_SL_SecStartRestart_Type information to start/restart security protection in the PDCP TimingInfo : 'Now' (in general) NOTE: "activation time" may be specified in the primitive based on PDCP SN
Release	Null_Type to release security protection in the PDCP (if any; if there is no security the NR-SS-UE does not need to do anything) TimingInfo : 'Now' (in general) NOTE: "activation time"

D.11.2.5 NR_SL_PDCP_Count

NR_SL_PdcpCountInfo_Type

TTCN-3 Record Type			
Name	NR_SL_PdcpCountInfo_Type		
Comment			
RadioBearerId	NR_SL_RadioBearerId_Type		
Tx	NR_PdcpCount_Type	opt	omit: keep as it is
Rx	NR_PdcpCount_Type	opt	omit: keep as it is

NR_SL_PdcpCountInfoList_Type

TTCN-3 Record of Type	
Name	NR_SL_PdcpCountInfoList_Type
Comment	
record of NR_SL_PdcpCountInfo_Type	

NR_SL_PdcpCountGetReq_Type

TTCN-3 Union Type		
Name	NR_SL_PdcpCountGetReq_Type	
Comment		
AllSL_RB	Null_Type	return COUNT values for all SL-RBs being configured
SingleRB	NR_SL_RadioBearerId_Type	

NR_SL_PDCP_CountReq_Type

TTCN-3 Union Type		
Name	NR_SL_PDCP_CountReq_Type	
Comment		
Get	NR_SL_PdcpCountGetReq_Type	Request PDCP count for one or all SL-RBs being configured at the PDCP TimingInfo: 'Now'
Set	NR_SL_PdcpCountInfoList_Type	Set PDCP count for one or all SL-RBs being configured at the PDCP; list for RBs which's COUNT shall be manipulated TimingInfo: 'Now' (in general)

NR_SL_PDCP_CountCnf_Type

TTCN-3 Union Type		
Name	NR_SL_PDCP_CountCnf_Type	
Comment		
Get	NR_SL_PdcpCountInfoList_Type	SL-RBs in ascending order; SL-SRBs first
Set	Null_Type	

D.11.2.6 NR_SL_SystemIndication

NR_SL_SyncRefReporting_Type

TTCN-3 Union Type	
Name	NR_SL_SyncRefReporting_Type
Comment	<p>Start is triggered in NR-SS-UE when</p> <ul style="list-style-type: none"> - the first S-SS associated with a MasterInformationBlockSidelink is received in the same subframe by NR-SS-UE since enabling of reporting - the previous indication was 'stop' or 'spurious' and an S-SS associated with a MasterInformationBlockSidelink is received by SS-UE <p>Stop is triggered in NR-SS-UE when</p> <ul style="list-style-type: none"> - no S-SS/MasterInformationBlockSidelink is transmitted in the period - the previous indication was 'start' or 'spurious' and no S-SS/MasterInformationBlockSidelink is transmitted in the period <p>Spurious is triggered in NR-SS-UE when</p> <ul style="list-style-type: none"> - the first S-SS is received without MasterInformationBlockSidelink or MasterInformationBlockSidelink is received without S-SS since enabling of SLSS reporting - the previous indication was 'start' or 'stop' and S-SS is received without MasterInformationBlockSidelink or MasterInformationBlockSidelink is received without S-SS
SyncRef_Start	NR_SL_SyncRefParamInd_Type
SyncRef_Stop	Null_Type
SyncRef_Spurious	Null_Type

NR_SL_SyncRefParamInd_Type

TTCN-3 Record Type	
Name	NR_SL_SyncRefParamInd_Type
Comment	
SL_SSId_Value	SL_SSId_Type
MasterInformationBlockSidelink	MasterInformationBlockSidelink

NR_SL_PSSCH_SciReporting_Type

TTCN-3 Union Type	
Name	NR_SL_PSSCH_SciReporting_Type
Comment	
SciFormat2A	NR_SL_SciFormat2A_Reporting_Type Acc to TS 38.212 cl 8.4.1.1 SCI format 2-A
SciFormat2B	NR_SL_SciFormat2B_Reporting_Type Acc to TS 38.212 cl 8.4.1.2 SCI format 2-B

NR_SL_SciFormat2A_Reporting_Type

TTCN-3 Record Type			
Name	NR_SL_SciFormat2A_Reporting_Type		
Comment	Acc to TS 38.212 cl 8.4.1.1 SCI format 2-A		
HarqProcessNumber	integer		
NewDataIndicator	integer		
RedundancyVersion	integer		
SourceID	integer		
DestinationID	integer		
HarqFeedback	integer		
CastTypeIndicator	integer		
CSI_Request	integer		

NR_SL_SciFormat2B_Reporting_Type

TTCN-3 Record Type			
Name	NR_SL_SciFormat2B_Reporting_Type		
Comment	Ac to TS 38.212 clause 8.4.1.2 SCI format 2-B		
HarqProcessNumber	integer		
NewDataIndicator	integer		
RedundancyVersion	integer		
SourceID	integer		
DestinationID	integer		
HarqFeedback	integer		
ZoneID	integer		
CommunicationRangeRequirement	integer		

D.11.2.7 NR_SL_SCI_Trigger

NR_SL_SCI_Trigger_Type

TTCN-3 Record Type			
Name	NR_SL_SCI_Trigger_Type		
Comment			
Layer2Ids	NR_SL_Layer2Ids_Type		
SL_BWP_Id	BWP_Id		
SL_PSCCH_SciTrigger	NR_SL_PSCCH_Sci_Tx_Type		
SL_PSSCH_SciTrigger	NR_SL_PSSCH_Sci_Tx_Type		
CSI_RS_Signal	boolean		when set to true the CSI-RS signal shall be transmitted by NR-SS-UE using NR_SL_TxPoolConfig_Type.SL_CSI_RS

D.11.3 NR_Sidelink_System_Interface

NR_SL_SYSTEM_CTRL_REQ

TTCN-3 Record Type	
Name	NR_SL_SYSTEM_CTRL_REQ
Comment	ASP to request/control NR Sidelink system configuration
Common	NR_SL_ReqAspCommonPart_Type Unless specified otherwise for a particular primitive, the following applies: SS_UE_Id: identifier of the NR-SS-UE RoutingInfo : 'None' TimingInfo : 'Now' or specific activation time, depends on respective primitive ControllInfo : CnfFlag: depends on TimingInfo; in general 'false' when specific activation time is used, 'true' for 'Now' FollowOnFlag 'false' - not applicable for NR-SS-UE
Request	NR_SL_SystemRequest_Type - NR_SS_UE_Config TimingInfo: depends on the request - EnquireTiming TimingInfo: 'now'

NR_SL_SYSTEM_CTRL_CNF

TTCN-3 Record Type	
Name	NR_SL_SYSTEM_CTRL_CNF
Comment	ASP to confirm a Sidelink system configuration request
Common	NR_SL_CnfAspCommonPart_Type TimingInfo is ignored by TTCN (apart from EnquireTiming): SS may set TimingInfo to "None" - EnquireTiming TimingInfo InCoverage: DFN/Subframe/Slot
Confirm	NR_SL_SystemConfirm_Type

NR_SL_SYSTEM_IND

TTCN-3 Record Type	
Name	NR_SL_SYSTEM_IND
Comment	ASP to report errors or system indications
Common	NR_SL_IndAspCommonPart_Type The SS shall provide TimingInfo (SFN + subframe number) depending on the respective indication:
Indication	NR_SL_SystemIndication_Type - Error TimingInfo: related to the error (if available) - SyncRefReporting TimingInfo: SFN/Subframe/Slot or DFN/DirectSubframe/Slot related to the S-SS/MasterInformationBlockSidelink received - PSSCH_SciReporting TimingInfo: SFN/Subframe/Slot or DFN/DirectSubframe/Slot related to the received PSSCH SCI - MAC_CE TimingInfo: SFN/Subframe/Slot or DFN/DirectSubframe/Slot related to the received MAC_CE

NR_SL_SYSTEM_PORT

TTCN-3 Port Type	
Name	NR_SL_SYSTEM_PORT
Comment	NR Sidelink UE PTC: Port for system configuration
out	NR_SL_SYSTEM_CTRL_REQ
in	NR_SL_SYSTEM_CTRL_CNF

NR_SL_SYSIND_PORT

TTCN-3 Port Type	
Name	NR_SL_SYSIND_PORT
Comment	NR Sidelink UE PTC: Port for system indications
in	NR_SL_SYSTEM_IND

D.11.4 NR_Sidelink_Data

NR_SL_U_PlaneTx_Type

TTCN-3 Record Type	
Name	NR_SL_U_PlaneTx_Type
Comment	NOTE: formal type definition to allow later enhancements
SlotDataList	NR_SL_DRB_DataPerSlotList_Tx_Type

NR_SL_DRB_DataPerSlotList_Tx_Type

TTCN-3 Record of Type	
Name	NR_SL_DRB_DataPerSlotList_Tx_Type
Comment	list of PC5 user plane data to be sent in slots given by the SlotOffset in the single elements of the list; Timing: the start time for the whole sequence is given by the timing info of the ASP (common information); the timing for the respective data pdus is given by the SlotOffset relative to the common timing info; design consideration: repetitions of this sequence are not foreseen (in which case the slot offset could not be related to the timing info of the ASP)
	record of NR_SL_DRB_DataPerSlotList_Tx_Type

NR_SL_DRB_DataPerSlot_Tx_Type

TTCN-3 Record Type	
Name	NR_SL_DRB_DataPerSlot_Tx_Type
Comment	common definition for one or several PDUs/SDUs; in NR the DL data is sent in the slot given by the slot offset
SlotOffset	integer NR: Slot offset relative to the absolute timing information given in the common part of the ASP; NOTE: if a PDCP PDU or SDU takes more than one slot, SlotOffset specifies the first slot (TTI)
HarqProcess	NR_HarqProcessAssignment_Type opt HARQ process to be used: specific value or automatically assigned by SS; in automatic mode SS chooses HARQ process out of the set configured by SciFormat2A_Type.HarqProcessConfig
PduSduList	NR_SidelinkDataList_Type list of PDUs/SDUs to be sent in one slot (TTI)

NR_SidelinkDataList_Type

TTCN-3 Union Type	
Name	NR_SidelinkDataList_Type
Comment	
SdapSdu	SDAP_SDUList_Type NR-SS-UE SS configuration: RLC AM/UM mode, PDCP normal mode (automatic handling of PDCP header), automatic handling of SDAP header

NR_SL_U_PlaneRx_Type

TTCN-3 Record Type	
Name	NR_SL_U_PlaneRx_Type
Comment	NOTE: formal type definition to allow later enhancements
SlotDataList	NR_SidelinkDataList_Type It is currently FFS if SCI 1A/2A or 2B should be also reported

NR_SL_MAC_ControlElement_Type

TTCN-3 Union Type	
Name	NR_SL_MAC_ControlElement_Type
Comment	
SidelinkCSI_Reporting	NR_SL_MAC_CE_SidelinkCSI_Reporting_Type TS 38.321 clause 6.1.3.35

NR_SL_MAC_CE_SidelinkCSI_Reporting_Type

TTCN-3 Record Type	
Name	NR_SL_MAC_CE_SidelinkCSI_Reporting_Type
Comment	TS 38.321 clause 6.1.3.35
RI	B1_Type
CQI	B4_Type
Reserved	B3_Type

NR_SL_DATA_REQ

TTCN-3 Record Type	
Name	NR_SL_DATA_REQ
Comment	Common ASP to send PDUs on PC5 channels SL-DCH
Common	NR_SL_ReqAspCommonPart_Type Unless specified otherwise for a particular primitive, the following applies: SS_UE_Id: identifier of the NR-SS-UE RoutingInfo: SL-SRB or SL-DRB or SL-QosFlow TimingInfo: 'Now' or specific activation time, depends on respective primitive ControlInfo: CnfFlag:=false; FollowOnFlag:=false
U_Plane	NR_SL_U_PlaneTx_Type

NR_SL_DATA_IND

TTCN-3 Record Type	
Name	NR_SL_DATA_IND
Comment	Common ASP to receive PDUs from PC5 channels SL-DCH
Common	NR_SL_IndAspCommonPart_Type SS_UE_Id: identifier of the SL UE RoutingInfo: SL-SRB or SL-DRB or SL-QosFlow TimingInfo: SFN/Subframe or DFN/DirectSubframe when message has been received
U_Plane	NR_SL_U_PlaneRx_Type

NR_SL_DRB_PORT

TTCN-3 Port Type	
Name	NR_SL_DRB_PORT
Comment	
out	NR_SL_DATA_REQ
in	NR_SL_DATA_IND

D.11.5 NR_Sidelink_SRBs

ASP Definitions to send/receive peer-to-peer messages on SL-SRBs

NR_PC5_RRC_Message_Type

TTCN-3 Union Type	
Name	NR_PC5_RRC_Message_Type
Comment	PC5-RRC PDU on SCCH
Scch	SCCH_Message

NR_SRB_Request_Type

TTCN-3 Union Type		
Name	NR_SRB_Request_Type	
Comment		
PC5_S	NG_V2X_Message_Type	PC5-S message to be sent to UE on SL-SRB0/1/2
PC5_RRC	NR_PC5_RRC_Message_Type	PC5-RRC message to be sent on SL-SRB3

NR_SRB_Indication_Type

TTCN-3 Union Type		
Name	NR_SRB_Indication_Type	
Comment		
PC5_S	NG_V2X_Message_Type	PC5-S message received from UE on SL-SRB0/1/2
PC5_RRC	NR_PC5_RRC_Message_Type	PC5-RRC message received from UE on SL-SRB3

NR_SL_SRB_COMMON_REQ

TTCN-3 Record Type	
Name	NR_SL_SRB_COMMON_REQ
Comment	common ASP to send PDUs to SL_SRB0, SL_SRB1, SL_SRB2, SL_SRB3
Common	NR_SL_ReqAspCommonPart_Type SS_UE_Id: identifier of the NR-SS-UE RoutingInfo : SL_SRB0, SL_SRB1, SL_SRB2, SL_SRB3 TimingInfo : Now in normal cases; TimingInfo can be set to specific activation time in which the Sidelink message shall be sent out (in this case and if the PDU is too long to be sent in one slot the TimingInfo corresponds to the first slot) ControllInfo Cnfflag=false; FollowOnFlag=false;
Signalling	NR_SRB_Request_Type

NR_SL_SRB_COMMON_IND

TTCN-3 Record Type	
Name	NR_SL_SRB_COMMON_IND
Comment	common ASP to receive PDUs from SL_SRB0, SL_SRB1, SL_SRB2, SL_SRB3
Common	NR_SL_IndAspCommonPart_Type SS_UE_Id: identifier of the NR-SS-UE RoutingInfo : SL_SRB0, SL_SRB1, SL_SRB2, SL_SRB3 TimingInfo : time when message has been received
Signalling	NR_SRB_Indication_Type

NR_SL_SRB_PORT

TTCN-3 Port Type	
Name	NR_SL_SRB_PORT
Comment	NR SL PTC: Port for Sending/Receiving data on SL-SRBs
out	NR_SL_SRB_COMMON_REQ
in	NR_SL_SRB_COMMON_IND

D.12 SidelinkUE_Common_TypeDefs

SS_UE_Id_Type

TTCN-3 Enumerated Type	
Name	SS_UE_Id_Type
Comment	Simulated UE-ID
ss_UE_NonSpecific	Represents all Simulated UEs
ss_UE_Id1	
ss_UE_Id2	
ss_UE_Id3	

D.13 References to TTCN-3

References to TTCN-3		
NR_ASP_TypeDefs	NR_Defs/NR_ASP_TypeDefs.ttcn	Rev 33940
NR_ASP_DrbDefs	NR_Defs/NR_ASP_DrbDefs.ttcn	Rev 33327
NR_ASP_SrbDefs	NR_Defs/NR_ASP_SrbDefs.ttcn	Rev 32690
NR_CommonDefs	NR_Defs/NR_CommonDefs.ttcn	Rev 33602
IP_ASP_TypeDefs	IP_PTC/IP_ASP_TypeDefs.ttcn	Rev 32541
NR_PDCP_TypeDefs	Common4G5G/NR_PDCP_TypeDefs.ttcn	Rev 33965
SDAP_TypeDefs	Common4G5G/SDAP_TypeDefs.ttcn	Rev 29170
NR_ASP_VirtualNoiseDefs	NR_Defs/NR_ASP_VirtualNoiseDefs.ttcn	Rev 30633
CommonDefs	Common/CommonDefs.ttcn	Rev 32710
CommonAspDefs	Common/CommonAspDefs.ttcn	Rev 30678
NR_SideLink_ASP_TypeDefs	NR_Defs/NR_SideLink_ASP_TypeDefs.ttcn	Rev 33916
SidelinkUE_Common_TypeDefs	Common4G5G/SidelinkUE_Common_TypeDefs.ttcn	Rev 31810

Annex E (informative): Change history

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2017-08	R5#76	R5-174121	-	-	-	Introduction of TS 38.523-3.	0.0.1
2018-03	R5#78	R5-180678	-	-	-	Initial Test Model aspects	0.1.0
2018-04	R5#2-5G-NR	R5-182072	-	-	-	EN-DC: Addition of Test Model aspects	0.2.0
2018-05	R5#79	R5-183237	-	-	-	EN-DC: Test Model updates	1.0.0
2018-06	RAN#80	RP-181212	-	-	-	put under revision control as v15.0.0 with small editorial changes	15.0.0
2018-09	RAN#81	R5-184333	0002	-	F	Updates to Annex B	15.1.0
2018-09	RAN#81	R5-184696	0003	-	F	EN-DC Test Model: Addition of further aspects	15.1.0
2018-09	RAN#81	R5-185172	0001	2	F	EN-DC: Test Model updates	15.1.0
2018-09	RAN#81	R5s180525 / RP-181987	0005	-	F	Add updated ASP definitions to 38.523-3 (prose), Annex D	15.1.0
2018-12	RAN#82	R5-186727	0011	-	F	Default NR TBS Tables for SIG test cases	15.2.0
2018-12	RAN#82	R5-186729	0013	-	F	EN-DC: Misc. Test Model updates	15.2.0
2018-12	RAN#82	R5-188105	0010	1	F	EN-DC test model handling of different types of bearers	15.2.0
2018-12	RAN#82	R5-188106	0012	1	F	SA Option2: Initial Test Model aspects	15.2.0
2018-12	RAN#82	R5s180636/ RP-182298	0014	-	F	Add updated ASP definitions to 38.523-3 (prose), Annex D	15.2.0
2019-03	RAN#83	R5-191204	0028	-	F	Common aspects: Test Model updates	15.3.0
2019-03	RAN#83	R5-191206	0030	-	F	EN-DC: Test Model updates	15.3.0
2019-03	RAN#83	R5-192812	0029	1	F	NR/5GC: Test Model updates	15.3.0
2019-03	RAN#83	R5-192858	0031	2	F	Common aspects: Updates to NR TBS handling	15.3.0
2019-03	RAN#83	R5s190019	0022	-	B	Addition of EN-DC RRC test case 8.2.3.1.1 in FR1	15.3.0
2019-03	RAN#83	R5s190024	0023	-	B	Addition of EN-DC RRC test case 8.2.5.2.1 in FR2 path	15.3.0
2019-03	RAN#83	R5s190027	0024	-	B	Addition of EN-DC RRC test case 8.2.5.4.1 in FR1	15.3.0
2019-03	RAN#83	R5s190029	0025	-	B	Addition of EN-DC RRC test case 8.2.5.2.1 in FR1	15.3.0
2019-03	RAN#83	R5s190033	0026	-	F	Rel-15 Dec'18 partial baseline upgrade for 5GS TTCN-3 Test Suites	15.3.0
2019-03	RAN#83	R5s190051	0027	-	F	Corrections for Initialisation of NR ENDC component	15.3.0
2019-03	RAN#83	R5s190060	0032	-	B	Addition of EN-DC RRC test case 8.2.3.5.1 in FR1 path	15.3.0
2019-03	RAN#83	R5s190062	0033	-	B	Addition of EN-DC RRC test case 8.2.3.4.1 in FR1 path	15.3.0
2019-03	RAN#83	R5s190064	0034	-	F	Common Corrections to ENDC testcases	15.3.0
2019-03	RAN#83	R5s190065	0035	-	F	correction to ENDC test case 10.2.1.2	15.3.0
2019-03	RAN#83	R5s190067	0037	-	B	Addition of EN-DC RRC test case 8.2.3.12.1 in FR1 path	15.3.0
2019-03	RAN#83	R5s190069	0038	-	F	Correction to ENDC RRC testcase 8.2.3.1.1	15.3.0
2019-03	RAN#83	R5s190086	0015	1	B	Addition of EN-DC NAS test case 10.2.1.2	15.3.0
2019-03	RAN#83	R5s190087	0016	1	B	Addition of EN-DC NAS test case 10.2.1.1	15.3.0
2019-03	RAN#83	R5s190088	0017	1	B	Addition of EN-DC RRC test case 8.2.5.4.1 in FR2 path	15.3.0
2019-03	RAN#83	R5s190124 / RP-190106	0054	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	15.3.0
2019-06	RAN#84	R5-193993	0095	-	F	NR: TBS updates	15.4.0
2019-06	RAN#84	R5-193994	0096	-	F	NR: Default UL Grants	15.4.0
2019-06	RAN#84	R5-195240	0097	1	F	Intra-NR mobility in RRC_CONNECTED	15.4.0
2019-06	RAN#84	R5-195241	0098	1	F	NR/5GC: Test Model updates	15.4.0
2019-06	RAN#84	R5-195373	0103	1	F	Handling of signalled absolute threshold values for OTA	15.4.0
2019-06	RAN#84	R5s190150	0060	-	F	NR/5GC: Re-verification of 5GC NAS test case 9.1.6.1.1	15.4.0
2019-06	RAN#84	R5s190155	0061	-	B	Addition of EN-DC RRC test case 8.2.3.6.1 in FR1 path	15.4.0
2019-06	RAN#84	R5s190157	0062	-	B	Addition of EN-DC RRC test case 8.2.3.7.1 in FR1 path	15.4.0
2019-06	RAN#84	R5s190161	0063	-	B	Addition of EN-DC RRC test case 8.2.2.9.1 in FR1 path	15.4.0
2019-06	RAN#84	R5s190163	0064	-	B	Addition of EN-DC RLC test case 7.1.2.2.1 in FR1	15.4.0
2019-06	RAN#84	R5s190165	0065	-	B	Addition of EN-DC RLC test case 7.1.2.2.2 in FR1	15.4.0
2019-06	RAN#84	R5s190168	0066	-	F	Correction for EN-DC test cases	15.4.0
2019-06	RAN#84	R5s190169	0067	-	B	Addition of EN-DC RRC test case 8.2.3.8.1 in FR1 path	15.4.0
2019-06	RAN#84	R5s190177	0068	-	F	Correction of EN-DC RRC test case 8.2.5.1.1	15.4.0
2019-06	RAN#84	R5s190178	0069	-	F	Correction to EN-DC RRC test cases 8.2.3.1.1 and 8.2.3.12.1	15.4.0
2019-06	RAN#84	R5s190179	0070	-	B	Addition of EN-DC RRC test case 8.2.5.3.1 in FR1	15.4.0
2019-06	RAN#84	R5s190181	0071	-	B	Addition of EN-DC RRC test case 8.2.5.3.1 in FR2	15.4.0
2019-06	RAN#84	R5s190188	0072	-	F	Correction to EN-DC RRC test cases 8.2.2.4.1 and 8.2.2.5.1	15.4.0
2019-06	RAN#84	R5s190192	0073	-	B	Addition of EN-DC RRC test cases 8.2.1.1.1 in FR1 path	15.4.0
2019-06	RAN#84	R5s190194	0074	-	B	Addition of EN-DC RRC test case 8.2.1.1.1 in FR2 path	15.4.0
2019-06	RAN#84	R5s190196	0075	-	B	Addition of EN-DC RRC test case 8.2.2.9.1 in FR2 path	15.4.0
2019-06	RAN#84	R5s190198	0076	-	B	Addition of NR5GC RRC test case 8.1.3.1.1 in FR1 path	15.4.0
2019-06	RAN#84	R5s190200	0077	-	F	Correction to EN-DC RRC test cases 8.2.3.4.1 and 8.2.3.5.1	15.4.0
2019-06	RAN#84	R5s190205	0079	-	B	NR5GC : Addition of 5GMM test case 9.1.2.1	15.4.0
2019-06	RAN#84	R5s190207	0080	-	B	NR5GC : Addition of 5GMM test case 9.1.5.2.2	15.4.0
2019-06	RAN#84	R5s190209	0081	-	B	NR5GC FR1 : Addition of RRC test case 8.1.1.2.1	15.4.0
2019-06	RAN#84	R5s190214	0082	-	B	NR5GC FR1 : Addition of RRC test case 8.1.1.1.1	15.4.0
2019-06	RAN#84	R5s190216	0083	-	B	Addition of EN-DC RLC test case 7.1.2.3.1 in FR1	15.4.0
2019-06	RAN#84	R5s190219	0084	-	F	Correction to cas_NR_DRB_COMMON_REQ_DataPerSlot	15.4.0
2019-06	RAN#84	R5s190223	0086	-	B	NR5GC : Addition of 5GMM test case 9.1.5.2.4	15.4.0

2019-06	RAN#84	R5s190236	0094	-	B	Addition of EN-DC RLC test case 7.1.2.2.2 in FR2	15.4.0
2019-06	RAN#84	R5s190244	0100	-	F	ENDC : Correction for RRC test case 8.2.5.2.1	15.4.0
2019-06	RAN#84	R5s190245	0101	-	F	Correction for EN-DC test cases	15.4.0
2019-06	RAN#84	R5s190260	0040	1	B	Addition of EN-DC RRC test case 8.2.5.1.1 in FR2	15.4.0
2019-06	RAN#84	R5s190261	0041	1	F	Correction for Rel-15 EN-DC ESM test case 10.2.1.1.	15.4.0
2019-06	RAN#84	R5s190268	0046	1	F	Correction to f_NR_ENDC_PreambleOnEUTRA	15.4.0
2019-06	RAN#84	R5s190269	0047	1	F	Correction to f_EUTRA38_ENDC_GetDRBIdOfMCG	15.4.0
2019-06	RAN#84	R5s190270	0048	1	F	Correction to cs_NR_CellConfigPhysicalLayerUplink	15.4.0
2019-06	RAN#84	R5s190271	0049	1	F	Correction to f_NR_SendRRCReconfigurationContentsToEUTRA	15.4.0
2019-06	RAN#84	R5s190272	0051	1	B	Addition of EN-DC RRC test case 8.2.2.4.1 in FR1 path	15.4.0
2019-06	RAN#84	R5s190273	0052	1	B	Addition of EN-DC RRC test case 8.2.2.5.1 in FR1 path	15.4.0
2019-06	RAN#84	R5s190274	0053	1	F	Correction to EN-DC TC 10.2.1.1	15.4.0
2019-06	RAN#84	R5s190278	0057	1	B	Addition of EN-DC RRC test case 8.2.2.5.1 in FR2 path	15.4.0
2019-06	RAN#84	R5s190279	0059	1	B	Addition of EN-DC RRC test case 8.2.5.1.1 in FR1	15.4.0
2019-06	RAN#84	R5s190296	0043	1	B	Addition of EN-DC RRC test case 8.2.3.3.1 in FR1 path	15.4.0
2019-06	RAN#84	R5s190297	0044	1	B	Addition of NR5GC NAS test case 9.1.6.1.1	15.4.0
2019-06	RAN#84	R5s190300	0055	1	F	Correction to EN-DC RRC testcase 8.2.3.1.1	15.4.0
2019-06	RAN#84	R5s190301	0056	1	B	Addition of EN-DC RRC test case 8.2.2.4.1 in FR2 path	15.4.0
2019-06	RAN#84	R5s190303	0058	1	F	Correction to checking of SINR reporting in Measurement Report in 5G EN-DC RRC test cases	15.4.0
2019-06	RAN#84	R5s190311	0050	1	F	Correction to EN-DC RRC test case 8.2.3.5.1	15.4.0
2019-06	RAN#84	R5s190309 / RP-190903	0121	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	15.4.0
2019-09	RAN#85	R5-195955	0297	-	F	EN-DC: Test Model updates	15.5.0
2019-09	RAN#85	R5-196754	0324	-	F	Corrections to Paging calculation in clause 7.3.4	15.5.0
2019-09	RAN#85	R5-197222	0295	1	F	Common aspects: Test Model updates	15.5.0
2019-09	RAN#85	R5-197223	0296	1	F	NR/5GC: Test Model updates	15.5.0
2019-09	RAN#85	R5s190400	0163	-	F	Correction to common ENDC TC preamble function	15.5.0
2019-09	RAN#85	R5s190401	0164	-	F	Corrections for RlcBearerRouting in EN-DC test cases	15.5.0
2019-09	RAN#85	R5s190408	0166	-	F	Correction to NR RLC test case 7.1.2.3.2	15.5.0
2019-09	RAN#85	R5s190410	0167	-	F	Correction to ENDC NAS test case 10.2.1.1	15.5.0
2019-09	RAN#85	R5s190411	0168	-	F	Correction to IP address check in Loopback Mode for ENDC TCs	15.5.0
2019-09	RAN#85	R5s190412	0169	-	F	Correction to ENDC testcase 8.2.5.3.1	15.5.0
2019-09	RAN#85	R5s190413	0170	-	F	Correction to ENDC testcase 8.2.5.1.1	15.5.0
2019-09	RAN#85	R5s190414	0171	-	F	Correction to ENDC testcase 8.2.2.4.1	15.5.0
2019-09	RAN#85	R5s190416	0172	-	F	Correction to EN-DC test case 8.2.3.8.1	15.5.0
2019-09	RAN#85	R5s190419	0174	-	B	EN-DC FR1 : Addition of NR RRC test case 8.2.3.15.1	15.5.0
2019-09	RAN#85	R5s190421	0175	-	F	Correction to f_Get_NG_SecurityModeCmdMsg	15.5.0
2019-09	RAN#85	R5s190424	0176	-	F	Correction to ENDC testcase 7.1.3.5.4	15.5.0
2019-09	RAN#85	R5s190425	0177	-	F	Correction to fl_NR_InitialiseSiScheduling	15.5.0
2019-09	RAN#85	R5s190426	0178	-	F	Correction to NR5GC test case 8.1.3.1.1	15.5.0
2019-09	RAN#85	R5s190429	0181	-	F	Correction to ENDC Test case 7.1.2.3.2	15.5.0
2019-09	RAN#85	R5s190435	0186	-	F	Correction to NR5GC test case 9.1.2.1	15.5.0
2019-09	RAN#85	R5s190436	0187	-	F	Correction to function f_ContentOf_pc_nrBandX	15.5.0
2019-09	RAN#85	R5s190442	0189	-	F	Corrections for TTCN-3 timing functions for 5G NR	15.5.0
2019-09	RAN#85	R5s190445	0192	-	F	Correction to TTCN-3 encoding rules for 5G test cases	15.5.0
2019-09	RAN#85	R5s190446	0193	-	F	Correction for PHR-Config in 5G test cases	15.5.0
2019-09	RAN#85	R5s190451	0198	-	F	Correction to EN-DC RRC test case 8.2.1.1.1	15.5.0
2019-09	RAN#85	R5s190455	0202	-	F	Correction to f_NR_CellInfo_SetPRACH_ConfigurationIndex	15.5.0
2019-09	RAN#85	R5s190456	0203	-	B	ENDC FR2 : Addition of NR RLC test case 7.1.2.3.7	15.5.0
2019-09	RAN#85	R5s190464	0204	-	F	Correction for 5GSM PDU SESSION ESTABLISHMENT ACCEPT	15.5.0
2019-09	RAN#85	R5s190465	0205	-	F	Correction for common TTCN function f_IntegerList_Search()	15.5.0
2019-09	RAN#85	R5s190466	0206	-	F	Correction for 5GMM test case 9.1.6.1.1	15.5.0
2019-09	RAN#85	R5s190468	0208	-	F	Corrections for NAS template function f_Check_NG_PDUSSessionReleaseComplete	15.5.0
2019-09	RAN#85	R5s190470	0209	-	F	Correction to NAS typedefs QosFlowDescr and Qos_Rule	15.5.0
2019-09	RAN#85	R5s190471	0210	-	F	Corrections to NR-MRDC Capability check test case 8.2.1.1.1	15.5.0
2019-09	RAN#85	R5s190476	0213	-	B	Addition of EN-DC PDCP test case 7.1.3.2.1 in FR1	15.5.0
2019-09	RAN#85	R5s190478	0214	-	B	Addition of EN-DC PDCP test case 7.1.3.2.1 in FR2	15.5.0
2019-09	RAN#85	R5s190480	0215	-	B	Addition of EN-DC PDCP test case 7.1.3.2.2 in FR1	15.5.0
2019-09	RAN#85	R5s190482	0216	-	B	Addition of EN-DC PDCP test case 7.1.3.2.2 in FR2	15.5.0
2019-09	RAN#85	R5s190484	0217	-	B	Addition of EN-DC PDCP test case 7.1.3.2.3 in FR2	15.5.0
2019-09	RAN#85	R5s190488	0218	-	B	Addition of EN-DC PDCP test case 7.1.3.2.3 in FR1	15.5.0
2019-09	RAN#85	R5s190489	0219	-	B	Addition of EN-DC test case 7.1.3.1.2 in FR1	15.5.0
2019-09	RAN#85	R5s190491	0220	-	B	Addition of EN-DC test case 8.2.3.14.1 in FR1	15.5.0
2019-09	RAN#85	R5s190505	0224	-	F	Correction for NR RRC test case 8.1.1.1.1	15.5.0
2019-09	RAN#85	R5s190506	0225	-	B	Addition of EN-DC test case 7.1.2.3.8 in FR1	15.5.0
2019-09	RAN#85	R5s190508	0226	-	F	Correction to PIXITs px_NR_PrimaryBandDeltas and px_NR_SecondaryBandDeltas	15.5.0
2019-09	RAN#85	R5s190509	0227	-	B	Addition of EN-DC test case 7.1.1.1.1a in FR1	15.5.0
2019-09	RAN#85	R5s190511	0228	-	B	Addition of NR5GC test case 7.1.1.1.1a in FR1	15.5.0
2019-09	RAN#85	R5s190513	0229	-	B	Addition of NR5GC test case 7.1.2.3.8 in FR1	15.5.0

2019-09	RAN#85	R5s190528	0234	-	F	Correction to EN-DC test case 10.2.2.1	15.5.0
2019-09	RAN#85	R5s190529	0235	-	F	Correction for EN-DC RRC test case 8.2.2.9.1	15.5.0
2019-09	RAN#85	R5s190530	0236	-	F	Correction to band combination DC_(n)41AA	15.5.0
2019-09	RAN#85	R5s190537	0239	-	B	Addition of EN-DC test case 7.1.2.2.6 in FR1	15.5.0
2019-09	RAN#85	R5s190543	0242	-	F	Rel-15 Jun'19 partial baseline upgrade for 5GS TTCN-3 Test Suites	15.5.0
2019-09	RAN#85	R5s190550	0245	-	B	Addition of EN-DC RLC test case 7.1.2.3.8 in FR2	15.5.0
2019-09	RAN#85	R5s190554	0247	-	B	Addition of EN-DC PDCP test case 7.1.3.3.1 in FR1	15.5.0
2019-09	RAN#85	R5s190556	0248	-	B	Addition of EN-DC PDCP test case 7.1.3.3.1 in FR2	15.5.0
2019-09	RAN#85	R5s190558	0249	-	B	Addition of EN-DC PDCP test case 7.1.3.3.2 in FR1	15.5.0
2019-09	RAN#85	R5s190560	0250	-	B	Addition of EN-DC PDCP test case 7.1.3.3.2 in FR2	15.5.0
2019-09	RAN#85	R5s190562	0251	-	B	Addition of EN-DC PDCP test case 7.1.3.3.3 in FR1	15.5.0
2019-09	RAN#85	R5s190564	0252	-	B	Addition of EN-DC PDCP test case 7.1.3.3.3 in FR2	15.5.0
2019-09	RAN#85	R5s190586	0260	-	F	Correction to EN-DC RRC test case 8.2.3.4.1	15.5.0
2019-09	RAN#85	R5s190587	0261	-	B	EN-DC FR1: Addition of RRC test case 8.2.3.13.1	15.5.0
2019-09	RAN#85	R5s190590	0263	-	F	Correction to EN-DC test case 7.1.3.5.1	15.5.0
2019-09	RAN#85	R5s190593	0264	-	F	Correction to EN-DC RRC test case 8.2.3.3.1	15.5.0
2019-09	RAN#85	R5s190607	0274	-	F	Correction to common EN-DC function f_EUTRA38_ENDC_ReConfigAM_UM()	15.5.0
2019-09	RAN#85	R5s190608	0275	-	B	Addition of EN-DC RRC test case 8.2.3.1.1 in FR2	15.5.0
2019-09	RAN#85	R5s190610	0276	-	B	Addition of EN-DC RRC test case 8.2.3.3.1 in FR2	15.5.0
2019-09	RAN#85	R5s190612	0277	-	B	Addition of EN-DC RRC test case 8.2.3.5.1 in FR2	15.5.0
2019-09	RAN#85	R5s190614	0278	-	B	Addition of EN-DC RRC test case 8.2.3.6.1 in FR2	15.5.0
2019-09	RAN#85	R5s190620	0281	-	B	Addition of NR5GC test case 9.1.5.1.6 in FR1	15.5.0
2019-09	RAN#85	R5s190624	0283	-	B	Addition of NR5GC test case 9.1.5.2.9 in FR1	15.5.0
2019-09	RAN#85	R5s190626	0284	-	B	Addition of NR5GC test case 10.1.2.2 in FR1	15.5.0
2019-09	RAN#85	R5s190629	0286	-	B	Addition of NR5GC test case 10.1.6.1 in FR1	15.5.0
2019-09	RAN#85	R5s190635	0078	1	B	Addition of EN-DC PDCP test case 7.1.3.1.1 in FR1	15.5.0
2019-09	RAN#85	R5s190636	0085	1	B	Addition of EN-DC PDCP test case 7.1.3.5.1 in FR2	15.5.0
2019-09	RAN#85	R5s190637	0087	1	B	Addition of EN-DC PDCP test case 7.1.3.5.1 in FR1	15.5.0
2019-09	RAN#85	R5s190638	0088	1	B	Addition of EN-DC PDCP test case 7.1.3.5.4 in FR2	15.5.0
2019-09	RAN#85	R5s190640	0289		B	Addition of NR5GC test case 7.1.2.3.10 in FR1	15.5.0
2019-09	RAN#85	R5s190643	0091	1	B	Addition of EN-DC RLC test case 7.1.2.3.2 in FR2	15.5.0
2019-09	RAN#85	R5s190644	0093	1	B	Addition of EN-DC RLC test case 7.1.2.3.2 in FR1	15.5.0
2019-09	RAN#85	R5s190645	0103	2	B	Addition of EN-DC PDCP test case 7.1.3.5.2 in FR2	15.5.0
2019-09	RAN#85	R5s190647	0104	1	B	Addition of EN-DC PDCP test case 7.1.3.5.2 in FR1	15.5.0
2019-09	RAN#85	R5s190648	0106	2	B	Addition of NR test case 9.1.2.2 in FR1	15.5.0
2019-09	RAN#85	R5s190649	0107	1	F	ENDC : Correction to RLC TCs	15.5.0
2019-09	RAN#85	R5s190651	0109	1	F	Correction for IP packet handling for EN-DC test cases	15.5.0
2019-09	RAN#85	R5s190652	0110	1	F	Correction to fl_NR5GC_QosRulesLength	15.5.0
2019-09	RAN#85	R5s190653	0111	1	F	Correction to fl_NR_Common_Init	15.5.0
2019-09	RAN#85	R5s190654	0112	1	F	Correction to IP PTC for NR5GC test cases	15.5.0
2019-09	RAN#85	R5s190655	0113	1	F	Correction to SA security mode procedure	15.5.0
2019-09	RAN#85	R5s190656	0114	1	B	Addition of EN-DC RLC test case 7.1.2.3.6 in FR1	15.5.0
2019-09	RAN#85	R5s190657	0115	1	F	Correction to default value for PDU Session Establishment Request	15.5.0
2019-09	RAN#85	R5s190658	0116	1	F	Correction to Paging in NR5GC	15.5.0
2019-09	RAN#85	R5s190659	0118	1	B	ENDC FR1 : Addition of NR RLC test case 7.1.2.2.3	15.5.0
2019-09	RAN#85	R5s190661	0119	1	F	Correction to NR5GC Release function f_NR_RRCRelease_Common	15.5.0
2019-09	RAN#85	R5s190662	0120	1	B	Addition of NR5GC test case 9.1.6.2.1 in FR1	15.5.0
2019-09	RAN#85	R5s190663	0122	1	B	Addition of NR5GC RLC test case 7.1.2.2.1 in FR1	15.5.0
2019-09	RAN#85	R5s190664	0123	1	B	Addition of NR5GC RLC test case 7.1.2.2.2 in FR1	15.5.0
2019-09	RAN#85	R5s190666	0124	1	B	ENDC FR1 : Addition of NR RLC test case 7.1.2.2.4	15.5.0
2019-09	RAN#85	R5s190669	0292		B	Addition of NR5GC test case 8.1.5.1.1 in FR1	15.5.0
2019-09	RAN#85	R5s190675	0125	1	B	Addition of NR5GC test case 7.1.2.3.1 in FR1	15.5.0
2019-09	RAN#85	R5s190676	0126	1	B	Addition of NR5GC test case 7.1.2.2.3 in FR1	15.5.0
2019-09	RAN#85	R5s190677	0127	1	B	Addition of EN-DC Session Management test case 10.2.2.1	15.5.0
2019-09	RAN#85	R5s190678	0128	1	B	Addition of NR5GC test case 7.1.2.3.2 in FR1	15.5.0
2019-09	RAN#85	R5s190680	0129	1	F	Correction to EN-DC testcase 10.2.1.1	15.5.0
2019-09	RAN#85	R5s190681	0130	1	B	Addition of NR5GC test case 7.1.3.1.1 in FR1	15.5.0
2019-09	RAN#85	R5s190682	0131	1	B	Addition of NR5GC test case 7.1.3.5.1 in FR1	15.5.0
2019-09	RAN#85	R5s190683	0132	1	B	Addition of NR5GC test case 7.1.3.5.4 in FR1	15.5.0
2019-09	RAN#85	R5s190685	0136	1	F	Correction to ENDC RRC test case 8.2.1.1.1	15.5.0
2019-09	RAN#85	R5s190688	0141	1	B	Addition of NR5GC test case 7.1.3.1.2 in FR1	15.5.0
2019-09	RAN#85	R5s190689	0142	1	B	Addition of NR5GC test case 7.1.2.3.3 in FR1	15.5.0
2019-09	RAN#85	R5s190690	0147	1	F	Correction to generic function f_EUTRA_InitialRegistration_Step9_11	15.5.0
2019-09	RAN#85	R5s190691	0148	1	F	Correction to ENDC testcase 8.2.3.1.1	15.5.0
2019-09	RAN#85	R5s190692	0154	1	B	Addition of NR5GC test case 8.1.3.1.2 in FR1	15.5.0
2019-09	RAN#85	R5s190693	0155	1	B	Addition of NR5GC test case 7.1.3.3.1 in FR1	15.5.0
2019-09	RAN#85	R5s190694	0156	1	B	Addition of NR5GC test case 7.1.3.3.2 in FR1	15.5.0
2019-09	RAN#85	R5s190695	0157	1	B	Addition of NR5GC test case 7.1.3.3.3 in FR1	15.5.0

2019-09	RAN#85	R5s190696	0158	1	B	Addition of NR5GC test case 8.1.2.1.1 in FR1	15.5.0
2019-09	RAN#85	R5s190697	0159	1	B	Addition of NR5GC test case 6.1.2.3 in FR1	15.5.0
2019-09	RAN#85	R5s190700	0161	1	F	Correction to f_NG_Authentication_A4	15.5.0
2019-09	RAN#85	R5s190701	0089	1	B	Addition of EN-DC PDCP test case 7.1.3.5.4 in FR1	15.5.0
2019-09	RAN#85	R5s190702	0298	-	F	Corrections to EN-DC ESM test case 10.2.2.1	15.5.0
2019-09	RAN#85	R5s190703	0299	-	F	Correction to cs_NR_ReqAspCommonPart and cr_PDU_SessionType	15.5.0
2019-09	RAN#85	R5s190704	0300	-	F	Correction to f_Check_NG_PDUSessionEstablishmentReq	15.5.0
2019-09	RAN#85	R5s190705	0301	-	F	Correction to f_NR_UE_DeRegisterOnSwitchOff	15.5.0
2019-09	RAN#85	R5s190706	0302	-	F	Correction to f_NR5GC_RegistrationReject	15.5.0
2019-09	RAN#85	R5s190707	0303	-	F	Correction to NR5GC testcase 9.1.2.2	15.5.0
2019-09	RAN#85	R5s190717	0309	-	B	Addition of NR5GC test case 10.1.6.2 in FR1	15.5.0
2019-09	RAN#85	R5s190723	0311	-	B	Addition of EN-DC test case 7.1.1.2.1 in FR1	15.5.0
2019-09	RAN#85	R5s190725	0312	-	B	Addition of EN-DC test case 7.1.1.3.1 in FR1	15.5.0
2019-09	RAN#85	R5s190739	0318	-	B	Addition of NR5GC test case 8.1.1.3.1 in FR1	15.5.0
2019-09	RAN#85	R5s190751	0327	-	B	Addition of EN-DC test case 8.2.2.7.1 in FR1	15.5.0
2019-09	RAN#85	R5s190770	0338	-	F	Correction of NR5GC PDCP test case 7.1.3.5.1	15.5.0
2019-09	RAN#85	R5s190771	0339	-	F	Correction of NR5GC mobility management test case 9.1.5.2.4	15.5.0
2019-09	RAN#85	R5s190803	0134	1	B	Addition of EN-DC RLC test case 7.1.2.3.10 in FR2	15.5.0
2019-09	RAN#85	R5s190804	0135	1	B	Addition of EN-DC RLC test case 7.1.2.3.10 in FR1	15.5.0
2019-09	RAN#85	R5s190805	0140	1	B	Addition of NR5GC test case 6.1.2.1 in FR1	15.5.0
2019-09	RAN#85	R5s190806	0143	1	B	Addition of NR5GC test case 7.1.1.2.1 in FR1	15.5.0
2019-09	RAN#85	R5s190807	0144	1	B	Addition of NR5GC test case 7.1.1.3.1 in FR1	15.5.0
2019-09	RAN#85	R5s190808	0149	1	B	ENDC FR1: Addition of NR PDCP test case 7.1.3.4.2	15.5.0
2019-09	RAN#85	R5s190809	0150	1	B	ENDC FR2: Addition of NR PDCP test case 7.1.3.4.2	15.5.0
2019-09	RAN#85	R5s190810	0152	1	B	Addition of ENDC test case 7.1.2.3.9 in FR1	15.5.0
2019-09	RAN#85	R5s190820/ RP-191720	0356	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	15.5.0
2019-12	RAN#86	R5-198992	0459	1	F	Common aspects: Test Model updates	15.6.0
2019-12	RAN#86	R5-198993	0460	1	F	NR/5GC: Test Model updates	15.6.0
2019-12	RAN#86	R5-198994	0461	1	F	EN-DC: Test Model updates	15.6.0
2019-12	RAN#86	R5s190869	0384		F	Correction to NR MAC test case 7.1.1.3.2	15.6.0
2019-12	RAN#86	R5s190871	0386		F	Correction for ENDC test case 8.2.3.3.1	15.6.0
2019-12	RAN#86	R5s190872	0387		B	EN-DC FR1 : Addition of NR RLC test case 7.1.2.3.11	15.6.0
2019-12	RAN#86	R5s190874	0388		F	Corrections to NR5GC Idle Mode test case 6.1.2.1	15.6.0
2019-12	RAN#86	R5s190886	0389		F	Corrections to NR MAC test case 7.1.1.2.1	15.6.0
2019-12	RAN#86	R5s190887	0390		F	Corrections to NR MAC test case 7.1.1.3.5	15.6.0
2019-12	RAN#86	R5s190888	0391		F	Corrections to common funcion f_NRL2_ReconfigExistingAndAddNewDRBs()	15.6.0
2019-12	RAN#86	R5s190889	0392		F	Corrections to NR MAC test case 7.1.1.3.1	15.6.0
2019-12	RAN#86	R5s190890	0393		F	Corrections to NR RLC test case 7.1.2.3.9	15.6.0
2019-12	RAN#86	R5s190891	0394		F	Corrections to NR RLC test case 7.1.2.3.8	15.6.0
2019-12	RAN#86	R5s190893	0396		F	Corrections for NR RRC test case 8.1.1.4.2	15.6.0
2019-12	RAN#86	R5s190894	0397		F	Correction to NR RLC test case 7.1.2.3.7	15.6.0
2019-12	RAN#86	R5s190897	0400		F	Correct to NR measurement test case 8.1.3.1.1	15.6.0
2019-12	RAN#86	R5s190898	0401		F	Correction to NR PDCP test case 7.1.3.5.1	15.6.0
2019-12	RAN#86	R5s190899	0402		F	Correction to NR MAC test case 7.1.1.3.4	15.6.0
2019-12	RAN#86	R5s190900	0403		F	Correction to ENDC template cs_RadioBearer_Reconfig	15.6.0
2019-12	RAN#86	R5s190901	0404		F	Correction to ENDC test cases 7.1.2.3.1 and 7.1.2.3.2	15.6.0
2019-12	RAN#86	R5s190905	0407		F	Corrections to NR RLC test case 7.1.2.2.6	15.6.0
2019-12	RAN#86	R5s190906	0408		F	Corrections to NR RLC test case 7.1.2.3.5	15.6.0
2019-12	RAN#86	R5s190909	0411		F	Correction to EN-DC RRC test case 8.2.2.7.1	15.6.0
2019-12	RAN#86	R5s190910	0412		F	Correction for NR5GC cell intialiation function	15.6.0
2019-12	RAN#86	R5s190911	0413		F	Corrections to NR RLC test case 7.1.2.3.3	15.6.0
2019-12	RAN#86	R5s190914	0416		B	EN-DC FR2 : Addition of NR RLC test case 7.1.2.3.11	15.6.0
2019-12	RAN#86	R5s190916	0417		F	Corrections for EN-DC PDCP test case 7.1.3.4.2	15.6.0
2019-12	RAN#86	R5s190918	0419		F	Corrections for NR PDCP cipherring test cases 7.1.3.3.x	15.6.0
2019-12	RAN#86	R5s190919	0420		F	Correction to f_NR5GC_PDUSessionEstablishment	15.6.0
2019-12	RAN#86	R5s190920	0421		F	Correction to EN-DC ESM test case 10.2.2.1	15.6.0
2019-12	RAN#86	R5s190925	0424		B	EN-DC FR2 : Addition of EN-DC RRC test case 8.2.3.14.1	15.6.0
2019-12	RAN#86	R5s190927	0425		F	Corrections to NR RLC test cases 7.1.2.2.3 and 7.1.2.2.4	15.6.0
2019-12	RAN#86	R5s190928	0426		F	Correction to type record LADN_Ind	15.6.0
2019-12	RAN#86	R5s190929	0427		F	Correction to f_NR5GC_RRC_Idle_Steps5_9_AKA	15.6.0
2019-12	RAN#86	R5s190930	0428		F	Correction to NR5GC testcase 9.1.2.1	15.6.0
2019-12	RAN#86	R5s190931	0429		F	NR5GC FR1 : Re-verification of NR5GC RRC test case 8.1.1.2.1	15.6.0
2019-12	RAN#86	R5s190936	0434		F	Corrections to NR5GC RRC test case 8.1.2.1.1	15.6.0
2019-12	RAN#86	R5s190938	0435		B	Addition of NR5GC 5GMM test case 9.1.5.1.5 in FR1	15.6.0
2019-12	RAN#86	R5s190943	0436		F	Correction for EN-DC measurement template	15.6.0
2019-12	RAN#86	R5s190944	0438		B	NR5GC FR1 : Addition of 5GSM test case 10.1.2.1	15.6.0
2019-12	RAN#86	R5s190948	0440		B	NR5GC FR1 : Addition of SDAP test case 7.1.4.2	15.6.0
2019-12	RAN#86	R5s190953	0441		F	Correction to Kssb and offset parameters for n71	15.6.0

2019-12	RAN#86	R5s190954	0442		F	Correction to Kssb and offset parameters for n5	15.6.0
2019-12	RAN#86	R5s190957	0444		B	NR5GC FR1 : Addition of 5GMM test case 9.1.1.4	15.6.0
2019-12	RAN#86	R5s190959	0445		B	NR5GC FR1 : Addition of 5GMM test case 9.1.5.1.11	15.6.0
2019-12	RAN#86	R5s190961	0446		B	EN-DC FR2 : Addition of NR MAC test case 7.1.1.3.2	15.6.0
2019-12	RAN#86	R5s190966	0449		F	Correction for NR MAC test case 7.1.1.3.5	15.6.0
2019-12	RAN#86	R5s190968	0451		F	Correction for NR MAC test case 7.1.1.2.1	15.6.0
2019-12	RAN#86	R5s190972	0145	1	B	Addition of NR5GC test case 7.1.1.3.3 in FR1	15.6.0
2019-12	RAN#86	R5s190973	0151	1	B	Addition of NR5GC test case 7.1.1.3.4 in FR1	15.6.0
2019-12	RAN#86	R5s190974	0160	1	B	Addition of NR5GC test case 7.1.1.3.5 in FR1	15.6.0
2019-12	RAN#86	R5s190975	0222	1	B	Addition of EN-DC test case 7.1.1.3.3 in FR1	15.6.0
2019-12	RAN#86	R5s190976	0223	1	B	Addition of EN-DC test case 7.1.1.3.5 in FR1	15.6.0
2019-12	RAN#86	R5s190977	0232	1	B	Addition of EN-DC test case 7.1.1.3.6 in FR1	15.6.0
2019-12	RAN#86	R5s190978	0233	1	B	Addition of NR5GC test case 7.1.1.3.6 in FR1	15.6.0
2019-12	RAN#86	R5s190979	0240	1	B	ENDC FR2: Addition of RLC AM test case 7.1.2.3.9	15.6.0
2019-12	RAN#86	R5s190980	0241	1	F	EN-DC: Indication of initial RACH on NR cell	15.6.0
2019-12	RAN#86	R5s190981	0246	1	B	EN-DC FR1 : Addition of MAC test case 7.1.1.3.4	15.6.0
2019-12	RAN#86	R5s190982	0254	1	B	EN-DC FR2 : Addition of RLC test case 7.1.2.2.4	15.6.0
2019-12	RAN#86	R5s190984	0453		F	Correction to function f_NR_UE_DeRegisterOnSwitchOff	15.6.0
2019-12	RAN#86	R5s190986	0454		F	Correction for NR MAC test case 7.1.1.3.1	15.6.0
2019-12	RAN#86	R5s190987	0455		F	Corrections to 5GSM test case 10.1.5.1	15.6.0
2019-12	RAN#86	R5s190988	0258	1	B	Addition of EN-DC RLC test cases 7.1.2.3.6 in FR2	15.6.0
2019-12	RAN#86	R5s190989	0272	1	B	EN-DC FR2: Addition of MAC test case 7.1.1.3.4	15.6.0
2019-12	RAN#86	R5s190990	0273	1	B	Addition of NR5GC test case 7.1.2.3.9 in FR1	15.6.0
2019-12	RAN#86	R5s190991	0456		B	EN-DC FR2 : Addition of NR RLC test case 7.1.2.2.1	15.6.0
2019-12	RAN#86	R5s190993	0457		B	EN-DC FR2 : Addition of NR PDCP test case 7.1.3.1.1	15.6.0
2019-12	RAN#86	R5s190995	0279	1	B	EN-DC FR2 : Addition of RRC test case 8.2.3.4.1	15.6.0
2019-12	RAN#86	R5s190997	0458		B	EN-DC FR2 : Addition of NR RLC test case 7.1.2.3.1	15.6.0
2019-12	RAN#86	R5s191001	0280	1	B	EN-DC FR2 : Addition of RRC test case 8.2.3.7.1	15.6.0
2019-12	RAN#86	R5s191002	0288	1	B	Addition of NR test case 7.1.2.2.6 in FR1	15.6.0
2019-12	RAN#86	R5s191003	0290	1	B	Addition of NR test case 8.1.1.1.2 in FR1	15.6.0
2019-12	RAN#86	R5s191004	0291	1	B	Addition of NR5GC test case 8.1.1.4.2 in FR1	15.6.0
2019-12	RAN#86	R5s191005	0294	1	B	Addition of NR5GC test case 10.1.5.1 in FR1	15.6.0
2019-12	RAN#86	R5s191006	0137	2	B	Addition of NR5GC test case 7.1.1.3.2 in FR1	15.6.0
2019-12	RAN#86	R5s191007	0305	1	B	NR5GC FR1 : Addition of RLC test case 7.1.2.2.4	15.6.0
2019-12	RAN#86	R5s191008	0308	1	B	NR5GC FR1 : Addition of RLC test case 7.1.2.3.6	15.6.0
2019-12	RAN#86	R5s191009	0310	1	B	Addition of NR5GC test case 9.1.3.1 in FR1	15.6.0
2019-12	RAN#86	R5s191011	0313	1	B	Addition of EN-DC test case 7.1.2.3.3 in FR1	15.6.0
2019-12	RAN#86	R5s191012	0314	1	B	Addition of NR5GC test case 7.1.2.3.5 in FR1	15.6.0
2019-12	RAN#86	R5s191013	0320	1	B	EN-DC FR2 : Addition of NR MAC test case 7.1.1.3.6	15.6.0
2019-12	RAN#86	R5s191014	0328	1	B	EN-DC FR2 : Addition of MAC test case 7.1.1.3.5	15.6.0
2019-12	RAN#86	R5s191015	0329	1	F	Correction to 5GSM test case 10.1.5.1	15.6.0
2019-12	RAN#86	R5s191016	0333	1	B	Addition of NR5GC test case 9.1.5.2.8 in FR1	15.6.0
2019-12	RAN#86	R5s191017	0334	1	B	EN-DC FR2 : Addition of NR MAC test case 7.1.1.1.1a	15.6.0
2019-12	RAN#86	R5s191018	0336	1	B	Addition of NR5GC test case 7.1.1.1.6 in FR1	15.6.0
2019-12	RAN#86	R5s191019	0337	1	B	Addition of NR5GC test case 7.1.1.3.7 in FR1	15.6.0
2019-12	RAN#86	R5s191020	0340	1	B	Addition of EN-DC test case 7.1.2.3.5 in FR1	15.6.0
2019-12	RAN#86	R5s191021	0341	1	B	Addition of NR5GC test case 7.1.1.2.3 in FR1	15.6.0
2019-12	RAN#86	R5s191022	0342	1	B	Addition of NR5GC test case 8.1.3.1.5 in FR1	15.6.0
2019-12	RAN#86	R5s191023	0343	1	B	Addition of NR5GC test case 8.1.3.1.8 in FR1	15.6.0
2019-12	RAN#86	R5s191025	0345	1	B	EN-DC FR1 : Addition of NR RLC test case 7.1.1.3.2	15.6.0
2019-12	RAN#86	R5s191026	0346	1	B	Addition of EN-DC test case 7.1.1.3.7 in FR1	15.6.0
2019-12	RAN#86	R5s191027	0348	1	B	ENDC FR1: Addition of NR RLC AM test case 7.1.2.3.7	15.6.0
2019-12	RAN#86	R5s191028	0349	1	B	Addition of NR test case 7.1.2.3.7 in FR1	15.6.0
2019-12	RAN#86	R5s191030	0355	1	F	Corrected usage of ULGrant_Period_Type for NR	15.6.0
2019-12	RAN#86	R5s191032	0360	1	B	Addition of NR MAC test case 7.1.1.4.1.1	15.6.0
2019-12	RAN#86	R5s191034	0365	1	B	Addition of EN-DC test case 7.1.1.1.1 in FR1	15.6.0
2019-12	RAN#86	R5s191035	0373	1	F	Correction to fl_NR5GC_QoSFlowsLength	15.6.0
2019-12	RAN#86	R5s191036	0374	1	F	Correction to ENDC Test Case 8.2.5.3.1	15.6.0
2019-12	RAN#86	R5s191041	0465	-	F	Correction to function f_NR_UE_DeRegisterOnSwitchOff	15.6.0
2019-12	RAN#86	R5s191049	0468	-	F	Correction to EN-DC MAC test case 7.1.1.3.6	15.6.0
2019-12	RAN#86	R5s191050	0469	-	F	Correction to capability check functions	15.6.0
2019-12	RAN#86	R5s191099	0353	1	B	Addition of EN-DC RLC test case 7.1.2.2.6 in FR2	15.6.0
2019-12	RAN#86	R5s191100	0363	1	F	Correction for EN-DC MAC test case 7.1.1.1.1a	15.6.0
2019-12	RAN#86	R5s191101	0364	1	B	Addition of EN-DC test case 7.1.1.1.2 in FR1	15.6.0
2019-12	RAN#86	R5s191102	0366	1	B	Addition of NR5GC test case 7.1.1.1.2 in FR1	15.6.0
2019-12	RAN#86	R5s191103	0367	1	B	Addition of EN-DC test case 7.1.3.4.1 in FR1	15.6.0
2019-12	RAN#86	R5s191104	0369	1	F	Corrections for NR DCI formats 0-1 and 1-1	15.6.0
2019-12	RAN#86	R5s191144	0344	1	B	Addition of NR5GC test case 7.1.1.1.3 in FR1	15.6.0
2019-12	RAN#86	R5s191156	0354	1	B	Addition of NR5GC test case 9.1.7.1 in FR1	15.6.0
2019-12	RAN#86	R5s191157/ RP-192496	0520	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	15.6.0

2020-03	RAN#87	R5-201150	0692	1	F	5G Test Models updates	15.7.0
2020-03	RAN#87	R5s200049	0585	-	B	NR5GC FR1 : Addition of NAS test case 9.1.1.5	15.7.0
2020-03	RAN#87	R5s200051	0586	-	F	Correction to PDCP testcases 7.1.3.2.x and 7.1.3.3.x	15.7.0
2020-03	RAN#87	R5s200052	0587	-	F	Correction to template cs_RadioBearer_Reconfig	15.7.0
2020-03	RAN#87	R5s200053	0588	-	F	Correction to EN-DC RRC test cases 8.2.2.4.1 and 8.2.2.5.1	15.7.0
2020-03	RAN#87	R5s200054	0589	-	F	Corrections for NR RLC test case 7.1.2.3.7	15.7.0
2020-03	RAN#87	R5s200055	0590	-	F	Correction for 5GMM test case 9.1.2.1	15.7.0
2020-03	RAN#87	R5s200056	0591	-	F	Correction to NR cell info initialization function	15.7.0
2020-03	RAN#87	R5s200057	0592	-	F	Correction to some NR MAC test cases	15.7.0
2020-03	RAN#87	R5s200059	0594	-	F	Correction to NR MAC test case 7.1.1.1.1	15.7.0
2020-03	RAN#87	R5s200062	0597	-	F	Correction to NR MAC test case 7.1.1.3.7	15.7.0
2020-03	RAN#87	R5s200063	0598	-	F	Correction to NR PDCP test case 7.1.3.4.1	15.7.0
2020-03	RAN#87	R5s200067	0601	-	F	Correction to NR5GC Test Case 6.1.2.1	15.7.0
2020-03	RAN#87	R5s200069	0603	-	F	Correction to the function f_NR5GC_RRC_Idle_Steps5_9_AKA	15.7.0
2020-03	RAN#87	R5s200071	0605	-	F	Correction to NR5GC Test Case 7.1.2.2.3, 7.1.2.2.4	15.7.0
2020-03	RAN#87	R5s200072	0606	-	F	Correction to NR5GC Test Case 7.1.1.1.6	15.7.0
2020-03	RAN#87	R5s200074	0608	-	F	Correction to NR5GC testcase 7.1.3.1.1	15.7.0
2020-03	RAN#87	R5s200075	0609	-	F	Correction to MAC testcase 7.1.1.3.3	15.7.0
2020-03	RAN#87	R5s200076	0610	-	F	Correction to NR5GC common template cs_NR_RachProcedureConfig_CRNTI_HO	15.7.0
2020-03	RAN#87	R5s200077	0611	-	F	Correction to NR5GC Test Case 10.1.5.1	15.7.0
2020-03	RAN#87	R5s200078	0612	-	F	Correction to NR5GC Test Case 7.1.1.1.6	15.7.0
2020-03	RAN#87	R5s200079	0613	-	F	Correction to NR measurement test cases	15.7.0
2020-03	RAN#87	R5s200080	0614	-	F	Correction to NR5GC test case 7.1.1.2.3	15.7.0
2020-03	RAN#87	R5s200081	0615	-	B	Addition of NR5GC test case 8.1.3.1.4 in FR1	15.7.0
2020-03	RAN#87	R5s200083	0616	-	B	Addition of NR5GC test case 8.1.3.1.7 in FR1	15.7.0
2020-03	RAN#87	R5s200085	0617	-	B	Addition of NR5GC test case 8.1.3.1.10 in FR1	15.7.0
2020-03	RAN#87	R5s200087	0618	-	F	Correction to NR5GC test case 9.1.7.1	15.7.0
2020-03	RAN#87	R5s200088	0619	-	F	Correction to NR5GC test case 7.1.1.2.4	15.7.0
2020-03	RAN#87	R5s200090	0621	-	B	Addition of NR5GC test case 6.1.1.3 in FR1	15.7.0
2020-03	RAN#87	R5s200092	0622	-	B	Addition of NR5GC test case 6.1.1.7 in FR1	15.7.0
2020-03	RAN#87	R5s200094	0623	-	F	Correction to NR MAC test case 7.1.1.3.7	15.7.0
2020-03	RAN#87	R5s200098	0627	-	F	Correction to NR RLC test case 7.1.2.3.7	15.7.0
2020-03	RAN#87	R5s200101	0630	-	F	Correction in ENDC TC 7.1.1.1.1	15.7.0
2020-03	RAN#87	R5s200102	0631	-	F	Correction to NR SA RRC test case 8.1.1.4.1	15.7.0
2020-03	RAN#87	R5s200104	0633	-	F	Correction to 5GMM test case 9.1.5.2.7	15.7.0
2020-03	RAN#87	R5s200106	0635	-	F	Corrections for SDAP test case 7.1.4.2	15.7.0
2020-03	RAN#87	R5s200108	0637	-	F	Correction to RLC Test Case 7.1.2.3.9	15.7.0

2020-03	RAN#87	R5s200109	0638	-	F	Correction to MAC Test Case 7.1.1.3.7	15.7.0
2020-03	RAN#87	R5s200110	0639	-	F	Correction to NR5GC Test Case 6.1.2.3	15.7.0
2020-03	RAN#87	R5s200111	0640	-	F	Correction to NR MAC test case 7.1.1.1.2	15.7.0
2020-03	RAN#87	R5s200116	0642	-	B	Addition of NR5GC test case 6.1.1.1 in FR1	15.7.0
2020-03	RAN#87	R5s200118	0643	-	B	Addition of NR5GC test case 9.1.6.1.4 in FR1	15.7.0
2020-03	RAN#87	R5s200120	0644	-	F	Correction to ENDC RLC AM TC 7.1.2.3.10	15.7.0
2020-03	RAN#87	R5s200121	0645	-	F	Correction to ENDC RLC UM TC 7.1.2.2.6	15.7.0
2020-03	RAN#87	R5s200122	0646	-	F	Correction to IntraBand Non-Contiguous frequency for DC_41A_n41A	15.7.0
2020-03	RAN#87	R5s200123	0647	-	F	Correction to NR RRC test case 8.2.5.1.1	15.7.0
2020-03	RAN#87	R5s200125	0649	-	F	Correction to 5GC test case 9.1.6.1.2	15.7.0
2020-03	RAN#87	R5s200126	0650	-	F	Correction to NR PDCP test case 7.1.3.4.2	15.7.0
2020-03	RAN#87	R5s200134	0651	-	B	Addition of NR5GC test case 9.1.5.1.10 in FR1	15.7.0
2020-03	RAN#87	R5s200138	0653	-	B	Addition of NR5GC test case 9.1.5.1.12 in FR1	15.7.0
2020-03	RAN#87	R5s200142	0655	-	B	Addition of NR5GC test case 9.1.5.1.13 in FR1	15.7.0
2020-03	RAN#87	R5s200145	0657	-	B	Addition of NR5GC test case 8.1.5.2.1 in FR1	15.7.0
2020-03	RAN#87	R5s200148	0659	-	F	Correction to NR RLC test case 7.1.2.3.5	15.7.0
2020-03	RAN#87	R5s200149	0660	-	B	Addition of EN-DC RRC test case 8.2.2.7.1 in FR2	15.7.0
2020-03	RAN#87	R5s200151	0661	-	B	Addition of EN-DC PDCP test case 7.1.3.4.1 in FR2	15.7.0
2020-03	RAN#87	R5s200153	0662	-	F	Correction to ENDC PDCP Test Case 7.1.3.5.3	15.7.0
2020-03	RAN#87	R5s200154	0663	-	B	NR5GC FR1 : Addition of 5GMM test case 9.1.5.1.8	15.7.0
2020-03	RAN#87	R5s200156	0664	-	B	NR5GC FR1 : Addition of NR Idle Mode test case 6.1.2.9	15.7.0
2020-03	RAN#87	R5s200158	0665	-	F	Correction to ENDC testcase 10.2.1.1	15.7.0
2020-03	RAN#87	R5s200159	0666	-	F	Correction to NR5GC testcase 7.1.1.1.1	15.7.0
2020-03	RAN#87	R5s200160	0667	-	F	Correction to capability check functions	15.7.0
2020-03	RAN#87	R5s200161	0668	-	F	Correction to template cads_NR_ULGrantAllocation_REQ	15.7.0
2020-03	RAN#87	R5s200162	0669	-	F	Correction for common function fl_SDAP_Preamble_Part1()	15.7.0
2020-03	RAN#87	R5s200165	0671	-	B	Addition of NR5GC test case 6.1.1.5 in FR1	15.7.0
2020-03	RAN#87	R5s200169	0673	-	B	Addition of NR5GC test case 6.1.1.4 in FR1	15.7.0
2020-03	RAN#87	R5s200171	0674	-	B	Addition of ENDC test case 8.2.2.8.1 in FR1	15.7.0
2020-03	RAN#87	R5s200173	0675	-	B	Addition of NR5GC test case 6.1.1.2 in FR1	15.7.0
2020-03	RAN#87	R5s200176	0677	-	B	Addition of NR5GC test case 9.1.5.2.6 in FR1	15.7.0
2020-03	RAN#87	R5s200178	0678	-	B	NR5GC FR1: Addition of NR RRC IDLE test case 6.1.2.2	15.7.0
2020-03	RAN#87	R5s200180	0679	-	F	Correction to NR RLC test case 7.1.2.2.6	15.7.0
2020-03	RAN#87	R5s200181	0680	-	F	Correction to NR5GC RRC test case 8.1.3.2.1	15.7.0
2020-03	RAN#87	R5s200182	0351	1	B	Addition of NR5GC test case 7.1.1.1.1 in FR1	15.7.0
2020-03	RAN#87	R5s200183	0361	1	B	Addition of NR MAC test case 7.1.1.4.2.1	15.7.0
2020-03	RAN#87	R5s200184	0395	1	F	Corrections to NR MAC test case 7.1.1.4.1.1	15.7.0

2020-03	RAN#87	R5s200185	0398	1	F	Corrections to NR MAC test case 7.1.1.4.2.1	15.7.0
2020-03	RAN#87	R5s200186	0431	1	F	Corrections to NR MAC test case 7.1.1.3.3	15.7.0
2020-03	RAN#87	R5s200187	0432	1	F	Corrections to NR MAC test case 7.1.1.1.1	15.7.0
2020-03	RAN#87	R5s200189	0452	1	B	Addition of EN-DC MAC test case 7.1.1.1.1 in FR2	15.7.0
2020-03	RAN#87	R5s200190	0463	1	F	Correction to RLC AM test case 7.1.2.3.9	15.7.0
2020-03	RAN#87	R5s200191	0464	1	F	Correction for EN-DC MAC test case 7.1.1.3.7	15.7.0
2020-03	RAN#87	R5s200192	0466	1	B	Addition of EN-DC PDCP test case 7.1.3.5.3 in FR1	15.7.0
2020-03	RAN#87	R5s200193	0467	1	B	Addition of EN-DC PDCP test case 7.1.3.5.3 in FR2	15.7.0
2020-03	RAN#87	R5s200195	0470	1	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.1.4.1	15.7.0
2020-03	RAN#87	R5s200196	0472	1	F	Corrections for some NR MAC test cases in NR5GC operation	15.7.0
2020-03	RAN#87	R5s200197	0473	1	B	NR5GC : Addition of NR PDCP test case 7.1.3.4.2 in FR1	15.7.0
2020-03	RAN#87	R5s200198	0474	1	F	Correction to ENDC Test Case 7.1.2.3.8	15.7.0
2020-03	RAN#87	R5s200199	0475	1	F	Correction to MR-DC capability check	15.7.0
2020-03	RAN#87	R5s200202	0476	1	B	NR5GC : Addition of NR RRC test case 8.1.5.6.3 in FR1	15.7.0
2020-03	RAN#87	R5s200204	0477	1	B	NR5GC FR1 : Addition of NR RLC test case 7.1.2.2.5	15.7.0
2020-03	RAN#87	R5s200205	0478	1	B	EN-DC FR1 : Addition of NR RLC test case 7.1.2.2.5	15.7.0
2020-03	RAN#87	R5s200208	0681		B	EN-DC FR1 : Addition of NR MAC test case 7.1.1.4.1.1	15.7.0
2020-03	RAN#87	R5s200211	0483	1	F	Correction for EN-DC ESM test case 10.2.2.1	15.7.0
2020-03	RAN#87	R5s200212	0486	1	F	Correction to NR5GC Test Case 9.1.3.1	15.7.0
2020-03	RAN#87	R5s200213	0487	1	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.3.1.3	15.7.0
2020-03	RAN#87	R5s200215	0488	1	B	NR5GC : Addition of NR RRC test case 9.1.5.2.7 in FR1	15.7.0
2020-03	RAN#87	R5s200216	0489	1	B	Addition of EN-DC RLC test case 7.1.2.3.3 in FR2	15.7.0
2020-03	RAN#87	R5s200217	0490	1	B	NR5GC : Addition of NR RRC test case 8.1.1.2.3 in FR1	15.7.0
2020-03	RAN#87	R5s200218	0491	1	B	Addition of EN-DC RLC test case 7.1.2.2.3 in FR2	15.7.0
2020-03	RAN#87	R5s200219	0492	1	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.3.1.6	15.7.0
2020-03	RAN#87	R5s200220	0493	1	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.3.1.9	15.7.0
2020-03	RAN#87	R5s200221	0494	1	B	Addition of EN-DC MAC test case 7.1.1.3.7 in FR2	15.7.0
2020-03	RAN#87	R5s200222	0495	1	F	Correction of ENDC Intra Band Contiguous frequency initialisation for MAC TBS test cases	15.7.0
2020-03	RAN#87	R5s200223	0682		F	Correction for function fl_Check_featureSetsUplinkPerCC	15.7.0
2020-03	RAN#87	R5s200224	0683		F	Correction to template cs_38508_PCCH_Config	15.7.0
2020-03	RAN#87	R5s200225	0496	1	B	ENDC FR2 : Addition of NR MAC test case 7.1.1.2.1	15.7.0
2020-03	RAN#87	R5s200226	0497	1	B	NR5GC FR1 : Addition of NR5GC/EUTRA Inter-RAT test case 8.1.3.2.1	15.7.0
2020-03	RAN#87	R5s200227	0503	1	B	NR5GC FR1 : Addition of SDAP test case 7.1.4.1	15.7.0
2020-03	RAN#87	R5s200231	0508	1	B	Addition of NR5GC test case 6.1.2.17 in FR1	15.7.0
2020-03	RAN#87	R5s200233	0521	1	B	EN-DC FR1 : Addition of EN-DC RRC Measurement test case 8.2.3.6.1a	15.7.0

2020-03	RAN#87	R5s200234	0522	1	B	EN-DC FR1 : Addition of EN-DC RRC Measurement test case 8.2.3.7.1a	15.7.0
2020-03	RAN#87	R5s200235	0524	1	B	Addition of NR5GC test case 6.1.2.15 in FR1	15.7.0
2020-03	RAN#87	R5s200236	0526	1	F	Correction to EN-DC common handover function	15.7.0
2020-03	RAN#87	R5s200239	0527	1	F	Correction to common NR5GC function f_NR_DRBInfo_RemoveEntry()	15.7.0
2020-03	RAN#87	R5s200240	0529	1	B	NR5GC FR1: Addition of NR RRC IDLE test case 6.1.2.12	15.7.0
2020-03	RAN#87	R5s200241	0531	1	B	Addition of NR5GC test case 7.1.1.2.4 in FR1	15.7.0
2020-03	RAN#87	R5s200242	0535	1	B	EN-DC FR1 : Addition of EN-DC RRC Measurement test case 8.2.3.6.1b	15.7.0
2020-03	RAN#87	R5s200243	0536	1	B	EN-DC FR1 : Addition of EN-DC RRC Measurement test case 8.2.3.7.1b	15.7.0
2020-03	RAN#87	R5s200244	0538	1	B	NR5GC FR1 : Addition of 5GMM test case 9.1.5.1.1	15.7.0
2020-03	RAN#87	R5s200245	0539	1	F	Correction to NR test case 8.1.1.4.2	15.7.0
2020-03	RAN#87	R5s200246	0540	1	B	EN-DC FR2 : Addition of NR RLC test case 7.1.2.2.5	15.7.0
2020-03	RAN#87	R5s200250	0685		F	Correction to ENDC testcase 7.1.2.3.7	15.7.0
2020-03	RAN#87	R5s200252	0546	1	F	Corrections to EN-DC RRC test case 8.2.3.13.1	15.7.0
2020-03	RAN#87	R5s200253	0547	1	F	Corrections to NR RLC test case 7.1.2.3.9	15.7.0
2020-03	RAN#87	R5s200254	0548	1	F	Corrections to NR RLC test case 7.1.2.3.6	15.7.0
2020-03	RAN#87	R5s200255	0549	1	F	Corrections for EN-DC measurements test cases	15.7.0
2020-03	RAN#87	R5s200256	0552	1	F	Correction to NR MAC test case 7.1.1.2.1	15.7.0
2020-03	RAN#87	R5s200257	0554	1	F	Correction to NR MAC test case 7.1.1.3.2	15.7.0
2020-03	RAN#87	R5s200258	0565	1	F	Correction for NR RLC test case 7.1.2.3.8	15.7.0
2020-03	RAN#87	R5s200259	0566	1	F	Correction for EN-DC RRC test cases 8.2.3.3.1	15.7.0
2020-03	RAN#87	R5s200260	0568	1	F	Correction to 5GMM test case 9.1.5.1.5	15.7.0
2020-03	RAN#87	R5s200261	0569	1	F	Correction to the function f_NR5GC_RRC_Idle_Steps5_20	15.7.0
2020-03	RAN#87	R5s200262	0570	1	F	Correction to NR RLC test cases 7.1.2.2.3 and 7.1.2.2.4	15.7.0
2020-03	RAN#87	R5s200263	0571	1	F	Correction for EN-DC capability checking test case 8.2.1.1.1	15.7.0
2020-03	RAN#87	R5s200264	0575	1	B	NR5GC FR1 : Addition of 5GMM test case 9.1.6.2.2	15.7.0
2020-03	RAN#87	R5s200265	0576	1	F	Correction to NR5GC testcase 9.1.3.1	15.7.0
2020-03	RAN#87	R5s200266	0578	1	F	Correction to the function f_NR_CellConfig_Def and template cas_NR_CellConfig_REQ	15.7.0
2020-03	RAN#87	R5s200268	0580	1	F	Corrections to NR MAC test case 7.1.1.1.2	15.7.0
2020-03	RAN#87	R5s200269	0581	1	F	Corrections for NR5GC RRC test case 8.1.2.1.1	15.7.0
2020-03	RAN#87	R5s200270	0582	1	F	Corrections for EN-DC preamble functions	15.7.0
2020-03	RAN#87	R5s200271	0583	1	F	Corrections for NR PDCP test cases 7.1.3.2.x and 7.1.3.3.x	15.7.0
2020-03	RAN#87	R5s200276	0686	-	F	Correction to the function f_NR_SkipMeasGap	15.7.0
2020-03	RAN#87	R5s200277	0687	-	F	Correction to the function fl_Check_Rf_Parameters_NRBand_PICS_Supp	15.7.0
2020-03	RAN#87	R5s200281	0689	-	B	Addition of NR5GC test case 6.1.2.7 in FR1	15.7.0

2020-03	RAN#87	R5s200283	0690	-	B	Addition of NR5GC test case 6.1.2.16 in FR1	15.7.0
2020-03	RAN#87	R5s200287	0693	-	B	Addition of NR5GC test case 6.1.2.4 in FR1	15.7.0
2020-03	RAN#87	R5s200288	0694	-	F	Correction to the templates for EAP message	15.7.0
2020-03	RAN#87	R5s200290	0695	-	B	Addition of NR5GC test case 6.1.2.18 in FR1	15.7.0
2020-03	RAN#87	R5s200292	0696	-	B	Addition of EN-DC RRC RSRQ Measurement test case 8.2.3.2.1 in FR1	15.7.0
2020-03	RAN#87	R5s200294	0697	-	B	Addition of NR5GC test case 8.1.3.1.15a in FR1	15.7.0
2020-03	RAN#87	R5s200296	0698	-	F	Correction to NR MAC test case 7.1.1.2.1	15.7.0
2020-03	RAN#87	R5s200313	0704	-	B	EN-DC FR2 : Addition of NR RLC test case 7.1.2.3.5	15.7.0
2020-03	RAN#87	R5s200319	0707	-	F	Correction to AM RLC test 7.1.2.3.7	15.7.0
2020-03	RAN#87	R5s200383	0741	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	15.7.0
2020-03	RAN#87	R5s200386	0484	1	F	Correction for EN-DC ESM test case 10.2.1.1	15.7.0
2020-03	RAN#87	R5s200387	0500	1	B	NR5GC FR1 : Addition of NR PDCP test case 7.1.3.2.1	15.7.0
2020-03	RAN#87	R5s200389	0507	1	F	Correction to Intra NR measurements test 8.1.3.1.1	15.7.0
2020-03	RAN#87	R5s200390	0509	1	B	Addition of NR5GC test case 9.1.6.1.2 in FR1	15.7.0
2020-03	RAN#87	R5s200391	0511	1	B	NR5GC FR1 : Addition of NR PDCP test case 7.1.3.2.2	15.7.0
2020-03	RAN#87	R5s200392	0512	1	B	NR5GC FR1 : Addition of NR PDCP test case 7.1.3.2.3	15.7.0
2020-03	RAN#87	R5s200393	0513	1	B	Addition of NR5GC IRAT test case 8.1.3.2.2 in FR1	15.7.0
2020-03	RAN#87	R5s200394	0532	1	F	Correction to NR test case 7.1.2.3.6	15.7.0
2020-03	RAN#87	R5s200395	0567	1	F	Correction to NR RLC test case 7.1.2.2.6 for EN-DC	15.7.0
2020-03	RAN#87	R5s200396	0572	1	F	Correction to NR PDCP test case 7.1.3.5.3	15.7.0
2020-03	RAN#87	R5s200397	0574	1	B	NR5GC FR1 : Addition of NR Idle Mode test case 6.1.2.20	15.7.0
2020-03	RAN#87	R5s200398	0584	1	B	NR5GC FR1 : Addition of 5GMM test case 9.1.5.1.2	15.7.0
2020-06	RAN#88	R5-202677	0940	1	F	5G Test Models updates	15.8.0
2020-06	RAN#88	R5s200478	0800	-	F	Correction to 5GMM test case 9.1.5.1.14	15.8.0
2020-06	RAN#88	R5s200479	0801	-	F	Correction for upper tester function for AT+C5GPNSSAI	15.8.0
2020-06	RAN#88	R5s200481	0803	-	B	NR5GC FR1 : Addition of NR MAC test case 7.1.1.4.2.3	15.8.0
2020-06	RAN#88	R5s200482	0804	-	F	Correction for function f_Get_PDUSessionIdForDNNTtype	15.8.0
2020-06	RAN#88	R5s200485	0807	-	F	Correction to EN-DC RRC measurement test cases 8.2.3.7.1x	15.8.0
2020-06	RAN#88	R5s200489	0810	-	F	Correction to NR5GC common functions when pc_noOf_PDUsNewConnection > 0	15.8.0
2020-06	RAN#88	R5s200491	0811	-	F	Correction to EN-DC RRC test case 8.2.2.7.1	15.8.0
2020-06	RAN#88	R5s200492	0812	-	B	NR5GC FR1 : Addition of RRC test case 8.1.1.3.3	15.8.0
2020-06	RAN#88	R5s200496	0813	-	F	Correction for NR5GC RRC test case 8.1.1.3.1	15.8.0
2020-06	RAN#88	R5s200499	0815	-	F	Correction for 5GMM test case 9.1.7.1	15.8.0
2020-06	RAN#88	R5s200501	0817	-	F	Correction for upper tester function	15.8.0
2020-06	RAN#88	R5s200504	0819	-	F	Correction to NR Idle Mode test case 6.1.2.9	15.8.0
2020-06	RAN#88	R5s200506	0821	-	F	Correction for EN-DC RRC test case 8.2.1.1.1	15.8.0

2020-06	RAN#88	R5s200509	0823	-	B	NR5GC FR1 : Addition of NR5GC IRAT test case 8.1.4.2.1.1	15.8.0
2020-06	RAN#88	R5s200510	0824	-	F	Correction for 5GMM test case 9.1.5.2.1	15.8.0
2020-06	RAN#88	R5s200511	0825	-	F	Correction to NR MAC test case 7.1.1.3.4	15.8.0
2020-06	RAN#88	R5s200512	0826	-	F	Correction for NR paging configuration	15.8.0
2020-06	RAN#88	R5s200514	0828	-	F	Corrections for NR PDCP test cases 7.1.3.3.x	15.8.0
2020-06	RAN#88	R5s200516	0830	-	B	EN-DC FR2 : Addition of NR PDCP test case 7.1.3.1.2	15.8.0
2020-06	RAN#88	R5s200517	0831	-	F	Correction for NR5GC RRC test case 8.1.1.4.1	15.8.0
2020-06	RAN#88	R5s200518	0832	-	F	Correction for NR5GC Idle Mode test case 6.1.2.4	15.8.0
2020-06	RAN#88	R5s200523	0837	-	F	Correction for NR5GC RRC test case 9.1.2.2	15.8.0
2020-06	RAN#88	R5s200524	0838	-	F	Correction for 5GMM test case 9.1.6.1.2	15.8.0
2020-06	RAN#88	R5s200526	0840	-	F	Correction for NR MAC test cases 7.1.1.1.1 and 7.1.1.1.1a	15.8.0
2020-06	RAN#88	R5s200527	0841	-	F	Corrections for EN-DC measurement test cases 8.2.3.6.1x	15.8.0
2020-06	RAN#88	R5s200529	0843	-	F	Correction for NR RLC test cases 7.1.2.3.3 and 7.1.2.3.4	15.8.0
2020-06	RAN#88	R5s200530	0844	-	F	Correction for NR RLC test cases 7.1.2.2.3 and 7.1.2.2.4	15.8.0
2020-06	RAN#88	R5s200533	0845	-	F	NR/5GC FR1: Re-verification of test case 8.1.1.3.2	15.8.0
2020-06	RAN#88	R5s200537	0848	-	F	Correction to NR Idle mode test case 6.4.2.1	15.8.0
2020-06	RAN#88	R5s200538	0849	-	F	Correction to NR Idle Mode test case 6.1.2.18	15.8.0
2020-06	RAN#88	R5s200539	0850	-	B	Addition of NR5GC test case 9.3.1.3 in FR1	15.8.0
2020-06	RAN#88	R5s200540	0851	-	F	Corrections to testcase 7.1.2.3.7	15.8.0
2020-06	RAN#88	R5s200541	0852	-	F	Corrections to NR5GC testcase 8.1.2.1.1	15.8.0
2020-06	RAN#88	R5s200542	0853	-	F	Correction to functions f_NR_NRFFullCapabilityCheck	15.8.0
2020-06	RAN#88	R5s200543	0854	-	F	Correction for NR5GC RRC test case 8.1.3.2.2	15.8.0
2020-06	RAN#88	R5s200544	0855	-	F	Correction of function f_NR_Resourceallocation0_AllowedNPRB for Band n3	15.8.0
2020-06	RAN#88	R5s200545	0856	-	F	Correction for slot offset calculation in f_NR_ShortMessageIndication_SysinfoMod	15.8.0
2020-06	RAN#88	R5s200546	0857	-	F	Correction to the function f_NR_ConvertSSB_IndexToBit	15.8.0
2020-06	RAN#88	R5s200547	0858	-	F	Correction to NR5GC test case 8.1.1.3.1	15.8.0
2020-06	RAN#88	R5s200548	0859	-	F	Correction to the function f_Get_PDUSessionForDNNTType	15.8.0
2020-06	RAN#88	R5s200549	0860	-	F	Correction to the template cads_NR_UplinkBWP_List_ConfigCommon_REQ	15.8.0
2020-06	RAN#88	R5s200550	0861	-	F	Correction to NR5GC test case 6.1.1.3	15.8.0
2020-06	RAN#88	R5s200551	0862	-	F	Correction to NR5GC test case 7.1.1.1.3	15.8.0
2020-06	RAN#88	R5s200552	0863	-	F	Correction to the template cs_NR_RachProcedureConfig_71116	15.8.0
2020-06	RAN#88	R5s200553	0864	-	F	Correction to NR5GC test case 7.1.1.3.2	15.8.0
2020-06	RAN#88	R5s200554	0865	-	F	Correction to NR5GC test case 7.1.1.2.1	15.8.0
2020-06	RAN#88	R5s200555	0866	-	F	Correction to NR5GC test case 7.1.1.3.1	15.8.0
2020-06	RAN#88	R5s200556	0867	-	F	Correction to NR5GC test case 7.1.1.1.1a	15.8.0
2020-06	RAN#88	R5s200557	0868	-	F	Correction to the function f_TC_7_1_3_2_X_NR_TestBody	15.8.0

2020-06	RAN#88	R5s200558	0869	-	F	Correction to the function f_NR_CellInfo_SetZeroCorrelationZoneConfig	15.8.0
2020-06	RAN#88	R5s200559	0870	-	F	Correction to NSA test case 10.2.2.1	15.8.0
2020-06	RAN#88	R5s200560	0871	-	F	Correction to definition of EUTRA_PdnInfo_Type	15.8.0
2020-06	RAN#88	R5s200561	0872	-	F	Correction to NR5GC test case 9.1.6.1.3	15.8.0
2020-06	RAN#88	R5s200563	0874	-	F	Correction to NR5GC test case 9.1.6.1.4	15.8.0
2020-06	RAN#88	R5s200564	0875	-	F	NR/5GC FR1: Re-verification of IRAT test case 6.2.3.1	15.8.0
2020-06	RAN#88	R5s200566	0876	-	F	NR/5GC FR1: Re-verification of IRAT test case 6.4.3.1	15.8.0
2020-06	RAN#88	R5s200570	0878	-	F	EN-DC FR2: Re-verification of test case 8.2.2.8.1	15.8.0
2020-06	RAN#88	R5s200571	0879	-	F	Corrections to NR5GC testcases 8.1.1.3.1 and 8.1.2.1.1	15.8.0
2020-06	RAN#88	R5s200573	0880	-	B	NR5GC FR1 : Addition of 5GMM test case 9.1.4.1	15.8.0
2020-06	RAN#88	R5s200575	0882	-	B	NR5GC FR1: Addition of Inter-band CA RRC test case 8.1.5.6.5.2	15.8.0
2020-06	RAN#88	R5s200577	0883	-	B	EN-DC FR1 : Addition of NR MAC test case 7.1.1.4.2.1	15.8.0
2020-06	RAN#88	R5s200579	0884	-	B	NR5GC FR1: Addition of Intra-band contiguous CA RRC test case 8.1.5.6.5.1	15.8.0
2020-06	RAN#88	R5s200582	0885	-	F	Correction to NR5GC test case 8.1.3.1.15a	15.8.0
2020-06	RAN#88	R5s200583	0886	-	F	NR/5GC FR1: Re-verification of IRAT test case 6.2.3.3	15.8.0
2020-06	RAN#88	R5s200585	0887	-	B	Addition of NR5GC test case 10.1.3.2 in FR1	15.8.0
2020-06	RAN#88	R5s200587	0888	-	B	Addition of NR5GC test case 9.1.7.2 in FR1	15.8.0
2020-06	RAN#88	R5s200589	0889	-	B	Addition of NR5GC test case 9.1.2.3 in FR1	15.8.0
2020-06	RAN#88	R5s200591	0890	-	B	Addition of NR5GC test case 9.1.2.4 in FR1	15.8.0
2020-06	RAN#88	R5s200593	0891	-	B	Addition of NR5GC test case 9.1.2.5 in FR1	15.8.0
2020-06	RAN#88	R5s200597	0893	-	B	Addition of NR5GC test case 9.1.2.7 in FR1	15.8.0
2020-06	RAN#88	R5s200601	0895	-	B	Addition of NR5GC test case 6.2.3.7 in FR1	15.8.0
2020-06	RAN#88	R5s200603	0896	-	B	Addition of NR5GC test case 6.1.2.19 in FR1	15.8.0
2020-06	RAN#88	R5s200605	0897	-	B	ENDC FR1: Addition of Intra-band contiguous CA RRC test case 8.2.4.1.1.1	15.8.0
2020-06	RAN#88	R5s200607	0898	-	B	Addition of NR5GC test case 6.2.3.9 in FR1	15.8.0
2020-06	RAN#88	R5s200610	0900	-	B	NR5GC FR1 : Addition of NR Idle Mode test case 6.1.2.8	15.8.0
2020-06	RAN#88	R5s200612	0902	-	F	Correction to EN-DC RRC measurement test cases	15.8.0
2020-06	RAN#88	R5s200614	0904	-	B	NR5GC FR1 : Addition of 5GMM test case 9.1.2.6	15.8.0
2020-06	RAN#88	R5s200617	0905	-	B	NR5GC FR1 : Addition of 5GMM test case 9.1.2.8	15.8.0
2020-06	RAN#88	R5s200619	0906	-	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.5.3.4	15.8.0
2020-06	RAN#88	R5s200622	0907	-	B	Addition of NR5GC test case 8.1.3.3.1 in FR1	15.8.0
2020-06	RAN#88	R5s200624	0908	-	B	ENDC FR1: Addition of Inter band CA RRC test case 8.2.4.1.1.3	15.8.0
2020-06	RAN#88	R5s200626	0909	-	F	Corrections to ENDC CA band combinations	15.8.0
2020-06	RAN#88	R5s200627	0910	-	F	Corrections to NR5GC testcase 9.1.5.1.3a	15.8.0
2020-06	RAN#88	R5s200628	0911	-	B	Addition of NR5GC test case 9.3.1.1 in FR1	15.8.0
2020-06	RAN#88	R5s200630	0912	-	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.5.4.1	15.8.0

2020-06	RAN#88	R5s200633	0914	-	B	Addition of NR5GC test case 6.1.2.14 in FR1	15.8.0
2020-06	RAN#88	R5s200635	0915	-	B	Addition of NR5GC test case 6.1.2.13 in FR1	15.8.0
2020-06	RAN#88	R5s200638	0917	-	B	Addition of NR5GC test case 6.4.1.2 in FR1	15.8.0
2020-06	RAN#88	R5s200644	0919	-	F	Correction to EN-DC RRC test case 8.2.1.1.1	15.8.0
2020-06	RAN#88	R5s200647	0922	-	F	Correction to common ENDC function for security key exchange	15.8.0
2020-06	RAN#88	R5s200648	0923	-	B	Addition of NR5GC test case 6.2.1.1 in FR1	15.8.0
2020-06	RAN#88	R5s200650	0924	-	B	Addition of EN-DC RRC test case 8.2.2.6.1 in FR1	15.8.0
2020-06	RAN#88	R5s200651	0925	-	B	Addition of EN-DC RRC test case 8.2.2.6.1 in FR2	15.8.0
2020-06	RAN#88	R5s200657	0929	-	B	Addition of NR5GC test case 6.4.1.1 in FR1	15.8.0
2020-06	RAN#88	R5s200659	0930	-	B	Addition of NR5GC test case 6.2.1.2 in FR1	15.8.0
2020-06	RAN#88	R5s200661	0931	-	F	Correction to multiPDN in EN-DC tests	15.8.0
2020-06	RAN#88	R5s200662	0932	-	F	Correction to test case 9.1.7.1	15.8.0
2020-06	RAN#88	R5s200663	0933	-	B	Addition of NR5GC test case 6.3.1.1 in FR1	15.8.0
2020-06	RAN#88	R5s200666	0935	-	B	EN-DC FR1 : Addition of RRC test case 8.2.6.2.1	15.8.0
2020-06	RAN#88	R5s200672	0939	-	B	Addition of NR5GC test case 6.3.1.2 in FR1	15.8.0
2020-06	RAN#88	R5s200676	0942	-	F	Correction to template cas_NR_SRB_NasPdu_REQ	15.8.0
2020-06	RAN#88	R5s200677	0943	-	F	Correction to NR5GC test case 9.1.7.1	15.8.0
2020-06	RAN#88	R5s200680	0945	-	B	Addition of NR5GC test case 6.3.1.3 in FR1	15.8.0
2020-06	RAN#88	R5s200682	0946	-	B	Addition of NR5GC test case 6.3.1.4 in FR1	15.8.0
2020-06	RAN#88	R5s200684	0947	-	B	ENDC FR2: Addition of EN-DC RRC measurement test case 8.2.3.6.1a	15.8.0
2020-06	RAN#88	R5s200686	0948	-	B	ENDC FR2: Addition of EN-DC RRC measurement test case 8.2.3.7.1a	15.8.0
2020-06	RAN#88	R5s200688	0949	-	B	ENDC FR2: Addition of EN-DC RRC measurement test case 8.2.3.8.1a	15.8.0
2020-06	RAN#88	R5s200690	0950	-	B	NR5GC FR1: Addition of NR PDCP test case 7.1.3.4.1	15.8.0
2020-06	RAN#88	R5s200696	0953	-	F	Correction to the function f_NR_ENDC_ReConfigAM_UM	15.8.0
2020-06	RAN#88	R5s200697	0954	-	F	Correction to NR5GC test case 10.1.1.2	15.8.0
2020-06	RAN#88	R5s200701	0956	-	F	Correction to the template cs_NR_PDCP_Config_UIPath	15.8.0
2020-06	RAN#88	R5s200703	0958	-	B	NR5GC FR1 : Addition of NR5GC PWS test case 8.1.5.3.1	15.8.0
2020-06	RAN#88	R5s200705	0959	-	B	NR5GC FR1 : Addition of NR5GC PWS test case 8.1.5.3.2	15.8.0
2020-06	RAN#88	R5s200707	0960	-	B	NR5GC FR1 : Addition of NR5GC PWS test case 8.1.5.3.3	15.8.0
2020-06	RAN#88	R5s200709	0961	-	F	Correction to NR5GC test case 6.1.1.8	15.8.0
2020-06	RAN#88	R5s200710	0962	-	F	Correction to NR5GC/ENDC test case 7.1.2.3.8	15.8.0
2020-06	RAN#88	R5s200715	0966	-	F	Correction for SDAP test case 7.1.4.2	15.8.0
2020-06	RAN#88	R5s200716	0967	-	F	Correction to 5GMM test case 9.1.7.2	15.8.0
2020-06	RAN#88	R5s200717	0968	-	B	NR5GC FR1 : Addition of RRC CA test case 8.1.3.1.17.1	15.8.0
2020-06	RAN#88	R5s200719	0969	-	B	NR5GC FR1 : Addition of RRC CA test case 8.1.3.1.17.2	15.8.0
2020-06	RAN#88	R5s200721	0970	-	B	Addition of NR5GC IRAT test case 6.2.3.2 in FR1	15.8.0

2020-06	RAN#88	R5s200723	0971	-	B	Addition of NR5GC IRAT test case 6.2.3.4 in FR1	15.8.0
2020-06	RAN#88	R5s200725	0972	-	B	Addition of NR5GC IRAT test case 8.1.3.2.3 in FR1	15.8.0
2020-06	RAN#88	R5s200727	0973	-	B	Addition of NR5GC IRAT test case 8.1.3.2.4 in FR1	15.8.0
2020-06	RAN#88	R5s200729	0974	-	B	Addition of NR5GC test case 11.3.3 in FR1	15.8.0
2020-06	RAN#88	R5s200731	0975	-	F	Correction to NR5GC test case 6.1.2.7	15.8.0
2020-06	RAN#88	R5s200732	0976	-	F	Correction to f_EUTRA38_IRAT_NAS_Init	15.8.0
2020-06	RAN#88	R5s200733	0977	-	F	Correction to NR5GC RRC test case 8.1.5.4.1	15.8.0
2020-06	RAN#88	R5s200734	0978	-	B	NR5GC FR1 : Addition of RRC CA test case 8.1.3.1.18.1	15.8.0
2020-06	RAN#88	R5s200736	0979	-	B	NR5GC FR1 : Addition of RRC CA test case 8.1.3.1.18.2	15.8.0
2020-06	RAN#88	R5s200738	0980	-	F	Correction to NR5GC test case 10.1.1.1	15.8.0
2020-06	RAN#88	R5s200744	0983	-	F	Correction to NR5GC test case 8.2.3.2.1	15.8.0
2020-06	RAN#88	R5s200747	0985	-	B	EN-DC FR2 : Addition of NR MAC test case 7.1.1.3.3	15.8.0
2020-06	RAN#88	R5s200750	0987	-	F	Correction to 5GSM test case 9.1.7.1	15.8.0
2020-06	RAN#88	R5s200752	0989	-	F	Correction to the NR5GC testcase 6.1.2.1	15.8.0
2020-06	RAN#88	R5s200753	0990	-	F	Correction to the ENDC testcase 7.1.1.3.7	15.8.0
2020-06	RAN#88	R5s200754	0991	-	F	Correction to NR5GC function f_NR5GC_508RRC_IntraNR_HO_IntraCell_Step1_8	15.8.0
2020-06	RAN#88	R5s200755	0992	-	F	Correction to NR RLC testcase 7.1.2.2.6	15.8.0
2020-06	RAN#88	R5s200756	0993	-	F	Correction to the NR5GC testcase 9.1.5.1.2	15.8.0
2020-06	RAN#88	R5s200757	0994	-	F	Correction to the NR5GC testcase 9.1.7.2	15.8.0
2020-06	RAN#88	R5s200758	0995	-	B	Addition of NR5GC test case 9.1.5.1.3 in FR1	15.8.0
2020-06	RAN#88	R5s200762	0515	1	B	Addition of NR5GC IRAT test case 6.2.3.1 in FR1	15.8.0
2020-06	RAN#88	R5s200763	0641	1	F	Correction to NR5GC RRC test case 8.1.1.2.1	15.8.0
2020-06	RAN#88	R5s200764	0688	1	B	Addition of NR5GC test case 8.1.2.1.2	15.8.0
2020-06	RAN#88	R5s200765	0699	1	B	NR5GC FR1 : Addition of 5GMM test case 9.1.5.1.14	15.8.0
2020-06	RAN#88	R5s200766	0702	1	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.4.1.2	15.8.0
2020-06	RAN#88	R5s200769	0708	1	B	EN-DC FR2 : Addition of EN-DC RRC test case 8.2.3.8.1	15.8.0
2020-06	RAN#88	R5s200770	0711	1	B	NR5GC FR1 : Addition of 5GMM test case 9.1.5.2.1	15.8.0
2020-06	RAN#88	R5s200772	0999		B	Addition of NR5GC test case 6.2.1.4 in FR1	15.8.0
2020-06	RAN#88	R5s200774	0714	1	F	Correction of function fl_Check_featureSetsUplinkPerCC	15.8.0
2020-06	RAN#88	R5s200775	0715	1	F	Correction for NR PDCP test case 7.1.3.5.2	15.8.0
2020-06	RAN#88	R5s200776	0716	1	B	NR5GC FR1 : Addition of 5GMM test case 9.1.5.1.3a	15.8.0
2020-06	RAN#88	R5s200777	0717	1	F	Correction to NR5GC RRC test case 8.1.2.1.1	15.8.0
2020-06	RAN#88	R5s200778	0718	1	F	Correction to ENDC RRC test case 8.2.3.13.1	15.8.0
2020-06	RAN#88	R5s200779	0719	1	B	Addition of NR5GC test case 6.1.1.8 in FR1	15.8.0
2020-06	RAN#88	R5s200780	0725	1	B	Addition of NR5GC IRAT test case 6.2.3.5 in FR1	15.8.0
2020-06	RAN#88	R5s200781	0726	1	B	Addition of NR5GC IRAT test case 6.2.3.6 in FR1	15.8.0
2020-06	RAN#88	R5s200784	0730	1	B	Addition of NR5GC test case 6.1.2.22 in FR1	15.8.0

2020-06	RAN#88	R5s200785	0731	1	F	Correction to function fl_NR_InitSIB4_FreqInfoList()	15.8.0
2020-06	RAN#88	R5s200786	0732	1	F	Correction to function f_EUTRA38_NR_Capability()	15.8.0
2020-06	RAN#88	R5s200787	0733	1	F	Correction to NR Idle Mode test case 6.1.2.7	15.8.0
2020-06	RAN#88	R5s200788	0734	1	F	Correction to NR5GC RRC test case 8.1.1.2.1	15.8.0
2020-06	RAN#88	R5s200789	0736	1	B	Addition of NR5GC test case 9.1.1.3 in FR1	15.8.0
2020-06	RAN#88	R5s200790	0737	1	B	Addition of NR5GC IRAT test case 6.2.3.8 in FR1	15.8.0
2020-06	RAN#88	R5s200791	0738	1	B	Addition of NR5GC test case 6.4.2.1 in FR1	15.8.0
2020-06	RAN#88	R5s200792	0739	1	B	Addition of NR5GC IRAT test case 9.3.1.2 in FR1	15.8.0
2020-06	RAN#88	R5s200793	0742	1	B	Addition of NR5GC test case 10.1.1.1 in FR1	15.8.0
2020-06	RAN#88	R5s200794	0743	1	B	Addition of NR5GC test case 10.1.1.2 in FR1	15.8.0
2020-06	RAN#88	R5s200795	0753	1	F	Correction for NR5GC common function f_BuildRRCReconfigParamsNewDRBs()	15.8.0
2020-06	RAN#88	R5s200796	0757	1	F	Corrections for EUTRA registration procedure	15.8.0
2020-06	RAN#88	R5s200798	1001	-	F	Correction to NR5GC testcase 9.3.1.2	15.8.0
2020-06	RAN#88	R5s200799	0759	1	B	EN-DC FR1 : Addition of EN-DC RRC measurement test case 8.2.3.8.1a	15.8.0
2020-06	RAN#88	R5s200800	0760	1	B	EN-DC FR1 : Addition of EN-DC RRC measurement test case 8.2.3.8.1b	15.8.0
2020-06	RAN#88	R5s200801	0767	1	F	Correction for 5GC registration	15.8.0
2020-06	RAN#88	R5s200802	0768	1	F	Correction for NR5GC Idle Mode test cases using SIB3	15.8.0
2020-06	RAN#88	R5s200803	0771	1	F	Correction for NR grant assignment	15.8.0
2020-06	RAN#88	R5s200804	0776	1	B	NR5GC FR1 : Addition of 5GMM test case 9.1.1.6	15.8.0
2020-06	RAN#88	R5s200805	0781	1	F	Correction for common ENDC handover function	15.8.0
2020-06	RAN#88	R5s200806	0786	1	F	Corrections to test frequencies for Intra-band Contiguous NR CA	15.8.0
2020-06	RAN#88	R5s200807	0789	1	F	Correction for NR5GC authentication function	15.8.0
2020-06	RAN#88	R5s200808	0792	1	F	Correction for common NR5GC configuration function()	15.8.0
2020-06	RAN#88	R5s200809	0797	1	F	Correction to function f_GetLastConfiguredInternetPDUSessionID	15.8.0
2020-06	RAN#88	R5s200817	1006	-	F	Correction to NR5GC test case 6.4.3.1	15.8.0
2020-06	RAN#88	R5s200818	1007	-	F	Update to Configuration and Activation of VNG	15.8.0
2020-06	RAN#88	R5s200819	1008	-	F	Correction to NR5GC test case 9.1.6.1.2	15.8.0
2020-06	RAN#88	R5s200823	1009	-	B	EN-DC FR2 : Addition of NR MAC test case 7.1.1.1.2	15.8.0
2020-06	RAN#88	R5s200839	0706	1	B	Addition of EN-DC RRC test case 8.2.2.8.1 in FR2	15.8.0
2020-06	RAN#88	R5s200841	0721	1	B	Addition of NR5GC test case 8.1.3.3.2 in FR1	15.8.0
2020-06	RAN#88	R5s200842	0723	1	B	Addition of NR5GC test case 9.1.6.1.3 in FR1	15.8.0
2020-06	RAN#88	R5s200844	0740	1	B	NR5GC FR1 : Addition of NR Idle Mode test case 6.1.2.5	15.8.0
2020-06	RAN#88	R5s200845	0744	1	B	NR5GC FR1 : Addition of NR Idle Mode test case 6.4.2.2	15.8.0
2020-06	RAN#88	R5s200846	0748	1	F	Correction to EN-DC RRC Measurement tests 8.2.3.1.1 and 8.2.3.3.1	15.8.0
2020-06	RAN#88	R5s200847	0755	1	B	EN-DC FR1 : Addition of RRC test case 8.2.2.1.1	15.8.0

2020-06	RAN#88	R5s200848	0758	1	B	EN-DC FR2 : Addition of RRC test case 8.2.2.1.1	15.8.0
2020-06	RAN#88	R5s200849	0787	1	B	ENDC FR2: Addition of Intra-band Contiguous CA RRC test case 8.2.4.1.1.1	15.8.0
2020-06	RAN#88	R5s200850	0793	1	F	Correction for common NR rounding function()	15.8.0
2020-06	RAN#88	R5s200851	0796	1	B	Addition of NR5GC test case 8.1.3.1.16 in FR1	15.8.0
2020-06	RAN#88	R5s200911	0691	1	B	Addition of NR5GC test case 8.1.1.3.2 in FR1	15.8.0
2020-06	RAN#88	R5s200912	0703	1	B	NR5GC FR1 : Addition of 5GMM SMS over NAS test case 9.1.8.1	15.8.0
2020-06	RAN#88	R5s200913	0749	1	B	EN-DC FR2 : Addition of NR MAC test case 7.1.1.3.1	15.8.0
2020-06	RAN#88	R5s200915	1057	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	15.8.0
2020-06	RAN#88	R5s200918	0516	1	B	Addition of NR5GC test case 6.4.3.1 in FR1	15.8.0
2020-06	RAN#88	R5s200919	0534	1	B	NR5GC FR1 : Addition of NR5GC inter-RAT test case 6.2.3.3	15.8.0
2020-06	RAN#88	R5s200920	0541	1	B	NR5GC FR1: Addition of NR RLC test case 7.1.2.3.11	15.8.0
2020-09	RAN#89	R5s201000	1125	-	F	Correction for NR5GC idle mode test case 6.4.2.1	15.9.0
2020-09	RAN#89	R5s201004	1129	-	F	Corrections for NR5GC IRAT Idle mode test cases	15.9.0
2020-09	RAN#89	R5s201007	1132	-	F	Correction to NR MAC test case 7.1.1.3.5	15.9.0
2020-09	RAN#89	R5s201010	1135	-	F	Correction for NR RLC test cases 7.1.2.3.6 and 7.1.2.3.8 in EN-DC operation	15.9.0
2020-09	RAN#89	R5s201011	1136	-	F	Corrections for NR5GC idle mode test case 6.4.1.2	15.9.0
2020-09	RAN#89	R5s201012	1137	-	F	Correction to NR MAC test case 7.1.1.3.1	15.9.0
2020-09	RAN#89	R5s201013	1138	-	F	Correction to ENDC testcase 8.2.3.2.1	15.9.0
2020-09	RAN#89	R5s201015	1139	-	F	NR5GC FR1 : Re-verification of NR Idle Mode test case 6.1.2.11	15.9.0
2020-09	RAN#89	R5s201017	1140	-	F	Correction to ENDC testcase 8.2.3.12.1	15.9.0
2020-09	RAN#89	R5s201018	1141	-	F	Correction to NR5GC IRAT test case 8.1.3.2.4	15.9.0
2020-09	RAN#89	R5s201019	1142	-	F	Correction to NR PDCP test case 7.1.3.4.1	15.9.0
2020-09	RAN#89	R5s201020	1143	-	F	Correction to function f_ExtendedEAPAKA_PRF	15.9.0
2020-09	RAN#89	R5s201021	1144	-	B	Addition of NR5GC test case 9.1.1.1 in FR1	15.9.0
2020-09	RAN#89	R5s201022	1145	-	F	Correction to NR MAC test case 7.1.1.1.1a	15.9.0
2020-09	RAN#89	R5s201023	1146	-	F	Correction to EN-DC RRC test case 8.2.3.3.1	15.9.0
2020-09	RAN#89	R5s201025	1147	-	B	Addition of NR5GC test case 9.1.1.2 in FR1	15.9.0
2020-09	RAN#89	R5s201028	1149	-	B	Addition of NR5GC test case 10.1.4.1 in FR1	15.9.0
2020-09	RAN#89	R5s201030	1150	-	F	Correction to NR5GC test case 11.3.4	15.9.0
2020-09	RAN#89	R5s201031	1151	-	F	Correction to NR5GC test case 6.1.2.14	15.9.0
2020-09	RAN#89	R5s201032	1152	-	F	Correction to NR5GC test case 9.1.5.2.9	15.9.0
2020-09	RAN#89	R5s201034	1154	-	F	Correction to NR5GC test case 9.1.5.2.6	15.9.0
2020-09	RAN#89	R5s201035	1155	-	F	Correction to NR5GC testcase 8.1.1.3.2	15.9.0
2020-09	RAN#89	R5s201036	1156	-	F	Correction to NR MAC test case 7.1.1.4.2.3	15.9.0
2020-09	RAN#89	R5s201037	1157	-	F	Correction to NR idle mode test case 6.1.2.19	15.9.0
2020-09	RAN#89	R5s201038	1158	-	F	Correction to NR MAC test case 7.1.1.2.4	15.9.0

2020-09	RAN#89	R5s201039	1159	-	F	EN-DC FR1 : Re-verification of NR MAC test case 7.1.1.5.1	15.9.0
2020-09	RAN#89	R5s201041	1160	-	F	EN-DC FR2 : Re-verification of NR MAC test case 7.1.1.5.1	15.9.0
2020-09	RAN#89	R5s201043	1161	-	F	Correction to NR5GC test case 6.3.1.1	15.9.0
2020-09	RAN#89	R5s201044	1162	-	F	Correction to NR5GC test case 6.3.1.2	15.9.0
2020-09	RAN#89	R5s201045	1163	-	F	Correction to NR5GC test case 6.2.1.4	15.9.0
2020-09	RAN#89	R5s201046	1164	-	F	Correction to NR5GC test case 6.2.3.9	15.9.0
2020-09	RAN#89	R5s201047	1165	-	F	Correction to NR5GC test case 6.4.1.1	15.9.0
2020-09	RAN#89	R5s201049	1167	-	F	Correction to NR5GC test case 9.1.2.1	15.9.0
2020-09	RAN#89	R5s201052	1170	-	F	Correction to the NR5GC testcase 9.1.7.1	15.9.0
2020-09	RAN#89	R5s201053	1171	-	F	Correction to the NR5GC testcase 7.1.1.5.3	15.9.0
2020-09	RAN#89	R5s201054	1172	-	B	NR5GC FR1 : Addition of NR5GC IRAT test case 6.2.1.3	15.9.0
2020-09	RAN#89	R5s201060	1175	-	F	Correction to NR5GC IRAT test case 8.1.5.5.1	15.9.0
2020-09	RAN#89	R5s201061	1176	-	F	Correction to 5GMM test case 9.1.2.1	15.9.0
2020-09	RAN#89	R5s201062	1177	-	F	Correction to NR5GC IRAT test case 8.1.1.3.4	15.9.0
2020-09	RAN#89	R5s201063	1178	-	F	Correction to 5GSM test case 10.1.6.1	15.9.0
2020-09	RAN#89	R5s201065	1180	-	F	Correction to the ENDC testcase 7.1.1.3.5	15.9.0
2020-09	RAN#89	R5s201066	1181	-	F	Correction to NR5GC testcase 9.1.4.1	15.9.0
2020-09	RAN#89	R5s201067	1182	-	F	Correction to NR5GC testcase 6.2.1.5	15.9.0
2020-09	RAN#89	R5s201072	1186	-	F	Correction for NR MAC test case 7.1.1.5.3	15.9.0
2020-09	RAN#89	R5s201076	1189	-	F	Correction to NR5GC IRAT test case 8.1.4.1.2	15.9.0
2020-09	RAN#89	R5s201077	1190	-	F	Corrections for NR5GC RRC test case 8.1.5.3.4	15.9.0
2020-09	RAN#89	R5s201079	1192	-	F	Correction for NR5GC IRAT measurement test cases	15.9.0
2020-09	RAN#89	R5s201080	1193	-	B	EN-DC FR1 : Addition of EN-DC RRC test case 8.2.3.16.1	15.9.0
2020-09	RAN#89	R5s201082	1194	-	F	Correction to NR5GC idle mode test case 6.1.1.4	15.9.0
2020-09	RAN#89	R5s201085	1196	-	B	EN-DC FR2 : Addition of EN-DC RRC test case 8.2.3.16.1	15.9.0
2020-09	RAN#89	R5s201090	1198	-	B	NR5GC FR1: Addition of NR5GC CA test case 8.1.3.1.17.3	15.9.0
2020-09	RAN#89	R5s201091	1199	-	B	NR5GC FR1: Addition of NR5GC CA test case 8.1.5.6.5.3	15.9.0
2020-09	RAN#89	R5s201096	1202	-	F	Correction for NR idle mode test case 6.2.1.4	15.9.0
2020-09	RAN#89	R5s201098	1204	-	F	Correction for RRCResume in NR5GC test cases	15.9.0
2020-09	RAN#89	R5s201099	1205	-	F	Corrections for NR5GC RRC test case 8.1.3.1.16	15.9.0
2020-09	RAN#89	R5s201102	1208	-	F	Correction to NR5GC function f_EUTRA38_NR_AdditionalProtocolConfigOptions	15.9.0
2020-09	RAN#89	R5s201103	1209	-	F	Correction for PDCP test case 7.1.3.1.2	15.9.0
2020-09	RAN#89	R5s201106	1212	-	F	Correction for NR inter-frequency test cases	15.9.0
2020-09	RAN#89	R5s201111	1215	-	F	Correction for NR5GC IRAT test case 8.1.3.2.3	15.9.0
2020-09	RAN#89	R5s201112	1216	-	F	Correction to NR5GC testcase 6.4.2.2	15.9.0
2020-09	RAN#89	R5s201113	1217	-	F	Correction to NR5GC testcase 9.1.5.1.8	15.9.0
2020-09	RAN#89	R5s201115	1219	-	F	Correction to ENDC test case 8.2.2.1.1	15.9.0

2020-09	RAN#89	R5s201118	1222	-	F	Correction to NR Idle Mode test case 6.4.2.2	15.9.0
2020-09	RAN#89	R5s201120	1224	-	F	Correction for NR Idle mode test case 6.1.1.1	15.9.0
2020-09	RAN#89	R5s201121	1225	-	F	Correction for PDU SESSION AUTHENTICATION COMMAND	15.9.0
2020-09	RAN#89	R5s201124	1227	-	F	Correction to NR5GC test case 8.1.3.1.11 and 8.1.3.1.12	15.9.0
2020-09	RAN#89	R5s201125	1228	-	F	Correction to NR5GC IRAT test case 8.1.3.2.4	15.9.0
2020-09	RAN#89	R5s201127	1230	-	F	Correction to the ENDC testcases 8.2.2.x.1 and 8.2.3.13.1	15.9.0
2020-09	RAN#89	R5s201128	1231	-	F	Correction to NR5GC test case 9.1.1.6	15.9.0
2020-09	RAN#89	R5s201129	1232	-	F	Correction to NR5GC test case 9.1.7.2	15.9.0
2020-09	RAN#89	R5s201132	1236	-	F	Correction to function f_NR_UE_DeRegisterOnSwitchOff	15.9.0
2020-09	RAN#89	R5s201134	1238	-	F	Correction to NR5GC test case 9.1.5.1.9	15.9.0
2020-09	RAN#89	R5s201136	1240	-	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.5.2.2	15.9.0
2020-09	RAN#89	R5s201138	1241	-	F	Correction to NR5GC test case 9.1.5.1.9	15.9.0
2020-09	RAN#89	R5s201139	1242	-	B	Addition of NR5GC test case 6.1.2.21 in FR1	15.9.0
2020-09	RAN#89	R5s201141	1243	-	F	Correction to NR5GC test case 9.1.4.1	15.9.0
2020-09	RAN#89	R5s201142	1244	-	F	Correction to NR5GC testcase 9.1.5.1.3	15.9.0
2020-09	RAN#89	R5s201143	1245	-	F	Correction to NR5GC test case 9.1.7.1	15.9.0
2020-09	RAN#89	R5s201144	1246	-	B	NR5GC FR1 : Addition of NR MAC test case 7.1.1.4.2.5	15.9.0
2020-09	RAN#89	R5s201146	1247	-	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.2.1.5.1	15.9.0
2020-09	RAN#89	R5s201148	1248	-	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.2.1.5.2	15.9.0
2020-09	RAN#89	R5s201150	1249	-	F	Correction to NR5GC test case 7.1.1.1.1	15.9.0
2020-09	RAN#89	R5s201158	0901	1	F	Correction to NR5GC RRC test case 8.1.3.1.10	15.9.0
2020-09	RAN#89	R5s201159	0964	1	F	Correction to NR5GC IRAT test case 8.1.3.3.2	15.9.0
2020-09	RAN#89	R5s201160	0981	1	B	Addition of NR5GC test case 6.3.1.8 in FR1	15.9.0
2020-09	RAN#89	R5s201161	0982	1	B	Addition of NR5GC test case 11.3.4 in FR1	15.9.0
2020-09	RAN#89	R5s201162	0984	1	B	Addition of NR5GC test case 6.3.1.9 in FR1	15.9.0
2020-09	RAN#89	R5s201163	0988	1	F	Corrections for some NR5GC test cases when pc_NoOf_PDUs = 0 and pc_noOf_PDUsNewConnection > 0	15.9.0
2020-09	RAN#89	R5s201164	1011	1	B	Addition of NR5GC test case 6.1.2.23 in FR1	15.9.0
2020-09	RAN#89	R5s201165	1013	1	F	Correction to 5GMM test case 9.1.5.1.11	15.9.0
2020-09	RAN#89	R5s201166	1022	1	F	Correction to NR5GC test case 6.2.3.5	15.9.0
2020-09	RAN#89	R5s201167	1023	1	F	Correction to function f_EUTRA38_NR_InitialRegistration	15.9.0
2020-09	RAN#89	R5s201168	1025	1	B	Addition of NR5GC test case 7.1.1.5.3 in FR1	15.9.0
2020-09	RAN#89	R5s201169	1026	1	B	Addition of ENDC test case 7.1.1.5.3 in FR1	15.9.0
2020-09	RAN#89	R5s201170	1030	1	B	Addition of NR5GC test case 8.1.3.1.11 in FR1	15.9.0
2020-09	RAN#89	R5s201171	1031	1	F	Correction for AT command format for S-NSSAI	15.9.0
2020-09	RAN#89	R5s201173	1033	1	B	Addition of NR5GC IRAT test case 8.1.1.3.4 in FR1	15.9.0
2020-09	RAN#89	R5s201174	1255	-	F	Correction to ENDC testcase 8.2.2.9.1	15.9.0
2020-09	RAN#89	R5s201180	1034	1	F	Correction to NR Idle Mode test case 6.1.1.1	15.9.0

2020-09	RAN#89	R5s201181	1035	1	F	Correction to NR5GC testcase 6.2.3.6	15.9.0
2020-09	RAN#89	R5s201182	1039	1	B	Addition of NR5GC IRAT test case 8.1.4.2.2.1 in FR1	15.9.0
2020-09	RAN#89	R5s201183	1041	1	F	Correction to NR MAC test case 7.1.1.1.1a	15.9.0
2020-09	RAN#89	R5s201187	1260	-	F	Correction to ENDC RLC Testcase 7.1.2.2.6	15.9.0
2020-09	RAN#89	R5s201188	1042	1	F	Correction to NR Idle mode test case 6.4.1.2	15.9.0
2020-09	RAN#89	R5s201189	1045	1	F	Correction to search space config	15.9.0
2020-09	RAN#89	R5s201190	1048	1	F	Correction to selection expression	15.9.0
2020-09	RAN#89	R5s201191	1049	1	F	Correction to 5GMM test case 9.1.4.1	15.9.0
2020-09	RAN#89	R5s201192	1050	1	F	Correction for 5GMM test case 9.1.5.1.10	15.9.0
2020-09	RAN#89	R5s201193	1055	1	F	Correction to EN-DC RRC test cases 8.2.2.8.1 and 8.2.3.13.1	15.9.0
2020-09	RAN#89	R5s201194	1058	1	F	Correction to NR5GC test case 10.1.2.2	15.9.0
2020-09	RAN#89	R5s201195	1059	1	F	Correction to NR5GC testcase 10.1.1.1	15.9.0
2020-09	RAN#89	R5s201196	1064	1	F	Correction to NR MAC test case 7.1.1.3.1	15.9.0
2020-09	RAN#89	R5s201197	1065	1	F	Correction for NR MAC test case 7.1.1.3.5	15.9.0
2020-09	RAN#89	R5s201198	1070	1	F	Correction to NR5GC test case 9.1.6.1.3	15.9.0
2020-09	RAN#89	R5s201199	1071	1	F	Correction to NR5GC IRAT test case 8.1.4.2.1.1	15.9.0
2020-09	RAN#89	R5s201200	1072	1	F	Correction to NR5GC IRAT test case 6.4.3.1	15.9.0
2020-09	RAN#89	R5s201201	1074	1	F	Correction to the NR5GC test case 6.1.2.7	15.9.0
2020-09	RAN#89	R5s201202	1075	1	F	Correction to the NR5GC test case 9.1.5.2.1	15.9.0
2020-09	RAN#89	R5s201203	1076	1	F	Correction to the NR5GC test case 9.1.5.2.2	15.9.0
2020-09	RAN#89	R5s201204	1077	1	F	Correction to the NR5GC test case 6.1.2.8	15.9.0
2020-09	RAN#89	R5s201205	1084	1	F	Correction to NR5GC test case 9.1.5.2.4	15.9.0
2020-09	RAN#89	R5s201206	1086	1	F	Correction to function f_TC_9_1_2_x_Common	15.9.0
2020-09	RAN#89	R5s201207	1093	1	F	Corrections for 5GMM test case 9.1.5.1.14	15.9.0
2020-09	RAN#89	R5s201208	1095	1	F	Correction to 5GMM test case 9.1.5.1.1	15.9.0
2020-09	RAN#89	R5s201209	1096	1	F	Correction to NR5GC test case 9.1.2.x	15.9.0
2020-09	RAN#89	R5s201210	1097	1	F	Correction to NR5GC test case 9.1.6.1.2	15.9.0
2020-09	RAN#89	R5s201211	1098	1	F	Correction to NR5GC test case 8.1.4.2.1.1	15.9.0
2020-09	RAN#89	R5s201212	1099	1	F	Correction to the NR5GC testcase 6.1.2.2	15.9.0
2020-09	RAN#89	R5s201213	1101	1	F	Correction to the definition of NR_FrequencyBand_Type	15.9.0
2020-09	RAN#89	R5s201214	1102	1	F	Correction to the function f_NR5GC_RRC_Idle_Steps5_9_AKA	15.9.0
2020-09	RAN#89	R5s201215	1103	1	F	Correction to NR5GC test case 6.1.1.7	15.9.0
2020-09	RAN#89	R5s201216	1104	1	F	Correction to NR5GC test case 6.2.1.1	15.9.0
2020-09	RAN#89	R5s201217	1105	1	F	Correction to NR5GC test case 6.2.1.2	15.9.0
2020-09	RAN#89	R5s201219	1111	1	B	Addition of NR5GC IRAT test case 8.1.5.5.1 in FR1	15.9.0
2020-09	RAN#89	R5s201221	1262	-	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.4.1.6	15.9.0
2020-09	RAN#89	R5s201264	0996	1	F	Corrections for NR5GC IRAT test case 8.1.4.2.1.1	15.9.0

2020-09	RAN#89	R5s201265	1014	1	B	EN-DC FR2 : Addition of NR MAC test case 7.1.1.5.1	15.9.0
2020-09	RAN#89	R5s201266	1015	1	B	EN-DC FR1 : Addition of NR MAC test case 7.1.1.5.1	15.9.0
2020-09	RAN#89	R5s201267	1107	1	F	Correction to NR Idle mode test case 6.4.2.2	15.9.0
2020-09	RAN#89	R5s201268	1108	1	F	Correction to NR5GC RRC test case 8.1.5.4.1	15.9.0
2020-09	RAN#89	R5s201269	1118	1	F	Correction to NR5GC testcase 10.1.6.1	15.9.0
2020-09	RAN#89	R5s201270	1119	1	F	Correction to NR5GC testcase 10.1.6.2	15.9.0
2020-09	RAN#89	R5s201271	1121	1	F	Correction to NR5GC test case 6.4.3.1	15.9.0
2020-09	RAN#89	R5s201272	1122	1	B	NR5GC FR1 : Addition of NR MAC test case 7.1.1.5.1	15.9.0
2020-09	RAN#89	R5s201274	1123	1	F	Correction to the function f_NR_ENDC_ReConfigAM_UM	15.9.0
2020-09	RAN#89	R5s201275	0926	1	F	Corrections for NR5GC IRAT common functions	15.9.0
2020-09	RAN#89	R5s201276	0944	1	B	NR5GC FR1 : Addition of NR Idle Mode test case 6.1.2.11	15.9.0
2020-09	RAN#89	R5s201277	1005	1	B	Addition of NR5GC test case 8.1.3.1.20 in FR1	15.9.0
2020-09	RAN#89	R5s201279	1018	1	F	Correction for NR MAC test case 7.1.1.2.1 in NR5GC operation	15.9.0
2020-09	RAN#89	R5s201280	1019	1	F	Correction to NR Idle Mode test case 6.1.1.2	15.9.0
2020-09	RAN#89	R5s201281	1029	1	B	Addition of NR5GC test case 9.1.5.1.9 in FR1	15.9.0
2020-09	RAN#89	R5s201283	1036	1	F	Correction to NR5GC testcase 7.1.1.1.2	15.9.0
2020-09	RAN#89	R5s201284	1037	1	B	Addition of NR5GC test case 8.1.3.1.12 in FR1	15.9.0
2020-09	RAN#89	R5s201285	1040	1	B	Addition of NR5GC test case 6.2.1.5 in FR1	15.9.0
2020-09	RAN#89	R5s201289	1046	1	B	Addition of ENDC test case 7.1.1.5.2 in FR1	15.9.0
2020-09	RAN#89	R5s201290	1052	1	F	Correction for NR5GC IRAT test cases 8.1.3.2.3 and 8.1.3.2.4	15.9.0
2020-09	RAN#89	R5s201291	1060	1	B	Addition of NR5GC test case 7.1.1.5.2 in FR1	15.9.0
2020-09	RAN#89	R5s201292	1061	1	B	Addition of NR5GC test case 7.1.1.5.4 in FR1	15.9.0
2020-09	RAN#89	R5s201293	1062	1	B	Addition of ENDC test case 7.1.1.5.4 in FR1	15.9.0
2020-09	RAN#89	R5s201294	1066	1	F	Correction to NR5GC RRC test case 8.1.5.1.1	15.9.0
2020-09	RAN#89	R5s201295	1081	1	B	Addition of NR5GC test case 6.2.2.1 in FR1	15.9.0
2020-09	RAN#89	R5s201296	1082	1	B	Addition of NR5GC test case 6.2.2.2 in FR1	15.9.0
2020-09	RAN#89	R5s201297	1085	1	F	Correction to NR5GC test case 9.1.5.1.1	15.9.0
2020-09	RAN#89	R5s201298	1087	1	F	Correction to NR5GC testcase 10.1.1.2	15.9.0
2020-09	RAN#89	R5s201299	1100	1	F	Correction to NR5GC test case 6.1.2.9	15.9.0
2020-09	RAN#89	R5s201300	1109	1	F	Corrections for NR5GC IRAT test cases	15.9.0
2020-09	RAN#89	R5s201301	1284	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	15.9.0
2020-09	RAN#89	R5-204475	1233	1	F	5G Test Models updates	15.9.0
2020-12	RAN#90	R5s201346	1304	-	B	ENDC FR2: Addition of NR MAC test case 7.1.1.5.3	15.10.0
2020-12	RAN#90	R5s201350	1306	-	F	Correction for NR PDCP test cases in EN-DC	15.10.0
2020-12	RAN#90	R5s201351	1307	-	F	Correction for NR band N257	15.10.0
2020-12	RAN#90	R5s201354	1308	-	F	Correction to the NR function f_EUTRA38_IRAT_Init	15.10.0
2020-12	RAN#90	R5s201355	1309	-	F	Correction to the NR function f_NR_GetSSB_ToMeasureSIB2	15.10.0

2020-12	RAN#90	R5s201356	1310	-	F	Correction to NR5GC test case 9.1.5.1.3 in FR1	15.10.0
2020-12	RAN#90	R5s201357	1311	-	F	Correction to NR5GC test case 9.1.1.3 in FR1	15.10.0
2020-12	RAN#90	R5s201358	1312	-	F	Correction to multiple NR functions	15.10.0
2020-12	RAN#90	R5s201359	1313	-	F	Correction to NR5GC common function f_NR_GetSCGConfigResume	15.10.0
2020-12	RAN#90	R5s201361	1315	-	F	Correction to NR5GC Test cases related to Multiple QoS	15.10.0
2020-12	RAN#90	R5s201362	1316	-	F	Correction to NR5GC testcase 10.1.6.2	15.10.0
2020-12	RAN#90	R5s201363	1317	-	F	Correction to function f_EUTRA38_TAUREqFromN1	15.10.0
2020-12	RAN#90	R5s201366	1318	-	F	Correction to function f_NR_ReceiveMeasurementReports	15.10.0
2020-12	RAN#90	R5s201367	1319	-	F	Correction to NR SDAP testcases 7.1.4.1 and 7.1.4.2	15.10.0
2020-12	RAN#90	R5s201368	1320	-	F	Correction to NR Idle mode testcases	15.10.0
2020-12	RAN#90	R5s201370	1322	-	F	Correction to test case applicability	15.10.0
2020-12	RAN#90	R5s201371	1323	-	F	Corrections for 5GSM test case 10.1.1.1	15.10.0
2020-12	RAN#90	R5s201373	1325	-	F	Corrections for EN-DC test cases with data path check	15.10.0
2020-12	RAN#90	R5s201379	1327	-	F	Correction to NR5GC testcase 10.1.6.1	15.10.0
2020-12	RAN#90	R5s201380	1328	-	F	Correction to NR5GC Inter-RAT testcase 6.4.3.1	15.10.0
2020-12	RAN#90	R5s201381	1329	-	F	Correction to the NR5GC testcase 9.1.5.1.9	15.10.0
2020-12	RAN#90	R5s201382	1330	-	F	Correction to function f_Get_PDUSessionAuthenticationCmd	15.10.0
2020-12	RAN#90	R5s201383	1331	-	F	Correction to NR5GC testcase 9.3.1.3	15.10.0
2020-12	RAN#90	R5s201384	1332	-	F	Correction to function f_NG_SMS_AT_Config_WithPowering_EnterState_0B	15.10.0
2020-12	RAN#90	R5s201385	1333	-	F	Correction to NR testcases 8.1.3.1.11, 8.1.3.1.12 and 8.1.3.1.15A	15.10.0
2020-12	RAN#90	R5s201389	1335	-	F	Correction to the NR5GC testcase 6.2.3.3	15.10.0
2020-12	RAN#90	R5s201390	1336	-	F	Correction to the NR5GC testcase 8.1.4.2.1.1	15.10.0
2020-12	RAN#90	R5s201410	1337	-	F	Correction to NR5GC testcase 9.1.1.1	15.10.0
2020-12	RAN#90	R5s201411	1338	-	F	Correction to the NR5GC testcase 9.1.5.1.3a	15.10.0
2020-12	RAN#90	R5s201412	1339	-	F	Correction to NR5GC testcase 10.1.1.1	15.10.0
2020-12	RAN#90	R5s201416	1341	-	F	Correction to NR5GC testcase 9.1.5.2.1	15.10.0
2020-12	RAN#90	R5s201418	1343	-	F	Correction to NR5GC test case 6.3.1.9	15.10.0
2020-12	RAN#90	R5s201419	1344	-	F	Correction to NR5GC IRAT test case 6.2.3.9	15.10.0
2020-12	RAN#90	R5s201420	1345	-	F	Correction to EN-DC RRC test case 8.2.3.3.1	15.10.0
2020-12	RAN#90	R5s201421	1346	-	F	Correction to OffsetCarrierCORESET#0 for several NR bands for frequencies in mid-range	15.10.0
2020-12	RAN#90	R5s201422	1347	-	F	Correction to NR5GC test case 6.1.2.13	15.10.0
2020-12	RAN#90	R5s201423	1348	-	F	Correction to NR5GC test case 6.1.2.19	15.10.0
2020-12	RAN#90	R5s201424	1349	-	F	Correction to NR5GC test case 9.1.4.1	15.10.0
2020-12	RAN#90	R5s201434	1351	-	F	Correction to NR RLC testcase 7.1.2.3.8	15.10.0
2020-12	RAN#90	R5s201435	1352	-	F	Correction to EN-DC RRC test case 8.2.2.6.1	15.10.0
2020-12	RAN#90	R5s201436	1353	-	F	Correction to NR MAC test case 7.1.1.5.2	15.10.0

2020-12	RAN#90	R5s201437	1354	-	F	Correction to NR MAC test case 7.1.1.5.4	15.10.0
2020-12	RAN#90	R5s201442	1355	-	F	Correction to NR5GC test case 6.3.1.5	15.10.0
2020-12	RAN#90	R5s201443	1356	-	F	Correction to NR5GC test case 9.1.5.2.9	15.10.0
2020-12	RAN#90	R5s201444	1357	-	F	Correction to NR5GC test case 6.1.1.2	15.10.0
2020-12	RAN#90	R5s201450	1360	-	B	Addition of NR5GC test case 8.1.3.1.23 in FR1	15.10.0
2020-12	RAN#90	R5s201453	1365	-	F	Correction to function fl_NR_ENDC_UECapabilityTransfer	15.10.0
2020-12	RAN#90	R5s201454	1366	-	F	Correction to NR5GC test case 7.1.1.1.2	15.10.0
2020-12	RAN#90	R5s201457	1368	-	B	Addition of NR5GC test case 7.1.1.9.1 in FR1	15.10.0
2020-12	RAN#90	R5s201461	1370	-	F	Correction to NR5GC RRC test case 8.1.1.4.1	15.10.0
2020-12	RAN#90	R5s201463	1372	-	F	Corrections for NR5GC CA test cases	15.10.0
2020-12	RAN#90	R5s201464	1373	-	F	Correction for EN-DC RRC test case 8.2.2.1.1	15.10.0
2020-12	RAN#90	R5s201469	1378	-	F	Correction to NR MAC test case 7.1.1.1.1a	15.10.0
2020-12	RAN#90	R5s201472	1381	-	F	Correction to NR5GC idle mode test case 6.1.2.14	15.10.0
2020-12	RAN#90	R5s201474	1383	-	F	Corrections to NR5GC RRC test cases 8.1.3.1.x	15.10.0
2020-12	RAN#90	R5s201475	1384	-	F	Correction to NR5GC RRC test case 8.1.1.3.3	15.10.0
2020-12	RAN#90	R5s201477	1386	-	F	Correction to EN-DC RRC test case 8.2.2.8.1	15.10.0
2020-12	RAN#90	R5s201479	1388	-	B	EN-DC FR1 : Addition of NR MAC test case 7.1.1.4.2.3	15.10.0
2020-12	RAN#90	R5s201481	1390	-	F	Correction to NR MAC test case 7.1.1.5.1	15.10.0
2020-12	RAN#90	R5s201512	1408	-	F	Correction to NR5GC test case 7.1.1.2.4	15.10.0
2020-12	RAN#90	R5s201513	1409	-	F	Correction to NR5GC testcase 6.1.2.2	15.10.0
2020-12	RAN#90	R5s201515	1411	-	B	ENDC FR1: Addition of Inter band CA RRC test case 8.2.4.3.1.3	15.10.0
2020-12	RAN#90	R5s201526	1417	-	F	Summary of regression errors for NR5GC ATS in 20wk43 IWD	15.10.0
2020-12	RAN#90	R5s201527	1418	-	F	Correction to NR5GC test case 6.2.3.2	15.10.0
2020-12	RAN#90	R5s201528	1419	-	F	Correction to function f_NR5GC_RRC_Idle_Steps16_20	15.10.0
2020-12	RAN#90	R5s201530	1420	-	F	Correction to NR5GC testcase 7.1.2.3.5 and 7.1.2.3.5a	15.10.0
2020-12	RAN#90	R5s201531	1421	-	F	Correction to template cr_NG_GMM_CapAny for 20wk43 IWD	15.10.0
2020-12	RAN#90	R5s201532	1422	-	F	Correction to f_NR5GC_PDUSessionEstablishment_InnerLoop for 20wk43 IWD	15.10.0
2020-12	RAN#90	R5s201546	1435	-	F	Correction for EN-DC test cases in postamble	15.10.0
2020-12	RAN#90	R5s201555	1043	1	F	Correction to NR5GC testcase 9.1.5.1.10	15.10.0
2020-12	RAN#90	R5s201556	1051	1	F	Correction to 5GMM test case 9.1.5.1.13	15.10.0
2020-12	RAN#90	R5s201557	1130	1	F	Correction to 5GMM test case 9.3.1.2	15.10.0
2020-12	RAN#90	R5s201558	1148	1	F	Correction to NR5GC test case 8.1.1.3.4	15.10.0
2020-12	RAN#90	R5s201559	1166	1	F	Correction to NR5GC test case 9.1.5.1.3	15.10.0
2020-12	RAN#90	R5s201560	1173	1	B	Addition of NR5GC test case 6.3.1.5 in FR1	15.10.0
2020-12	RAN#90	R5s201561	1184	1	F	Corrections for EN-DC RRC test case 8.2.2.6.1	15.10.0
2020-12	RAN#90	R5s201562	1188	1	F	Correction to 5GMM test case 9.1.8.1	15.10.0
2020-12	RAN#90	R5s201563	1191	1	F	Corrections for NR5GC IRAT test case 8.1.4.2.2.1	15.10.0

2020-12	RAN#90	R5s201564	1200	1	F	Correction for NR5GC IRAT test cases	15.10.0
2020-12	RAN#90	R5s201566	1201	1	F	Correction for NR5GC IRAT test cases	15.10.0
2020-12	RAN#90	R5s201567	1207	1	F	Correction for 5GMM test case 9.1.5.1.9	15.10.0
2020-12	RAN#90	R5s201568	1210	1	B	EN-DC FR2 : Addition of NR MAC test case 7.1.1.5.2	15.10.0
2020-12	RAN#90	R5s201569	1211	1	B	EN-DC FR2 : Addition of NR MAC test case 7.1.1.5.4	15.10.0
2020-12	RAN#90	R5s201570	1237	1	F	Correction to the PDU Session Establishment Accept message	15.10.0
2020-12	RAN#90	R5s201571	1239	1	F	Correction to ENDC test case 8.2.2.6.1	15.10.0
2020-12	RAN#90	R5s201572	1251	1	F	Corrections to NR5GC SoR test case 6.3.1.9	15.10.0
2020-12	RAN#90	R5s201573	1252	1	F	Correction to the NR5GC testcase 8.1.3.1.12	15.10.0
2020-12	RAN#90	R5s201574	1253	1	B	NR5GC FR1: Addition of Intra-band non Contiguous NR RRC CA test case 8.1.3.1.18.3	15.10.0
2020-12	RAN#90	R5s201575	1258	1	B	Addition of NR5GC test case 9.1.8.2 in FR1	15.10.0
2020-12	RAN#90	R5s201577	1261	1	F	Correction to the ENDC Test cases 8.2.3.16.1 and 8.2.2.1.1	15.10.0
2020-12	RAN#90	R5s201578	1263	1	F	Correction to the NR5GC EAP common part	15.10.0
2020-12	RAN#90	R5s201579	1264	1	F	Correction to NR5GC testcase 9.1.5.1.3	15.10.0
2020-12	RAN#90	R5s201580	1266	1	F	Correction to NR5GC testcase 9.1.3.1	15.10.0
2020-12	RAN#90	R5s201581	1267	1	F	Correction to the NR5GC testcase 10.1.4.1	15.10.0
2020-12	RAN#90	R5s201582	1269	1	B	ENDC FR2: Addition of NR RRC test case 8.2.6.2.1	15.10.0
2020-12	RAN#90	R5s201584	1276	1	F	Correction to NR5GC testcase 9.1.8.1	15.10.0
2020-12	RAN#90	R5s201592	1283	1	F	Correction to the NR5GC testcase 7.1.1.2.3	15.10.0
2020-12	RAN#90	R5s201593	1285	1	F	Correction to common functions for ENDC RRC test case 8.2.1.1.1 and NR5GC test case 8.1.5.1.1	15.10.0
2020-12	RAN#90	R5s201594	1286	1	F	Correction to the NR5GC testcase 8.1.4.1.2	15.10.0
2020-12	RAN#90	R5s201595	1287	1	F	Correction to 5GSM test case 10.1.4.1	15.10.0
2020-12	RAN#90	R5s201596	1288	1	F	Correction to NR5GC idle mode test case 6.1.2.23	15.10.0
2020-12	RAN#90	R5s201597	1289	1	F	Correction to NR5GC idle mode test case 6.4.1.1	15.10.0
2020-12	RAN#90	R5s201601	1293	1	F	Correction ENDC MAC testcase 7.1.1.1.2	15.10.0
2020-12	RAN#90	R5s201603	1294	1	F	Correction to the UE capability transfer testcases 8.2.1.1.1 and 8.1.5.1.1	15.10.0
2020-12	RAN#90	R5s201604	1297	1	F	Correction to the NR5GC CA testcase 8.1.2.1.5.1	15.10.0
2020-12	RAN#90	R5s201605	1298	1	F	Correction to the NR function f_Get_NG_PDUSessionEstablishmentAccept	15.10.0
2020-12	RAN#90	R5s201606	1301	1	F	Correction to ENDC testcase 7.1.2.3.11	15.10.0
2020-12	RAN#90	R5s201623	1278	1	B	NR5GC FR1 : Addition of NR RRC CA test case 8.1.4.1.7.1	15.10.0
2020-12	RAN#90	R5s201624	1279	1	B	NR5GC FR1 : Addition of NR RRC CA test case 8.1.4.1.7.2	15.10.0
2020-12	RAN#90	R5s201625	1280	1	F	Correction to ENDC testcase 8.2.6.2.1	15.10.0
2020-12	RAN#90	R5s201627	1292	1	B	EN-DC FR1 :Addition of RRC test case 8.2.4.3.1.1	15.10.0
2020-12	RAN#90	R5s201628	1299	1	F	Correction to NR RLC testcases 7.1.2.3.7 and 7.1.2.3.8	15.10.0
2020-12	RAN#90	R5s201636	1235	1	F	Correction to NR5GC testcase 10.1.3.2	15.10.0

2020-12	RAN#90	R5s201646	1452	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	15.10.0
2020-12	RAN#90	R5-206369	1362	1	-	5G Test Models updates	15.10.0
2020-12	RAN#90	R5s201387	1334	-	F	Rel-16 Sep'20 baseline upgrade for 5GS Test Suites	16.0.0
2021-03	RAN#91	R5-210355	1570	-	F	Guidelines on test execution for bands n14 and n53	16.1.0
2021-03	RAN#91	R5-211417	1568	1	F	5G Test Models updates	16.1.0
2021-03	RAN#91	R5s210042	1484	-	F	Correction for NR5GC idle mode test case 6.4.1.2	16.1.0
2021-03	RAN#91	R5s210043	1485	-	F	Correction for NR5GC IRAT test cases 6.2.2.1 and 6.2.3.3	16.1.0
2021-03	RAN#91	R5s210044	1486	-	F	Correction for NR5GC RRC test case 8.1.3.3.2	16.1.0
2021-03	RAN#91	R5s210049	1491	-	F	Correction for NR5GC idle mode test case 6.3.1.7	16.1.0
2021-03	RAN#91	R5s210051	1493	-	F	Correction for NR RRC test case 8.1.1.2.3	16.1.0
2021-03	RAN#91	R5s210057	1497	-	F	Correction for NR5GC idle mode test case 6.2.1.4	16.1.0
2021-03	RAN#91	R5s210058	1498	-	F	Correction for NR5GC RRC test case 8.1.4.1.2	16.1.0
2021-03	RAN#91	R5s210059	1499	-	F	Correction for NR RRC Deregistration test cases	16.1.0
2021-03	RAN#91	R5s210065	1502	-	F	Correction to ENDC testcase 7.1.3.5.2	16.1.0
2021-03	RAN#91	R5s210066	1503	-	B	Addition of NR5GC test case 7.1.1.7.1.1 in FR1	16.1.0
2021-03	RAN#91	R5s210068	1504	-	B	Addition of NR5GC test case 7.1.1.7.1.2 in FR1	16.1.0
2021-03	RAN#91	R5s210070	1505	-	B	Addition of ENDC test case 7.1.1.7.1.1 in FR1	16.1.0
2021-03	RAN#91	R5s210072	1506	-	F	Correction to NR5GC test case 6.1.2.19	16.1.0
2021-03	RAN#91	R5s210073	1507	-	F	Correction to function f_NR5GC_ModifyPDUSession_AddVoice	16.1.0
2021-03	RAN#91	R5s210074	1508	-	F	Correction to f_BuildDefaultQoSRules	16.1.0
2021-03	RAN#91	R5s210075	1509	-	F	Correction to CA configurations for CA_n260G	16.1.0
2021-03	RAN#91	R5s210077	1511	-	F	Correction for NR5GC IRAT test cases	16.1.0
2021-03	RAN#91	R5s210078	1512	-	F	Correction for 5GMM test case 9.3.1.2	16.1.0
2021-03	RAN#91	R5s210079	1513	-	F	Correction for NR5GC RRC CA test cases 8.1.4.1.7.1 and 8.1.4.1.7.2	16.1.0
2021-03	RAN#91	R5s210082	1516	-	F	Correction to NR PDCCP test case 7.1.3.5.3	16.1.0
2021-03	RAN#91	R5s210083	1517	-	F	Corrections for ENDC RRC test case 8.2.2.3.1	16.1.0
2021-03	RAN#91	R5s210084	1518	-	F	Correction for NR5GC idle extension procedure	16.1.0
2021-03	RAN#91	R5s210085	1519	-	F	Corrections for NR5GC idle mode test cases	16.1.0
2021-03	RAN#91	R5s210087	1521	-	F	Correction to NR MAC test case 7.1.1.3.3	16.1.0
2021-03	RAN#91	R5s210088	1522	-	F	Correction to NR MAC test case 7.1.1.1.1a	16.1.0
2021-03	RAN#91	R5s210089	1523	-	F	Correction to ENDC RRC test case 8.2.4.3.1.1	16.1.0
2021-03	RAN#91	R5s210092	1526	-	F	Correction to NR5GC idle mode test case 6.4.2.1	16.1.0
2021-03	RAN#91	R5s210093	1527	-	F	Corrections to NR RLC test case 7.1.2.3.5	16.1.0
2021-03	RAN#91	R5s210094	1528	-	F	Correction to NR idle mode test case 6.4.1.1	16.1.0
2021-03	RAN#91	R5s210103	1531	-	F	Correction to f_EUTRA38_TAUREqFromN1	16.1.0
2021-03	RAN#91	R5s210104	1532	-	F	Correction to function f_NR_GetHighestBandwidthFrequency	16.1.0

2021-03	RAN#91	R5s210110	1538	-	F	Correction for 5GSM test case 10.1.1.1	16.1.0
2021-03	RAN#91	R5s210111	1539	-	F	Correction to NR5GC testcase 9.1.1.2	16.1.0
2021-03	RAN#91	R5s210116	1543	-	F	Correction for NR5GC multilayer test case 11.3.4	16.1.0
2021-03	RAN#91	R5s210123	1545	-	F	Correction to NR5GC test case 9.1.5.1.8	16.1.0
2021-03	RAN#91	R5s210128	1546	-	F	Correction to ENDC test case 8.2.2.3.1	16.1.0
2021-03	RAN#91	R5s210129	1547	-	F	Correction to function f_NR_GetSSB_ToMeasure	16.1.0
2021-03	RAN#91	R5s210130	1548	-	F	Correction function f_NG_GetDNN	16.1.0
2021-03	RAN#91	R5s210134	1550	-	F	Correction to NR5GC testcase 9.1.5.1.3	16.1.0
2021-03	RAN#91	R5s210135	1551	-	F	Correction to NR5GC test case 8.1.4.1.2	16.1.0
2021-03	RAN#91	R5s210138	1552	-	F	Correction to NR5GC test case 7.1.1.9.1	16.1.0
2021-03	RAN#91	R5s210143	1554	-	F	Correction for NR5GC RRC PWS test cases	16.1.0
2021-03	RAN#91	R5s210145	1555	-	F	Correction to NR5GC test case 9.1.5.1.9	16.1.0
2021-03	RAN#91	R5s210147	1557	-	F	Correction to NR5GC test case 7.1.1.2.1 and 7.1.1.3.1	16.1.0
2021-03	RAN#91	R5s210148	1558	-	F	Correction to function f_NR5GC_PDUSessionEstablishment_InnerLoop	16.1.0
2021-03	RAN#91	R5s210153	1560	-	F	Correction to EAP authentication calculation	16.1.0
2021-03	RAN#91	R5s210157	1564	-	F	Correction for NR5GC IRAT test cases	16.1.0
2021-03	RAN#91	R5s210159	1565	-	F	Correction to NR5GC testcase 9.1.7.2	16.1.0
2021-03	RAN#91	R5s210160	1566	-	F	Correction to ENDC test case 8.2.4.3.1.3	16.1.0
2021-03	RAN#91	R5s210161	1567	-	F	Correction function f_EUTRA38_MultiPDN_GetAPN	16.1.0
2021-03	RAN#91	R5s210162	1569	-	B	Addition of NR5GC test case 8.1.4.1.5 in FR1	16.1.0
2021-03	RAN#91	R5s210164	1571	-	F	Correction to function f_NR5GC_RRC_Idle_Steps5_9_AKA	16.1.0
2021-03	RAN#91	R5s210166	1572	-	F	Correction to NR5GC testcase 9.1.1.1	16.1.0
2021-03	RAN#91	R5s210167	1573	-	F	Correction to NR5GC test case 8.1.1.3.4	16.1.0
2021-03	RAN#91	R5s210168	1574	-	F	Correction to NR5GC test case 6.1.1.4	16.1.0
2021-03	RAN#91	R5s210171	1223	1	F	Correction to NR testcase 7.1.2.3.3	16.1.0
2021-03	RAN#91	R5s210172	1277	1	F	Correction to function f_NR_RRCReconfigExistingDRBs	16.1.0
2021-03	RAN#91	R5s210173	1305	1	B	EN-DC FR1 : Addition of RRC test case 8.2.2.3.1	16.1.0
2021-03	RAN#91	R5s210175	1321	2	F	Correction to function f_NR5GC_PDUSessionEstablishment	16.1.0
2021-03	RAN#91	R5s210176	1340	1	F	Correction to NR5GC testcase 9.3.1.2	16.1.0
2021-03	RAN#91	R5s210178	1367	1	B	Addition of NR5GC test case 6.3.1.7 in FR1	16.1.0
2021-03	RAN#91	R5s210179	1374	1	F	Correction for NR5GC IRAT test cases 8.1.1.3.4	16.1.0
2021-03	RAN#91	R5s210180	1375	1	F	Correction to NR5GC IRAT test case 6.2.3.9	16.1.0
2021-03	RAN#91	R5s210181	1376	1	F	Corrections for NR5GC IRAT test case 8.1.4.2.2.1	16.1.0
2021-03	RAN#91	R5s210182	1379	1	F	Correction to NR5GC IRAT test case 6.2.1.4	16.1.0
2021-03	RAN#91	R5s210183	1380	1	F	Correction to EN-DC RRC test case 8.2.4.1.1.x	16.1.0
2021-03	RAN#91	R5s210184	1392	1	F	Correction to 5GMM test case 9.1.1.2	16.1.0
2021-03	RAN#91	R5s210185	1393	1	F	Correction to NR PDCP test case 7.1.3.4.1	16.1.0

2021-03	RAN#91	R5s210186	1395	1	F	Correction to 5GMM test case 9.1.5.1.1	16.1.0
2021-03	RAN#91	R5s210187	1577	-	F	Correction to ENDC testcase 8.2.2.1.1	16.1.0
2021-03	RAN#91	R5s210188	1396	1	F	Correction to NR RLC test case 7.1.2.3.5	16.1.0
2021-03	RAN#91	R5s210190	1398	1	F	Correction to 5GMM test case 9.1.7.2	16.1.0
2021-03	RAN#91	R5s210191	1399	1	F	Correction for NR MAC test case 7.1.1.5.2	16.1.0
2021-03	RAN#91	R5s210192	1401	1	B	EN-DC FR1 : Addition of NR MAC test case 7.1.1.5.5	16.1.0
2021-03	RAN#91	R5s210193	1403	1	B	EN-DC FR2 : Addition of NR MAC test case 7.1.1.5.5	16.1.0
2021-03	RAN#91	R5s210194	1405	1	F	Correction to NR5GC SDAP test cases and RRC test case 8.1.5.4.1	16.1.0
2021-03	RAN#91	R5s210195	1406	1	F	Correction to NR5GC idle more test case 6.3.1.7	16.1.0
2021-03	RAN#91	R5s210196	1410	1	F	Correction to ENDC RLC testcase 7.1.2.3.6	16.1.0
2021-03	RAN#91	R5s210197	1412	1	F	Correction to NR MAC test case 7.1.1.5.4	16.1.0
2021-03	RAN#91	R5s210198	1413	1	F	Correction for template cs_NR_SS_SpCellConfig	16.1.0
2021-03	RAN#91	R5s210199	1415	1	B	Addition of NR5GC test case 7.1.1.10.1 in FR1	16.1.0
2021-03	RAN#91	R5s210200	1423	1	F	Correction for NR5GC IRAT test cases	16.1.0
2021-03	RAN#91	R5s210201	1425	1	F	Correction for NR MAC test case 7.1.1.5.1	16.1.0
2021-03	RAN#91	R5s210202	1426	1	F	Correction for 5GMM test case 9.1.4.1	16.1.0
2021-03	RAN#91	R5s210203	1434	1	F	Corrections for NR PDCP integrity and ciphering test cases	16.1.0
2021-03	RAN#91	R5s210204	1438	1	F	Correction to f_Check_NG_PDUSessionModificationReq in 20wk43 IWD	16.1.0
2021-03	RAN#91	R5s210205	1439	1	F	Correction to NR5GC testcases 10.1.6.1 and 10.1.6.2 for 20wk43 IWD	16.1.0
2021-03	RAN#91	R5s210206	1441	1	F	Correction to function f_NR_InitAS_KeyChaining_SKgNB	16.1.0
2021-03	RAN#91	R5s210209	1442	1	F	Correction to NR5GC test case 9.1.5.1.9	16.1.0
2021-03	RAN#91	R5s210210	1445	1	F	Correction to NR5GC test case 9.1.5.1.12	16.1.0
2021-03	RAN#91	R5s210211	1446	1	F	Correction to NR MAC test case 7.1.1.3.3	16.1.0
2021-03	RAN#91	R5s210221	1449	1	B	Addition of NR5GC test case 7.1.1.5.5 in FR1	16.1.0
2021-03	RAN#91	R5s210222	1451	1	F	Correction to NR PDCP integrity test cases	16.1.0
2021-03	RAN#91	R5s210226	1453	1	F	Correction to NR5GC test case 8.1.4.2.2.1	16.1.0
2021-03	RAN#91	R5s210230	1454	1	F	Correction to NR5GC test case 10.1.3.2	16.1.0
2021-03	RAN#91	R5s210234	1580	-	F	Correction to function f_Get_NG_DLNAStTransport	16.1.0
2021-03	RAN#91	R5s210235	1581	-	F	Correction to function fl_TC_9_1_1_3_6_Body	16.1.0
2021-03	RAN#91	R5s210238	1583	-	F	Correction to ENDC test case 10.2.2.1	16.1.0
2021-03	RAN#91	R5s210243	1588	-	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.1.2.4	16.1.0
2021-03	RAN#91	R5s210253	1589	-	F	Correction to function f_NR5GC_CellInfo_SetSIB3_start	16.1.0
2021-03	RAN#91	R5s210254	1459	1	F	Correction to function f_NR_TestcasesL2Testcase in 20wk50	16.1.0
2021-03	RAN#91	R5s210255	1460	1	F	Correction to function f_GetPDN_DNNTypeFromAPN in 20wk50	16.1.0
2021-03	RAN#91	R5s210256	1461	1	F	Correction to NR5GC IRAT test case 6.2.1.5	16.1.0
2021-03	RAN#91	R5s210257	1472	1	F	Correction to NR5GC idle mode test case 6.3.1.9	16.1.0

2021-03	RAN#91	R5s210258	1475	1	F	Correction to NR MAC testcase 7.1.1.1.2	16.1.0
2021-03	RAN#91	R5s210259	1476	1	F	Correction for NR RLC test case 7.1.2.3.8 in EN-DC	16.1.0
2021-03	RAN#91	R5s210260	1477	1	F	Correction to ENDC Integrity protection test cases 7.1.3.2.x	16.1.0
2021-03	RAN#91	R5s210261	1478	1	F	Correction for NR PDCP test case 7.1.3.4.1 in EN-DC	16.1.0
2021-03	RAN#91	R5s210263	1590	-	F	Correction to cads_NR_CellConfig_C_RNTI_REQ	16.1.0
2021-03	RAN#91	R5s210265	1591	-	F	Correction to f_EUTRA38_BuildEUTRA_RadioResourceConfigDedicated	16.1.0
2021-03	RAN#91	R5s210267	1592	-	F	Correction to f_NG_GetPDNAddress	16.1.0
2021-03	RAN#91	R5s210271	1594	-	F	Correction to NR5GC test case 8.1.3.1.23	16.1.0
2021-03	RAN#91	R5s210275	1595	-	F	Correction to NR PDCP test 7.1.3.5.2	16.1.0
2021-03	RAN#91	R5s210276	1596	-	F	Correction to NR5GC testcase 6.2.3.4	16.1.0
2021-03	RAN#91	R5s210277	1597	-	F	Correction to the function f_ReconfigureDRBs	16.1.0
2021-03	RAN#91	R5s210282	1598	-	F	Correction to NR5GC test case 7.1.3.4.1	16.1.0
2021-03	RAN#91	R5s210283	1599	-	B	EN-DC FR1 : Addition of EN-DC RRC test case 8.2.2.2.1	16.1.0
2021-03	RAN#91	R5s210312	1443	1	F	Correction to NR5GC test case 8.1.3.2.2	16.1.0
2021-03	RAN#91	R5s210314	1462	1	F	Correction to NR5GC IRAT test case 8.1.4.2.1.1	16.1.0
2021-03	RAN#91	R5s210316	1457	1	B	EN-DC FR1 : Addition of NR MAC test case 7.1.1.4.2.5	16.1.0
2021-03	RAN#91	R5s210319	1614	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	16.1.0
2021-06	RAN#92	R5-213516	1717	1	F	5G Test Models updates	16.2.0
2021-06	RAN#92	R5s210389	1646	-	F	Correction for NR5GC CA inter-cell handover procedure	16.2.0
2021-06	RAN#92	R5s210390	1647	-	B	Addition of NR5GC Idle mode test case 6.1.1.6 in FR1	16.2.0
2021-06	RAN#92	R5s210395	1648	-	F	Correction to the function f_NR_PDCP_SDU_GetList	16.2.0
2021-06	RAN#92	R5s210396	1649	-	F	Correction to cads_NR_UplinkBWP_ConfigCommon_REQ	16.2.0
2021-06	RAN#92	R5s210402	1650	-	F	Correction for NR5GC IRAT test case 8.1.4.2.1.1	16.2.0
2021-06	RAN#92	R5s210403	1651	-	F	Correction for NR 5GC IRAT test case 6.2.3.4	16.2.0
2021-06	RAN#92	R5s210404	1652	-	F	Correction for NR system information modification functions	16.2.0
2021-06	RAN#92	R5s210405	1653	-	F	Correction for NR idle mode test case 6.3.1.9	16.2.0
2021-06	RAN#92	R5s210406	1654	-	F	Correction for NR5GC RRC test case 8.1.1.3.2	16.2.0
2021-06	RAN#92	R5s210407	1655	-	F	Correction for NR5GC common function	16.2.0
2021-06	RAN#92	R5s210408	1656	-	F	Corrections for NR5GC IRAT test cases	16.2.0
2021-06	RAN#92	R5s210409	1657	-	F	Correction for NR idle mode test case 6.4.3.1	16.2.0
2021-06	RAN#92	R5s210410	1658	-	F	Correction for NR5GC IRAT test case 6.2.1.2	16.2.0
2021-06	RAN#92	R5s210412	1660	-	F	Correction for NR5GC IRAT test case 8.1.4.2.2.1	16.2.0
2021-06	RAN#92	R5s210414	1661	-	F	Re-verification of NR5GC IRAT test case 11.1.1	16.2.0
2021-06	RAN#92	R5s210417	1663	-	F	Correction to function f_GetPDN_DNNTYPEFromAPN	16.2.0
2021-06	RAN#92	R5s210422	1664	-	F	Correction to a_ApplicationCtrl	16.2.0
2021-06	RAN#92	R5s210426	1666	-	F	Correction for NR MAC test case 7.1.1.2.3	16.2.0

2021-06	RAN#92	R5s210427	1667	-	F	Correction for NR MAC test case 7.1.1.2.4	16.2.0
2021-06	RAN#92	R5s210428	1668	-	F	Correction for NR idle mode test case 6.1.1.3	16.2.0
2021-06	RAN#92	R5s210431	1670	-	F	Correction for 5GMM test case 9.1.5.1.3	16.2.0
2021-06	RAN#92	R5s210432	1671	-	F	Correction for 5GMMtest cases 9.1.8.1 and 9.1.8.2	16.2.0
2021-06	RAN#92	R5s210433	1672	-	F	Correction for NR idle mode test case 6.2.3.11	16.2.0
2021-06	RAN#92	R5s210434	1673	-	F	Correction for NR MAC test cases	16.2.0
2021-06	RAN#92	R5s210435	1674	-	F	Correction for NR5GC measurement test cases	16.2.0
2021-06	RAN#92	R5s210438	1676	-	F	Correction for NR MAC test case 7.1.1.10.1	16.2.0
2021-06	RAN#92	R5s210439	1677	-	F	Correction for EN-DC RRC test case 8.2.2.3.1	16.2.0
2021-06	RAN#92	R5s210440	1678	-	F	Correction for NR idle mode test case 6.1.2.8	16.2.0
2021-06	RAN#92	R5s210444	1679	-	F	Rel-16 Mar'21 partial baseline upgrade for 5GS TTCN-3 Test Suites	16.2.0
2021-06	RAN#92	R5s210445	1680	-	F	Correction for NR idle mode test case 6.2.3.6	16.2.0
2021-06	RAN#92	R5s210446	1681	-	F	Correction for 5GMM test case 9.3.1.2	16.2.0
2021-06	RAN#92	R5s210449	1684	-	F	Correction to NR idle mode test case 6.1.1.4	16.2.0
2021-06	RAN#92	R5s210453	1686	-	F	Corrections for EN-DC RRC test case 8.2.4.3.1.1	16.2.0
2021-06	RAN#92	R5s210454	1687	-	F	Correction for NR idle mode test case 6.4.1.1	16.2.0
2021-06	RAN#92	R5s210456	1689	-	B	Addition of NR5GC test case 8.1.5.6.1 in FR1	16.2.0
2021-06	RAN#92	R5s210463	1692	-	F	Correction to NR5GC testcase 7.1.4.1	16.2.0
2021-06	RAN#92	R5s210471	1694	-	F	Correction to function fl_QoS_MaximumBitRateExtd_2	16.2.0
2021-06	RAN#92	R5s210475	1696	-	F	Re-verification of NR5GC IRAT test case 11.1.3	16.2.0
2021-06	RAN#92	R5s210476	1697	-	F	Correction to NR testcases 7.1.3.1.2.NR5GC and 7.1.3.1.2.ENDC	16.2.0
2021-06	RAN#92	R5s210478	1699	-	B	Addition of NR5GC EPS fall back test case 11.1.4 in FR1	16.2.0
2021-06	RAN#92	R5s210480	1700	-	F	Correction to functions f_NR5GC_ModifyPDUSession_AddVoice and f_NR5GC_ModifyPDUSession_RemoveIMSVoice	16.2.0
2021-06	RAN#92	R5s210483	1702	-	F	Correction to function f_TC_7_1_1_3_3_NR5GC	16.2.0
2021-06	RAN#92	R5s210485	1704	-	F	Correction to NR5GC testcase 6.3.1.5	16.2.0
2021-06	RAN#92	R5s210501	1707	-	F	Correction to the NR5GC Testcase 6.4.2.2	16.2.0
2021-06	RAN#92	R5s210503	1708	-	B	NR5GC FR1 : Addition of 5GMM test case 9.1.5.1.15	16.2.0
2021-06	RAN#92	R5s210509	1710	-	F	Correction to the UE capability transfer testcases 8.2.1.1.1 and 8.1.5.1.1	16.2.0
2021-06	RAN#92	R5s210520	1715	-	F	Correction to NR5GC testcase 6.2.3.8	16.2.0
2021-06	RAN#92	R5s210523	1718	-	F	Correction to NR5GC RRC test case 8.1.3.1.18.x	16.2.0
2021-06	RAN#92	R5s210524	1719	-	F	Correction to NR idle mode test case 6.1.2.2	16.2.0
2021-06	RAN#92	R5s210528	1088	1	B	EN-DC FR1 : Addition of NR RLC test case 7.1.2.3.4	16.2.0
2021-06	RAN#92	R5s210529	1259	1	B	EN-DC FR2 : Addition of NR RLC test case 7.1.2.3.4	16.2.0
2021-06	RAN#92	R5s210530	1295	1	B	Addition of NR5GC test case 7.1.2.3.4 in FR1	16.2.0
2021-06	RAN#92	R5s210531	1456	1	F	Correction to NR5GC test case 9.1.5.1.3	16.2.0
2021-06	RAN#92	R5s210532	1488	1	F	Correction to NR MAC test case 7.1.1.1.2	16.2.0

2021-06	RAN#92	R5s210533	1494	1	F	EN-DC FR1 : Re-verification of NR RLC test case 7.1.2.3.4	16.2.0
2021-06	RAN#92	R5s210534	1495	1	F	EN-DC FR2 : Re-verification of NR RLC test case 7.1.2.3.4	16.2.0
2021-06	RAN#92	R5s210535	1524	1	F	Correction to NR MAC test case 7.1.1.10.1	16.2.0
2021-06	RAN#92	R5s210536	1525	1	F	Correction to NR MAC test case 7.1.1.1.6	16.2.0
2021-06	RAN#92	R5s210537	1536	1	F	Corrections for NR MAC test cases 7.1.1.2.3 and 7.1.1.2.4	16.2.0
2021-06	RAN#92	R5s210538	1544	1	F	NR5GC FR1 : Re-verification of NR RLC test case 7.1.2.3.4	16.2.0
2021-06	RAN#92	R5s210539	1578	1	F	Correction NR5GC test case 6.1.2.14	16.2.0
2021-06	RAN#92	R5s210540	1582	1	F	Correction to NR5GC testcase 6.3.1.7	16.2.0
2021-06	RAN#92	R5s210541	1587	1	F	Correction for NR common function f_NR_InitDL_BWPs()	16.2.0
2021-06	RAN#92	R5s210543	1593	1	F	Encoding enhancement for better TTCN logging	16.2.0
2021-06	RAN#92	R5s210547	1604	1	F	Correction to function f_MTC_IMS_CreateMapAndConnectPTCs_NR5GC	16.2.0
2021-06	RAN#92	R5s210548	1607	1	F	Correction to the Mapped EPS Parameter	16.2.0
2021-06	RAN#92	R5s210550	1611	1	B	NR5GC FR1 : Addition of NR5GC multilayer test case 11.3.9	16.2.0
2021-06	RAN#92	R5s210551	1612	1	F	Correction to NR5GC test case 8.1.1.4.1	16.2.0
2021-06	RAN#92	R5s210552	1613	1	F	Correction to function f_NR_RRC_SetupRequest_Common	16.2.0
2021-06	RAN#92	R5s210556	1619	1	B	Addition of NR5GC test case 7.1.1.3.8.1 in FR1	16.2.0
2021-06	RAN#92	R5s210557	1620	1	B	Addition of NR5GC test case 7.1.1.3.8.2 in FR1	16.2.0
2021-06	RAN#92	R5s210558	1621	1	F	Correction to NR5GC test case 6.3.1.5	16.2.0
2021-06	RAN#92	R5s210560	1624	1	B	Addition of NR5GC test case 8.1.2.1.4 in FR1	16.2.0
2021-06	RAN#92	R5s210561	1625	1	B	Addition of NR5GC CA test case 8.1.4.1.8.1 in FR1	16.2.0
2021-06	RAN#92	R5s210562	1626	1	B	Addition of NR5GC CA test case 8.1.4.1.8.2 in FR1	16.2.0
2021-06	RAN#92	R5s210564	1629	1	B	NR5GC FR1 : Addition of NR IRAT test case 6.2.3.11	16.2.0
2021-06	RAN#92	R5s210565	1631	1	F	Correction for 5GMM test case 9.3.1.2	16.2.0
2021-06	RAN#92	R5s210566	1633	1	F	Correction to function fl_NR_InitialiseSiScheduling	16.2.0
2021-06	RAN#92	R5s210567	1634	1	F	Correction to NR5GC testcase 9.1.5.1.3	16.2.0
2021-06	RAN#92	R5s210568	1635	2	F	Correction for function f_NR5GC_ModifyPDUSession_AddVoice()	16.2.0
2021-06	RAN#92	R5s210570	1638	1	F	Summary of regression errors in 21wk12 TTCN for NR testcases	16.2.0
2021-06	RAN#92	R5s210571	1639	1	F	Correction to Multiple ENDC Measurement testcases	16.2.0
2021-06	RAN#92	R5s210572	1640	1	F	Correction to NR5GC testcase 9.1.5.2.8	16.2.0
2021-06	RAN#92	R5s210574	1724	-	F	Correction for NR5GC RRC test case 8.1.4.1.8.1	16.2.0
2021-06	RAN#92	R5s210575	1725	-	F	Correction to NR Idle Mode test case 6.4.2.1	16.2.0
2021-06	RAN#92	R5s210576	1726	-	F	Correction to the NR5GC Testcase 6.3.1.1	16.2.0
2021-06	RAN#92	R5s210577	1727	-	F	Correction to NR5GC testcase 9.1.5.1.3	16.2.0
2021-06	RAN#92	R5s210578	1729	-	F	Correction to the function f_NR_SendRRCResume_Def	16.2.0
2021-06	RAN#92	R5s210581	1732	-	F	Correction to f_TC_6_4_2_1_NR5GC_TestBody	16.2.0
2021-06	RAN#92	R5s210582	1733	-	F	Correction to function f_TC_7_1_1_5_5_NR_TestBody	16.2.0
2021-06	RAN#92	R5s210594	1738	-	F	Correction to NR5GC MAC DRX test cases	16.2.0

2021-06	RAN#92	R5s210595	1739	-	F	Correction to NR5GC RRC test case 8.1.1.2.4	16.2.0
2021-06	RAN#92	R5s210598	1742	-	F	Correction to the function f_GetTestcaseAttrib_EarlyContentionResolution	16.2.0
2021-06	RAN#92	R5s210602	1745	-	F	Correction for NR5GC RRC test case 8.1.3.3.2	16.2.0
2021-06	RAN#92	R5s210605	1747	-	F	Correction to the testcase 6.4.2.2.NR5GC	16.2.0
2021-06	RAN#92	R5s210638	1559	1	B	Addition of NR5GC EPS fall back test case 11.1.1 in FR1	16.2.0
2021-06	RAN#92	R5s210639	1609	1	B	Addition of NR5GC EPS fall back test case 11.1.3 in FR1	16.2.0
2021-06	RAN#92	R5s210640	1623	1	F	Correction to ENDC test case 10.2.2.1	16.2.0
2021-06	RAN#92	R5s210641	1636	1	F	Correction to NR5GC testcase 8.1.5.4.1	16.2.0
2021-06	RAN#92	R5s210643	1605	1	F	Correction to the function f_NR_CheckDataPath_CA	16.2.0
2021-06	RAN#92	R5s210646	1628	1	B	NR5GC FR1 : Addition of NR IRAT test case 6.2.3.10	16.2.0
2021-06	RAN#92	R5s210648	1764	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	16.2.0
2021-09	RAN#93	R5-214620	1856	-	F	5G Rel-15 Test Models updates	16.3.0
2021-09	RAN#93	R5-214621	1857	-	F	Addition of NR/UTRAN Inter-RAT Test Model	16.3.0
2021-09	RAN#93	R5s210716	1790	-	B	Addition of NR-DC test case 8.2.2.4.2 in FR1+FR2	16.3.0
2021-09	RAN#93	R5s210719	1792	-	F	Correction for NR PDCP test case 7.1.3.4.1	16.3.0
2021-09	RAN#93	R5s210722	1794	-	F	Correction for NR5GC multilayer test case 11.1.4	16.3.0
2021-09	RAN#93	R5s210725	1797	-	F	Correction for NR MAC test case 7.1.1.2.1	16.3.0
2021-09	RAN#93	R5s210727	1798	-	F	Correction for NR MAC CA test cases 7.1.1.7.1.x	16.3.0
2021-09	RAN#93	R5s210729	1800	-	F	Correction for some NR5GC test cases with IMS enabled	16.3.0
2021-09	RAN#93	R5s210730	1801	-	F	Correction for EN-DC RRC test case 8.2.2.2.1	16.3.0
2021-09	RAN#93	R5s210731	1802	-	F	Correction for NR5GC multilayer test case 11.3.7	16.3.0
2021-09	RAN#93	R5s210735	1803	-	F	Correction for ENDC RRC test case 8.2.6.2.1	16.3.0
2021-09	RAN#93	R5s210736	1804	-	F	Correction for NR idle mode test case 6.1.2.8	16.3.0
2021-09	RAN#93	R5s210737	1805	-	B	Addition of NR5GC test case 9.1.2.1 in FR2	16.3.0
2021-09	RAN#93	R5s210739	1806	-	B	Addition of NR5GC test case 9.1.2.2 in FR2	16.3.0
2021-09	RAN#93	R5s210741	1807	-	B	Addition of NR5GC test case 9.1.2.3 in FR2	16.3.0
2021-09	RAN#93	R5s210743	1808	-	B	Addition of NR5GC test case 9.1.2.4 in FR2	16.3.0
2021-09	RAN#93	R5s210745	1809	-	B	Addition of NR5GC test case 9.1.2.5 in FR2	16.3.0
2021-09	RAN#93	R5s210747	1810	-	B	Addition of NR5GC test case 9.1.2.6 in FR2	16.3.0
2021-09	RAN#93	R5s210749	1811	-	B	Addition of NR5GC test case 9.1.2.7 in FR2	16.3.0
2021-09	RAN#93	R5s210751	1812	-	B	Addition of NR5GC test case 9.1.2.8 in FR2	16.3.0
2021-09	RAN#93	R5s210753	1813	-	B	Addition of NR5GC test case 9.1.3.1 in FR2	16.3.0
2021-09	RAN#93	R5s210757	1815	-	F	Correction to NR5GC multilayer test case 11.3.2	16.3.0
2021-09	RAN#93	R5s210758	1816	-	F	Correction to EN-DC RRC CA test case 8.2.4.3.1.1	16.3.0
2021-09	RAN#93	R5s210760	1817	-	B	Addition of NR CA test case 8.1.2.1.5.3 in FR1	16.3.0
2021-09	RAN#93	R5s210763	1818	-	B	Addition of NR5GC test case 9.1.1.1 in FR2	16.3.0

2021-09	RAN#93	R5s210765	1819	-	B	Addition of NR5GC test case 9.1.1.2 in FR2	16.3.0
2021-09	RAN#93	R5s210770	1822	-	F	Correction to NR5GC testcase 11.4.6	16.3.0
2021-09	RAN#93	R5s210771	1823	-	F	Correction to function f_NR5GC_EmergencyCallPDUSession	16.3.0
2021-09	RAN#93	R5s210774	1825	-	B	Addition of NR-DC test case 8.2.5.1.2 in FR1+FR2	16.3.0
2021-09	RAN#93	R5s210776	1826	-	B	Addition of NR-DC test case 8.2.5.2.2 in FR1+FR2	16.3.0
2021-09	RAN#93	R5s210778	1827	-	F	Correction to NR RLC test case 7.1.2.3.5	16.3.0
2021-09	RAN#93	R5s210786	1830	-	F	Correction to NG NAS template	16.3.0
2021-09	RAN#93	R5s210787	1831	-	F	Correction for NR PDCP test case 7.1.3.5.1	16.3.0
2021-09	RAN#93	R5s210797	1834	-	F	Correction to NR test cases 9.1.5.2.2, 9.1.5.1.1 and 11.3.9 for guard timer extension	16.3.0
2021-09	RAN#93	R5s210804	1838	-	F	Correction to NR5GC testcase 11.3.2	16.3.0
2021-09	RAN#93	R5s210808	1841	-	B	NR5GC FR1 : Addition of NR5GC multilayer test case 11.4.4	16.3.0
2021-09	RAN#93	R5s210810	1842	-	B	NR5GC FR1 : Addition of NR5GC multilayer test case 11.4.8	16.3.0
2021-09	RAN#93	R5s210816	1844	-	B	Addition of NR5GC testcase 9.1.5.2.8 in FR2	16.3.0
2021-09	RAN#93	R5s210818	1845	-	B	Addition of NR5GC testcase 9.1.5.2.7 in FR2	16.3.0
2021-09	RAN#93	R5s210820	1846	-	F	Correction to NR5GC testcase 9.1.5.1.10 in FR1	16.3.0
2021-09	RAN#93	R5s210821	1847	-	B	Addition of NR5GC testcase 9.1.5.2.2 in FR2	16.3.0
2021-09	RAN#93	R5s210823	1848	-	B	Addition of NR5GC testcase 9.1.1.4 in FR2	16.3.0
2021-09	RAN#93	R5s210826	1849	-	B	Addition of NR5GC testcase 9.1.5.1.5 in FR2	16.3.0
2021-09	RAN#93	R5s210828	1850	-	B	Addition of NR5GC testcase 10.1.1.1 in FR2	16.3.0
2021-09	RAN#93	R5s210830	1851	-	B	Addition of NR5GC testcase 6.1.2.15 in FR2	16.3.0
2021-09	RAN#93	R5s210832	1852	-	B	Addition of NR5GC testcase 9.1.5.1.6 in FR2	16.3.0
2021-09	RAN#93	R5s210836	1854	-	B	Addition of NR5GC testcase 9.1.5.1.15 in FR2	16.3.0
2021-09	RAN#93	R5s210838	1855	-	F	Correction to NR test case 7.1.3.4.1	16.3.0
2021-09	RAN#93	R5s210842	1860	-	B	Addition of NR5GC test case 8.1.5.8.2.1 in FR1	16.3.0
2021-09	RAN#93	R5s210844	1861	-	B	Addition of NR5GC test case 8.1.5.8.2.2 in FR1	16.3.0
2021-09	RAN#93	R5s210846	1862	-	F	Correction to ENDC testcases 8.2.4.3.1.1 and 8.2.4.3.1.3	16.3.0
2021-09	RAN#93	R5s210847	1863	-	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.1.4.1	16.3.0
2021-09	RAN#93	R5s210855	1864	-	B	ENDC FR2 : Addition of ENDC NR MAC test case 7.1.1.7.1.1	16.3.0
2021-09	RAN#93	R5s210857	1865	-	B	ENDC FR1 : Addition of ENDC NR MAC test case 7.1.1.7.1.2	16.3.0
2021-09	RAN#93	R5s210860	1867	-	F	Correction to NR testcase 7.1.1.3.2	16.3.0
2021-09	RAN#93	R5s210862	1869	-	F	Correction to NR5GC testcase 7.1.1.3.5	16.3.0
2021-09	RAN#93	R5s210865	1871	-	F	Correction to NR5GC testcase 7.1.1.7.1.2	16.3.0
2021-09	RAN#93	R5s210872	1877	-	F	Correction to NR testcase 8.1.5.4.1	16.3.0
2021-09	RAN#93	R5s210873	1878	-	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.6.1.4.4	16.3.0
2021-09	RAN#93	R5s210883	1881	-	F	Correction to ENDC MAC testcase 7.1.1.3.7	16.3.0
2021-09	RAN#93	R5s210886	1884	-	F	Correction to NR testcases 7.1.2.3.5 and 7.1.2.3.5a	16.3.0

2021-09	RAN#93	R5s210891	1886	-	F	Corrections for NR-DC test cases	16.3.0
2021-09	RAN#93	R5s210892	1887	-	F	Correction of NR5GC test case 6.4.1.2	16.3.0
2021-09	RAN#93	R5s210893	1888	-	F	Correction to NR5GC testcase 7.1.1.7.1.1 in FR1	16.3.0
2021-09	RAN#93	R5s210894	1889	-	B	EN-DC FR1 : Addition of NR MAC test case 7.1.1.3.8.1	16.3.0
2021-09	RAN#93	R5s210896	1890	-	F	Correction to NR5GC testcase 7.1.1.9.1	16.3.0
2021-09	RAN#93	R5s210898	1644	1	F	Correction for IMS voice call procedures	16.3.0
2021-09	RAN#93	R5s210900	1675	1	F	Correction for 5GSM test case 10.1.4.1	16.3.0
2021-09	RAN#93	R5s210901	1714	1	B	NR5GC FR1 : Addition of NR5GC multilayer test case 11.4.3	16.3.0
2021-09	RAN#93	R5s210902	1721	1	F	Correction to NR handover function	16.3.0
2021-09	RAN#93	R5s210903	1730	1	F	Correction to NR testcase 7.1.3.1.2 (ENDC and NR5GC)	16.3.0
2021-09	RAN#93	R5s210904	1731	1	F	Correction for NR idle mode test case 6.2.3.5	16.3.0
2021-09	RAN#93	R5s210905	1740	1	F	Correction for NR idle mode test case 6.1.1.1	16.3.0
2021-09	RAN#93	R5s210906	1746	1	B	NR5GC FR1 : Addition of NR5GC multilayer test case 11.4.7	16.3.0
2021-09	RAN#93	R5s210908	1748	1	F	Correction to NR5GC testcase 11.3.4	16.3.0
2021-09	RAN#93	R5s210909	1749	1	F	Correction to NR5GC testcase 9.1.5.1.3	16.3.0
2021-09	RAN#93	R5s210911	1751	1	F	Correction to NR5GC testcase 7.1.1.5.2	16.3.0
2021-09	RAN#93	R5s210912	1752	1	F	Correction to ENDC test case 8.2.2.6.1	16.3.0
2021-09	RAN#93	R5s210913	1753	1	F	Correction to the NR5GC Testcase 6.3.1.2	16.3.0
2021-09	RAN#93	R5s210914	1754	1	F	Corrections for NR MAC testcase 7.1.1.1.1a	16.3.0
2021-09	RAN#93	R5s210916	1755	1	B	Addition of NR5GC test case 11.1.7 in FR1	16.3.0
2021-09	RAN#93	R5s210917	1756	1	B	Addition of NR5GC test case 11.3.2 in FR1	16.3.0
2021-09	RAN#93	R5s210921	1759	1	B	NR5GC FR1 : Addition of NR5GC multilayer test case 11.3.8	16.3.0
2021-09	RAN#93	R5s210924	1761	1	B	Addition of NR5GC multilayer test case 11.4.6	16.3.0
2021-09	RAN#93	R5s210925	1763	1	F	Corrections for ENDC testcase 8.2.2.2.1	16.3.0
2021-09	RAN#93	R5s210929	1767	1	F	Corrections for NR5GC SOR TCs	16.3.0
2021-09	RAN#93	R5s210930	1771	1	F	Corrections for NR MAC testcase 7.1.1.7.1.1	16.3.0
2021-09	RAN#93	R5s210931	1773	1	F	Correction to function fl_NR5GC_QoSFlowsLength	16.3.0
2021-09	RAN#93	R5s210932	1775	1	F	Correction to NR test cases 7.1.3.5.1 and 7.1.3.5.4	16.3.0
2021-09	RAN#93	R5s210933	1776	1	F	Correction to NR test cases 7.1.2.3.3, 7.1.2.3.4 ,7.1.3.1.1 and 7.1.3.1.2	16.3.0
2021-09	RAN#93	R5s210936	1777	1	F	Correction to function f_TC_7_1_1_5_5_NR_TestBody	16.3.0
2021-09	RAN#93	R5s210938	1778	1	F	Correction to function f_NR_CheckDataPath_CA	16.3.0
2021-09	RAN#93	R5s210939	1781	1	F	Correction for NR5GC IRAT test cases	16.3.0
2021-09	RAN#93	R5s210941	1784	1	F	Corrections for NR MAC testcase 7.1.1.1.2	16.3.0
2021-09	RAN#93	R5s210946	1787	1	F	Correction for NR5GC RRC test cases 8.1.4.1.8.x	16.3.0
2021-09	RAN#93	R5s210954	1665	1	B	NR5GC FR1 : Addition of NR5GC multilayer test case 11.3.7	16.3.0
2021-09	RAN#93	R5s210958	1783	1	F	Correction for NR5GC RRC test case 8.1.1.4.1	16.3.0
2021-09	RAN#93	R5s210960	1789	1	F	Correction for NR5GC RRC test case 8.1.1.2.1	16.3.0

2021-09	RAN#93	R5s211172	1765	1	F	Correction to NR5GC testcase 11.3.9	16.3.0
2021-09	RAN#93	R5s211173	1772	1	B	Addition of NR5GC test case 11.3.6 in FR1	16.3.0
2021-09	RAN#93	R5s211174	1774	1	F	Correction to NR5GC IRAT functions	16.3.0
2021-09	RAN#93	R5s211175	2003	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	16.3.0
2021-09	RAN#93	R5-215725	1866	1	B	Introduction of n24	17.0.0
2021-12	RAN#94	R5-217830	2164	1	F	5G Rel-15 Test Models updates	17.1.0
2021-12	RAN#94	R5-217831	2167	1	F	Correction to Switch/Power off procedure after EMERGENCY CALL RELEASED in RRC_CONNECTED	17.1.0
2021-12	RAN#94	R5-217896	2165	1	F	5G V2X: Initial Test Model	17.1.0
2021-12	RAN#94	R5s211262	2026	-	F	Correction to function f_Nr_UE_DeRegisterOnSwitchOff	17.1.0
2021-12	RAN#94	R5s211263	2027	-	F	Correction to NR testcase 9.1.5.1.15	17.1.0
2021-12	RAN#94	R5s211280	2042	-	F	Correction to function f_Nr5GC_IRAT_S1ToN1_SessionModification	17.1.0
2021-12	RAN#94	R5s211281	2043	-	F	Correction to NR test case 8.1.6.1.4.4	17.1.0
2021-12	RAN#94	R5s211298	2059	-	F	Correction for NR idle mode test case 6.3.1.1	17.1.0
2021-12	RAN#94	R5s211299	2060	-	F	Correction for some NR5GC test cases with IMS enabled	17.1.0
2021-12	RAN#94	R5s211301	2062	-	F	Correction for EN-DC RRC test case 8.2.3.2.1	17.1.0
2021-12	RAN#94	R5s211302	2063	-	F	Correction for MAC test cases 7.1.1.7.1.x	17.1.0
2021-12	RAN#94	R5s211303	2064	-	F	Correction for NR5GC RRC PWS test cases	17.1.0
2021-12	RAN#94	R5s211306	2067	-	F	Correction to NR testcase 11.4.6	17.1.0
2021-12	RAN#94	R5s211308	2068	-	F	Correction to NR testcase 8.1.2.1.1	17.1.0
2021-12	RAN#94	R5s211309	2069	-	B	Addition of EPS Fallback test case 11.1.8	17.1.0
2021-12	RAN#94	R5s211312	2071	-	B	NR5GC FR2: Addition of NR5GC test case 9.1.5.1.3a	17.1.0
2021-12	RAN#94	R5s211314	2072	-	B	NR5GC FR2: Addition of NR5GC test case 9.1.5.1.9	17.1.0
2021-12	RAN#94	R5s211316	2073	-	B	NR5GC FR2: Addition of NR5GC test case 9.1.6.1.2	17.1.0
2021-12	RAN#94	R5s211318	2074	-	B	NR5GC FR2: Addition of NR5GC test case 9.1.7.1	17.1.0
2021-12	RAN#94	R5s211321	2076	-	B	NR5GC FR1 : Addition of NR5GC multilayer test case 11.4.2	17.1.0
2021-12	RAN#94	R5s211323	2077	-	B	NR5GC FR1 : Addition of NR5GC multilayer test case 11.4.9	17.1.0
2021-12	RAN#94	R5s211326	2079	-	F	Correction to NR idle mode test case 6.3.1.5	17.1.0
2021-12	RAN#94	R5s211328	2081	-	F	Correction for NR5GC multilayer test case 11.4.3	17.1.0
2021-12	RAN#94	R5s211329	2082	-	F	Correction for 5GMM test case 9.1.5.1.8	17.1.0
2021-12	RAN#94	R5s211330	2083	-	F	Correction for NRDC test case 8.2.2.5.2	17.1.0
2021-12	RAN#94	R5s211333	2086	-	F	Correction for NR5GC RRC test case 8.1.4.1.7.1	17.1.0
2021-12	RAN#94	R5s211335	2088	-	F	Correction to f_Nr_RRCReconfig_AddSCG_DRBs_NRDC	17.1.0
2021-12	RAN#94	R5s211336	2089	-	F	Correction to function f_Nr5GC_ModifyPDUSession_AddVideo	17.1.0
2021-12	RAN#94	R5s211341	2091	-	F	Correction to f_Nr_SendRRCReconfiguration_NRDC	17.1.0
2021-12	RAN#94	R5s211342	2092	-	F	Correction for 5GMM test case 9.3.1.2	17.1.0
2021-12	RAN#94	R5s211343	2093	-	F	Correction for NR5GC multilayer test case 11.4.8	17.1.0

2021-12	RAN#94	R5s211344	2094	-	F	Correction for NR5GC multilayer test case 11.4.6	17.1.0
2021-12	RAN#94	R5s211349	2099	-	F	Correction to NR5GC testcase 8.1.2.1.1	17.1.0
2021-12	RAN#94	R5s211350	2100	-	F	Correction to f_IMS_EPS_Fallback_Part2	17.1.0
2021-12	RAN#94	R5s211351	2101	-	F	Correction to EPS FB TC 11.1.3	17.1.0
2021-12	RAN#94	R5s211353	2102	-	F	Corrections for NR5GC multilayer test case 11.1.7	17.1.0
2021-12	RAN#94	R5s211354	2103	-	F	Corrections for NR5GC multilayer test case 11.4.5	17.1.0
2021-12	RAN#94	R5s211357	2105	-	F	Correction to NR testcase 11.1.7	17.1.0
2021-12	RAN#94	R5s211358	2106	-	F	Correction to function f_NR5GC_RegistrationReject	17.1.0
2021-12	RAN#94	R5s211385	1637	1	B	EN-DC FR1 : Addition of NR PDCP test case 7.1.3.5.5	17.1.0
2021-12	RAN#94	R5s211386	1769	1	B	Addition of NR5GC test case 11.1.2 in FR1	17.1.0
2021-12	RAN#94	R5s211387	1814	1	B	Addition of NR-DC test case 8.2.2.5.2 in FR1+FR2	17.1.0
2021-12	RAN#94	R5s211388	1820	1	F	Correction for 5GMM test case 9.1.5.1.8	17.1.0
2021-12	RAN#94	R5s211389	1824	1	B	Addition of NR-DC test case 8.2.2.9.2 in FR1+FR2	17.1.0
2021-12	RAN#94	R5s211390	1828	1	F	EN-DC FR1 : Re-verification of NR PDCP test case 7.1.3.5.5	17.1.0
2021-12	RAN#94	R5s211391	1832	1	B	Addition of NR-DC test case 8.2.5.3.2 in FR1+FR2	17.1.0
2021-12	RAN#94	R5s211392	1833	1	B	Addition of NR-DC test case 8.2.5.4.2 in FR1+FR2	17.1.0
2021-12	RAN#94	R5s211393	1858	1	F	Correction to NR5GC testcase 9.1.7.1	17.1.0
2021-12	RAN#94	R5s211394	1870	1	B	Addition of NR5GC test case 7.1.1.3.2b in FR1	17.1.0
2021-12	RAN#94	R5s211395	1873	1	F	Correction for NR5GC RRC test case 8.1.3.1.16	17.1.0
2021-12	RAN#94	R5s211397	1874	1	F	Correction for EN-DC RRC test case 8.2.2.7.1	17.1.0
2021-12	RAN#94	R5s211399	2107	-	F	Correction for EN-DC MAC test case 7.1.3.5.2	17.1.0
2021-12	RAN#94	R5s211402	1882	1	F	Correction to NR test cases 7.1.1.4.2.x	17.1.0
2021-12	RAN#94	R5s211403	1883	1	F	Correction to NR testcase 7.1.1.4.1.1	17.1.0
2021-12	RAN#94	R5s211404	1885	1	B	Addition of NR-DC test case 7.1.3.5.2 in FR1+FR2	17.1.0
2021-12	RAN#94	R5s211405	1893	1	F	Correction to NR5GC testcase 7.1.1.9.1	17.1.0
2021-12	RAN#94	R5s211406	1894	1	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.1.3.7	17.1.0
2021-12	RAN#94	R5s211407	1895	1	F	Correction to NR5GC testcase 7.1.1.3.8.2 in FR1	17.1.0
2021-12	RAN#94	R5s211408	1947	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.1.1.1a	17.1.0
2021-12	RAN#94	R5s211410	1948	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.1.2.4	17.1.0
2021-12	RAN#94	R5s211411	1949	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.1.3.1	17.1.0
2021-12	RAN#94	R5s211412	1950	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.1.3.2	17.1.0
2021-12	RAN#94	R5s211413	1951	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.1.3.3	17.1.0
2021-12	RAN#94	R5s211414	1952	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.1.3.4	17.1.0
2021-12	RAN#94	R5s211415	1953	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.1.3.5	17.1.0
2021-12	RAN#94	R5s211416	1954	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.1.3.6	17.1.0
2021-12	RAN#94	R5s211417	1955	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.1.3.7	17.1.0
2021-12	RAN#94	R5s211418	1956	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.2.1	17.1.0

2021-12	RAN#94	R5s211419	1957	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.2.2	17.1.0
2021-12	RAN#94	R5s211420	1958	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.2.3	17.1.0
2021-12	RAN#94	R5s211421	1959	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.2.4	17.1.0
2021-12	RAN#94	R5s211422	1960	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.2.5	17.1.0
2021-12	RAN#94	R5s211423	1961	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.2.6	17.1.0
2021-12	RAN#94	R5s211424	1962	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.3.1	17.1.0
2021-12	RAN#94	R5s211425	1963	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.3.2	17.1.0
2021-12	RAN#94	R5s211426	1964	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.3.6	17.1.0
2021-12	RAN#94	R5s211427	1965	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.3.7	17.1.0
2021-12	RAN#94	R5s211428	1966	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.3.8	17.1.0
2021-12	RAN#94	R5s211429	1967	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.3.9	17.1.0
2021-12	RAN#94	R5s211430	1968	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.2.3.10	17.1.0
2021-12	RAN#94	R5s211431	1969	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.3.2.1	17.1.0
2021-12	RAN#94	R5s211432	1970	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.3.2.2	17.1.0
2021-12	RAN#94	R5s211433	1971	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.3.2.3	17.1.0
2021-12	RAN#94	R5s211434	1972	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.3.3.1	17.1.0
2021-12	RAN#94	R5s211435	1973	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.3.3.2	17.1.0
2021-12	RAN#94	R5s211436	1974	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.3.3.3	17.1.0
2021-12	RAN#94	R5s211437	1975	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.3.4.2	17.1.0
2021-12	RAN#94	R5s211438	1976	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.4.1	17.1.0
2021-12	RAN#94	R5s211439	1977	1	B	NR5GC FR2: Addition of NR5GC test case 7.1.4.2	17.1.0
2021-12	RAN#94	R5s211440	1978	1	B	NR5GC FR2: Addition of NR5GC test case 8.1.1.1.2	17.1.0
2021-12	RAN#94	R5s211441	1979	1	B	NR5GC FR2: Addition of NR5GC test case 8.1.1.2.4	17.1.0
2021-12	RAN#94	R5s211442	1980	1	B	NR5GC FR2: Addition of NR5GC test case 8.1.2.1.2	17.1.0
2021-12	RAN#94	R5s211443	1981	1	B	NR5GC FR2: Addition of NR5GC test case 8.1.5.3.1	17.1.0
2021-12	RAN#94	R5s211444	1982	1	B	NR5GC FR2: Addition of NR5GC test case 8.1.5.3.3	17.1.0
2021-12	RAN#94	R5s211445	1983	1	B	NR5GC FR2: Addition of NR5GC test case 8.1.5.3.4	17.1.0
2021-12	RAN#94	R5s211446	1984	1	B	NR5GC FR2: Addition of NR5GC test case 9.1.1.5	17.1.0
2021-12	RAN#94	R5s211447	1985	1	B	NR5GC FR2: Addition of NR5GC test case 9.1.6.1.1	17.1.0
2021-12	RAN#94	R5s211448	1986	1	B	NR5GC FR2: Addition of NR5GC test case 9.1.6.2.1	17.1.0
2021-12	RAN#94	R5s211449	1987	1	B	NR5GC FR2: Addition of NR5GC test case 9.1.6.2.2	17.1.0
2021-12	RAN#94	R5s211450	1988	1	B	NR5GC FR2: Addition of NR5GC test case 9.1.7.2	17.1.0
2021-12	RAN#94	R5s211451	1989	1	B	NR5GC FR2: Addition of NR5GC test case 9.1.8.1	17.1.0
2021-12	RAN#94	R5s211452	1990	1	B	NR5GC FR2: Addition of NR5GC test case 9.1.8.2	17.1.0
2021-12	RAN#94	R5s211453	1991	1	B	NR5GC FR2: Addition of NR5GC test case 10.1.1.2	17.1.0
2021-12	RAN#94	R5s211454	1992	1	B	NR5GC FR2: Addition of NR5GC test case 10.1.2.1	17.1.0
2021-12	RAN#94	R5s211455	1993	1	B	NR5GC FR2: Addition of NR5GC test case 10.1.2.2	17.1.0

2021-12	RAN#94	R5s211456	1994	1	B	NR5GC FR2: Addition of NR5GC test case 10.1.4.1	17.1.0
2021-12	RAN#94	R5s211457	1995	1	B	NR5GC FR2: Addition of NR5GC test case 10.1.5.1	17.1.0
2021-12	RAN#94	R5s211458	1996	1	B	NR5GC FR2: Addition of NR5GC test case 10.1.6.1	17.1.0
2021-12	RAN#94	R5s211459	1997	1	B	NR5GC FR2: Addition of NR5GC test case 10.1.6.2	17.1.0
2021-12	RAN#94	R5s211460	1999	1	F	Correction to NR test case 8.2.2.3.1	17.1.0
2021-12	RAN#94	R5s211461	2000	1	F	Correction to NR testcases 7.1.3.2.x.	17.1.0
2021-12	RAN#94	R5s211462	2008	1	B	NR5GC FR2 : Addition of NR MAC test case 7.1.1.1.3	17.1.0
2021-12	RAN#94	R5s211464	2009	1	F	Correction to NR5GC testcase 7.1.1.2.1	17.1.0
2021-12	RAN#94	R5s211465	2011	1	F	Correction to NR5GC NAS TC 9.1.5.1.1	17.1.0
2021-12	RAN#94	R5s211466	2013	1	F	Correction to the UE capability transfer testcases 8.2.1.1.1 and 8.1.5.1.1	17.1.0
2021-12	RAN#94	R5s211467	2015	1	F	Correction to NRDC functions	17.1.0
2021-12	RAN#94	R5s211470	2109	-	F	Correction to NR-DC test case 8.2.2.9.2	17.1.0
2021-12	RAN#94	R5s211471	2110	-	F	Correction to NR5GC test case 7.1.3.5.2	17.1.0
2021-12	RAN#94	R5s211479	2115	-	F	Corrections for NR idle more test case 6.3.1.7	17.1.0
2021-12	RAN#94	R5s211480	2116	-	F	Correction for NG NAS template	17.1.0
2021-12	RAN#94	R5s211482	2117	-	F	Correction for EN-DC RRC test case 8.2.1.1.1	17.1.0
2021-12	RAN#94	R5s211483	2118	-	F	Correction to NR RRC test cases 8.1.3.1.12 and 8.1.3.1.11	17.1.0
2021-12	RAN#94	R5s211486	2121	-	F	Correction for NR5GC multilayer test case 11.4.8	17.1.0
2021-12	RAN#94	R5s211487	2122	-	F	Correction for SDAP test case 7.1.4.1	17.1.0
2021-12	RAN#94	R5s211488	2123	-	F	Correction for 5GSM test case 10.1.1.1	17.1.0
2021-12	RAN#94	R5s211489	2124	-	F	Corrections for NR5GC multilayer test cases 11.4.x	17.1.0
2021-12	RAN#94	R5s211496	2130	-	B	Addition of NR5GC testcase 8.1.5.4.1 in FR2	17.1.0
2021-12	RAN#94	R5s211498	2131	-	B	Addition of NR5GC testcase 7.1.3.5.4 in FR2	17.1.0
2021-12	RAN#94	R5s211500	2132	-	B	Addition of NR5GC testcase 7.1.3.5.1 in FR2	17.1.0
2021-12	RAN#94	R5s211502	2133	-	B	Addition of NR5GC testcase 7.1.3.1.1 in FR2	17.1.0
2021-12	RAN#94	R5s211504	2134	-	B	Addition of NR5GC testcase 7.1.3.1.2 in FR2	17.1.0
2021-12	RAN#94	R5s211506	2135	-	F	Correction to NR5GC testcase 9.3.1.3	17.1.0
2021-12	RAN#94	R5s211508	2137	-	F	Correction for 5GSM test case 10.1.4.1	17.1.0
2021-12	RAN#94	R5s211509	2138	-	F	Correction for 5GSM test case 10.1.2.2	17.1.0
2021-12	RAN#94	R5s211510	2139	-	F	Correction to NR5GC testcase 11.4.9	17.1.0
2021-12	RAN#94	R5s211511	2140	-	B	Addition of NR5GC testcase 7.1.3.4.1 in FR2	17.1.0
2021-12	RAN#94	R5s211513	2141	-	B	Addition of NR5GC testcase 8.1.5.1.1 in FR2	17.1.0
2021-12	RAN#94	R5s211516	2142	-	B	Addition of NR5GC testcase 10.1.3.2 in FR2	17.1.0
2021-12	RAN#94	R5s211524	2146	-	F	Correction to NR5GC testcase 11.4.4	17.1.0
2021-12	RAN#94	R5s211526	2147	-	F	Rel-16 Sep'21 partial baseline upgrade for 5GS TTCN-3 Test Suites	17.1.0
2021-12	RAN#94	R5s211528	2149	-	F	Correction to f_NR_Postamble	17.1.0
2021-12	RAN#94	R5s211536	2152	-	B	Addition of EPS Fallback test case 11.1.9	17.1.0

2021-12	RAN#94	R5s211538	2153	-	F	Re-verification of EPS Fallback test case 11.1.8	17.1.0
2021-12	RAN#94	R5s211556	2154	-	B	NR5GC FR2 : Addition of NR idle mode test case 6.1.2.1	17.1.0
2021-12	RAN#94	R5s211557	2155	-	B	NR5GC FR2 : Addition of NR idle mode test case 6.1.2.17	17.1.0
2021-12	RAN#94	R5s211559	2157	-	B	NR5GC FR2 : Addition of NR RLC test case 7.1.2.3.3	17.1.0
2021-12	RAN#94	R5s211560	2158	-	B	NR5GC FR2 : Addition of NR RLC test case 7.1.2.3.4	17.1.0
2021-12	RAN#94	R5s211562	2160	-	B	NR5GC FR2 : Addition of 5GMM test case 9.1.1.3	17.1.0
2021-12	RAN#94	R5s211563	2161	-	B	NR5GC FR2 : Addition of 5GMM test case 9.1.1.6	17.1.0
2021-12	RAN#94	R5s211579	2170	-	B	NR5GC FR2 : Addition of RRC test case 8.1.1.4.1	17.1.0
2021-12	RAN#94	R5s211581	2171	-	F	Correction for NR bands n38 and n40	17.1.0
2021-12	RAN#94	R5s211586	2173	-	B	Addition of NR5GC Power Saving test case 8.1.5.10.1 in FR1	17.1.0
2021-12	RAN#94	R5s211588	2174	-	F	Correction for NR5GC Idle mode test case 6.2.1.4	17.1.0
2021-12	RAN#94	R5s211591	2177	-	F	Correction for NR5GC RRC test case 8.1.2.1.1	17.1.0
2021-12	RAN#94	R5s211593	2178	-	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.1.4.5	17.1.0
2021-12	RAN#94	R5s211595	2179	-	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.1.1.1	17.1.0
2021-12	RAN#94	R5s211603	2184	-	F	Correction for CA band combination N257G	17.1.0
2021-12	RAN#94	R5s211609	2187	-	F	Correction for 5GMM test case 9.1.5.1.8	17.1.0
2021-12	RAN#94	R5s211611	1876	1	F	Correction for NR MAC test case 7.1.1.5.3	17.1.0
2021-12	RAN#94	R5s211612	1892	1	F	Correction for NR capability functions	17.1.0
2021-12	RAN#94	R5s211613	2004	1	B	NR5GC FR2 : Addition of NR5GC RRC test case 8.1.1.1.1	17.1.0
2021-12	RAN#94	R5s211614	2005	1	B	NR5GC FR2 : Addition of NR5GC RRC test case 8.1.1.2.3	17.1.0
2021-12	RAN#94	R5s211615	2006	1	B	NR5GC FR2 : Addition of NR5GC RRC test case 8.1.1.4.2	17.1.0
2021-12	RAN#94	R5s211616	2007	1	B	NR5GC FR2 : Addition of NR5GC RRC test case 8.1.5.3.2	17.1.0
2021-12	RAN#94	R5s211636	2022	1	F	Correction to NR5GC testcase 7.1.1.3.8.2	17.1.0
2021-12	RAN#94	R5s211682	1839	1	F	Correction for NR5GC RRC test case 8.1.1.2.1	17.1.0
2021-12	RAN#94	R5s211686	1998	1	F	Correction to NR5GC testcase 8.1.2.1.4	17.1.0
2021-12	RAN#94	R5s211687	2001	1	F	Correction to the reestablishment procedure related functions	17.1.0
2021-12	RAN#94	R5s211692	1879	1	B	NR5GC FR1 : Addition of NR5GC multilayer test case 11.4.5	17.1.0
2021-12	RAN#94	R5s211693	2217	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	17.1.0
2022-03	RAN#95	R5-221403	2369	1	F	Addition of NR/WLAN Inter-RAT test model	17.2.0
2022-03	RAN#95	R5-221467	2367	1	F	5G Rel-15: Test Models updates	17.2.0
2022-03	RAN#95	R5-221529	2368	1	F	5G V2X: Test Model updates	17.2.0
2022-03	RAN#95	R5-221596	2371	1	F	Addition of new PIXIT parameter for NR EIEI	17.2.0
2022-03	RAN#95	R5s220071	2285	-	F	Correction to EPS Fallback test case 11.1.8	17.2.0
2022-03	RAN#95	R5s220072	2286	-	B	Addition of NR5GC Logged MDT test case 8.1.6.1.2.4	17.2.0
2022-03	RAN#95	R5s220073	2287	-	B	Addition of NR5GC Logged MDT test case 8.1.6.1.2.5	17.2.0
2022-03	RAN#95	R5s220074	2288	-	B	Addition of NR5GC Logged MDT test case 8.1.6.1.2.8	17.2.0

2022-03	RAN#95	R5s220078	2289	-	B	Addition of NR CA test case 8.1.4.1.9.1	17.2.0
2022-03	RAN#95	R5s220080	2290	-	B	Addition of NR CA test case 8.1.4.1.9.2	17.2.0
2022-03	RAN#95	R5s220082	2291	-	B	Addition of NR5GC testcase 7.1.1.5.3 in FR2	17.2.0
2022-03	RAN#95	R5s220084	2292	-	B	Addition of NR5GC testcase 8.1.2.1.4 in FR2	17.2.0
2022-03	RAN#95	R5s220086	2293	-	B	Addition of NR5GC testcase 7.1.1.5.5 in FR2	17.2.0
2022-03	RAN#95	R5s220089	2294	-	B	Addition of NR5GC Logged MDT FR1 test case 8.1.6.1.2.11	17.2.0
2022-03	RAN#95	R5s220091	2295	-	F	Correction to NR5GC testcase 11.1.7	17.2.0
2022-03	RAN#95	R5s220094	2296	-	B	NR5GC FR1: Addition of NR5GC Logged MDT FR1 test case 8.1.6.1.2.6	17.2.0
2022-03	RAN#95	R5s220095	2297	-	F	Correction for NR MAC test cases 7.1.1.4.2.x	17.2.0
2022-03	RAN#95	R5s220098	2300	-	F	Correction for NR MAC test case 7.1.1.4.2.5	17.2.0
2022-03	RAN#95	R5s220105	2307	-	F	Correction for SDAP test case 7.1.4.1	17.2.0
2022-03	RAN#95	R5s220106	2308	-	F	Correction for TCP functions	17.2.0
2022-03	RAN#95	R5s220107	2309	-	F	Correction for functionf_MultipleQoS_Preamble_Part1()	17.2.0
2022-03	RAN#95	R5s220109	2311	-	F	Correction for 5GMM test case 9.1.6.2.1	17.2.0
2022-03	RAN#95	R5s220115	2316	-	F	Correction to NR testcase 7.1.1.3.3	17.2.0
2022-03	RAN#95	R5s220116	2317	-	F	Correction to f_NR_GetCA_IntraBandFrequency	17.2.0
2022-03	RAN#95	R5s220117	2318	-	F	Correction for TCP function	17.2.0
2022-03	RAN#95	R5s220118	2319	-	F	Correction for NR5GC RRC test case 8.1.2.1.2	17.2.0
2022-03	RAN#95	R5s220119	2320	-	B	Addition of NR5GC MDT test case 8.1.6.1.2.13 in FR1	17.2.0
2022-03	RAN#95	R5s220121	2321	-	F	Correction to NR MDT test case 8.1.6.1.2.1	17.2.0
2022-03	RAN#95	R5s220123	2323	-	F	Correction to function f_NR5GC_508RRC_IntraNR_HO_IntraCell_Step1_8	17.2.0
2022-03	RAN#95	R5s220124	2324	-	F	Correction to NR5GC testcase 7.1.3.4.2	17.2.0
2022-03	RAN#95	R5s220125	2325	-	F	Correction to NR test case 8.1.1.4.1	17.2.0
2022-03	RAN#95	R5s220126	2002	1	B	Addition of NR5GC RACS test case 9.1.9.1	17.2.0
2022-03	RAN#95	R5s220127	2078	1	F	Correction to 7.1.1.4.2.x test cases	17.2.0
2022-03	RAN#95	R5s220128	2104	1	B	NR5GC FR1 : Addition of 5GMM Rel-16 test case 9.1.9.2	17.2.0
2022-03	RAN#95	R5s220145	2112	1	F	Correction to NR5GC testcase 11.3.7	17.2.0
2022-03	RAN#95	R5s220146	2143	1	B	Addition of NR5GC testcase 8.1.5.6.3 in FR2	17.2.0
2022-03	RAN#95	R5s220147	2144	1	B	Addition of NR5GC testcase 8.1.1.3.1 in FR2	17.2.0
2022-03	RAN#95	R5s220148	2145	1	B	Addition of NR5GC testcase 7.1.1.1.6 in FR2	17.2.0
2022-03	RAN#95	R5s220149	2156	1	B	NR5GC FR2 : Addition of NR MAC test case 7.1.1.2.1	17.2.0
2022-03	RAN#95	R5s220150	2159	1	B	NR5GC FR2 : Addition of NR RLC test case 7.1.2.3.11	17.2.0
2022-03	RAN#95	R5s220151	2162	1	B	Addition of NR5GC test case 7.1.1.4.2.4 in FR1	17.2.0
2022-03	RAN#95	R5s220152	2163	1	B	Addition of ENDC test case 7.1.1.4.2.4 in FR1	17.2.0
2022-03	RAN#95	R5s220153	2175	1	F	Correction for NR MAC test case 7.1.1.2.1	17.2.0
2022-03	RAN#95	R5s220154	2176	1	B	NR5GC FR2 : Addition of NR MAC test case 7.1.1.1.2	17.2.0

2022-03	RAN#95	R5s220155	2180	1	F	Correction to NR testcases 7.1.1.5.1, 7.1.1.5.2 and 7.1.1.5.4	17.2.0
2022-03	RAN#95	R5s220156	2182	1	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.1.3.3	17.2.0
2022-03	RAN#95	R5s220157	2191	1	F	Correction of NR5GC test case 9.1.1.6	17.2.0
2022-03	RAN#95	R5s220158	2193	1	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.1.3.1	17.2.0
2022-03	RAN#95	R5s220159	2194	1	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.1.3.2	17.2.0
2022-03	RAN#95	R5s220160	2195	1	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.1.2.1	17.2.0
2022-03	RAN#95	R5s220161	2196	1	B	NR5GC FR2 : Addition of NR5GC test case 8.1.2.1.5.1	17.2.0
2022-03	RAN#95	R5s220162	2197	1	B	NR5GC FR2 : Addition of NR5GC test case 8.1.5.6.5.1	17.2.0
2022-03	RAN#95	R5s220163	2198	1	B	NR5GC FR2 : Addition of NR5GC test case 8.1.2.1.1	17.2.0
2022-03	RAN#95	R5s220164	2199	1	B	NR5GC FR2 : Addition of NR5GC test case 8.1.5.2.2	17.2.0
2022-03	RAN#95	R5s220166	2206	1	F	Correction for 5GMM test case 9.1.5.1.3	17.2.0
2022-03	RAN#95	R5s220167	2207	1	F	Corrections for NR MAC test cases 7.1.1.5.x	17.2.0
2022-03	RAN#95	R5s220169	2208	1	F	Correction to the function f_ReconfigureDRBs	17.2.0
2022-03	RAN#95	R5s220171	2209	1	F	Correction to NR test case 7.1.1.1.1a	17.2.0
2022-03	RAN#95	R5s220174	2326	-	F	Correction to 5GMM Emergency Services TCs	17.2.0
2022-03	RAN#95	R5s220175	2327	-	F	Correction to function f_NR5GC_MappedContextFromS1_InitNAS	17.2.0
2022-03	RAN#95	R5s220176	2328	-	F	Correction to NR5GC testcase 8.1.4.1.5	17.2.0
2022-03	RAN#95	R5s220177	2329	-	F	Correction to NR5GC testcase 11.1.5	17.2.0
2022-03	RAN#95	R5s220178	2330	-	B	Addition of NR5GC Logged MDT test case 8.1.6.1.2.3 in FR1	17.2.0
2022-03	RAN#95	R5s220180	2331	-	B	Addition of NR5GC Logged MDT test case 8.1.6.1.2.12 in FR1	17.2.0
2022-03	RAN#95	R5s220183	2333	-	F	Correction for 5GMM test cases 9.1.5.2.7 and 9.1.5.2.8	17.2.0
2022-03	RAN#95	R5s220185	2335	-	F	Correction for NRDC test case 8.2.2.9.2	17.2.0
2022-03	RAN#95	R5s220188	2337	-	F	Correction to MAC test case 7.1.1.3.2	17.2.0
2022-03	RAN#95	R5s220191	2339	-	F	Correction for NR5GC MAC test cases 7.1.1.5.2 and 7.1.1.5.4	17.2.0
2022-03	RAN#95	R5s220194	2340	-	F	Correction to NR test case 7.1.3.5.3	17.2.0
2022-03	RAN#95	R5s220195	2341	-	B	Addition of ENDC testcase 8.2.2.3.1 in FR2	17.2.0
2022-03	RAN#95	R5s220197	2342	-	F	Correction to NR test case 8.1.4.1.6	17.2.0
2022-03	RAN#95	R5s220198	2343	-	F	Correction to Reestablishment procedure (add SRB1)	17.2.0
2022-03	RAN#95	R5s220199	2344	-	B	Addition of ENDC testcase 7.1.1.3.2b in FR2	17.2.0
2022-03	RAN#95	R5s220201	2345	-	F	Correction to NR test case 8.1.4.1.5	17.2.0
2022-03	RAN#95	R5s220207	2347	-	F	Correction to NR5GC testcase 11.1.6	17.2.0
2022-03	RAN#95	R5s220208	2348	-	F	Correction for EN-DC RRC test case 8.2.2.2.1	17.2.0
2022-03	RAN#95	R5s220211	2351	-	F	Correction for EN-DC RRC test case 8.2.1.1.1	17.2.0
2022-03	RAN#95	R5s220213	2353	-	F	Correction to function f_NR_GetSCGConfig_SCellAdd	17.2.0
2022-03	RAN#95	R5s220214	2354	-	F	Correction to function fl_TC_8_2_4_1_1_x_ENDC_NR_TestBody	17.2.0

2022-03	RAN#95	R5s220217	2355	-	F	Correction to NR testcase 8.1.6.1.2.7	17.2.0
2022-03	RAN#95	R5s220218	2356	-	B	Addition of NR5GC test case 7.1.1.7.1.3	17.2.0
2022-03	RAN#95	R5s220224	2358	-	F	Update to function f_NR_InitLocationAndBandwidth	17.2.0
2022-03	RAN#95	R5s220225	2359	-	B	NR5GC FR1 : Addition of RRC test case 8.1.1.3.7a	17.2.0
2022-03	RAN#95	R5s220227	2360	-	F	Correction to NAS 5GMM test case 9.1.5.1.15	17.2.0
2022-03	RAN#95	R5s220241	2226	1	F	Correction for NR MAC test case 7.1.1.3.2b	17.2.0
2022-03	RAN#95	R5s220242	2232	1	B	Addition of NR5GC MDT test case 8.1.6.1.4.3	17.2.0
2022-03	RAN#95	R5s220243	2246	1	F	Correction for NR5GC IRAT test case 8.1.1.3.4	17.2.0
2022-03	RAN#95	R5s220247	2249	1	F	Correction to test case 7.1.1.9.1	17.2.0
2022-03	RAN#95	R5s220248	2250	1	F	Correction to NR5GC MDT template cr_NR_RLF_Report_r16	17.2.0
2022-03	RAN#95	R5s220249	2251	1	F	Correction for Rel-16 SON-MDT test cases 8.1.6.1.3.1 and 8.1.6.1.3.2	17.2.0
2022-03	RAN#95	R5s220250	2256	1	F	Correction for NR5GC postamble function	17.2.0
2022-03	RAN#95	R5s220252	2259	1	F	Correction to NR testcase 7.1.3.5.3	17.2.0
2022-03	RAN#95	R5s220253	2260	1	F	Correction to NR test case 8.1.2.1.1	17.2.0
2022-03	RAN#95	R5s220254	2261	1	F	Correction to NR testcase 8.1.3.2.3	17.2.0
2022-03	RAN#95	R5s220258	2262	1	B	Addition of eNS NR5GC test case 9.1.10.2	17.2.0
2022-03	RAN#95	R5s220259	2263	1	F	Correction to function f_NR5GC_EmergencyCallRelease	17.2.0
2022-03	RAN#95	R5s220260	2264	1	F	Correction to function f_NR5GC_EmergencyCallWithRegistration	17.2.0
2022-03	RAN#95	R5s220261	2265	1	F	Correction to function f_NR_UE_DeRegisterOnSwitchOff	17.2.0
2022-03	RAN#95	R5s220262	2266	1	F	Correction to NR5GC testcase 11.4.4	17.2.0
2022-03	RAN#95	R5s220263	2267	1	F	Correction to NR testcase 7.1.1.4.2.4	17.2.0
2022-03	RAN#95	R5s220264	2268	1	F	Correction to NR test case 7.1.1.5.1	17.2.0
2022-03	RAN#95	R5s220265	2269	1	F	Correction to NR5GC MAC testcase 7.1.1.3.2b	17.2.0
2022-03	RAN#95	R5s220267	2270	1	F	Correction to the function f_ReconfigureDRBs	17.2.0
2022-03	RAN#95	R5s220268	2280	1	F	Correction to NR testcase 7.1.1.11.1	17.2.0
2022-03	RAN#95	R5s220269	2282	1	F	Correction to f_EUTRA38_MultiPDN_EstablishAdditionalPDN_Step2	17.2.0
2022-03	RAN#95	R5s220280	2372	-	F	Correction to NR testcase 8.1.5.2.2	17.2.0
2022-03	RAN#95	R5s220281	2373	-	B	NR5GC FR2 : Addition of test case 6.1.1.4	17.2.0
2022-03	RAN#95	R5s220283	2374	-	B	NR5GC FR2 : Addition of test case 7.1.1.1.1	17.2.0
2022-03	RAN#95	R5s220285	2375	-	B	NR5GC FR2 : Addition of test case 7.1.1.10.1	17.2.0
2022-03	RAN#95	R5s220287	2376	-	B	NR5GC FR2 : Addition of test case 7.1.1.2.3	17.2.0
2022-03	RAN#95	R5s220289	2377	-	B	NR5GC FR2 : Addition of test case 7.1.1.5.1	17.2.0
2022-03	RAN#95	R5s220291	2378	-	B	NR5GC FR2 : Addition of test case 7.1.1.5.2	17.2.0
2022-03	RAN#95	R5s220293	2379	-	B	NR5GC FR2 : Addition of test case 7.1.1.5.4	17.2.0
2022-03	RAN#95	R5s220295	2380	-	B	NR5GC FR2 : Addition of test case 7.1.1.7.1.1	17.2.0
2022-03	RAN#95	R5s220297	2381	-	B	NR5GC FR2 : Addition of test case 7.1.2.3.5	17.2.0

2022-03	RAN#95	R5s220299	2382	-	B	NR5GC FR2 : Addition of test case 8.1.1.3.2	17.2.0
2022-03	RAN#95	R5s220303	2384	-	B	NR5GC FR2 : Addition of test case 8.1.5.6.1	17.2.0
2022-03	RAN#95	R5s220309	2387	-	B	NR5GC FR2 : Addition of test case 9.3.1.1	17.2.0
2022-03	RAN#95	R5s220311	2388	-	B	NR5GC FR2 : Addition of test case 9.3.1.3	17.2.0
2022-03	RAN#95	R5s220321	2393	-	F	Correction to test case 7.1.2.2.6	17.2.0
2022-03	RAN#95	R5s220332	2400	-	B	Addition of NR5GC test case 7.1.1.3.9	17.2.0
2022-03	RAN#95	R5s220334	2401	-	B	Addition of ENDC test case 7.1.1.3.9	17.2.0
2022-03	RAN#95	R5s220338	2402	-	B	NR5GC FR1 : Addition of NR5GC RRC test case 8.1.1.3.7b	17.2.0
2022-03	RAN#95	R5s220347	2404	-	B	NR/5GC FR1 : Addition of NR test case 8.1.4.1.8.3	17.2.0
2022-03	RAN#95	R5s220353	2405	-	F	Correction to the template cs_RadioBearer_Reconfig_DRBwithNRPDCPonEUTRA	17.2.0
2022-03	RAN#95	R5s220354	2406	-	F	Correction to the NR5GC testcases 8.1.4.1.9.1, 8.1.4.1.9.2 and 8.1.4.1.9.3	17.2.0
2022-03	RAN#95	R5s220365	2407	-	F	Correction to NR5GC testcases 8.1.5.8.2.x	17.2.0
2022-03	RAN#95	R5s220372	2411	-	F	Correction to the reestablishment functions	17.2.0
2022-03	RAN#95	R5s220398	2065	1	F	Correction for NR MAC test case 7.1.1.1.6	17.2.0
2022-03	RAN#95	R5s220399	2169	1	F	Correction for NR5GC 5GMM test case 9.1.1.6	17.2.0
2022-03	RAN#95	R5s220400	2181	1	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.1.4.2	17.2.0
2022-03	RAN#95	R5s220401	2185	1	B	NR5GC FR1+FR2 : Addition of NR5GC RRC test case 8.2.3.14.2	17.2.0
2022-03	RAN#95	R5s220402	2210	1	F	Correction to NAS 5GMM test case 9.1.5.1.15	17.2.0
2022-03	RAN#95	R5s220403	2211	1	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.1.2.9	17.2.0
2022-03	RAN#95	R5s220404	2212	1	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.1.2.7	17.2.0
2022-03	RAN#95	R5s220405	2219	1	B	Addition of NR-DC test case 7.1.1.11.1	17.2.0
2022-03	RAN#95	R5s220407	2224	1	F	Corrections to NR MAC test case 7.1.1.9.1	17.2.0
2022-03	RAN#95	R5s220408	2227	1	F	Correction for NR5GC UAC test case 11.3.6	17.2.0
2022-03	RAN#95	R5s220409	2230	1	B	Addition of eNS NR5GC test case 9.1.10.1 in FR1	17.2.0
2022-03	RAN#95	R5s220410	2247	1	B	NR5GC FR1 : Addition of Rel-16 SON-MDT test case 8.1.6.1.4.6	17.2.0
2022-03	RAN#95	R5s220411	2271	1	B	Addition of EN-DC MAC test case 7.1.1.3.2b	17.2.0
2022-03	RAN#95	R5s220429	2216	1	F	Correction of NR5GC test case 9.1.4.1	17.2.0
2022-03	RAN#95	R5s220438	2428	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	17.2.0
2022-06	RAN#96	R5-222377	2513	-	F	NR Positioning: addition of posSIBs support	17.3.0
2022-06	RAN#96	R5-223378	2514	1	F	5G V2X: Test Model updates	17.3.0
2022-06	RAN#96	R5-223443	2515	1	F	5G Rel-15: Test Models updates	17.3.0
2022-06	RAN#96	R5-223444	2521	1	F	NR IIoT: Test Model updates	17.3.0
2022-06	RAN#96	R5s220471	2447	-	F	Correction to function f_Get_NG_PDUSessionEstablishmentAccept	17.3.0
2022-06	RAN#96	R5s220472	2448	-	F	Correction to NR5GC testcase 8.1.6.1.2.8	17.3.0
2022-06	RAN#96	R5s220473	2449	-	F	Correction for NR5GC RRC CA test cases 8.1.4.1.9.x	17.3.0

2022-06	RAN#96	R5s220474	2450	-	F	Correction for NR MAC test case 7.1.1.1.1a	17.3.0
2022-06	RAN#96	R5s220476	2452	-	F	Correction for NR MAC test case 7.1.1.1.6	17.3.0
2022-06	RAN#96	R5s220477	2453	-	F	Correction to the function f_NR_SetCellPowerList	17.3.0
2022-06	RAN#96	R5s220478	2454	-	F	Correction to the function f_EUTRA38_MultiPDN_InitialRegistration_Step5_16	17.3.0
2022-06	RAN#96	R5s220479	2455	-	F	Correction for NR5GC emergency calling test cases	17.3.0
2022-06	RAN#96	R5s220480	2456	-	F	Correction for NR MAC test case 7.1.1.3.3	17.3.0
2022-06	RAN#96	R5s220481	2457	-	F	Correction for NR5GC idle mode test case 6.4.1.1	17.3.0
2022-06	RAN#96	R5s220482	2458	-	F	Correction for NR5GC IRAT test case 9.3.1.2	17.3.0
2022-06	RAN#96	R5s220483	2459	-	F	Correction to ENDC test case 7.1.1.3.9	17.3.0
2022-06	RAN#96	R5s220484	2460	-	F	Correction to ENDC test case 7.1.1.3.7	17.3.0
2022-06	RAN#96	R5s220486	2461	-	F	Correction to function f_NR_RRC_CipherActTime_GetCurrent	17.3.0
2022-06	RAN#96	R5s220489	2463	-	F	Correction to NR5GC testcase 8.1.6.1.3.3	17.3.0
2022-06	RAN#96	R5s220490	2464	-	F	Correction to NR5GC testcase 8.1.6.1.4.7	17.3.0
2022-06	RAN#96	R5s220491	2465	-	F	Correction to NR5GC testcase 11.1.5	17.3.0
2022-06	RAN#96	R5s220492	2466	-	F	Correction to NR5GC testcase 11.1.6	17.3.0
2022-06	RAN#96	R5s220493	2467	-	F	Correction to NR5GC test case 7.1.3.4.1	17.3.0
2022-06	RAN#96	R5s220495	2468	-	F	Correction for NR5GC postamble function	17.3.0
2022-06	RAN#96	R5s220498	2471	-	F	Correction for NR RLC test case 7.1.2.3.7	17.3.0
2022-06	RAN#96	R5s220501	2473	-	F	Correction for NR5GC eNS test cases	17.3.0
2022-06	RAN#96	R5s220502	2474	-	F	Correction for 5GMM test case 9.1.4.1	17.3.0
2022-06	RAN#96	R5s220503	2475	-	F	Correction for NR PDCP test case 7.1.3.4.2	17.3.0
2022-06	RAN#96	R5s220506	2476	-	F	Correction to NR5GC testcase 7.1.1.9.1	17.3.0
2022-06	RAN#96	R5s220508	2477	-	F	Re-verification of NR5GC R16 SON-MDT test case 8.1.6.1.3.7	17.3.0
2022-06	RAN#96	R5s220509	2478	-	F	Correction to function f_UT_RequestIMSCall	17.3.0
2022-06	RAN#96	R5s220524	2479	-	F	Correction to function f_NR5GC_EmergencyCallRelease	17.3.0
2022-06	RAN#96	R5s220534	2480	-	F	Correction for NR PDCP test case 7.1.3.5.2	17.3.0
2022-06	RAN#96	R5s220537	2482	-	F	Re-verification of NR5GC Rel-16 Mobility Enhancement test case 8.1.4.4.3 in FR1	17.3.0
2022-06	RAN#96	R5s220547	2486	-	F	Correction for NR PDCP test case 7.1.3.4.1	17.3.0
2022-06	RAN#96	R5s220548	2487	-	F	Correction for NR5GC ENDC test case 8.2.2.8.1	17.3.0
2022-06	RAN#96	R5s220550	2489	-	F	Correction for SDAP test case 7.1.4.1	17.3.0
2022-06	RAN#96	R5s220551	2490	-	F	Correction for 5GMM test case 9.1.7.1	17.3.0
2022-06	RAN#96	R5s220553	2492	-	F	Correction for NR5GC NRDC test case 8.2.3.14.2	17.3.0
2022-06	RAN#96	R5s220554	2493	-	F	Correction for NR5GC idle mode test case 6.2.1.5	17.3.0
2022-06	RAN#96	R5s220558	2494	-	F	Correction for NR MAC test cases 7.1.1.4.2.x	17.3.0
2022-06	RAN#96	R5s220560	2495	-	F	Correction to function f_ReleaseCallWithOptionalDeregister	17.3.0
2022-06	RAN#96	R5s220561	2496	-	F	Correction to NR5GC testcase 7.1.1.3.9	17.3.0
2022-06	RAN#96	R5s220567	2502	-	F	Correction for NR PDCP test case 7.1.3.5.2	17.3.0

2022-06	RAN#96	R5s220569	2503	-	B	Addition of NR5GC testcase 6.3.1.4 in FR2	17.3.0
2022-06	RAN#96	R5s220571	2504	-	B	Addition of NR5GC testcase 6.3.1.9 in FR2	17.3.0
2022-06	RAN#96	R5s220573	2505	-	B	Addition of NR5GC testcase 11.3.3 in FR2	17.3.0
2022-06	RAN#96	R5s220577	2506	-	F	Corrections for NR5GC IRAT test cases	17.3.0
2022-06	RAN#96	R5s220579	2507	-	B	Addition of NR5GC UAC test case 11.3.1	17.3.0
2022-06	RAN#96	R5s220582	2509	-	B	Addition of NR5GC testcase 11.3.7 in FR2	17.3.0
2022-06	RAN#96	R5s220585	2511	-	B	Addition of NR5GC testcase 6.1.2.9 in FR2	17.3.0
2022-06	RAN#96	R5s220587	2512	-	B	Addition of NR5GC testcase 6.3.1.7 in FR2	17.3.0
2022-06	RAN#96	R5s220590	2516	-	F	Correction to NR testcases 8.1.4.1.7.x	17.3.0
2022-06	RAN#96	R5s220591	2517	-	F	Correction to the function f_TC_7_1_1_3_8_EUTRA_Common	17.3.0
2022-06	RAN#96	R5s220596	2519	-	B	Addition of NR5GC test case 6.3.1.10 in FR1	17.3.0
2022-06	RAN#96	R5s220613	2523	-	F	Correction for EN-DC NR PDCP test case 7.1.3.5.2	17.3.0
2022-06	RAN#96	R5s220614	2524	-	F	Correction for NR5GC emergency call test case 11.4.4	17.3.0
2022-06	RAN#96	R5s220618	2526	-	B	Addition of NR5GC testcase 8.1.1.2.1 in FR2	17.3.0
2022-06	RAN#96	R5s220622	2201	1	F	Correction to NR MAC testcases 7.1.1.7.1.x	17.3.0
2022-06	RAN#96	R5s220623	2222	1	B	Addition of NR5GC test case 11.1.5 in FR1	17.3.0
2022-06	RAN#96	R5s220624	2223	1	B	Addition of NR5GC test case 11.1.6 in FR1	17.3.0
2022-06	RAN#96	R5s220625	2248	1	B	NR5GC FR1 : Addition of Rel-16 SON-MDT test case 8.1.6.1.4.7	17.3.0
2022-06	RAN#96	R5s220626	2283	1	B	Addition of EN-DC CA test case 8.2.4.2.1.1	17.3.0
2022-06	RAN#96	R5s220627	2284	1	B	Addition of EN-DC CA test case 8.2.4.2.1.3	17.3.0
2022-06	RAN#96	R5s220628	2322	1	F	Correction to NR test case 7.1.1.3.7	17.3.0
2022-06	RAN#96	R5s220630	2346	1	B	NR5GC FR1 : Addition of 5GMM Rel-16 test case 9.1.9.5	17.3.0
2022-06	RAN#96	R5s220631	2349	1	F	Correction for Rel-16 SON-MDT test case 8.1.6.1.2.9	17.3.0
2022-06	RAN#96	R5s220633	2357	1	B	NR5GC FR1 : Addition of R16 eNS test case 9.1.10.6	17.3.0
2022-06	RAN#96	R5s220634	2363	1	F	Correction for NR5GC emergency call test case 11.4.7	17.3.0
2022-06	RAN#96	R5s220635	2364	1	B	Addition of NR5GC MDT test case 8.1.6.1.3.5	17.3.0
2022-06	RAN#96	R5s220636	2365	1	B	Addition of NR5GC Rel-16 Mobility Enhancement test case 8.1.4.4.2	17.3.0
2022-06	RAN#96	R5s220637	2383	1	B	NR5GC FR2 : Addition of test case 8.1.4.2.2.1	17.3.0
2022-06	RAN#96	R5s220638	2385	1	B	NR5GC FR2 : Addition of test case 9.1.5.1.11	17.3.0
2022-06	RAN#96	R5s220639	2386	1	B	NR5GC FR2 : Addition of test case 9.1.5.1.3	17.3.0
2022-06	RAN#96	R5s220640	2389	1	B	NR5GC FR1 : Addition of NR5GC multilayer test case 11.3.1a	17.3.0
2022-06	RAN#96	R5s220641	2390	1	B	NR5GC FR2 : Addition of NR5GC multilayer test case 11.3.1a	17.3.0
2022-06	RAN#96	R5s220642	2391	1	B	NR5GC FR1 : Addition of NR5GC Rel-16 RRC test case 8.1.4.4.1	17.3.0
2022-06	RAN#96	R5s220644	2395	1	F	Correction to NR5GC idle mode test case 6.1.2.9	17.3.0
2022-06	RAN#96	R5s220645	2399	1	B	Addition of NR5GC test case 8.1.5.9.1	17.3.0
2022-06	RAN#96	R5s220646	2408	1	B	Addition of NR5GC test case 8.1.5.8.1 in FR1	17.3.0
2022-06	RAN#96	R5s220647	2409	1	B	Addition of NR5GC test case 8.1.4.1.9.3 in FR1	17.3.0

2022-06	RAN#96	R5s220649	2413	1	B	Addition of NR5GC testcase 9.1.5.1.10 in FR2	17.3.0
2022-06	RAN#96	R5s220652	2414	1	B	Addition of NR5GC testcase 7.1.1.3.2b in FR2	17.3.0
2022-06	RAN#96	R5s220654	2417	1	F	Correction for 5GMM test case 9.1.4.1	17.3.0
2022-06	RAN#96	R5s220655	2418	1	F	Correction for NR5GC RRC test case 8.1.1.2.3	17.3.0
2022-06	RAN#96	R5s220656	2419	1	F	Correction for NR5GC postamble function	17.3.0
2022-06	RAN#96	R5s220657	2420	1	F	Correction for NR5GC UAC test case 11.3.2	17.3.0
2022-06	RAN#96	R5s220658	2422	1	B	Addition of NR5GC MDT testcase 8.1.6.1.3.4 in FR1	17.3.0
2022-06	RAN#96	R5s220659	2423	1	F	Correction for NR5GC RRC test case 8.1.1.3.3	17.3.0
2022-06	RAN#96	R5s220660	2424	1	B	Addition of NR5GC testcase 11.6.2 in FR1	17.3.0
2022-06	RAN#96	R5s220661	2427	1	B	Addition of NR5GC test case 8.1.4.1.7.3 in FR1	17.3.0
2022-06	RAN#96	R5s220662	2429	1	F	Re-verification of NR5GC test case 11.1.5 in FR1	17.3.0
2022-06	RAN#96	R5s220663	2430	1	F	Re-verification of NR5GC test case 11.1.6 in FR1	17.3.0
2022-06	RAN#96	R5s220664	2432	1	F	Correction for NR5GC EPS fallback test cases 11.1.1 and 11.1.3	17.3.0
2022-06	RAN#96	R5s220665	2437	1	F	Correction to f_NR5GC_RRC_Idle_Extension	17.3.0
2022-06	RAN#96	R5s220666	2438	1	B	Addition of NR5GC testcase 9.1.5.2.4 in FR2	17.3.0
2022-06	RAN#96	R5s220667	2441	1	B	Addition of NR5GC Logged MDT test case 8.1.6.1.2.2	17.3.0
2022-06	RAN#96	R5s220668	2446	1	B	Addition of NR5GC Logged MDT test case 8.1.6.1.2.10	17.3.0
2022-06	RAN#96	R5s220669	2529	-	F	Correction to NR5GC testcase 7.1.1.9.1	17.3.0
2022-06	RAN#96	R5s220674	2532	-	F	Correction to NR testcase 6.1.1.7	17.3.0
2022-06	RAN#96	R5s220676	2534	-	F	Correction to NR testcase 7.1.1.3.4	17.3.0
2022-06	RAN#96	R5s220677	2366	1	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.1.3.7	17.3.0
2022-06	RAN#96	R5s220678	2535	-	F	Correction to template cads_NR_TDD_UL_DL_ConfigCommon_REQ	17.3.0
2022-06	RAN#96	R5s220713	2412	1	B	Addition of NR5GC Rel-16 Mobility Enhancement test case 8.1.4.4.3	17.3.0
2022-06	RAN#96	R5s220722	2425	1	B	Addition of NR5GC testcase 8.1.4.4.4 in FR1	17.3.0
2022-06	RAN#96	R5s220724	2560	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	17.3.0
2022-09	RAN#97	R5-223932	2669	-	F	NR URLLC enhancements: addition of PUSCH Repetition Type B support	17.4.0
2022-09	RAN#97	R5-223933	2670	-	F	NR Positioning: updates for posSIBs support	17.4.0
2022-09	RAN#97	R5-223934	2671	-	F	NR IMS eCall: addition of NR/GERAN Inter-RAT support	17.4.0
2022-09	RAN#97	R5-225418	2672	1	F	Routine maintenance for TS 38.523-3	17.4.0
2022-09	RAN#97	R5s220768	2588	-	B	NR5GC FR1 : Addition of NR5GC Rel-16 CAG test case 6.5.2.4	17.4.0
2022-09	RAN#97	R5s220774	2591	-	F	Corrections for NR5GC MAC DRX test cases	17.4.0
2022-09	RAN#97	R5s220777	2594	-	F	Correction for 5GMM test case 9.1.7.2	17.4.0
2022-09	RAN#97	R5s220779	2596	-	F	Correction for NR5GC RRC test case 8.1.2.1.1	17.4.0
2022-09	RAN#97	R5s220784	2600	-	F	Correction to f_ReconfigureSS_DRBs_NRDC	17.4.0
2022-09	RAN#97	R5s220785	2601	-	F	Correction to NR testcase 8.2.2.5.2	17.4.0
2022-09	RAN#97	R5s220786	2602	-	F	Correction to NR testcase 8.2.2.9.2	17.4.0
2022-09	RAN#97	R5s220790	2604	-	F	Correction to f_EUTRA38_MultiPDN_ActivateDedicatedEpsBearer_Speech	17.4.0

2022-09	RAN#97	R5s220792	2606	-	B	NR5GC FR1 : Addition of NR5GC R16 SON-MDT test case 8.1.6.2.1	17.4.0
2022-09	RAN#97	R5s220793	2607	-	F	Correction to NR testcase 7.1.1.3.3	17.4.0
2022-09	RAN#97	R5s220794	2608	-	F	Correction to NR testcase 7.1.1.1.2	17.4.0
2022-09	RAN#97	R5s220795	2609	-	F	Correction to NR testcase 7.1.1.9.1	17.4.0
2022-09	RAN#97	R5s220796	2610	-	F	Correction to the NR5GC SM testcases	17.4.0
2022-09	RAN#97	R5s220797	2611	-	F	Correction for NR MAC test cases 7.1.1.4.2.x	17.4.0
2022-09	RAN#97	R5s220798	2612	-	F	Correction to the template cs_NR_RachProcedureConfig_Msg3TBS	17.4.0
2022-09	RAN#97	R5s220801	2613	-	B	Addition of NR5GC Inter-RAT MDT test case 8.1.6.2.4 in FR1	17.4.0
2022-09	RAN#97	R5s220803	2614	-	F	Correction to NR testcase 11.4.5	17.4.0
2022-09	RAN#97	R5s220804	2615	-	F	Correction to function f_NR5GC_EmergencyCallLimitedService	17.4.0
2022-09	RAN#97	R5s220805	2616	-	F	Correction to ENDC test case 7.1.1.9.1	17.4.0
2022-09	RAN#97	R5s220806	2617	-	F	Correction to NR5GC idle mode test case 6.3.1.5	17.4.0
2022-09	RAN#97	R5s220807	2618	-	F	Correction for function f_NR5GC_RRC_Idle_Steps16_20()	17.4.0
2022-09	RAN#97	R5s220808	2619	-	F	Correction for EN-DC PDCP test case 7.1.3.5.2	17.4.0
2022-09	RAN#97	R5s220812	2622	-	F	Correction to NR MDT testcases 8.1.6.1.2.x	17.4.0
2022-09	RAN#97	R5s220813	2623	-	F	Correction to the function f_NR5GC_RRC_ProcedureDelayReestablishment	17.4.0
2022-09	RAN#97	R5s220814	2624	-	F	Correction to ENDC test case 7.1.1.3.7	17.4.0
2022-09	RAN#97	R5s220816	2626	-	F	Correction to the testcases 8.1.4.1.7.x and 8.1.4.1.8.x	17.4.0
2022-09	RAN#97	R5s220817	2627	-	F	Correction to NR5GC Test case 11.3.1	17.4.0
2022-09	RAN#97	R5s220818	2628	-	F	Re-verification of NR5GC RRC test case 8.1.5.7.1.1 in FR1	17.4.0
2022-09	RAN#97	R5s220821	2629	-	F	Correction to function f_NR5GC_EmergencyCallWithRegistration	17.4.0
2022-09	RAN#97	R5s220823	2631	-	F	Correction to the NR testcase 7.1.1.2.4	17.4.0
2022-09	RAN#97	R5s220824	2632	-	F	Correction for NR5GC RRC test cases 8.1.4.1.5 and 8.1.4.1.6	17.4.0
2022-09	RAN#97	R5s220825	2633	-	F	Correction for NR RLC test case 7.1.2.3.11	17.4.0
2022-09	RAN#97	R5s220826	2634	-	F	Correction for NR MAC test case 7.1.1.1.1	17.4.0
2022-09	RAN#97	R5s220828	2636	-	F	Correction for NR5GC PS data off test cases	17.4.0
2022-09	RAN#97	R5s220829	2637	-	F	Correction for NR5GC emergency call test case 11.4.4	17.4.0
2022-09	RAN#97	R5s220833	2640	-	F	Re-verification of NR5GC RRC test case 8.1.5.7.1.2 in FR1	17.4.0
2022-09	RAN#97	R5s220835	2641	-	F	Correction to NR5GC test cases 8.1.5.8.2.x	17.4.0
2022-09	RAN#97	R5s220837	2642	-	F	Correction to the template cs_NR_PDCP_Config_SplitSRB	17.4.0
2022-09	RAN#97	R5s220838	2643	-	F	Correction to 7.1.1.9.1.ENDC test case	17.4.0
2022-09	RAN#97	R5s220840	2645	-	F	Correction to NR5GC testcase 7.1.1.3.5	17.4.0
2022-09	RAN#97	R5s220842	2646	-	B	Addition of NR5GC test case 8.1.5.8.2.3 in FR1	17.4.0
2022-09	RAN#97	R5s220848	2649	-	F	Correction for NR5GC MAC test cases 7.1.1.3.8.1 and 7.1.1.3.8.2	17.4.0
2022-09	RAN#97	R5s220850	2650	-	F	Correction for NR5GC UAC test case 11.3.6	17.4.0
2022-09	RAN#97	R5s220852	2652	-	F	Correction for 5GMM test case 9.3.1.3	17.4.0
2022-09	RAN#97	R5s220853	2653	-	B	Addition of NR test case 8.1.4.2.1.2 in FR1	17.4.0

2022-09	RAN#97	R5s220857	2654	-	B	Addition of NR5GC testcase 6.5.2.1 in FR1	17.4.0
2022-09	RAN#97	R5s220864	2656	-	B	Addition of NR5GC testcase 6.5.2.2 in FR1	17.4.0
2022-09	RAN#97	R5s220866	2657	-	B	Addition of NR5GC MDT test case 8.1.6.1.4.8 in FR1	17.4.0
2022-09	RAN#97	R5s220868	2658	-	F	Correction to ENDC test case 7.1.3.4.1	17.4.0
2022-09	RAN#97	R5s220873	2659	-	B	Addition of NR5GC MDT test case 8.1.6.4.1 in FR1	17.4.0
2022-09	RAN#97	R5s220880	2660	-	F	Correction to NR5GC on demand system information test cases 6.1.2.11 and 7.1.1.1.3	17.4.0
2022-09	RAN#97	R5s220887	2439	1	B	Addition of NR5GC RRC test case 8.1.5.7.1.1 in FR1	17.4.0
2022-09	RAN#97	R5s220888	2440	1	B	Addition of NR5GC RRC test case 8.1.5.7.1.2 in FR1	17.4.0
2022-09	RAN#97	R5s220892	2527	1	B	Addition of NR5GC testcase 8.1.4.2.1.1 in FR2	17.4.0
2022-09	RAN#97	R5s220893	2530	1	F	Correction to the function f_GetDNNStringFromPICS	17.4.0
2022-09	RAN#97	R5s220894	2531	1	F	Correction to NR test case 7.1.1.1.2	17.4.0
2022-09	RAN#97	R5s220896	2536	1	F	Correction for 5G NAS type definitions	17.4.0
2022-09	RAN#97	R5s220897	2538	1	F	Correction to NR testcase 8.1.5.8.1	17.4.0
2022-09	RAN#97	R5s220899	2541	1	F	Correction to NR testcase 7.1.1.9.1	17.4.0
2022-09	RAN#97	R5s220901	2542	1	F	Correction to NR testcase 8.1.3.2.2	17.4.0
2022-09	RAN#97	R5s220902	2543	1	F	Correction to NR testcase 8.1.3.3.2	17.4.0
2022-09	RAN#97	R5s220903	2545	1	F	Correction for NR5GC Rel-16 test case 8.1.4.4.3	17.4.0
2022-09	RAN#97	R5s220904	2549	1	F	Correction to NR testcase 6.2.1.4	17.4.0
2022-09	RAN#97	R5s220905	2555	1	F	Correction to NR5GC test case 6.2.3.8	17.4.0
2022-09	RAN#97	R5s220906	2556	1	F	Correction of NR5GC Logged MDT test case 8.1.6.1.3.1	17.4.0
2022-09	RAN#97	R5s220907	2557	1	B	NR5GC FR1 : Addition of NR5GC PS data off test case 11.6.3	17.4.0
2022-09	RAN#97	R5s220908	2558	1	B	Addition of ENDC MAC test case 7.1.1.9.1 in FR1	17.4.0
2022-09	RAN#97	R5s220909	2559	1	B	NR5GC FR1 : Addition of NR5GC PS data off test case 11.6.1	17.4.0
2022-09	RAN#97	R5s220910	2563	1	B	Addition of NR5GC testcase 7.1.1.9.1 in FR2	17.4.0
2022-09	RAN#97	R5s220911	2564	1	F	Corrections for ENDC testcase 8.2.2.2.1	17.4.0
2022-09	RAN#97	R5s220912	2567	1	F	Correction for 5GMM test case 9.1.6.1.1	17.4.0
2022-09	RAN#97	R5s220913	2570	1	F	Correction for NR5GC idle mode test case 6.4.2.1	17.4.0
2022-09	RAN#97	R5s220914	2571	1	F	Correction for NR MAC test case 7.1.1.5.4	17.4.0
2022-09	RAN#97	R5s220915	2572	1	F	Correction for NR MAC test case 7.1.1.5.5	17.4.0
2022-09	RAN#97	R5s220916	2574	1	B	Addition of EN-DC RRC test case 8.2.3.6.1b in FR2	17.4.0
2022-09	RAN#97	R5s220917	2575	1	B	Addition of EN-DC RRC test case 8.2.3.7.1b in FR2	17.4.0
2022-09	RAN#97	R5s220918	2576	1	B	Addition of EN-DC RRC test case 8.2.3.8.1b in FR2	17.4.0
2022-09	RAN#97	R5s220919	2579	1	F	Correction for NR MAC test case 7.1.1.3.1	17.4.0
2022-09	RAN#97	R5s220920	2580	1	F	Correction for NR5GC EPS fallback test cases	17.4.0
2022-09	RAN#97	R5s220921	2586	1	F	Correction to the function f_NR_MobileInfo_Init	17.4.0
2022-09	RAN#97	R5s220923	2662	-	B	Addition of EPS Fallback test case 11.1.1a in FR1	17.4.0
2022-09	RAN#97	R5s220925	2663	-	F	Correction to NR test case 7.1.1.1.1a	17.4.0

2022-09	RAN#97	R5s220926	2664	-	B	Addition of EPS Fallback test case 11.1.3a in FR1	17.4.0
2022-09	RAN#97	R5s220930	2666	-	F	Correction to NR testcase 7.1.1.1.2	17.4.0
2022-09	RAN#97	R5s220931	2667	-	F	Correction to NR testcase 8.1.5.2.2	17.4.0
2022-09	RAN#97	R5s220932	2668	-	B	Addition of ENDC testcase 7.1.1.9.1 in FR2	17.4.0
2022-09	RAN#97	R5s220934	2673	-	F	Correction for NR5GC UAC test case 11.3.7	17.4.0
2022-09	RAN#97	R5s220936	2675	-	F	Correction for NR5GC SOR test case 6.3.1.7	17.4.0
2022-09	RAN#97	R5s220938	2676	-	F	Correction for NR5GC SDAP test case 7.1.4.1	17.4.0
2022-09	RAN#97	R5s220944	2678	-	F	Correction to NR testcase 8.1.5.7.1.1	17.4.0
2022-09	RAN#97	R5s220945	2679	-	F	Correction to NR testcase 7.1.1.2.1	17.4.0
2022-09	RAN#97	R5s220946	2680	-	B	EN-DC FR2 : Addition of EN-DC RRC test cases 8.2.2.2.1	17.4.0
2022-09	RAN#97	R5s220952	2682	-	F	Correction to NR5GC function fl_NR_TestBody_Check	17.4.0
2022-09	RAN#97	R5s220957	2685	-	F	Correction to the function f_NR_AddMod_1SCell_ENDC	17.4.0
2022-09	RAN#97	R5s220958	2686	-	F	Correction to NR testcase 11.1.8	17.4.0
2022-09	RAN#97	R5s220961	2687	-	B	Addition of NR5GC MDT test case 8.1.6.1.1.2	17.4.0
2022-09	RAN#97	R5s220965	2689	-	B	NR5GC FR2 : Addition of test case 9.1.5.2.1	17.4.0
2022-09	RAN#97	R5s220967	2690	-	B	NR5GC FR2 : Addition of test case 11.1.3	17.4.0
2022-09	RAN#97	R5s220969	2691	-	B	NR5GC FR2 : Addition of test case 11.1.7	17.4.0
2022-09	RAN#97	R5s220971	2692	-	B	NR5GC FR2 : Addition of test case 11.3.1	17.4.0
2022-09	RAN#97	R5s220973	2693	-	B	NR5GC FR2 : Addition of test case 11.4.2	17.4.0
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2022-09	RAN#97	R5s220981	2697	-	F	Correction to the function f_NR_ServCellIndex	17.4.0
2022-09	RAN#97	R5s220982	2698	-	F	Correction to NR5GC test case 6.3.1.7	17.4.0
2022-09	RAN#97	R5s220983	2699	-	B	NR5GC FR1 : Addition of test case 9.1.9.3	17.4.0
2022-09	RAN#97	R5s220987	2702	-	F	Correction to NR5GC CAG Testcase 6.5.2.2	17.4.0
2022-09	RAN#97	R5s220989	2705	-	F	Correction to NR5GC function f_Check_NG_PDU SessionReleaseReq	17.4.0
2022-09	RAN#97	R5s220991	2707	-	F	Correction to NR testcase 6.3.1.5	17.4.0
2022-09	RAN#97	R5s221013	2708	-	B	Addition of NR5GC testcase 6.5.2.3 in FR1	17.4.0
2022-09	RAN#97	R5s221029	2716	-	F	Correction to NR5GC CAG Testcase 6.5.2.4	17.4.0
2022-09	RAN#97	R5s221071	2734	-	F	Add new verified and e-mail agreed TTCN test cases in the TC lists in 38.523-3 (prose), Annex A	17.4.0

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