

# ETSI TS 103 920-3 V1.2.1 (2026-07)



## TECHNICAL SPECIFICATION

**Core Network and Interoperability Testing (INT);  
5G NGAP Conformance Testing for the N2 interface;  
(3GPP™ Release 16);  
Part 3: Abstract Test Suite (ATS) and partial  
Protocol Implementation eXtra Information for Testing (PIXIT)  
pro forma specification**

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**Reference**

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RTS/INT-00219

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**Keywords**

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ATS, conformance, NGAP, PIXIT

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# Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Core Network and Interoperability Testing (INT).

The present document is part 3 of a multi-part deliverable. Full details of the entire series can be found in part 1 [2].

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# Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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# 1 Scope

The present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) pro forma for the test specification for the NGAP protocol on the N2 interface as specified in ETSI TS 138 413 [1] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [i.2] and ETSI ETS 300 406 [5].

The test notation used in the ATS is TTCN-3 (see ETSI ES 201 873-1 [6]).

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

- the overall test suite structure;
- the testing architecture;
- the test methods and port definitions;
- the test configurations;
- TTCN styles and conventions;
- the partial PIXIT pro forma;
- the modules containing the TTCN-3 ATS.

Annex A provides the Partial Implementation Extra Information for Testing (PIXIT) pro forma.

Annex B provides the Abstract Test Suite (ATS).

---

# 2 References

## 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

- [1] [ETSI TS 138 413 \(V16.17.0\)](#): "5G; NG-RAN; NG Application Protocol (NGAP) (3GPP TS 38.413 version 16.17.0 Release 16)".
- [2] [ETSI TS 103 920-1](#): "Core Network and Interoperability Testing (INT); 5G NGAP Conformance Testing for the N2 interface; (3GPPTM Release 16); Part 1: Protocol Implementation Conformance Statement (PICS)".
- [3] [ETSI TS 103 920-2](#): "Core Network and Interoperability Testing (INT); 5G NGAP Conformance Testing for the N2 interface; (3GPPTM Release 16); Part 2: Test Suite Structure (TSS) and Test Purposes (TP)".
- [4] [ISO/IEC 9646-6](#): "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 6: Protocol profile test specification".
- [5] [ETSI ETS 300 406](#): "Methods for testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

- [6] [ETSI ES 201 873-1](#): "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 1: TTCN-3 Core Language".
- [7] [ETSI TS 123 501 \(V16.20.0\)](#): "5G; System architecture for the 5G System (5GS) (3GPP TS 23.501 version 16.20.0 Release 16)".

## 2.2 Informative references

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The following referenced documents may be useful in implementing an ETSI deliverable or add to the reader's understanding, but are not required for conformance to the present document.

- [i.1] [ISO/IEC 9646-1](#): "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 1: General concepts".
- [i.2] [ISO/IEC 9646-7](#): "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 7: Implementation Conformance Statements".

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## 3 Definition of terms, symbols and abbreviations

### 3.1 Terms

For the purposes of the present document, the terms given in ISO/IEC 9646-7 [i.2] and ETSI TS 138 413 [1] apply.

### 3.2 Symbols

Void.

### 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ISO/IEC 9646-1 [i.1], ISO/IEC 9646-6 [4], ISO/IEC 9646-7 [i.2] and ETSI TS 138 413 [1] apply.

---

## 4 Abstract Test Method (ATM)

### 4.1 Introduction

This clause describes the ATM used to test the NGAP protocol on the N2 interface at the gNB and AMF side.

### 4.2 Test architecture

#### 4.2.1 Test method

Void.

## 4.2.2 Test machine configuration

### 4.2.2.1 Test configurations using N2 interface

The N2 interface is located between the gNB and the AMF. Following configurations are simplified to highlight tested interface and involved entities.

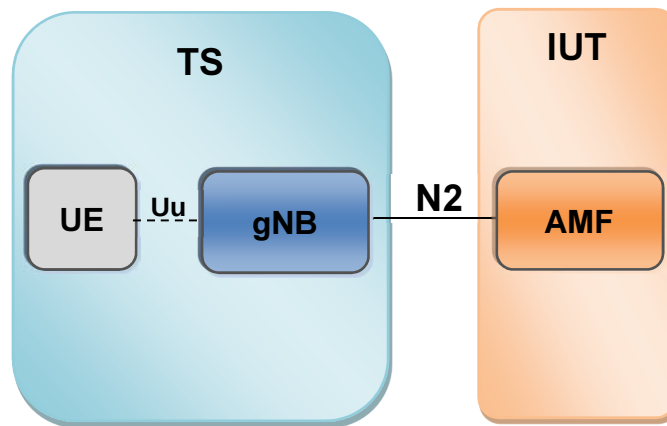


Figure 1: Test configuration CF\_AMF\_N2

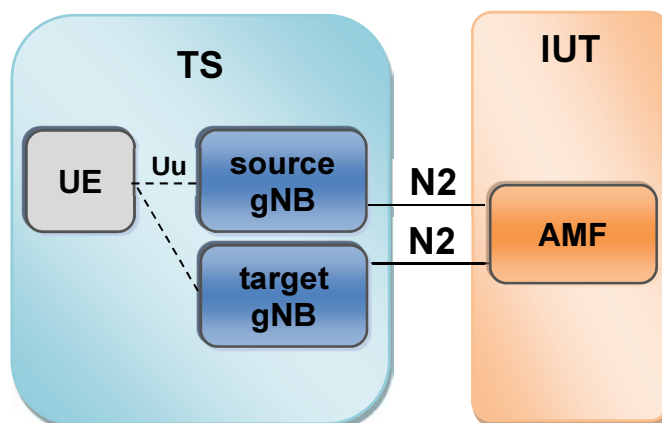


Figure 2: Test configuration CF\_AMF\_2N2

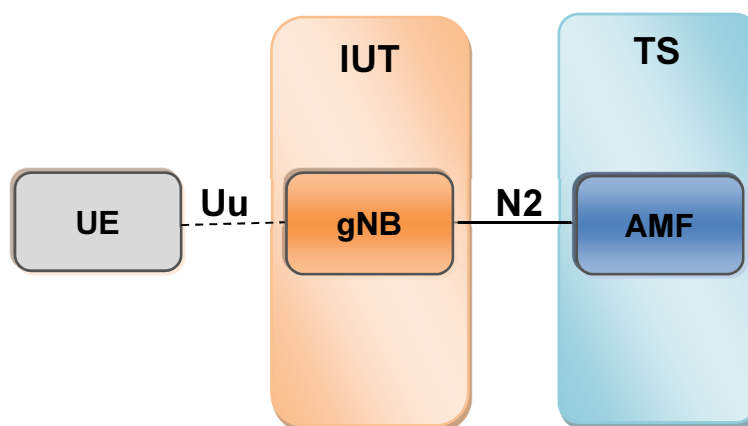


Figure 3: Test configuration CF\_GNB\_N2

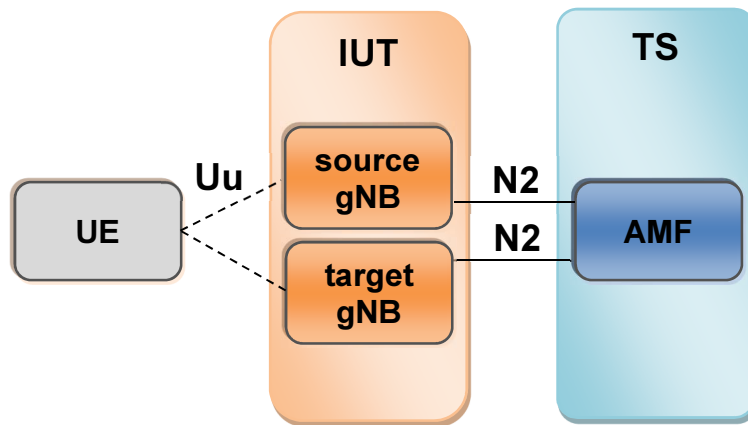


Figure 4: Test configuration CF\_GNB\_2N2

## 4.2.3 Interconnection of TS and SUT

### 4.2.3.1 gNB Role

Figure 5 shows the interconnection of TS and SUT in terms of NGAP message flows. NGAP messages are transferred over the N2 port.

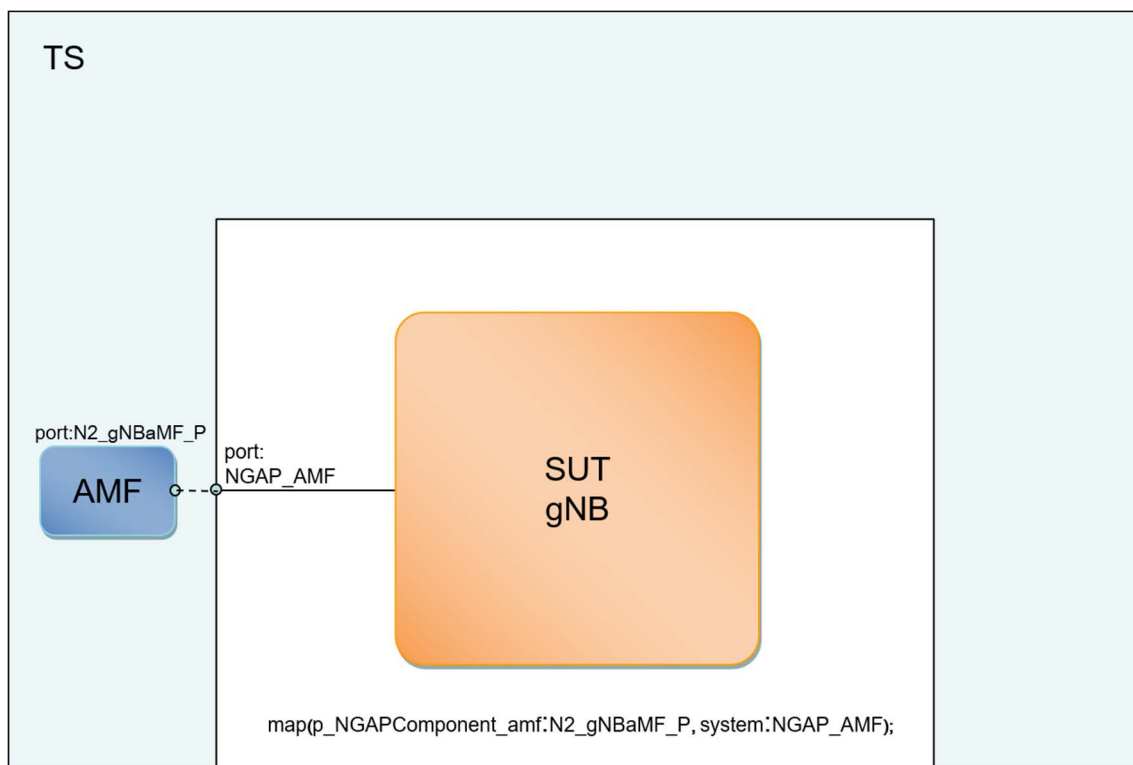
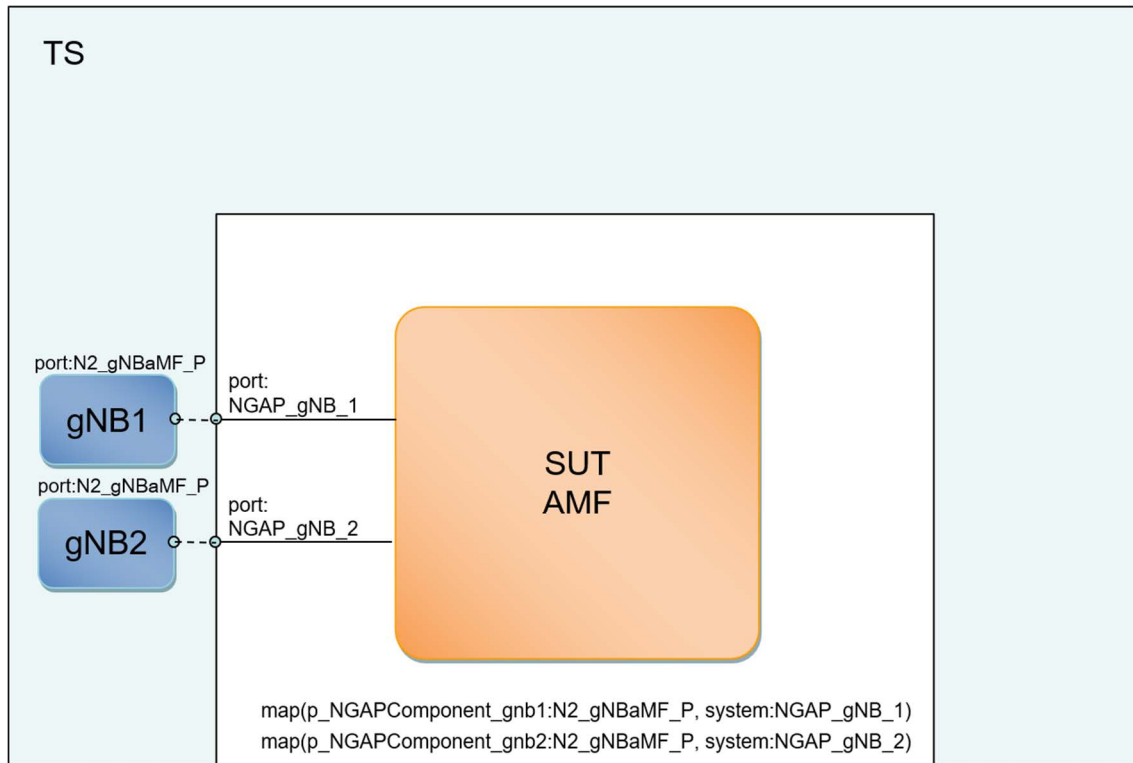


Figure 5: Interconnection for gNB role

### 4.2.3.2 AMF Role

If SUT has the role of AMF Figure 6 shows the interconnection of TS and SUT in terms of signalling message flows. NGAP messages are transferred over the N2 port.





**Figure 6: Interconnection for AMF role**

## 5 ATS conventions

### 5.1 Introduction

The ATS conventions are intended to give a better understanding of the ATS but they also describe the conventions made for the development of the ATS. These conventions shall be considered during any later maintenance or further development of the ATS.

The ATS conventions contain two clauses, the testing conventions and the naming conventions. The naming conventions describe the structure of the naming of all ATS elements.

To define the ATS, the guidelines of ETSI ETS 300 406 [5] were considered.

### 5.2 Testing conventions

#### 5.2.1 Test cases Preamble and Postamble

As described in the test method clause the test tool shall behave as a gNB when the IUT is an AMF and shall behave as an AMF when the IUT is a gNB. For that reason the test case preambles and postambles are named as follows:

IUT is an NGAP/gNB (example TC\_NGAP\_GNB\_PDU\_01):

```

f_cf_NGAP_gNB_Up
f_cf_NGAP_gNB_Down
f_cf_NGAP_gNB2_Up
f_cf_NGAP_gNB2_Down

```

IUT is a NGAP/AMF (example TC\_NGAP\_AMF\_PDU\_01):

f\_cf\_NGAP\_AMF\_Up

f\_cf\_NGAP\_AMF\_Down

## 5.3 Naming conventions

### 5.3.1 General guidelines

The naming conventions are based on the following underlying principles:

- In most cases, identifiers should be prefixed with a short alphabetic string (specified in table 1) indicating the type of TTCN-3 element it represents.
- Suffixes should not be used except in those specific cases identified in table 1.
- Prefixes and suffixes should be separated from the body of the identifier with an underscore ("\_").

EXAMPLE 1: c\_sixteen, t\_wait\_max.

- Only module names, data type names and module parameters should begin with an upper-case letter. All other names (i.e. the part of the identifier following the prefix) should begin with a lower-case letter.
- The start of second and subsequent words in an identifier should be indicated by capitalizing the first character. Underscores should not be used for this purpose.

EXAMPLE 2: f\_send\_Location\_Reporting\_Control.

Table 1 specifies the naming guidelines for each element of the TTCN-3 language indicating the recommended prefix, suffixes (if any) and capitalization.

**Table 1: TTCN-3 naming convention**

| Language element                                                           | Naming convention             | Prefix      | Suffix      | Example             | Notes    |
|----------------------------------------------------------------------------|-------------------------------|-------------|-------------|---------------------|----------|
| Module                                                                     | Use upper-case initial letter | NGAP_       | <i>none</i> | LibNGAP_Interface   |          |
| TSS grouping                                                               | Use all upper-case letters    | <i>none</i> | <i>none</i> | TC_NGAP_GNB_PDU     |          |
| Message template                                                           | Use lower-case initial letter | m_          | <i>none</i> | m_ngap_initMsg      |          |
| Message template with wildcard or matching expression                      | Use lower-case initial letter | mw_         | <i>none</i> | mw_cause            |          |
| Port instance                                                              | Use upper-case initial letter | <i>none</i> | <i>none</i> | NGAPPort            |          |
| Constant                                                                   | Use lower-case initial letter | c_          | <i>none</i> | c_maxRetransmission |          |
| Function                                                                   | Use lower-case initial letter | f_          | <i>none</i> | f_rcv_NGAP_PDU()    |          |
| Altstep                                                                    | Use lower-case initial letter | a_          | <i>none</i> | a_receive()         |          |
| Variable                                                                   | Use lower-case initial letter | v_          | <i>none</i> | v_basicId           |          |
| PICS values                                                                | Use all upper case letters    | PICS_       | <i>none</i> | PICS_A4_1_1         | See note |
| PIXIT values                                                               | Use all upper case letters    | PIX_        | <i>none</i> | PIX_VA_CRITICALITY  | See note |
| Parameterization                                                           | Use lower-case initial letter | p_          | <i>none</i> | p_servedPLMNs       |          |
| Enumerated Value                                                           | Use lower-case initial letter | e_          | <i>none</i> | e_preamble          |          |
| NOTE: In this case it is acceptable to use underscore as a word delimiter. |                               |             |             |                     |          |

### 5.3.2 Test case grouping

The ATS structure is based on the Test Purposes for the NGAP protocol on the N2 interface as defined in ETSI TS 103 920-2 [3].

### 5.3.3 Test case identifiers

The test cases have been divided according to the functionalities into several groups.

The test case names are built up according to the following scheme.

**Table 2: TC identifier naming convention scheme**

|                                           |   |                           |                                               |
|-------------------------------------------|---|---------------------------|-----------------------------------------------|
| Identifier: <TC>_<iut>_<scope>_<nn>[_<n>] |   |                           |                                               |
| <tp>                                      | = | Test Case:                | fixed to "TC"                                 |
| <interface>                               | = | Interface:                | NGAP                                          |
| <iut>                                     | = | type of IUT:              | gNB or AMF                                    |
| <scope>                                   | = | group                     | PDU PDU Session Management Procedures         |
|                                           |   |                           | CMP Context Management Procedures             |
|                                           |   |                           | MMP UE Mobility Management Procedures         |
|                                           |   |                           | PAG Paging                                    |
|                                           |   |                           | NAS Transport of NAS Messages Procedures      |
|                                           |   |                           | IMP Interface Management Procedures           |
|                                           |   |                           | CTP Configuration Transfer Procedures         |
|                                           |   |                           | WTP Warning Message Transmission Procedures   |
|                                           |   |                           | NTP NRPPa Transport Procedures                |
|                                           |   |                           | TRP Trace Procedures                          |
|                                           |   |                           | LRP Location Reporting Procedures             |
|                                           |   |                           | UBP UE TNLA Binding Procedures                |
|                                           |   |                           | URP UE Radio Capability Management Procedures |
|                                           |   |                           | DRP Data Usage Reporting Procedures           |
|                                           |   |                           | RIP RIM Information Transfer Procedures       |
| <nn>                                      | = | sequential number         | (01 to 99)                                    |
| <n>                                       | = | sequential number variant | (1 to 9)                                      |

NOTE: This naming scheme results into a one-to-one correspondence between the test purpose identifiers as defined in ETSI TS 103 920-2 [3] and the test case identifiers.  
The TP identifier of the test case TC\_xxx\_01 is TP\_xxx\_01.

## Annex A (normative): NGAP N2 Partial PIXIT pro forma

### A.1 The right to copy

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the Partial PIXIT pro forma in this annex so that it can be used for its intended purposes and may further publish the completed Partial PIXIT.

The PIXIT Pro forma is based on ISO/IEC 9646-6. Any additional information which may be needed can be found in this international standard document.

### A.2 Identification summary

**Table A.1**

|                       |  |
|-----------------------|--|
| PIXIT Number:         |  |
| Test Laboratory Name: |  |
| Date of Issue:        |  |
| Issued to:            |  |

### A.3 ATS summary

**Table A.2**

|                         |                                              |
|-------------------------|----------------------------------------------|
| Protocol Specification: | ETSI TS 138 413 version 16.14.0 (Release 16) |
| Protocol to be tested:  | NGAP                                         |
| ATS Specification:      | ETSI TS 103 920-2                            |
| Abstract Test Method:   | ETSI TS 103 920-3, clause 4                  |

### A.4 Test laboratory

**Table A.3**

|                                 |  |
|---------------------------------|--|
| Test Laboratory Identification: |  |
| Test Laboratory Manager:        |  |
| Means of Testing:               |  |
| SAP Address:                    |  |

### A.5 Client identification

**Table A.4**

|                           |  |
|---------------------------|--|
| Client Identification:    |  |
| Client Test manager:      |  |
| Test Facilities required: |  |

## A.6 SUT

**Table A.5**

|                                  |  |
|----------------------------------|--|
| Name:                            |  |
| Version:                         |  |
| SCS Number:                      |  |
| Machine configuration:           |  |
| Operating System Identification: |  |
| IUT Identification:              |  |
| PICS Reference for IUT:          |  |
| Limitations of the SUT:          |  |
| Environmental Conditions:        |  |

## A.7 Protocol layer information

### A.7.1 Protocol identification

**Table A.6**

|                  |                                                           |
|------------------|-----------------------------------------------------------|
| Name:            | ETSI TS 138 413: "NG-RAN; NG Application Protocol (NGAP)" |
| Version:         | Version 16.14.0 (Release 16)                              |
| PICS References: | ETSI TS 103 920-1                                         |

## A.8 PIXIT items

### A.8.1 Introduction

Tables in this clause need to be filled by the IUT Manufacturer to specify how the IUT needs to be configured with IUT specific values or describe IUT specific procedures required for complete testing of the IUT.

Each PIXIT item corresponds to a Module Parameter of the ATS.

### A.8.2 Port and Address items

**Table A.7: Test system ports and addresses**

| Item | Identifier          | Type       | Description                               |
|------|---------------------|------------|-------------------------------------------|
| 1    | PX_NGAP_ETS_IPADDR  | Charstring | IP address of the gNB/AMF test system     |
| 2    | PX_NGAP_ETS_PORT    | Integer    | Port number of the gNB/AMF test system    |
| 3    | PX_NGAP_ETS_IPADDR2 | Charstring | IP address of the second gNB test system  |
| 4    | PX_NGAP_ETS_PORT2   | Integer    | Port number of the second gNB test system |
| 5    | PX_VA               | Integer    | Variant selection                         |
| 6    | PX_VA_CRITICALITY   | Enum       | Criticality for variant selection         |
| 7    | PX_TNGRELOCOOverall | Float      | Timer TNGRELOCOOverall                    |

**Table A.8: SUT ports and addresses**

| Item | Identifier         | Type       | Description                                  |
|------|--------------------|------------|----------------------------------------------|
| 1    | PX_NGAP_SUT_IPADDR | Charstring | IP address of the gNB/AMF system under test  |
| 2    | PX_NGAP_SUT_PORT   | Integer    | Port number of the gNB/AMF system under test |

## A.8.3 LibCommon items

**Table A.9: PIXIT for LibCommon**

| Item | Identifier               | Type  | Description                                                                          |
|------|--------------------------|-------|--------------------------------------------------------------------------------------|
| 1    | PX_TSYNC_TIME_LIMIT      | Float | Default time limit for a sync client to reach a synchronization point                |
| 2    | PX_TSHUT_DOWN_TIME_LIMIT | Float | Default time limit for a sync client to finish its execution of the shutdown default |

## A.8.4 LibNGAP items

**Table A.10: PIXIT for LibNGAP**

| Item | Identifier                                       | Type        | Description                                                                                                                                        |
|------|--------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | PX_IPv6                                          | boolean     | True, if IPv6 addresses are used                                                                                                                   |
| 2    | PX_NGAP_TRANSPORT_PROTOCOL                       | enum        | NGAP transport protocol                                                                                                                            |
| 3    | PX_NGAP_TWAIT                                    | float       | NGAP message Twait timer                                                                                                                           |
| 4    | PX_TIMER_T3560                                   | integer     | T3560 timer value                                                                                                                                  |
| 5    | PX_AMF_UE_NGAP_ID                                | integer     | Unique identifier assigned by the AMF to the UE for NGAP signaling purposes                                                                        |
| 6    | PX_RAN_UE_NGAP_ID                                | integer     | This IE carries an identifier assigned by the RAN to the UE for the purposes of NGAP signaling                                                     |
| 7    | PX_PDU_SESSION_ID                                | integer     | The identifier for the PDU session                                                                                                                 |
| 8    | PX_SST                                           | integer     | Single Network Slice Selection Assistance Information                                                                                              |
| 9    | PX_SD                                            | octetstring | Slice differentiator                                                                                                                               |
| 10   | PX_TRANSPORT_LAYER_ADDRESS                       | bitstring   | Transport Layer Address                                                                                                                            |
| 11   | PX_SOURCE_TRANSPORT_LAYER_ADDRESS                | bitstring   | Source Transport Layer Address                                                                                                                     |
| 12   | PX_MC_TRANSPORT_LAYER_ADDRESS                    | bitstring   | Multicast Transport Layer Address                                                                                                                  |
| 13   | PX_GTP_TEID                                      | octetstring | GPRS Tunneling Protocol - Tunnel Endpoint Identifier                                                                                               |
| 14   | PX_QOS_FLOW_IDENTIFIER                           | integer     | To identify QoS flow                                                                                                                               |
| 15   | PX_ALTERNATIVE_QOS_PARA_SET_INDEX                | Integer     | To Indicate alternative sets of QoS parameters for the QoS flow                                                                                    |
| 16   | PX_ALTERNATIVE_QOS_PARA_SET_NOTIFY_IN_DEX        | integer     | To indicate the QoS parameters set which can currently be fulfilled                                                                                |
| 17   | PX_M_RELATIVE_AMF_CAP                            | integer     | Indicates the relative processing capacity of an AMF with respect to the other AMFs in the AMF Set in order to load-balance AMFs within an AMF Set |
| 18   | PX_NAS_MCC                                       | hexstring   | The Mobile Country Code (MCC)                                                                                                                      |
| 19   | PX_NAS_MNC                                       | hexstring   | The Mobile Network Code (MNC)                                                                                                                      |
| 20   | PX_TIME_ZONE                                     | octetstring | Time Zone value                                                                                                                                    |
| 21   | PX_EUTRA_CELL_IDENTITY                           | bitstring   | The leftmost bits of the E-UTRA Cell Identity IE correspond to the ng-eNB ID                                                                       |
| 22   | PX_PDU_SESSION_RESOURCE_RELEASE_COMMAND_TRANSFER | octetstring | Message value                                                                                                                                      |
| 23   | PX_EXPECTED_ACTIVITY_PERIOD                      | integer     | The expected activity time in seconds                                                                                                              |
| 24   | PX_EXPECTED_IDLE_PERIOD                          | integer     | The expected idle time in seconds                                                                                                                  |
| 25   | PX_UE_CONTEXT_RELEASE_COMMAND_CAUSE              | enum        | To indicate the reason for a particular event for the NGAP protocol                                                                                |
| 26   | PX_CAUSE_UE_CONTEXT_MODIFICATION_FAILURE         | enum        | To indicate the reason for a particular event for the NGAP protocol                                                                                |
| 27   | PX_CAUSE_UE_CONTEXT_SUSPEND_FAILURE              | enum        | To indicate the reason for a particular event for the NGAP protocol                                                                                |
| 28   | PX_CAUSE_UE_CONTEXT_RESUME_FAILURE               | enum        | To indicate the reason for a particular event for the NGAP protocol                                                                                |
| 29   | PX_CAUSE_HANDOVER_REQUIRED                       | enum        | To indicate the reason for a particular event for the NGAP protocol                                                                                |
| 30   | PX_CAUSE_HANDOVER_PREPARATION_FAILURE            | enum        | To indicate the reason for a particular event for the NGAP protocol                                                                                |

| Item | Identifier                                   | Type      | Description                                                                                                          |
|------|----------------------------------------------|-----------|----------------------------------------------------------------------------------------------------------------------|
| 31   | PX_CAUSE_HANOVER_REQUEST                     | enum      | To indicate the reason for a particular event for the NGAP protocol                                                  |
| 32   | PX_CAUSE_HANOVER_FAILURE                     | enum      | To indicate the reason for a particular event for the NGAP protocol                                                  |
| 33   | PX_CAUSE_HANOVER_CANCEL                      | enum      | To indicate the reason for a particular event for the NGAP protocol                                                  |
| 34   | PX_CAUSE_MULTIPLE_LOCATION_REPORTING         | enum      | To indicate the reason for a particular event for the NGAP protocol                                                  |
| 35   | PX_NG_SETUP_FAILURE                          | enum      | To indicate the reason for a particular event for the NGAP protocol                                                  |
| 36   | PX_RAN_CONFIGURATION_UPDATE_FAILURE          | enum      | To indicate the reason for a particular event for the NGAP protocol                                                  |
| 37   | PX_AMF_CONFIGURATION_UPDATE_FAILURE          | enum      | To indicate the reason for a particular event for the NGAP protocol                                                  |
| 38   | PX_CAUSE_NAS_NON_DELIVERY_INDICATION         | enum      | To indicate the reason for a particular event for the NGAP protocol                                                  |
| 39   | PX_RRC_STATE                                 | enum      | To indicate the RRC state of the UE                                                                                  |
| 40   | PX_AMF_POINTER                               | bitstring | To identify the AMF within the global 5G network                                                                     |
| 41   | PX_AMF_REGION_ID                             | bitstring | To identify the AMF within the global 5G network                                                                     |
| 42   | PX_AMF_SET_ID                                | bitstring | To identify the AMF within the global 5G network                                                                     |
| 43   | PX_UL_NAS_MAC                                | bitstring | Identify UL NAS MAC                                                                                                  |
| 44   | PX_UL_NAS_COUNT                              | bitstring | Identify UL NAS count                                                                                                |
| 45   | PX_DL_NAS_MAC                                | bitstring | Identify DL NAS MAC                                                                                                  |
| 46   | PX_RRC_ESTABLISHMENT_CAUSE                   | enum      | To indicate the reason for RRC Connection Establishment/Resume                                                       |
| 47   | PX_RRC_RESUME_CAUSE                          | enum      | To indicate the reason for RRC Connection Establishment/Resume                                                       |
| 48   | PX_HANOVER_TYPE                              | enum      | To indicate which kind of handover was triggered in the source side                                                  |
| 49   | PX_UE_AGGREGATE_MAXIMUM_BIT_RATE_DL          | integer   | To indicates the UE Aggregate Maximum Bit Rate as specified in ETSI TS 123 501 [7] in the downlink direction (bit/s) |
| 50   | PX_UE_AGGREGATE_MAXIMUM_BIT_RATE_UL          | integer   | To indicates the UE Aggregate Maximum Bit Rate as specified in ETSI TS 123 501 [7] in the uplink direction (bit/s)   |
| 51   | PX_NR_ENCRYPTION_ALGORITHMS                  | Bitstring | Each position in the bitmap represents an encryption algorithm                                                       |
| 52   | PX_NR_INTEGRITY_PROTECTION_ALGORITHMS        | bitstring | Each position in the bitmap represents an encryption algorithm                                                       |
| 53   | PX_EUTRA_ENCRYPTION_ALGORITHMS               | Bitstring | Each position in the bitmap represents an encryption algorithm                                                       |
| 54   | PX_EUTRA_INTEGRITY_PROTECTION_ALGORIT<br>HMS | bitstring | Each position in the bitmap represents an encryption algorithm                                                       |
| 55   | PX_NEXT_HOP_CHAINING_COUNT                   | integer   | Serves as a counter that tracks how many NH key derivations have been performed from the initial root key            |
| 56   | PX_NEXT_HOP_NH                               | bitstring | Intermediate key derived by the UE and Core Network (MME/AMF) to provide forward security                            |
| 57   | PX_DRB_ID                                    | integer   | Contains the DRB ID                                                                                                  |
| 58   | PX_PAGING_DRX                                | enum      | To indicate the Paging DRX                                                                                           |
| 59   | PX_AMF_NAME                                  | string    | To uniquely identify the AMF                                                                                         |
| 60   | PX_RAN_NODE_NAME                             | string    | Human readable name of the NG-RAN node                                                                               |
| 61   | PX_MESSAGE_IDENTIFIER                        | bitsring  | To identify the warning message                                                                                      |
| 62   | PX_SERIAL_NUMBER                             | bitsring  | To identifies a particular message from the source and type                                                          |
| 63   | PX_REPETITION_PERIOD                         | integer   | To indicate the periodicity of the warning message to be broadcast                                                   |

| Item | Identifier                                   | Type        | Description                                                                                                                                                                    |
|------|----------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 64   | PX_NUMBER_OF_BROADCASTS_REQUESTED            | integer     | To indicate the number of times a message is to be broadcast                                                                                                                   |
| 65   | PX_SOURCE_TO_TARGET_TRANSPARENT_CONTAINER    | octetstring | Transparent NAS container                                                                                                                                                      |
| 66   | PX_EPS_TAC                                   | octetstring | Uniquely and globally identify a tracking area within the Evolved Packet System                                                                                                |
| 67   | PX_MACRO_NGENB_ID                            | bitstring   | uniquely identify a Next Generation Evolved Node-B (ng-eNB)                                                                                                                    |
| 68   | PX_SHORT_MACRO_NGENB_ID                      | bitstring   | uniquely identify a Next Generation Evolved Node-B (ng-eNB)                                                                                                                    |
| 69   | PX_LONG_MACRO_NGENB_ID                       | bitstring   | uniquely identify a Next Generation Evolved Node-B (ng-eNB)                                                                                                                    |
| 70   | PX_UE_IDENTITY_INDEX_VALUE                   | bitstring   | Used by the NG-RAN node to calculate the Paging Frame for a specific User Equipment                                                                                            |
| 71   | PX_PERIODIC_REGISTRATION_UPDATE_TIMER        | bitstring   | Used within the 5G NG Application Protocol (NGAP) to assist the NG-RAN node in managing mobility for User Equipment (UE) in the RRC_INACTIVE state                             |
| 72   | PX_NGRAN_TRACE_ID                            | octetstring | Used to uniquely identify a trace session for a specific User Equipment                                                                                                        |
| 73   | PX_INTERFACES_TO_TRACE                       | bitstring   | Used to specify which NG-RAN node interfaces should be monitored during a trace session                                                                                        |
| 74   | PX_U_E_RADIO_CAPABILITY_ID                   | octetstring | Serves as a compact identifier that represents a specific set of UE radio capabilities                                                                                         |
| 75   | PX_EXTENDED_CONNECTED_TIME                   | integer     | Used to indicate the minimum time the RAN should keep the User Equipment (UE) in the RRC_CONNECTED state                                                                       |
| 76   | PX_UE_SIDELINK_AGGREGATE_MAXIMUM_BIT_RATE    | bitstring   | Used in the 5G NG Application Protocol (NGAP) to provide the radio access network with the aggregate maximum bit rate for a User Equipment's (UE) sidelink communication (V2X) |
| 77   | PX_FIVE_QI                                   | integer     | Used in 5G systems to identify specific Quality of Service (QoS) characteristics to be provided for a QoS flow                                                                 |
| 78   | PX_GNB_ID                                    | bitstring   | gNodeB Identifier                                                                                                                                                              |
| 79   | PX_MaskedIMEISV                              | bitstring   | To indicate IMEISV value with a mask, to identify a terminal model without identifying an individual Mobile Equipment.                                                         |
| 80   | PX_Index_to_RAT_Frequency_Selection_Priority | integer     | To indicate local configuration for RRM strategies such as camp priorities in Idle mode and control of inter-RAT/inter-frequency handover in Active mode                       |
| 81   | PX_TACode                                    | octetstring | To uniquely identify a Tracking Area Code                                                                                                                                      |

## A.8.5 Lib5GNAS items

**Table A.11: PIXIT for Lib5GNAS**

| Item | Identifier        | Type        | Description                                                      |
|------|-------------------|-------------|------------------------------------------------------------------|
| 1    | PX_CHECK_SECURITY | boolean     | Set to true to activate security checks                          |
| 2    | PX_SUPI_FORMAT    | bitstring   | Specify the type of identity being transmitted                   |
| 3    | PX_TYPE_OF_ID     | bitstring   | Identify the specific nature of a User Equipment (UE) identifier |
| 4    | PX_SUPI_DIGITS    | octetstring | SUPI digits                                                      |



| Item | Identifier                         | Type        | Description                                  |
|------|------------------------------------|-------------|----------------------------------------------|
| 5    | PX_MSIN                            | octetstring | MSIN digits                                  |
| 6    | PX_SUCI_DIGITS                     | octetstring | SUCI digits                                  |
| 7    | PX_OPERATOR_KEY                    | octetstring | Operator key (OP)                            |
| 8    | PX_OPERATOR_SECRET_KEY             | octetstring | Derived Operator Key (OPc)                   |
| 9    | PX_FORCE_USING_OPERATOR_SECRET_KEY | boolean     | Set to true if OPc is provided instead of OP |
| 10   | PX_SQN                             | bitstring   | Sequence Number (SQN)                        |
| 11   | PX_AMF                             | bitstring   | Authentication Management Field              |
| 12   | PX_RAND_VALUE                      | bitstring   | Random challenge                             |
| 13   | PX_SUBSCRIPTION_KEY                | bitstring   | User subscriprion key (K)                    |
| 14   | PX_BEARER_ID                       | bitstring   | Bearer identifier                            |
| 15   | PX_NETWORK_NAME                    | string      | Network name                                 |

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## Annex B (normative): NGAP N2 Abstract Test Suite (ATS)

### B.1 The TTCN-3 Module

This ATS has been produced using the Testing and Test Control Notation (TTCN-3) according to ETSI ES 201 873-1 [6].

This test suite has been compiled error-free using two different TTCN-3 compilers.

The TTCN-3 ATS NGAP modules (under `ttcn/AtsNgap/`) and library modules corresponding to the ATS are released in the ETSI forge repository:

- [https://forge.etsi.org/rep/int/5g-core/nas/-/tree/v1.2.1/ttcn?ref\\_type=tags](https://forge.etsi.org/rep/int/5g-core/nas/-/tree/v1.2.1/ttcn?ref_type=tags).

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# History

| Version | Date         | Status      |
|---------|--------------|-------------|
| V1.1.1  | October 2024 | Publication |
| V1.2.1  | July 2026    | Publication |
|         |              |             |
|         |              |             |
|         |              |             |