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Candidate Harmonized European Standard (Telecommunications series)

Terrestrial Trunked Radio (TETRA); Attachment requirements for TETRA terminal equipment; Part 1: Civil access



Reference

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Foreword

This Candidate Harmonized European Standard (Telecommunications series) has been produced by ETSI Project Terrestrial Trunked Radio (TETRA).

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations.

The present document, together with EN 301 435-2, is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Council Directive on the approximation of the laws of the Member States relating to telecommunications terminal equipment Directive 98/13/EC [41].

| National transposition dates | |
|--|------------------|
| Date of adoption of this EN: | 24 November 2000 |
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1 Scope

The present document specifies the technical characteristics to be provided by Terrestrial Trunked Radio (TETRA) terminal equipment, which uses the TETRA technology. It applies to terminal equipment operating within the frequency ranges, which are expected to be allocated to TETRA when member states have implemented ERC Decision ERC/DEC/(96)/4 [44].

The objective of the present document is to ensure that no disturbance occurs to the public telecommunications network, to ensure proper inter-working of TETRA terminals with TETRA networks, so that communication can be routed successfully through the applicable network(s), and to ensure interworking of TETRA terminal with TETRA terminal under control of a network management mechanism to avoid interference.

In addition to the present document, other Harmonized Standards may apply.

Requirements apply to the network interface and the Radio Frequency (RF) Air Interface of the equipment.

TETRA terminal equipment consists of several elements. The present document is structured to enable the approval of the individual elements as separate items. Because of the need for effective use of the radio spectrum, the essential air interface characteristics will always apply. For each essential requirement a test is given including measurement methods.

In the present document there are no Electromagnetic Compatibility (EMC) requirements in terms of the Terminal Directive 98/13/EC [41], article 5c.

NOTE: Technical requirements for EMC performance are covered by the relevant standards applicable to the EMC Directive 89/336/EEC [43] which also lays down the conformity assessment procedure.

The present document is based on the radio and protocol provisions of ETS 300 392, ETS 300 394 and ETS 300 396.

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.

- [1] ETSI EN 300 392-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".
- [2] ETSI EN 300 392-7: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 7: Security".
- [3] ETSI ETS 300 392-10: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1".
- [4] ETSI ETS 300 392-11: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2".
- [5] ETSI ETS 300 392-12: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3".
- [6] ETSI ETS 300 392-14: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 14: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [7] ETSI TS 100 392-15: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 15: TETRA frequency bands, duplex spacings and channel numbering".

- [8] ETSI ETS 300 394-1: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 1: Radio".
- [9] ETSI ETS 300 394-2-1: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 2: Protocol testing specification for Voice plus Data (V+D); Sub-part 1: Test suite structure and test purposes".
- [10] ETSI ETS 300 394-2-2: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 2: Protocol testing specification for Voice plus Data (V+D); Sub-part 2: Abstract Test Suite (ATS) for Network (NWK) layer".
- [11] ETSI ETS 300 394-2-3: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 2: Protocol testing specification for Voice plus Data (V+D); Sub-part 3: Abstract Test Suite (ATS) for Logical Link Control (LLC)".
- [12] ETSI ETS 300 394-2-4: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 2: Protocol testing specification for Voice plus Data (V+D); Sub-part 4: Abstract Test Suite (ATS) for Medium Access Control (MAC)".
- [13] ETSI ETS 300 394-5-1: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 5: Security; Sub-part 1: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [14] ETSI ETS 300 394-5-2: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 5: Security; Sub-part 2: Protocol testing specification for TETRA security".
- [15] ETSI ETS 300 394-5-3: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 5: Security; Sub-part 3: Abstract Test Suite (ATS)".
- [16] ETSI ETS 300 396-2: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 2: Radio aspects".
- [17] ETSI ETS 300 396-3: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 3: Mobile Station to Mobile Station (MS-MS) Air Interface (AI) protocol".
- [18] ETSI EN 300 396-4: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 4: Type 1 repeater air interface".
- [19] ETSI ETS 300 396-5: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 5: Gateway air interface".
- [20] ETSI ETS 300 396-6 (1996): "Terrestrial Trunked Radio (TETRA); Direct Mode Operation (DMO); Part 6: Security".
- [21] ETSI EN 300 396-7: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 7: Type 2 repeater air interface".
- [22] ETSI ETS 300 396-8-1: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 8: Protocol Implementation Conformance Statement (PICS) proforma specification; Sub-part 1: Mobile Station to Mobile Station (MS-MS) Air Interface (AI)".
- [23] ETSI EN 300 396-8-2: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 8: Protocol Implementation Conformance Statement (PICS) proforma specification; Sub-part 2: Type 1 repeater Air Interface (AI)".
- [24] ETSI ETS 300 396-8-3: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 8: Protocol Implementation Conformance Statement (PICS) proforma specification; Sub-part 3: Gateway Air Interface (AI)".
- [25] ETSI ETS 300 396-8-4: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 8: Protocol Implementation Conformance Statement (PICS) proforma specification; Sub-part 4: Type 2 Repeater Air Interface (AI)".

- [26] ETSI TS 100 396-10: "Terrestrial Trunked Radio (TETRA) Technical requirements for Direct Mode Operation (DMO) Part 10: Managed Direct Mode Operation (DMO)".
- [27] ETSI ETS 300 394-4-1: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 1: Test suite structure and test purposes (TSS&TP) for Mobile Station to Mobile Station (MS-MS) Air Interface (AI)".
- [28] ETSI ETS 300 394-4-2: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 2: Abstract Test Suite (ATS) for Mobile Station to Mobile Station (MS-MS) Air Interface (AI)".
- [29] ETSI EN 300 394-4-3: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 3: Test suite structure and test purposes (TSS&TP) for Mobile Station (MS) Repeater type 1".
- [30] ETSI EN 300 394-4-4: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 4: Test suite structure and test purposes (TSS&TP) for Direct Mode Repeater (DM-REP) type 1".
- [31] ETSI EN 300 394-4-5: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 5: Abstract Test Suite (ATS) for Mobile Station (MS) Repeater type 1".
- [32] ETSI EN 300 394-4-6: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 6: Abstract Test Suite (ATS) for Direct Mode Repeater (DM-REP) type 1".
- [33] ETSI ETS 300 394-4-7: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 7: Test suite structure and test purposes (TSS&TP) for Mobile Station to Gateway (MS-GW) Air Interface (AI)".
- [34] ETSI ETS 300 394-4-8: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 8: Test suite structure and test purposes (TSS&TP) for Direct Mode Gateway (DM-GATE)".
- [35] ETSI ETS 300 394-4-9: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 9: Abstract Test Suite (ATS) for Mobile Station (MS) Gateway".
- [36] ETSI ETS 300 394-4-10: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 10: Abstract Test Suite (ATS) for Direct Mode Gateway (DM-GATE)".
- [37] ETSI EN 300 394-4-11: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 11: Test Suite Structure and Test Purposes (TSS&TP) for Mobile Station Repeater type 2".
- [38] ETSI EN 300 394-4-12: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 12: Test Suite Structure and Test Purposes (TSS&TP) for Repeater type 2".
- [39] ETSI EN 300 394-4-13: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 13: Abstract Test Suite (ATS) for Mobile station Repeater type 2".
- [40] ETSI EN 300 394-4-14: "Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 4: Protocol testing specification for Direct Mode Operation (DMO); Sub-part 14: Abstract Test Suite (ATS) for Repeater type 2".
- [41] Directive 98/13/EC of the European Parliament and of the Council of 12 February 1998 relating to telecommunications terminal equipment and satellite earth station equipment, including the mutual recognition of their conformity.

- [42] ISO/IEC 9646-3 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The tree and tabular combined notation". (See also CCITT Recommendation X.292 (1992)).
- [43] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility.
- [44] CEPT/ERC/DEC(96)04: "ERC Decision of 7 March 1996 on the frequency bands for the introduction of the Trans European Trunked Radio System (TETRA)".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

acknowledged data transfer: service provided by the layer below which gives an acknowledgement back over the air interface from the lower layer peer entity. This service is used by the layer 3 entities to get a secure transmission including re-transmissions.

announced cell re-selection: cell re-selection where MS-MLE informs the SwMI both in the old cell (leaving cell) and in the new cell (arriving cell) that cell change is performed.

Associated Control CHannel (ACCH): dedicated signalling channel associated with a channel that has been assigned for circuit mode traffic. It comprises the Fast Associated Control CHannel (FACCH) which uses frames 1 to 18 when there is no traffic in a given direction or the Slow Associated Control CHannel (SACCH) which is always available in frame 18 when there is traffic.

attached: a MS is said to be attached to a cell when the MS is camped and registered on the cell. The MS may be in idle mode (i.e. not actively processing a transaction) or in active mode (i.e. actively processing a transaction in reception and/or in transmission). It is the MM which decides when a MS is said to be attached.

basic link: bi-directional connectionless path between one or several MS and a BS, with a provision of both unacknowledged and acknowledged services on a single message basis.

Bit Error Ratio (BER): limit ratio of the bits wrongly received to all bits received in a given logical channel.

broadcast: unidirectional point to multi-point mode of transmission.

cell re-selection: act of changing the serving cell from an old cell to a new cell. The cell re-selection is performed by procedures located in the MLE and in the MAC. When the re-selection is made and possible registration is performed, the MS is said to be attached to the cell.

changeover: within a call, the process of effecting a transfer of the master role (and hence transmitting MS) at the end of one call transaction so that another can commence.

Common Cipher Key (CCK): cipher key that is generated by the infrastructure to protect group addressed signalling and traffic.

common control channels: control channels transmitted by the infrastructure to control the MS population. They comprise the Main Control Channel (MCCH) and common Secondary Control Channels (SCCH).

Direct Mode (DM): mode of simplex operation where mobile subscriber radio units may communicate using radio frequencies which may be monitored by, but which are outside the control of, the TETRA V+D network. DM is performed without intervention of any base station.

Direct Mode Call Control (DMCC): layer 3 entity responsible for setting up and maintaining a call in DMO.

Direct Mode channel: specific grouping of timeslots in the DM multiplex structure related to a particular DM RF carrier i.e. DM frequency (or to a pair of duplex-spaced RF carriers for operation with a type 1B or type 2 DM-REP). The grouping may not always be fixed, but in DMO when operating in frequency efficient mode as an example, there are two DM channels, identified by the letters A and B.

Direct Mode GATEway (DM-GATE): device which provides gateway connectivity between a DM-MS and the TETRA V+D network. The gateway provides the interface between TETRA DMO and TETRA V+D mode.

Direct Mode Mobility Management (DMMM): layer 3 entity responsible for registration to a gateway in DMO.

Direct Mode Mobile Station (DM-MS): physical grouping that contains all of the mobile equipment that is used to obtain TETRA DM services.

Direct Mode REPeater (DM-REP): device that operates in TETRA DMO and provides a repeater function to enable two or more DM-MSs to extend their coverage range. It may be either a DM-REP type 1, supporting a single call on the air interface, or a DM-REP type 2, supporting two calls on the air interface. A DM-REP type 1 may operate on either a single RF carrier (DM-REP type 1A) or a pair of duplex-spaced RF carriers (DM-REP type 1B). A DM-REP type 2 operates on a pair of duplex-spaced RF carriers.

direct set-up signalling: signalling procedure where immediate communication can take place between the calling and the called users without the alerting process and without an explicit response from the called user that he has answered.

DM-REP presence signal: message transmitted by a DM-REP in order to indicate its presence on an RF carrier.

DM-REP type 1: DM repeater that supports a single call on the air interface. There are two varieties of type 1 DM-REP:

- **DM-REP type 1A:** which operates on a single RF carrier;
- **DM-REP type 1B:** which operates on a pair of duplex-spaced RF carriers, one used as the "uplink" from DM-MSs to the DM-REP and the other used as the "downlink" from the DM-REP to DM-MSs.

DM-REP type 2: DM repeater that is capable of supporting two simultaneous type 2 calls on the air interface. A type 2 DM-REP operates on a pair of duplex-spaced RF carriers, one used as the "uplink" from DM-MSs to the DM-REP and the other used as the "downlink" from the DM-REP to DM-MSs. The protocol for type 2 calls through a type 2 DM-REP is based on the protocol for frequency efficient mode in ETS 300 396-3 [17]. (A DM-REP type 2 may also optionally offer type 1B calls using the protocol defined in EN 300 396-4 [18]).

duplex frequency spacing: fixed frequency spacing between up and downlink frequencies directions.

Group Cipher Key (GCK): long lifetime cipher key known by the infrastructure and MS to protect group addressed signalling and traffic.

Group TETRA Subscriber Identity (GTSD): identity used to set up and receive group calls. A TETRA user may have multiple GTSDs associated to its ITSI. Multiple user may have the same GTSD as a valid reception address.

Individual TETRA Subscriber Identity (ITSD): identity used to specify an individual TETRA user. An ITSD cannot be shared by multiple users.

initial cell selection: act of choosing a first serving cell to register in. The initial cell selection is performed by procedures located in the MLE and in the MAC. When the cell selection is made and possible registration is performed, the MS is said to be attached to the cell.

logical channel: generic term for any distinct data path. Logical channels are considered to operate between logical endpoints.

Main Control Channel (MCCH): principal common control channel transmitted by the infrastructure to control the MSs in a cell. The frequency of the main carrier for the cell is broadcast by the infrastructure, and the MCCH is located on timeslot 1 of the main carrier.

Managed DMO (M-DMO): direct interworking between two DMO Mobile Stations under control of a network by a management mechanism to avoid interference

master: direct Mode equipment that is either active in a call transaction transmitting traffic or control data, or is reserving the channel by means of channel reservation signalling and hence is providing synchronization information to the channel.

Message Erasure Rate (MER): limit ratio of the messages detected as wrong by the receiver to all messages received in a given logical channel.

on/off hook signalling: signalling procedure which includes an alerting process to the called user. An explicit response from the called user that he has answered is waited before the call can be set-up.

presence signal: message transmitted by a DM-REP or a gateway in order to indicate its presence on an RF carrier.

Probability of Undetected Erroneous Message (PUEM): limit ratio of the erroneous messages detected as right by the receiver to all messages received in a given logical channel.

Random Challenge (RAND1, RAND2): random value generated by the infrastructure to authenticate a user or in an MS to authenticate the infrastructure, respectively.

Response (RES1, RES2): value calculated in the MS from RAND1 and a session key to prove the authenticity of a user to the infrastructure or by the infrastructure from RAND2 and a session key to prove its authenticity to a user, respectively.

Sealed Common Cipher Key (SCCK): common cipher key cryptographically sealed with a particular user's derived cipher key. In this form the keys are distributed over the air interface.

Sealed Group Cipher Key (SGCK): group cipher key cryptographically sealed with a particular user's derived cipher key. In this form the keys are distributed over the air interface.

Sealed Static Cipher Key (SSCK): static cipher key cryptographically sealed with a particular user's secret key. In this form the keys are distributed over the air interface.

Secondary Control Channel (SCCH): control channel other than the MCCH.

slave: direct Mode equipment that is receiving traffic and/or signalling and hence is deriving synchronization information from the channel.

solicited registration: registration request which is made by a DM-MS during a registration phase initiated by a gateway.

Static Cipher Key (SCK): cipher key that is independent of any other key that may be used if no (successful) authentication has taken place.

surveillance: process of monitoring the quality of the radio link to the serving cell for V+D, and the process of determining the current state of the DM RF carrier for DMO.

unacknowledged data transfer: service provided by the layer below which does not give any acknowledgement back to over the air interface from the lower layer peer entity.

unannounced cell re-selection: cell re-selection where the MS-MLE does not inform the old cell (leaving cell) that it intends to change to a new cell. Only the new cell (arriving cell) is informed about the MS-MLE.

undeclared cell re-selection: cell re-selection where the MS-MLE does not inform the old cell (leaving cell) nor the new cell (arriving cell) that cell change is performed.

useful part of a burst: modulation symbol times SN0 to SNmax of a burst.

unsolicited registration: registration request which is made by a DM-MS at any time other than within a registration phase.

V+D operation: mode of operation where MSs may communicate via the TETRA V+D air interface which is controlled by the TETRA Switching and Management Infrastructure (SwMI).

3.2 Symbols

For the purposes of the present document, the following symbols apply:

| | |
|----|---|
| Um | TETRA Voice plus Data (V+D) air interface |
| Ud | TETRA Direct Mode (DM) air interface |

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

| | |
|---------|--------------------------------------|
| AACH | Access Assignment CHannel |
| ACCH | Associated Control CHannel |
| AT | ATtachment |
| ATS | Abstract Test Suite |
| AU | AUthentication |
| BA | Basic link, Acknowledged service |
| BU | Basic link, Unacknowledged service |
| BI | Behaviour invalid |
| BNCH | Broadcast Network CHannel |
| BS | Base Station |
| BSCH | Broadcast Synchronization CHannel |
| CA | CApability test |
| Cat. | Category |
| CC | Call Control |
| CCK | Common Cipher Key |
| CLCH | Common Linearization CHannel |
| CM | Circuit Mode |
| CMCE | Circuit Mode Control Entity |
| CONP | Connection Oriented Network Protocol |
| CR | Cell Reselection |
| CSS | Carrier Specific Signalling |
| CT | Control of Transmission |
| CTR | Common Technical Requirement |
| CU | Channel Usage |
| DM | Direct Mode |
| DM-GATE | Direct Mode GATEway |
| DM-MS | Direct Mode Mobile Station |
| DM-REP | Direct Mode REPeater |
| DM-REP1 | Direct Mode REPeater type 1 |
| DM-REP2 | Direct Mode REPeater type 2 |
| DMCC | Direct Mode Call Control |
| DMMM | Direct Mode Mobility Management |
| DMO | Direct Mode Operation |
| EN | ENable |
| ETS | European Telecommunication Standard |
| FCS | Frame Check Sequence |
| GC | Group Call |
| GCK | Group Cipher Key |
| GSSI | Group Short Subscriber Identity |
| GTSI | Group TETRA Subscriber Identity |
| GW | GateWay |
| GWCC | GateWay Call Control |
| GWMM | GateWay Mobility Management |
| HD | Half-slot Down-link |
| HU | Half-slot Up-link |
| IC | Individual Call |
| ID | IDle Channel |
| II | Infrastructure Initiated |
| IMP | IMPLICIT |
| ITSI | Individual TETRA Subscriber Identity |

| | |
|---------|---|
| IUT | Implementation Under Test |
| KH | Key Holder |
| KS | Key Sealer |
| KU | Key User |
| L3 | Layer 3 |
| LA | Location Area |
| LLC | Logical Link Control |
| LS | Line Station |
| M-DMO | Managed DMO |
| MA | MAintenance |
| MAC | Medium Access Control |
| MCC | Mobile Country Code |
| MCCH | Main Control CHannel |
| MCM | Minimum Control Mode |
| MLE | Mobile Link Entity |
| MM | Mobility Management |
| MNC | Mobile Network Code |
| MNI | Mobile Network Identity |
| MS | Mobile Station |
| MS-GW | Mobile Station to GateWay operation |
| MS-MS | Mobile Station to Mobile Station operation |
| MS-REP1 | Mobile Station to Repeater type 1 operation |
| MS-REP2 | Mobile Station to Repeater type 2 operation |
| MSMS | Mobile Station to Mobile Station |
| NB | Network Broadcast |
| NCM | Normal Control Mode |
| NWK | NetWorK layer |
| OC | Outgoing Call |
| OTAR | On The Air Rekeying |
| PD | Permanent Disable |
| PDU | Protocol Data Unit |
| PEI | Peripheral Equipment Interface |
| PICS | Protocol Implementation Conformance Statement |
| PIXIT | Protocol Implementation eXtra Information for Testing |
| PUEM | Probability of Undetected Erroneous Message |
| RA | Random Access |
| RAND1 | RANDom challenge 1 |
| RE | REserved Access (for MAC layer) or REgistration (for MLE layer) |
| REG | REGistration |
| RES2 | RESponse 2 |
| RF | Radio Frequency |
| RO | Receive Occupation |
| RR | Receive Reservation |
| RS | Random Seed |
| RT | Requirements Table |
| SCCH | Secondary Control CHannel |
| SCCK | Sealed Common Cipher Key |
| SCH | Signalling CHannel |
| SCH/F | Signalling CHannel, Full-slot |
| SCH/H | Signalling CHannel, Half-slot |
| SCH/S | Signalling CHannel, Synchronization |
| SCK | Static Cipher Key |
| SCKN | Static Cipher Key Number |
| SCLNP | Specific ConnectionLess Network Protocol |
| SDS | Short Data Services |
| SDU | Service Data Unit |
| Sec | Security |
| SED | Secure Enable/Disable |
| SGCK | Sealed GCK |
| SIM | Subscriber Identity Module |
| SM | Signalling Messages |
| SS | Supplementary Service |

| | |
|-------|--|
| SSCK | Sealed SCK |
| SSI | Short Subscriber Identity |
| STCH | S'Tealing CHannel |
| SU | Set-Up |
| SwMI | Switching and Management Infrastructure |
| TAR | TARget |
| TC | Transmission Control |
| TCH | Traffic CHannel |
| TD | Tempory Disable |
| TEI | TETRA Equipment Identity |
| TETRA | TErrestrial Trunked RAdio |
| TI | TImer or Terminal Initiated (for Security) |
| TM | TETRA MAC layer |
| TSS | Test Suite Structure |
| TP | Test Purpose |
| TR | Transmit Reservation |
| TTCN | Tree and Tabular Combined Notation |
| TXO | Transmit Occupation |
| V+D | Voice and Data |
| VD | Voice and Data |
| VN | Version Number |

4 Requirements

This clause references the requirements from the standards specifying TETRA. It also contains the justifications for inclusion of the requirements, and a reference to the relevant test to verify compliance with the requirement.

NOTE: This clause does not specify the exact status (e.g. mandatory or optional) of the listed features, services and requirements. This is specified in the Requirements Tables (RT) in annex A.

The following table headings are applicable to the tables in this clause:

- **Requirement reference:** Reference to a (sub)clause(s) in the reference specification.
- **Description:** A short description of the requirement.
- **Category (Cat.):** The category in which the relative item falls under the article 5 in the Council Directive 98/13/EC [41].

The interpretation of category column in all tables is as follows:

- d** falls under item (d) from Article 5 of Council Directive 98/13/EC [41], "protection of the network from harm";
- e** falls under item (e) from Article 5 of Council Directive 98/13/EC [41], "effective use of radio frequency spectrum";
- f** falls under item (f) from Article 5 of Council Directive 98/13/EC [41], "interworking with the network";
- g** falls under item (g) from Article 5 of Council Directive 98/13/EC [41], "interworking via the network, in justified cases".

NOTE: There are no EMC technical requirements in the present document, which are specific to the equipment in terms of item (c) from Article 5 of Council Directive 98/13/EC [41]. Other technical aspects of EMC performance and testing of the equipment are covered by the relevant requirements of the EMC Directive, 89/336/EEC [43].

- **Justification:** The justification for the requirement against the indicated category.
- **Test method reference:** For physical layer tables, a test method is referenced for each requirement.

- **Test case limit value:** For physical layer tables, the limit values are indicated for a requirement when applicable.
- **Test purpose reference:** For protocol layer tables, at least one test purpose is referenced for each requirement.
- **Test case reference:** For protocol layer tables, at least one test case is referenced for each requirement.

4.1 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be declared by the supplier.

To avoid unnecessary interference in the radio spectrum, the equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the declared operational environmental profile.

4.2 Requirements at the Um air interface

4.2.1 Physical layer requirements

This subclause contains the radio layer requirements at the Um air interface.

Table 1: Radio layer requirements at the Um air interface

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|--------------------------------|--|------|---|--|--------------------------------|
| 5.2 | Modulation type. | d, e | Incorrect modulation will lead to disturbance of other TETRA users. | - | Implicit by 10.1.3. |
| 6.2 | Frequency bands and channel arrangements. | d, e | Incorrect use of frequency bands and channel arrangements may cause unnecessary interference in the radio spectrum. | - | Implicit by 10.2.1/10.2.2 |
| 6.4.1.1 | BS transmitter output power. | d, e | Maladjustment of the RF output power may either cause unnecessary interference in the radio spectrum or decrease the probability of successful radio connections. | 7.1.1.2 | 8.1 and 8.1.2 |
| 6.4.1.2 | MS transmitter output power. | d, e | Maladjustment of the RF output power may either cause unnecessary interference in the radio spectrum or decrease the probability of successful radio connections. | 7.1.1.2 | 8.1 and 8.1.1 |
| 6.4.1.2 | MS nominal transmitter output power control levels. | d, e | Maladjustment of the RF output power may either cause unnecessary interference in the radio spectrum or decrease the probability of successful radio connections. | 7.1.1.2 | 8.1 and 8.1.1 |
| 6.4.2.2.1 | Unwanted conducted emission over the useful part of the burst. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.3.2 | 8.3 |
| 6.4.2.2.2 | Unwanted conducted emission during the switching transients. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.4.2 | 8.4 |
| 6.4.2.3 | Unwanted conducted emission far from the carrier. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.5.2 | 8.5 |
| 6.4.2.4 | Unwanted conducted emission during CLCH and BLCH. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.7.2 | 8.7, 8.7.1 and 8.7.2 |
| 6.4.2.5 | Unwanted conducted emission in the non-transmit state. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.8.2 | 9.8 |
| 6.4.3 | Unwanted radiated emissions. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.6.2 | 8.6 |
| 6.4.5 | BS output power time mask. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | 7.1.1.2 | 8.1 and 8.1.2 |
| 6.4.5 | MS output power time mask. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | 7.1.1.2 | 8.1 and 8.1.1 |
| 6.4.5.1 | BS output power in non-active transmit state. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | 7.1.2.2 | 8.2 |
| 6.4.5.2 | MS output power in non-active transmit state. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | 7.1.2.2 | 8.2 |
| 6.4.6.2 | BS transmitter intermodulation attenuation. | d, e | A transmitter intermodulation attenuation below an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.8.2.2 | 8.8 and 8.8.2 |
| 6.4.6.3 | MS transmitter intermodulation attenuation. | d, e | A transmitter intermodulation attenuation below an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.8.2.1 | 8.8 and 8.8.1 |
| 6.4.7 | Intra-BS transmitter intermodulation attenuation. | d, e | A transmitter Intra-BS intermodulation attenuation below an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.8.2.3 | 8.8 and 8.8.3 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|--------------------------------|--|------|--|--|---|
| 6.5.1.2 | Blocking characteristics. | e | Insufficient blocking characteristics of the receiver may lead to an unnecessarily high number of radio transmission attempts. | 7.2.5.2 | 9.5, 9.5.1 and 9.5.2 |
| 6.5.2.2 | Spurious response rejection. | d, e | Insufficient spurious response rejection may lead to an unnecessarily high number of radio transmission attempts. | 7.2.6.2 | 9.6 |
| 6.5.3.2 | Intermodulation response rejection. | d, e | Insufficient intermodulation response rejection may lead to an unnecessarily high number of radio transmission attempts. | 7.2.7.2 | 9.7, 9.7.1 and 9.7.2 |
| 6.5.4.2 | Unwanted conducted emission in reception. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.8.2 | 9.8 |
| 6.5.5 | Unwanted radiated emission. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.9.2 | 9.9 |
| 6.6.1.2 | Modulation accuracy. | e, f | Insufficient modulation accuracy may lead to the transmission of incorrect data. | 7.3.1.2 | 10.1, 10.1.1, 10.1.2 and 10.1.3 |
| 6.6.2.1 | Nominal error rate. | e, f | An unacceptable nominal error rate may lead to the reception of incorrect data. | 7.2.2.2 | 9.2, 9.2.1 and 9.2.2 |
| 6.6.2.2 | Dynamic reference sensitivity performance. | e, f | An unacceptable dynamic reference sensitivity performance may lead to the reception of incorrect data. | 7.2.3.2 | 9.3, 9.3.1, 9.3.2 and 9.3.3 |
| 6.6.2.2.1 | BS dynamic reference sensitivity performance. | e, f | An unacceptable dynamic reference sensitivity performance may lead to the reception of incorrect data. | 7.2.3.2 | 9.3 and 9.3.2 |
| 6.6.2.2.2 | MS dynamic reference sensitivity performance. | e, f | An unacceptable dynamic reference sensitivity performance may lead to the reception of incorrect data. | 7.2.3.2 | 9.3 and 9.3.1 |
| 6.6.2.3 | Reference interference performance. | e, f | An unacceptable reference interference performance may lead to the reception of incorrect data. | 7.2.4.2 | 9.4, 9.4.1 and 9.4.2 |
| 6.6.2.3.1 | BS reference interference performance. | e, f | An unacceptable reference interference performance may lead to the reception of incorrect data. | 7.2.4.2 | 9.4 and 9.4.2 |
| 6.6.2.3.2 | MS reference interference performance. | e, f | An unacceptable reference interference performance may lead to the reception of incorrect data. | 7.2.4.2 | 9.4 and 9.4.1 |
| 6.6.2.4 | Static reference sensitivity performance. | e, f | An unacceptable static reference sensitivity performance may lead to the reception of incorrect data. | Implicit by 7.2.5.2, 7.2.6.2 and 7.2.7.2 | Implicit by 9.5.1, 9.5.2, 9.6, 9.7.1 and 9.7.2. |
| 6.6.2.4.1 | BS static reference sensitivity performance. | e, f | An unacceptable static reference sensitivity performance may lead to the reception of incorrect data. | Implicit by 7.2.5.2, 7.2.6.2 and 7.2.7.2 | Implicit by 9.5.2, 9.6, and 9.7.2. |
| 6.6.2.4.2 | MS static reference sensitivity performance. | e, f | An unacceptable static reference sensitivity performance may lead to the reception of incorrect data. | Implicit by 7.2.5.2, 7.2.6.2 and 7.2.7.2 | Implicit by 9.5.1, 9.6 and 9.7.1. |
| 6.6.2.5 | MS receiver performance for synchronization burst acquisition. | d, e | An insufficient synchronization burst acquisition may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing. |
| 7.4 | Timing of transmitted signal. | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing. |
| 7.5 | BS requirement for synchronization. | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | 7.3.2.2 | 10.2 and 10.2.2 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|---|-------------------------------------|---------|---|--|---------------------------------|
| 7.6 | MS requirement for synchronization. | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | 7.3.2.2 and 7.3.4.2 | 10.2, 10.2.1 and 10.4 |
| 9.5.2 | Mapping of BCCH and CLCH. | d, e | Incorrect mapping of BCCH and CLCH may cause interference with other users. | - | Implicit by MAC layer testing. |
| 9.5.3 | Mapping of SCH. | d, e | Incorrect mapping of SCH may cause interference with other users. | - | Implicit by MAC layer testing. |
| 9.5.4 | Mapping of TCH and STCH. | d, e | Incorrect mapping of TCH and STCH may cause interference with other users. | - | Implicit by CMCE layer testing. |
| 9.5.5 | Mapping of AACH. | d, e | Incorrect mapping of AACH may cause interference with other users. | - | Implicit by MAC layer testing. |
| 10.2 | RF power control. | d, e, f | An insufficient RF power control may either cause unnecessary interference in the radio spectrum or decrease the probability of successful radio connections. | 7.3.5.2 | 10.5 |
| 10.3.1 | Received signal strength. | d, e, f | If the received signal strength is not measured sufficiently accurate this may lead to a maladjustment of the RF output power and thus either cause unnecessary interference in the radio spectrum or decrease the probability of successful radio connections. | 7.3.5.2 | 10.5 |
| 23.4.4.2 | MS open loop power control. | d, e, f | An insufficient RF power control may either cause unnecessary interference in the radio spectrum or decrease the probability of successful radio connections. | 7.3.5.2 | 10.5 |
| TS 100 392-15 [7], clause 5 | TETRA Frequency bands. | d, e | Incorrect use of frequency bands may cause unnecessary interference in the radio spectrum. | - | Implicit by 10.2.1/10.2.2 |
| TS 100 392-15 [7], clause 6 | Duplex spacing | d, e | Incorrect Duplex spacing may cause unnecessary interference in the radio spectrum. | - | Implicit by 10.2.1/10.2.2 |
| NOTE 1: The requirements are specified in EN 300 392-2 [1] under the given subclause, except when otherwise stated. | | | | | |
| NOTE 2: The test case limit values are specified in ETS 300 394-1 [8], clause 7. | | | | | |
| NOTE 3: The test methods are specified in ETS 300 394-1 [8], clauses 8 to 10. | | | | | |

In addition to the requirements specified in table 1, the following applies for the TETRA V+D civil access for the frequency bands and channel arrangements defined in subclause 6.2 of EN 300 392-2 [1], and clauses 5 and 6 of TS 100 392-15 [7]:

The operational frequencies shall be within the ranges defined by ERC Decision ERC/DEC/(96)04 [44] for civil usage, i.e.:

- the uplink RF carrier frequencies shall be within one or more of the bands 410 MHz to 420 MHz, 870 MHz to 876 MHz, 450 MHz to 460 MHz and 385 MHz to 390 MHz;
- the downlink RF carrier frequencies shall be within one or more of the bands 420 MHz to 430 MHz, 915 MHz to 921 MHz, 460 MHz to 470 MHz and 395 MHz to 399,99 MHz.

The duplex spacing, D, shall correspond to the values allowed by ERC Decision ERC/DEC/(96)04 [44] for civil usage, i.e. it shall be:

- 10 MHz for operation within the bands 410 MHz to 430 MHz, 450 MHz to 470 MHz and 385 MHz to 390/395 MHz to 399,99 MHz;
- 45 MHz for operation within the band 870-876/915-921 MHz.

The requirements for frequency bands and channel arrangements are tested implicitly.

4.2.2 Layer 2 requirements

This subclause contains the layer 2 requirements at the Um air interface for MS.

Table 2: Lower MAC layer requirements at the Um air interface

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference | Test case reference (note 2) |
|--|---|------|---|------------------------|--------------------------------------|
| 8.3.1 | Error control scheme for Access Assignment CHannel (AACH). | d, e | Incorrect decoding of AACH may cause interference with other users. | - | Implicit by Upper MAC layer testing. |
| 8.3.2 | Error control scheme for Broadcast Synchronization CHannel (BSCH). | d, e | Incorrect decoding of BSCH may cause interference with other users. | - | Implicit by Upper MAC layer testing. |
| 8.3.4.1 | Error control scheme for mapping onto Half-bursts on the Downlink (SCH/HD), Broadcast Network CHannel (BNCH) and STealing Channel (STCH). | d, e | Incorrect decoding of BNCH may cause interference with other users. Incorrect coding/decoding of SCH/HD and STCH may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |
| 8.3.4.2 | Error control scheme for Signalling CHannel for mapping onto Half-bursts on the Uplink (SCH/HU). | e | Incorrect coding of SCH/HU may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |
| 8.3.4.3 | Error control scheme for Signalling CHannel for mapping onto Full-bursts (SCH/F). | d, e | Incorrect coding/decoding of SCH/F may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |
| NOTE 1: The requirements are specified in EN 300 392-2 [1], under the given subclause. | | | | | |
| NOTE 2: The test cases, as referenced, are specified in ETS 300 394-2-4 [12], annex A. | | | | | |

Table 3: Upper MAC layer requirements at the Um air interface

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|--|------|--|-------------------------------------|---------------------------------|
| 23.3.1.1 | Receiving and decoding of messages on the downlink MCCH. | e, f | Incorrect reception and decoding of the MCCH may cause unwanted transmission attempts or prevent transfer of upper layer messages. | - | Implicit by MAC layer testing. |
| 23.3.1.3 | Receiving messages on the ACCH. | e, f | Incorrect reception of messages on the ACCH may cause unwanted transmission attempts or prevent transfer of upper layer messages. | - | Implicit by CMCE layer testing. |
| 23.3.3.1 | Beginning of minimum mode. | e | Incorrect detection of minimum mode operation may cause unwanted transmission attempts. | TP/MAC/BV/MI-01, TP/MAC/BI/MI-01 | MAC_BV_MI_01, MAC_BI_MI_01 |
| 23.3.3.2 | MS operation during frames 1-17 in minimum mode. | e, f | Incorrect operation during minimum mode may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/BV/MI-01 | MAC_BV_MI_01 |
| 23.3.3.3 | MS operation during frame 18 in minimum mode. | e, f | Incorrect operation during minimum mode may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/BV/MI-01 | MAC_BV_MI_01 |
| 23.3.3.5 | End of minimum mode. | e, f | Incorrect detection of end of minimum mode may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/BV/MI-02 | MAC_BV_MI_02 |
| 23.4.1.2.1 | Recognition of destination address in downlink messages. | e, f | Incorrect recognition of destination address may cause unwanted transmission attempts or prevent transfer of upper layer messages. | - | Implicit by MAC layer testing. |
| 23.4.1.2.2 | Source address in uplink messages. | e, f | Use of incorrect source address may cause unwanted transmission attempts or prevent transfer of upper layer messages. | - | Implicit by MAC layer testing. |
| 23.4.2.1.2 | Transmission of TM-SDU not requiring fragmentation. | e, f | Incorrect transmission of TM-SDU not requiring fragmentation may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/CA-01 | MAC_CA_01 |
| 23.4.2.1.2 | Fragmentation of uplink TM-SDU, when a transmission starts in a full slot granted by the BS. | e, f | Incorrect fragmentation may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/BV/RE-01 | MAC_BV_RE_01 |
| 23.4.2.1.2 | Fragmentation of uplink TM-SDU, using random access to start the process. | e, f | Incorrect fragmentation may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/BV/RE-03 | MAC_BV_RE_03 |
| 23.4.2.2 | Fill bit addition. | e, f | Incorrect addition of fill bits may cause unwanted transmission attempts or prevent transfer of upper layer messages. | - | Implicit by MAC layer testing. |
| 23.4.3.1.1 | Reception of unfragmented TM-SDU. | e, f | Incorrect reception of unfragmented TM-SDU may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/CA-01 | MAC_CA_01 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|--|---------|---|---|--|
| 23.4.3.1.1 | Reception of fragmented TM-SDU. | e, f | Incorrect reception of fragmented TM-SDU may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/BV/RA-01 | MAC_BV_RA_01 |
| 23.4.3.2 | Fill bit deletion. | e, f | Incorrect deletion of fill bits may cause unwanted transmission attempts or prevent transfer of upper layer messages. | - | Implicit by MAC layer testing. |
| 23.4.3.3 | PDU dissociation. | e, f | Incorrect PDU disassociation may cause unwanted transmission attempts or prevent transfer of upper layer messages. | - | Implicit by MAC layer testing. |
| 23.5.1.4.1 | Reception of ACCESS-DEFINE PDU. | e, f | Incorrect reception of the ACCESS-DEFINE PDU may cause incorrect random access transmission leading to unwanted transmission attempts or preventing transfer of upper layer messages. | - | Implicit by MAC layer testing. |
| 23.5.1.4.2 | Reception of ACCESS-ASSIGN PDU. | d, e, f | Incorrect reception of the ACCESS-ASSIGN PDU may cause interference with other users and unwanted transmission attempts. | - | Implicit by MAC layer testing. |
| 23.5.1.4.3 | Initiating a random access. | e, f | Incorrect random access transmission may cause unwanted transmission attempts or prevent transfer of upper layer messages. | - | Implicit by MAC layer testing. |
| 23.5.1.4.4 | Checking for appropriate access code. | e, f | Incorrect checking for access code may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/BI/RA-01 | MAC_BI_RA_01 |
| 23.5.1.4.5 | First try procedure. | e, f | Incorrect first try procedure may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/BI/RA-02, TP/MAC/TI-02 | MAC_BI_RA_02, MAC_TI_02 |
| 23.5.1.4.8 | Re-try procedure. | e, f | Incorrect re-try procedure may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/BI/RA-02, TP/MAC/TI-02 | MAC_BI_RA_02, MAC_TI_02 |
| 23.5.1.4.9 | Abandoning random access attempt. | e | Incorrect abandoning of random access may cause unwanted transmission attempts. | TP/MAC/BI/RA-02 | MAC_BI_RA_02 |
| 23.5.2.1 | Reservation requirement. | e, f | Incorrect reservation of transmission capacity may cause unwanted transmission attempts or prevent transfer of upper layer messages. | TP/MAC/BV/RE-01, TP/MAC/BV/RE-03 | MAC_BV_RE_01, MAC_BV_RE_03 |
| 23.5.2.2 | Slot granting. | d, e, f | Incorrect recognition of granted slots may cause interference with other users, loss of radio spectrum capacity or prevent transfer of upper layer messages. | TP/MAC/BV/RE-01, TP/MAC/BV/RE-02, TP/MAC/BV/RE-03 | MAC_BV_RE_01, MAC_BV_RE_02, MAC_BV_RE_03 |
| 23.5.4.2.2 | Replace current main control channel with specified channel. | d, e, f | Incorrect reception of channel allocation commands may cause interference with other users or prevent transfer of upper layer messages. | - | Implicit by MLE layer testing. |
| 23.5.4.2.2 | Quit current main control channel and go to specified channel. | d, e, f | Incorrect reception of channel allocation commands may cause interference with other users or prevent transfer of upper layer messages. | - | Implicit by MLE layer testing. |

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|---|---------|--|---------------------------------|---------------------------------|
| 23.5.4.2.2 | Replace current main control channel with specified channel, plus MCCH/SCCH or CSS. | d, e, f | Incorrect reception of channel allocation commands may cause interference with other users or prevent transfer of upper layer messages. | - | Implicit by MLE layer testing. |
| 23.5.4.2.3 | Replace current assigned channel with specified channel. | d, e, f | Incorrect reception of channel allocation commands may cause interference with other users or prevent transfer of upper layer messages. | - | Implicit by MLE layer testing. |
| 23.5.4.2.3 | Quit current assigned channel and go to specified channel. | d, e, f | Incorrect reception of channel allocation commands may cause interference with other users or prevent transfer of upper layer messages. | - | Implicit by MLE layer testing. |
| 23.5.4.2.3 | Replace current assigned channel with specified channel, plus MCCH/SCCH or CSS. | d, e, f | Incorrect reception of channel allocation commands may cause interference with other users or prevent transfer of upper layer messages. | - | Implicit by MLE layer testing. |
| 23.6.1 | Reception and decoding of BNCH and BSCH. | d, e, f | Incorrect reception and decoding of BNCH and BSCH may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing. |
| 23.6.2 | Acquiring cell synchronization. | d, e, f | Incorrect cell synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing. |
| 23.6.3 | Acquiring network information. | d, e, f | Incorrect decoding of network information may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing. |
| 23.7.1.1 | Path loss parameter C1 calculation. | e, f | Incorrect path loss calculation may prevent attachment or cause defective call restoration resulting in unnecessary transmission attempts or unwanted traffic channel allocation. | - | Implicit by MLE layer testing. |
| 23.7.1.2 | Path loss parameter C2 calculation. | e, f | Incorrect path loss calculation may cause defective call restoration resulting in unnecessary transmission attempts or unwanted traffic channel allocation. | - | Implicit by MLE layer testing. |
| 23.7.3.1 | Downlink measurements. | e, f | Incorrect downlink measurements may prevent attachment or cause defective call restoration resulting in unnecessary transmission attempts or unwanted traffic channel allocation. | - | Implicit by MLE layer testing. |
| 23.7.4.2 | Monitoring measurements. | e, f | Incorrect monitoring measurements may cause defective call restoration resulting in unnecessary transmission attempts or unwanted traffic channel allocation. | - | Implicit by MLE layer testing. |
| 23.7.4.3 | Signal strength measurements. | e, f | Incorrect signal strength measurements may prevent attachment or cause defective call restoration resulting in unnecessary transmission attempts or unwanted traffic channel allocation. | - | Implicit by MLE layer testing. |
| 23.7.5.2 | Scanning measurements. | e, f | Incorrect scanning measurements may cause defective call restoration resulting in unnecessary transmission attempts or unwanted traffic channel allocation. | - | Implicit by MLE layer testing. |
| 23.8.2.2 | Timing of change of mode. | e, f | Incorrect timing of change of mode may cause interference with other users or prevent transfer of upper layer messages. | - | Implicit by CMCE layer testing. |

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|---|----------------------------------|------|--|---------------------------------|---------------------------------|
| 23.8.4.1.1 | Transmission of uplink stealing. | e, f | Incorrect implementation of stealing may cause unnecessary transmission attempts or prevent transfer of upper layer traffic. | - | Implicit by CMCE layer testing. |
| 23.8.4.2.2 | Reception of downlink stealing. | e, f | Incorrect implementation of stealing may cause unnecessary transmission attempts or prevent transfer of upper layer traffic. | - | Implicit by CMCE layer testing. |
| NOTE 1: The requirements are specified in EN 300 392-2 [1], under the given subclause. | | | | | |
| NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-2-1 [9], clause 8. | | | | | |
| NOTE 3: The test cases, as referenced, are specified in ETS 300 394-2-4 [12], annex A. | | | | | |

Table 4: LLC layer requirements at the Um air interface

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|---|--|------|---|---|--|
| 22.3.2.1 | Initial basic link data transmission. | e, f | Incorrect SDU-number usage in initial transmission may cause unnecessary transmission attempts over the air interface and may prevent registration. | TP/LLC/CA/BA-01 | LLC_CA_BA_01 |
| 22.3.2.3 | Acknowledged basic link data transmission. | e, f | Incorrect PDU-type in transmission may cause unwanted transmission attempts or prevent data transfer of upper layer messages. | TP/LLC/CA/BA-02 | LLC_CA_BA_02 |
| 22.3.2.3 | FCS calculation in transmission in acknowledged basic link. | e | Incorrect FCS calculation will cause unnecessary transmission attempts. | TP/LLC/CA/BA-06 | LLC_CA_BA_06 |
| 22.3.2.3 | SDU numbering in transmission in acknowledged basic link. | e | Incorrect SDU-number incrementation may cause unnecessary transmission attempts. | TP/LLC/BV/BA-01 | LLC_BV_BA_01 |
| 22.3.2.3 | Acknowledgement transmission in acknowledged basic link. | e | Failing acknowledgement transmission will cause unnecessary transmission attempts. | TP/LLC/CA/BA-07, TP/LLC/CA/BA-08, TP/LLC/CA/BA-09 | LLC_CA_BA_07, LLC_CA_BA_08, LLC_CA_BA_09 |
| 22.3.2.3 | Retransmission counts based on parameter N.252 in acknowledged basic link. | e | Incorrect implementation of parameter N.252 may cause unnecessary transmission attempts. | TP/LLC/BV/BA-02 | LLC_BV_BA_02 |
| 22.3.2.3 | Retransmission in acknowledged basic link based on timer T.251. | e | Incorrect implementation of timer T.251 may cause unnecessary transmission attempts. | TP/LLC/TI/BA-01 | LLC_TI_BA_01 |
| 22.3.2.3 | Acknowledgement reception in acknowledged basic link. | e | Failing acknowledgement reception will cause unnecessary transmission attempts. | TP/LLC/CA/BA-03, TP/LLC/CA/BA-04, TP/LLC/CA/BA-05 | LLC_CA_BA_03, LLC_CA_BA_04, LLC_CA_BA_05 |
| 22.3.2.3 | SDU numbering in reception in acknowledged basic link. | e | Incorrect interpretation of SDU-numbers in reception will cause unnecessary transmission attempts. | TP/LLC/BV/BA-03 | LLC_BV_BA_03 |
| 22.3.2.3 | FCS checking in reception in acknowledged basic link. | e | Incorrect FCS checking in reception will cause unnecessary transmission attempts. | TP/LLC/BI/BA-01 | LLC_BI_BA_01 |
| 22.3.2.4.2 | Basic link unacknowledged data reception. | e, f | To guarantee basic reliable data transfer for upper layers as basis for group addressing and thereby efficient usage of radio frequency spectrum. | TP/LLC/CA/BU-03 | LLC_CA_BU_03 |
| 22.3.2.4.2 | FCS checking in reception in unacknowledged basic link. | e | Incorrect FCS checking in reception may cause unnecessary transmission attempts on the upper layers. | TP/LLC/BI/BU-01, TP/LLC/CA/BU-04 | LLC_BI_BU_01, LLC_CA_BU_04 |
| NOTE 1: The requirements are specified in EN 300 392-2 [1], under the given subclause. | | | | | |
| NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-2-1 [9], clause 7. | | | | | |
| NOTE 3: The test cases, as referenced, are specified in ETS 300 394-2-3 [11], annex A. | | | | | |

4.2.3 Layer 3 requirements

This subclause contains the layer 3 requirements at the Um air interface for MS.

Table 5: MLE protocol requirements at the Um air interface

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|-------------------------------------|------|--|---|--|
| 18.3.4.6 | Initial cell selection. | e, f | Incorrectly implemented initial cell selection may cause unnecessary transmission attempts and prevent attachment. | TP/NWK/MLE/CA/CR-01 | NWK_MLE_CA_CR_01 |
| 18.3.4.7.2 | Undeclared cell re-selection. | e, f | Incorrectly implemented undeclared cell re-selection may cause unnecessary registration attempts and prevent attachment. | TP/NWK/MLE/CA/CR-02 | NWK_MLE_CA_CR_02 |
| 18.3.4.7.3 | Unannounced cell re-selection. | e, f | Incorrectly implemented unannounced cell re-selection may prevent attachment or cause defective call restoration resulting in unnecessary transmission attempts or unwanted traffic channel allocation. | TP/NWK/MLE/CA/CR-03, TP/NWK/MLE/BV/CR-01, TP/NWK/MLE/BV/CR-02, TP/NWK/MLE/BV/RE-01, TP/NWK/MLE/BV/RE-03 | NWK_MLE_CA_CR_03, NWK_MLE_BV_CR_01, NWK_MLE_BV_CR_02, NWK_MLE_BV_RE_01, NWK_MLE_BV_RE_03 |
| 18.3.4.7.4 | Announced type 3 cell re-selection. | e, f | Incorrectly implemented announced type 3 cell re-selection may prevent attachment or cause defective call restoration resulting in unnecessary transmission attempts or unwanted traffic channel allocation. | TP/NWK/MLE/CA/CR-04, TP/NWK/MLE/BV/CR-03, TP/NWK/MLE/TI-01, TP/NWK/MLE/TI-02 | NWK_MLE_CA_CR_04, NWK_MLE_BV_CR_03, NWK_MLE_TI_01, NWK_MLE_TI_02 |
| 18.3.6.5 | Usage of neighbour cell enquiry. | e | Incorrect BS service details element interpretation in reception may cause disallowed transmission attempts. | TP/NWK/MLE/BV/NB-02 | NWK_MLE_BV_NB_02 |

NOTE 1: The requirements are specified in EN 300 392-2 [1], under the given subclause.

NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-2-1 [9], clause 6.

NOTE 3: The test cases, as referenced, are specified in ETS 300 394-2-2 [10], annex A.

Table 6: MM protocol requirements at the Um air interface for a non-Gateway

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|--|------|--|--|---|
| 16.4.1.1 | MLE initiated normal registration. | e, f | Incorrectly implemented MLE initiated normal registration may prevent attachment, cause unnecessary registration attempts, and cause disallowed L3 transmission attempts. Additional requirements for attachment/detachment of group identities apply when this operation is performed within registration. | TP/NWK/MM/BV/RE-02 | NWK_MM_BV_RE_02 |
| 16.4.2 | User application initiated registration. | e, f | Incorrect implementation of user application initiated registration may cause unnecessary registration attempts or prevent attachment to a network, and cause disallowed L3 transmission attempts. Additional requirements for attachment/detachment of group identities apply when this operation is performed within registration. | TP/NWK/MM/CA-02, TP/NWK/MM/CA-03, TP/NWK/MM/BV/RE-01 | NWK_MM_CA_02, NWK_MM_CA_03, NWK_MM_BV_RE_01 |
| 16.4.3 | Infrastructure initiated registration. | e, f | Incorrectly implemented infrastructure initiated registration may cause unnecessary traffic channel allocation, and disallowed L3 transmission attempts. Additional requirements for attachment/detachment of group identities apply when this operation is performed within registration. | TP/NWK/MM/BV/RE-07, | NWK_MM_BV_RE_07 |
| 16.8.1 | Infrastructure initiated attachment of group identities. | e, f | Incorrect group identity attachment may cause unnecessary traffic channel allocation and partially prevent interworking. | TP/NWK/MM/BV/AT-01 | NWK_MM_BV_AT_01 |
| 16.8.1 | Infrastructure initiated detachment of group identities. | e, f | Incorrectly implemented group identity detachment may cause unwanted L3 transmission attempts and partially prevent interworking. | TP/NWK/MM/BV/AT-02 | NWK_MM_BV_AT_02 |
| 16.8.2 | MS initiated attachment of group identities. | e, f | Incorrect group identity attachment may cause unnecessary traffic channel allocation and partially prevent interworking. | TP/NWK/MM/BV/AT-03 | NWK_MM_BV_AT_03 |
| 16.8.2 | MS initiated detachment of group identities. | e, f | Incorrectly implemented group identity detachment may cause unwanted L3 transmission attempts and partially prevent interworking. | TP/NWK/MM/BV/AT-04 | NWK_MM_BV_AT_04 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|---|---|------|---|---------------------------------|------------------------------|
| 16.8.3 | Infrastructure initiated group identity report request. | e, f | Infrastructure initiated group identity report request is part of the group identity attachment procedure. Incorrect group identity attachment may cause unnecessary traffic channel allocation and partially prevent interworking. | TP/NWK/MM/BV/AT-01 | NWK_MM_BV_AT_01 |
| NOTE 1: The requirements are specified in EN 300 392-2 [1], under the given subclause. | | | | | |
| NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-2-1 [9], clause 6. | | | | | |
| NOTE 3: The test cases, as referenced, are specified in ETS 300 394-2-2 [10], annex A. | | | | | |

Table 7: MM protocol requirements at the Um air interface for a Gateway

| Requirement reference | Description | Cat. | Justification | Test purpose reference (note 1) | Test case reference (note 2) |
|--|--|------|---|---------------------------------|------------------------------|
| ETS 300 396-5 [19] subclause 10.3.1, EN 300 392-2 [1] subclause 16.4.1.1 | Normal roaming registration. | e, f | Incorrectly implemented normal roaming registration may prevent attachment, cause unnecessary registration attempts, and cause disallowed L3 transmission attempts. | DMO_GATE_GWMM_CA_02 | DMO_GATE_GWMM_CA_02 |
| ETS 300 396-5 [19] subclause 10.3.1, EN 300 392-2 [1] subclause 16.4.2 | Registration at power up | e, f | Incorrect implementation of registration at power up may cause unnecessary registration attempts or prevent attachment to a network, and cause disallowed L3 transmission attempts. | DMO_GATE_GWMM_BV_01 | DMO_GATE_GWMM_BV_01 |
| ETS 300 396-5 [19] subclause 10.3.1, EN 300 392-2 [1] subclause 16.4.3 | Infrastructure initiated registration. | e, f | Incorrectly implemented infrastructure initiated registration may cause unnecessary traffic channel allocation, and disallowed L3 transmission attempts. | DMO_GATE_GWMM_BV_04 | DMO_GATE_GWMM_BV_04 |
| NOTE 1: The test purposes, as referenced, are specified in ETS 300 394-4-8 [34], clause 6. | | | | | |
| NOTE 2: The test cases, as referenced, are specified in ETS 300 394-4-10 [36], annex A. | | | | | |

Table 8: CMCE protocol requirements at the Um air interface for a non-Gateway

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|--|------|--|---|---|
| 14.5.1.1.1 | Incoming individual call set-up. | e, f | To avoid unnecessary traffic channel allocation and to ensure correct interworking with and through the network. | TP/NWK/CMCE/IC/CA/SU-01, TP/NWK/CMCE/IC/CA/SU-02, TP/NWK/CMCE/IC/CA/SU-03 | NWK_CMCE_IC_CA_SU_01, NWK_CMCE_IC_CA_SU_02, NWK_CMCE_IC_CA_SU_03 |
| 14.5.1.1.2 | Outgoing individual call set-up. | e, f | Incorrectly implemented outgoing call set-up may cause unnecessary call set-up attempts and prevent interworking. | TP/NWK/CMCE/IC/CA/SU-04, TP/NWK/CMCE/IC/BV/OC-01, TP/NWK/CMCE/IC/BV/OC-02, TP/NWK/CMCE/IC/CA/SU-05, TP/NWK/CMCE/IC/BV/OC-03 | NWK_CMCE_IC_CA_SU_04, NWK_CMCE_IC_BV_OC_01, NWK_CMCE_IC_BV_OC_02, NWK_CMCE_IC_CA_SU_05, NWK_CMCE_IC_BV_OC_03 |
| 14.5.1.1.3 | Colliding individual call set-up. | e, f | Incorrect implementation of colliding call set-up procedure may cause unnecessary traffic channel allocation in the network and prevent interworking. | TP/NWK/CMCE/IC/BV/CC-01, TP/NWK/CMCE/IC/BV/CC-02 | NWK_CMCE_IC_BV_CC_01, NWK_CMCE_IC_BV_CC_02 |
| 14.5.1.2.1 | Transmission control in individual call. | e, f | Incorrect implementation of transmission control may lead into radio interference, interference with other users, and unnecessary and disallowed transmission attempts. Incorrect information of the transmission status may prevent interworking. | TP/NWK/CMCE/IC/BV/MA/TC-01, TP/NWK/CMCE/IC/BV/MA/TC-02, TP/NWK/CMCE/IC/BV/MA/TC-03, TP/NWK/CMCE/IC/BV/MA/TC-04, TP/NWK/CMCE/IC/BV/MA/TC-05, TP/NWK/CMCE/IC/BV/MA/TC-06 | NWK_CMCE_IC_BV_MA_TC_01, NWK_CMCE_IC_BV_MA_TC_02, NWK_CMCE_IC_BV_MA_TC_03, NWK_CMCE_IC_BV_MA_TC_04, NWK_CMCE_IC_BV_MA_TC_05, NWK_CMCE_IC_BV_MA_TC_06 |
| 14.5.1.2.4 | Individual call restoration. | e | Incorrectly implemented call restoration may lead into unnecessary traffic channel allocation in the network and cause unnecessary transmission attempts. | - | Implicit by MLE protocol testing. |
| 14.5.1.3.1 | Individual call disconnection. | e, f | To ensure, that MS disconnects the call enabling the network to deallocate the traffic channel used and to ensure interworking. | TP/NWK/CMCE/IC/CA/CD-01 | NWK_CMCE_IC_CA_CD_01 |
| 14.5.1.3.3 | Reception of disconnection request in individual call. | e, f | To ensure, that MS disconnects the call enabling the network to deallocate the traffic channel used and to ensure interworking. | TP/NWK/CMCE/IC/CA/CD-02, TP/NWK/CMCE/IC/CA/CD-03 | NWK_CMCE_IC_CA_CD_02, NWK_CMCE_IC_CA_CD_03 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|---|------|--|---|---|
| 14.5.1.3.4 | Expiry of call related timers resulting in disconnection in individual calls. | e, f | To ensure, that MS disconnects the call enabling the network to deallocate the traffic channel used and to ensure interworking. | TP/NWK/CMCE/IC/TI-01, TP/NWK/CMCE/IC/TI-02, TP/NWK/CMCE/IC/TI-03, TP/NWK/CMCE/IC/TI-04, TP/NWK/CMCE/IC/TI-05, TP/NWK/CMCE/IC/TI-06, TP/NWK/CMCE/IC/TI-07, TP/NWK/CMCE/IC/TI-08, TP/NWK/CMCE/IC/TI-10, TP/NWK/CMCE/IC/TI-13 | NWK_CMCE_IC_TI_01, NWK_CMCE_IC_TI_02, NWK_CMCE_IC_TI_03, NWK_CMCE_IC_TI_04, NWK_CMCE_IC_TI_05, NWK_CMCE_IC_TI_06, NWK_CMCE_IC_TI_07, NWK_CMCE_IC_TI_08, NWK_CMCE_IC_TI_10, NWK_CMCE_IC_TI_13 |
| 14.5.1.3.4 | Expiry of call related timers resulting in call release in individual calls. | e | Incorrect implementation of call release procedures may lead in disallowed transmission requests. | TP/NWK/CMCE/IC/TI-11, TP/NWK/CMCE/IC/TI-12 | NWK_CMCE_IC_TI_11, NWK_CMCE_IC_TI_12 |
| 14.5.1.4 | U-plane switching in individual call. | e | Incorrectly implemented U-plane switching may cause radio interference and interference with other users. | TP/NWK/CMCE/IC/BV/MA/TC-06 | NWK_CMCE_IC_BV_MA_TC_06 |
| 14.5.2.1.2 | Outgoing group call set-up. | e, f | Incorrectly implemented outgoing call set-up may cause unnecessary call set-up attempts and prevent interworking. | TP/NWK/CMCE/GC/CA/SU-01, TP/NWK/CMCE/GC/BV/OC-01 | NWK_CMCE_GC_CA_SU_01, NWK_CMCE_GC_BV_OC_01 |
| 14.5.2.1.3 | Colliding group call set-up. | e, f | Incorrect implementation of colliding call set-up procedure may cause unnecessary traffic channel allocation in the network and prevent interworking. | TP/NWK/CMCE/GC/BV/CC-01 | NWK_CMCE_GC_BV_CC_01 |
| 14.5.2.2.1 | Transmission control in group call. | e, f | Incorrect implementation of transmission control may lead into radio interference, interference with other users, and unnecessary and disallowed transmission attempts. Incorrect information of the transmission status may prevent interworking. | TP/NWK/CMCE/GC/BV/MA/TC-01, TP/NWK/CMCE/GC/BV/MA/TC-02, TP/NWK/CMCE/GC/BV/MA/TC-03, TP/NWK/CMCE/GC/BV/MA/TC-04, TP/NWK/CMCE/GC/BV/MA/TC-05, TP/NWK/CMCE/GC/BV/MA/TC-06, TP/NWK/CMCE/GC/BV/MA/TC-07 | NWK_CMCE_GC_BV_MA_TC_01, NWK_CMCE_GC_BV_MA_TC_02, NWK_CMCE_GC_BV_MA_TC_03, NWK_CMCE_GC_BV_MA_TC_04, NWK_CMCE_GC_BV_MA_TC_05, NWK_CMCE_GC_BV_MA_TC_06, NWK_CMCE_GC_BV_MA_TC_07 |
| 14.5.2.2.4 | Group call restoration. | e | Incorrectly implemented call restoration may lead into unnecessary traffic channel allocation in the network and cause unnecessary transmission attempts. | TP/NWK/CMCE/GC/BV/MA/CR-01 | NWK_CMCE_GC_BV_MA_CR_01 |
| 14.5.2.3.3 | Network initiated group call disconnection. | e, f | To ensure, that MS disconnects the call enabling the network to deallocate the traffic channel used and to ensure interworking. | TP/NWK/CMCE/GC/CA/CD-01 TP/NWK/CMCE/GC/BV/CD-01 | NWK_CMCE_GC_CA_CD_01 NWK_CMCE_GC_BV_CD_01 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|---|--|------|---|--|---|
| 14.5.2.3.5 | Expiry of call related timers resulting in disconnection in group calls. | e, f | To ensure, that MS disconnects the call enabling the network to deallocate the traffic channel used and to ensure interworking. | TP/NWK/CMCE/GC/TI-02 TP/NWK/CMCE/GC/TI-03 | NWK_CMCE_GC_TI_02 NWK_CMCE_GC_TI_03 |
| 14.5.2.3.5 | Expiry of call related timers resulting in call release in group calls. | e | Incorrect implementation of call release procedures may lead in disallowed transmission requests. | TP/NWK/CMCE/GC/TI-01 TP/NWK/CMCE/GC/TI-04 TP/NWK/CMCE/GC/TI-05 TP/NWK/CMCE/GC/TI-06 TP/NWK/CMCE/GC/TI-07 | NWK_CMCE_GC_TI_01 NWK_CMCE_GC_TI_04 NWK_CMCE_GC_TI_05 NWK_CMCE_GC_TI_06 NWK_CMCE_GC_TI_07 |
| 14.5.2.4 | U-plane switching in group call. | e | Incorrectly implemented U-plane switching may cause radio interference and interference with other users. | TP/NWK/CMCE/GC/BV/MA/TC-06, TP/NWK/CMCE/GC/TI-07 | NWK_CMCE_GC_BV_MA_TC-06, NWK_CMCE_GC_TI_07 |
| 14.5.2.5 | Acceptance of group- addressed channel allocation | e | Incorrect implementation of the channel allocation reception may cause radio interference and interference with other users. | - | Implicit by group call set-up and maintenance function testing. |
| NOTE 1: The requirements are specified in EN 300 392-2 [1], under the given subclause. NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-2-1 [9], clause 6. NOTE 3: The test cases, as referenced, are specified in ETS 300 394-2-2 [10], annex A. | | | | | |

Table 9: CMCE requirements at the Um air interface for Gateway operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|---|------|---|---|---|
| 9.3.2.1 | Outgoing call to V+D | e | Incorrectly implemented outgoing call set-up may cause unnecessary call set-up attempts and prevent interworking. | DMO_GATE_GWCC_CM_BV_SU_02, DMO_GATE_GWCC_CM_BV_SU_10, DMO_GATE_GWCC_CM_BV_TI_04, DMO_GATE_GWCC_CM_BV_TI_05 | DMO_GATE_GWCC_CM_BV_SU_02, DMO_GATE_GWCC_CM_BV_SU_10, DMO_GATE_GWCC_CM_BV_TI_04, DMO_GATE_GWCC_CM_BV_TI_05 |
| 9.3.2.2 | Colliding call set-up at the V+D | e | Incorrect implementation of colliding call set-up procedure may cause unnecessary traffic channel allocation in the network and prevent interworking. | DMO_GATE_GWCC_CM_BV_CC_01, DMO_GATE_GWCC_CM_BV_CC_02 | DMO_GATE_GWCC_CM_BV_CC_01, DMO_GATE_GWCC_CM_BV_CC_02 |
| 9.3.3.1.1 | Transmitting U-TX CEASED by end of DM-MS call | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | DMO_GATE_GWCC_CM_BV_CT_01 | DMO_GATE_GWCC_CM_BV_CT_01 |
| 9.3.3.1.2 | Reception of D-TX CEASED by end of V+D call | e, f | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | DMO_GATE_GWCC_CM_BV_CT_02 | DMO_GATE_GWCC_CM_BV_CT_02 |
| 9.3.3.2 | Reception of D-TX INTERRUPT from V+D | e, f | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | DMO_GATE_GWCC_CM_BV_CT_04 | DMO_GATE_GWCC_CM_BV_CT_04 |
| 9.3.3.3 | Permission to transmit granted to another party | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | DMO_GATE_GWCC_CM_BV_CT_03 | DMO_GATE_GWCC_CM_BV_CT_03 |
| 9.3.3.4.1 | Transmitting U-TX DEMAND at request for transmission from DM-MS | e | Incorrect implementation of transmission control may lead into radio interference, interference with other users, and unnecessary and disallowed transmission attempts. | DMO_GATE_GWCC_CM_BV_CT_05 | DMO_GATE_GWCC_CM_BV_CT_05 |
| 9.3.3.5 | V+D permission to transmit withdrawn during a call | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | DMO_GATE_GWCC_CM_BV_CT_06 | DMO_GATE_GWCC_CM_BV_CT_06 |
| 9.3.3.9.1 | Transmission of U-DISCONNECT on receipt of DM-RELEASE from current master | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | DMO_GATE_GWCC_CM_BV_CD_01 | DMO_GATE_GWCC_CM_BV_CD_01 |
| 9.3.3.9.2 | Receipt of D-RELEASE from SwMI | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | DMO_GATE_GWCC_CM_BV_CD_02, DMO_GATE_GWCC_CM_BV_CD_03 | DMO_GATE_GWCC_CM_BV_CD_02, DMO_GATE_GWCC_CM_BV_CD_03 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--|---|------|--|---------------------------------|------------------------------|
| 9.3.3.9.3 | Transmission of U-DISCONNECT at expiry of call length timer | | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | DMO_GATE_GWCC_CM_BV_TI_02 | DMO_GATE_GWCC_CM_BV_TI_02 |
| 9.3.4.1.3 | Termination of call on receipt of preemption request from DM-MS | | To ensure disconnection of the call enabling the network to deallocate the traffic channel used. | DMO_GATE_GWCC_CM_BV_CT_08 | DMO_GATE_GWCC_CM_BV_CT_08 |
| 9.3.4.2.1 | Reception of D-TX INTERRUPT from V+D | | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | DMO_GATE_GWCC_CM_BV_CT_09 | DMO_GATE_GWCC_CM_BV_CT_09 |
| NOTE 1: The requirements are specified in ETS 300 396-5 [19] under the given subclause. NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-4-8 [34], clause 6. NOTE 3: The test cases, as referenced, are specified in ETS 300 394-4-10 [36], annex A. | | | | | |

4.2.4 Security requirements

This subclause contains the security requirements at the Um air interface for MS.

Table 10: Security requirements at the Um air interface

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|---|------|--|---------------------------------|-------------------------------------|
| 4.2.5 | Encrypted Short Identity mechanism | e,f | To guarantee reliable signalling when security class 2 or 3 is used, and thereby efficient usage of radio frequency spectrum. | - | Implicit by other security testing. |
| 4.4.2.1 | Authentication of a MS by SwMI. | e, f | Incorrect authentication of the terminal will prevent call establishment and access to other services, cause unwanted registration attempts, and may cause misuse of traffic channels. | TP/Sec_VD/AU/BV/II/01 | Sec_VD_AU_BV_II_01 |
| 4.4.2.2 | Authentication of a SwMI by MS. | e, f | Incorrect authentication of the SwMI will prevent call establishment and access to other services, cause unwanted registration attempts, and may cause misuse of traffic channels. | TP/Sec_VD/AU/BV/II/01 | Sec_VD_AU_BV_TI_01 |
| 4.4.2.3 | Mutual authentication of MS and SwMI initiated by SwMI. | e, f | Incorrect authentication will prevent call establishment and access to other services, cause unwanted registration attempts, and may cause misuse of traffic channels. | TP/Sec_VD/AU/BV/II/02 | Sec_VD_AU_BV_II_02 |
| 4.4.2.4 | Mutual authentication of MS and SwMI initiated by MS. | e, f | Incorrect authentication will prevent call establishment and access to other services, cause unwanted registration attempts, and may cause misuse of traffic channels. | TP/Sec_VD/AU/BV/TI/02 | Sec_VD_AU_BV_TI_02 |
| 4.4.2.5 | Authentication of an MS by SwMI during registration. | e, f | Incorrect authentication of the terminal will prevent call establishment and access to other services, cause unwanted registration attempts, and may cause misuse of traffic channels. | TP/Sec_VD/AU/BV/REG/01 | Sec_VD_AU_BV_REG_01 |
| 4.4.2.6 | Authentication of a SwMI by MS during registration. | e, f | Incorrect authentication of the SwMI will prevent call establishment and access to other services, cause unwanted registration attempts, and may cause misuse of traffic channels. | TP/Sec_VD/AU/BV/REG/02 | Sec_VD_AU_BV_REG_02 |
| 4.4.2.7 | Mutual authentication of MS and SwMI initiated by MS during registration. | e, f | Incorrect authentication will prevent call establishment and access to other services, cause unwanted registration attempts, and may cause misuse of traffic channels. | TP/Sec_VD/AU/BV/REG/TEI/03 | Sec_VD_AU_BV_REG_TEI_03 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|---|------|---|---------------------------------|-----------------------------------|
| 4.4.2.8 | Mutual authentication of MS and SwMI initiated by SwMI during registration. | e, f | Incorrect authentication will prevent call establishment and access to other services, cause unwanted registration attempts, and may cause misuse of traffic channels. | TP/Sec_VD/AU/BV/REG/TEI/04 | Sec_VD_AU_BV_REG_TEI_04 |
| 4.4.3.1 | Key transfer mechanism for CCK initiated by SwMI. | e, f | Incorrect Common Cipher Key (CCK) reception may prevent correct interworking with the network, prevent access to network services, and cause misuse of traffic channels preventing effective use of radio frequency spectrum in individual and group calls. | TP/Sec_VD/OTAR/BV/CCK/01 | Sec_VD_OTAR_BV_CCK_01 |
| 4.4.3.2 | Key transfer mechanism for CCK initiated by MS. | e, f | Incorrect Common Cipher Key (CCK) reception may prevent correct interworking with the network, prevent access to network services, and cause misuse of traffic channels preventing effective use of radio frequency spectrum in individual and group calls. | TP/Sec_VD/OTAR/BV/CCK/03 | Sec_VD_OTAR_BV_CCK_03 |
| 4.4.4.1 | Key transfer mechanism for SCK requested by MS. | e, f | Incorrect Static Cipher Key (SCK) reception may prevent correct interworking with the network, prevent access to network services, and cause misuse of traffic channels preventing effective use of radio frequency spectrum in individual calls. | - | Implicit by other security tests. |
| 4.4.4.2 | Key transfer mechanism for SCK initiated by SwMI. | e, f | Incorrect Static Cipher Key (SCK) reception may prevent correct interworking with the network, prevent access to network services, and cause misuse of traffic channels preventing effective use of radio frequency spectrum in individual calls. | TP/Sec_VD/OTAR/BV/SCK/02 | Sec_VD_OTAR_BV_SCK_01 |
| 4.4.5.1 | Key transfer mechanism for GCK requested by MS. | e, f | Incorrect Group Cipher Key (GCK) reception may prevent correct interworking with the network, prevent access to network services, and cause misuse of traffic channels preventing effective use of radio frequency spectrum in group calls. | TP/Sec_VD/OTAR/BV/GCK/01 | Sec_VD_OTAR_BV_GCK_01 |
| 4.4.5.2 | Key transfer mechanism for GCK initiated by SwMI. | e, f | Incorrect Group Cipher Key (GCK) reception may prevent correct interworking with the network, prevent access to network services, and cause misuse of traffic channels preventing effective use of radio frequency spectrum in group calls. | TP/Sec_VD/OTAR/BV/GCK/02 | Sec_VD_OTAR_BV_GCK_02 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|---|--|------|--|---------------------------------|--|
| 4.4.6 | Notification of key change | e,f | Incorrect handling of key change notifications may prevent correct interworking with the network, prevent access to network services, and cause misuse of traffic channels preventing effective use of radio frequency spectrum in individual and group calls. | - | Implicit by testing of key transfer mechanism. |
| 5.4.3.1 | Permanent disabling of an MS using authentication. | e | Incorrect MS operation when permanently disabled may cause disallowed transmission attempts. Disabling of equipment provides mechanism to prevent defective MS loading the network whilst disabling the user prevents unauthorized use of the network. | TP/Sec_VD/SED/PD/02 | Sec_VD_SED_BV_PD_02 |
| 5.4.3.1 | Temporary disabling of an MS using authentication. | e | Incorrect MS operation when temporarily disabled may cause disallowed transmission attempts. Disabling of equipment provides mechanism to prevent defective MS loading the network whilst disabling the user prevents unauthorized use of the network. | - | Implicit by enabling testing |
| 5.4.5 | Temporary disabling of an MS without authentication. | e | Incorrect MS operation when temporarily disabled may cause disallowed transmission attempts. Disabling of equipment provides mechanism to prevent defective MS loading the network whilst disabling the user prevents unauthorized use of the network. | - | Implicit by enabling testing |
| 5.4.3.2 | Enabling an MS using authentication. | e | Incorrectly implemented enabling procedure may result in disallowed transmission attempts and unnecessary traffic channel allocation. | TP/Sec_VD/SED/BV/EN/01 | Sec_VD_SED_BV_EN_01 |
| 5.4.4 | Enabling an MS without authentication. | e | Incorrectly implemented enabling procedure may result in disallowed transmission attempts and unnecessary traffic channel allocation. | TP/Sec_VD/SED/BV/EN/05 | Sec_VD_SED_BV_EN_05 |
| 6.4 | Air interface encryption. | e, f | Incorrectly implemented air interface encryption may prevent interworking with the network and cause misuse of traffic and signalling channels. | - | Implicit by CC testing (note 4). |
| <p>NOTE 1: The requirements are specified in EN 300 392-7 [2], under the given subclause. NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-5-2 [14], clause 6. NOTE 3: The test cases, as referenced, are specified in ETS 300 394-5-3 [15], annex A. NOTE 4: For the CC testing of the terminals supporting security, the supported security features shall be enabled.</p> | | | | | |

4.2.5 Other entities at the Um air interface

There are no essential requirements for:

- any of the Supplementary Services (SSs), ETS 300 392-10 [3], ETS 300 392-11 [4], and ETS 300 392-12 [5];
- TETRA Connection Oriented Network Protocol (CONP), EN 300 392-2 [1], clause 25;
- TETRA Specific Connectionless Network Protocol (SCLNP), EN 300 392-2 [1], clause 27.

4.3 Requirements at the Ud air interface

4.3.1 Mobile station air interface protocol

4.3.1.1 Physical layer requirements

This subclause contains the radio layer requirements for the mobile station air interface.

Table 11: Mobile Station Radio layer requirements at the Ud air interface

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|--------------------------------|---|------|---|--|---|
| 5.2 | Modulation type. | d, e | Incorrect modulation will lead to disturbance of other TETRA users. | - | Implicit by 10.1.3. |
| 6.2 | Frequency bands and channel arrangements | d, e | Incorrect use of frequency bands and channel arrangements may cause unnecessary interference in the radio spectrum. | - | Implicit by F.6.4.3 |
| 6.4.2 | Transmitter output power. | d, e | Maladjustment of the RF output power may either cause unnecessary interference in the radio spectrum or decrease the probability of successful radio connections. | 7.1.1.2 a) and F.5, table F.2 | 8.1, 8.1.1 a), b) b2), c) and d) and F.4, table F.1 |
| 6.4.3.2.1 | Unwanted conducted emission over the useful part of the burst. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.3.2 | 8.3 and F.4, table F.1 |
| 6.4.3.2.2 | Unwanted conducted emission during the switching transients. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.4.2 | 8.4 |
| 6.4.3.3.1 | Unwanted conducted discrete spurious emission far from the carrier. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.5.2 and F.5, table F.2 | 8.5 |
| 6.4.3.3.2 | Unwanted conducted wideband noise emission far from the carrier. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.5.2 and F.5, table F.2 | 8.5 |
| 6.4.3.4 | Unwanted conducted emission during LCH. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.7.2 | 8.7, and 8.7.1 |
| 6.4.3.5 | Unwanted conducted emission in the non-transmit state. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.8.2 | 9.8 |
| 6.4.4 | Unwanted radiated emissions. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.6.2 | 8.6 |
| 6.4.6 | RF output power time mask. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | F.6.2.1 | F.6.2.2 |
| 6.4.6 | RF output power in non-active transmit state. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | 7.1.2.2 | 8.2 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|--------------------------------|--|------|---|--|-----------------------------------|
| 6.4.7.2 | Transmitter intermodulation attenuation. | d, e | An intermodulation attenuation below an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.8.2.1 | 8.8 and 8.8.1 |
| 6.5.1.2 | Blocking characteristics. | e | Insufficient blocking characteristics of the receiver may lead to an unnecessarily high number of radio transmission attempts | 7.2.5.2 and F.5 table F.2 | 9.5 and 9.5.1 |
| 6.5.2.2 | Spurious response rejection. | d, e | Insufficient spurious response rejection may lead to an unnecessarily high number of radio transmission attempts. | 7.2.6.2 and F.5, table F.2 | 9.6 |
| 6.5.3.2 | Intermodulation response rejection. | d, e | Insufficient intermodulation response rejection may lead to an unnecessarily high number of radio transmission attempts | 7.2.7.2 and F.5, table F.2 | 9.7 and 9.7.1 |
| 6.5.4.2 | Unwanted conducted emission in reception. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.8.2 | 9.8 |
| 6.5.5 | Unwanted radiated emission. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.9.2 | 9.9 |
| 6.6.1.2 | Modulation accuracy. | e, f | Insufficient modulation accuracy may lead to the transmission of incorrect data. | 7.3.1.2 | 10.1, 10.1.1 and 10.1.3 |
| 6.6.2.1 | Nominal error rate. | e, f | An unacceptable nominal error rate may lead to the reception of incorrect data. | 7.2.2.2 and F.5, table F.2 | 9.2 and 9.2.1 |
| 6.6.2.2 | Dynamic reference sensitivity performance. | e, f | An unacceptable dynamic reference sensitivity performance may lead to the reception of incorrect data. | 7.2.3.2 and F.5, table F.2 | 9.3, 9.3.1 and 9.3.3 |
| 6.6.2.3 | Reference interference performance. | e, f | An unacceptable reference interference performance may lead to the reception of incorrect data. | 7.2.4.2 and F.5, table F.2 | 9.4 and 9.4.1 |
| 6.6.2.4 | Static reference sensitivity performance. | e, f | An unacceptable static reference sensitivity performance may lead to the reception of incorrect data. | Implicit by 7.2.5.2, 7.2.6.2, 7.2.7.2 and F.5, table F.2 | Implicit by 9.5.1, 9.6 and 9.7.1. |
| 6.6.2.5 | MS receiver performance for synchronization burst acquisition. | d, e | An insufficient synchronization burst acquisition may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing. |
| 7.2 | DM-MS synchronization requirement. | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 7.3.2 | Relationship between counters | d, e | An incorrect relation between the counters may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing. |
| 7.4 | RF frequency accuracy | d, e | An insufficient RF frequency accuracy may cause unnecessary interference in the radio spectrum. | F.6.3.1 | F.6.3.2 |
| 7.5 | Requirement for synchronization of a slave DM mobile | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | F.6.4.2 | F.6.4.3 |
| 9.4.5 | Mapping of logical channels | d, e | Incorrect mapping of logical channels into physical channels may cause interference with other users. | - | Implicit by MAC layer testing. |

NOTE 1: The requirements are specified in ETS 300 396-2 [16] under the given subclause, except when otherwise stated.

NOTE 2: The test case limit values are specified in ETS 300 394-1 [8], under the given subclause.

NOTE 3: The test methods are specified in ETS 300 394-1 [8], under the given subclause.

In addition to the requirements specified in table 11, the following applies for the TETRA DMO civil access for the frequency bands and channel arrangements defined in subclause 6.2 of ETS 300 396-2 [16]:

The RF carrier frequencies shall be among the frequencies allocated to TETRA DMO for civil access within the ranges defined by ERC Decision ERC/DEC/(96)/4 [44], i.e. within one or more of the bands 410 MHz to 430 MHz, 870 MHz to 876 MHz, 915 MHz to 921 MHz, 450 MHz to 470 MHz, 385 MHz to 390 MHz and 395 MHz to 399,99 MHz.

The requirements for frequency bands are tested implicitly.

Table 12: Additional Radio layer requirements at the Ud air interface for operation with Repeater type 1

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference | Test method reference (note 2) |
|--------------------------------|----------------------------------|------|--|---------------------------------|--------------------------------|
| 8.4 | Usage of DM channel with DM-REP1 | d, e | Incorrect use of frequency bands may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 8.4.1.1 | DM channel arrangements | d, e | Incorrect channel arrangements may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |

NOTE 1: The requirements are specified in EN 300 396-4 [18] under the given subclause.
NOTE 2: The test methods are specified in EN 300 394-4-5 [31], under the given subclause.

Table 13: Additional Radio layer requirements at the Ud air interface for operation with Repeater type 2

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference | Test method reference (note 2) |
|--------------------------------|---|------|---|---------------------------------|--------------------------------|
| 8.4 | Usage of DM channel with DM-REP2 | d, e | Incorrect use of frequency bands may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 8.4.1.1 | DM channel arrangements | d, e | Incorrect channel arrangements may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 11.3.2 | Frequency bands and channel arrangements | d, e | Incorrect use of frequency bands and channel arrangements may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 11.4.2 | General requirements for synchronization of DM-MSs | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 11.4.6 | Synchronization requirements for a master MS operating on channel B | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |

NOTE 1: The requirements are specified in EN 300 396-7 [21] under the given subclause.
NOTE 2: The test methods are specified in EN 300 394-4-13 [39], under the given subclause.

Table 14: Additional Radio layer requirements at the Ud air interface for operation with Gateway

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference | Test method reference (note 2) |
|--------------------------------|--|------|---|---------------------------------|--------------------------------|
| 15.3.2 | Frequency bands and channel arrangements | d, e | Incorrect use of frequency bands and channel arrangements may cause unnecessary interference in the radio spectrum. | - | Implicit by F.6.4.3 |
| 15.4.2 | DM-MS synchronization requirement. | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 15.4.5 | Requirement for synchronization of a slave DM mobile | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by F.6.4.3 |

NOTE 1: The requirements are specified in ETS 300 396-5 [19] under the given subclause.

NOTE 2: The test methods are specified in ETS 300 394-1 [8], under the given subclause.

4.3.1.2 Layer 2 requirements

This subclause contains the layer 2 requirements at the Ud air interface for Mobile Station operation.

Table 15: Lower MAC layer requirements at the Ud air interface for Mobile Station operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference | Test case reference (note 2) |
|--------------------------------|--|------|--|------------------------|--------------------------------------|
| 8.3.1.1 | Error control scheme for Synchronization Signalling CHannel (SCH/S). | d, e | Incorrect coding/decoding of SCH/S may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |
| 8.3.1.2 | Error control scheme for Half-slot Signalling CHannel (SCH/H) and Stealing CHannel (STCH). | d, e | Incorrect coding/decoding of SCH/H and STCH may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |
| 8.3.1.3 | Error control scheme for Full-slot Signalling Channel (SCH/F). | d, e | Incorrect coding/decoding of SCH/F may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |

NOTE 1: The requirements are specified in ETS 300 396-2 [16] under the given subclause.

NOTE 2: The test cases, as referenced, are specified in ETS 300 394-4-2 [28], annex A.2.

Table 16: Managed DMO requirements at the Uu air interface for Mobile Station operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|---|-----------------------------------|------|---|---------------------------------|------------------------------|
| 4.2 | Authorization to transmit | e | Transmission without authorization may cause interference to other users of the radio frequency spectrum. | M_DMO_MSMS_MAC_CA_01 | M_DMO_MSMS_MAC_CA_01 |
| 4.4.3 | Withdrawal of authorization | e | Transmission without authorization may cause interference to other users of the radio frequency spectrum. | M_DMO_MSMS_MAC_CA_01 | M_DMO_MSMS_MAC_CA_01 |
| 5.1 | Authorization of presence signal. | e | Transmission without authorization may cause interference to other users of the radio frequency spectrum. | M_DMO_MSMS_MAC_CA_01 | M_DMO_MSMS_MAC_CA_01 |
| NOTE 1: The requirements are specified in TS 100 396-10 [26], under the given subclause. | | | | | |
| NOTE 2: The test purposes, as referenced, are specified in annex C of the present document. | | | | | |
| NOTE 3: The test cases, as referenced, are specified in annex C of the present document. | | | | | |

Table 17: Upper MAC layer requirements at the Ud air interface for Mobile station operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--|--|------|--|---|---|
| 8.4.5.1.7 | Transmitting DM-OCCUPIED | e | Incorrectly implemented procedures for signalling of channel occupation may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSMS_MAC_BV_CU_02 | DMO_MSMS_MAC_BV_CU_02 |
| 8.4.6.1 | Transmitting DM-RESERVED | e | Incorrectly implemented procedures for signalling of channel reservation may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSMS_MAC_BV_CU_04 | DMO_MSMS_MAC_BV_CU_04 |
| 8.5.6.1 | Transmission of messages | e, f | Incorrectly implemented transmission of messages may cause unnecessary and disallowed transmission attempts. | DMO_MSMS_MAC_BV_CU_06 | DMO_MSMS_MAC_BV_CU_06 |
| 8.5.7.2.1 | Indicating frames available for requests | e | Incorrectly implemented procedures for indicating frames available for requests may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSMS_MAC_BV_SM_09, DMO_MSMS_MAC_BV_SM_10 | DMO_MSMS_MAC_BV_SM_09, DMO_MSMS_MAC_BV_SM_10 |
| NOTE 1: The requirements are specified in ETS 300 396-3 [17], under the given subclause. NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-4-1 [27], clause 6. NOTE 3: The test cases, as referenced, are specified in ETS 300 394-4-2 [28], annex A. | | | | | |

Table 18: Additional Upper MAC layer requirements at the Ud air interface for Mobile station operation with Repeater type 1

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|---|--|------|--|--|--|
| 8.4.4.3 | DM-channel monitoring during occupation | e | Incorrectly implemented procedures for monitoring of channel occupation may prevent other users from gaining access to the radio frequency spectrum. | Implicit by DMO_MSREP1_DMCC_CM_BV_TXO_03 | Implicit by DMO_MSREP1_DMCC_CM_BV_TXO_03 |
| 8.4.4.4 | DM-channel monitoring during reservation | e | Incorrectly implemented procedures for monitoring of channel reservation may prevent other users from gaining access to the radio frequency spectrum. | Implicit by DMO_MSREP1_DMCC_CM_BV_TR_02, DMO_MSREP1_DMCC_CM_BV_TR_04 | Implicit by DMO_MSREP1_DMCC_CM_BV_TR_02, DMO_MSREP1_DMCC_CM_BV_TR_04 |
| 8.4.4.6 | DM-channel monitoring during pre-emption signalling | e, f | Incorrectly implemented procedures for monitoring of channel during pre-emption may cause interference to other users of the radio frequency spectrum. | Implicit by DMO_MSREP1_MAC_BV_SM_02 | Implicit by DMO_MSREP1_MAC_BV_SM_02 |
| 8.5.2.1.1 | Indication of master/slave role in synchronization burst | e, f | Incorrectly implemented indication of master/slave role may cause interference to other users of the radio frequency spectrum. | DMO_MSREP1_MAC_BV_SM_01C | DMO_MSREP1_MAC_BV_SM_01C |
| 8.5.7.2.1 | Indicating frames available for requests | e | Incorrectly implemented procedures for indicating frames available for requests may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSREP1_MAC_BV_SM_09, DMO_MSREP1_MAC_BV_SM_10 | DMO_MSREP1_MAC_BV_SM_09, DMO_MSREP1_MAC_BV_SM_10 |
| NOTE 1: The requirements are specified in EN 300 396-4 [18], under the given subclause. | | | | | |
| NOTE 2: The test purposes, as referenced, are specified in EN 300 394-4-3 [29], clause 6. | | | | | |
| NOTE 3: The test cases, as referenced, are specified in EN 300 394-4-5 [31], annex A. | | | | | |

Table 19: Additional Upper MAC layer requirements at the Ud air interface for Mobile station operation with Repeater type 2

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--|--|------|--|--|--|
| 8.4.4.3 | DM-channel monitoring during occupation | e | Incorrectly implemented procedures for monitoring of channel occupation may prevent other users from gaining access to the radio frequency spectrum. | Implicit by DMO_MSREP2_DMCC_CM_BV_TXO_03 | Implicit by DMO_MSREP2_DMCC_CM_BV_TXO_03 |
| 8.4.4.4 | DM-channel monitoring during reservation | e | Incorrectly implemented procedures for monitoring of channel reservation may prevent other users from gaining access to the radio frequency spectrum. | Implicit by DMO_MSREP2_DMCC_CM_BV_TR_02, DMO_MSREP2_DMCC_CM_BV_TR_04 | Implicit by DMO_MSREP2_DMCC_CM_BV_TR_02, DMO_MSREP2_DMCC_CM_BV_TR_04 |
| 8.4.4.6 | DM-channel monitoring during pre-emption signalling | e, f | Incorrectly implemented procedures for monitoring of channel during pre-emption may cause interference to other users of the radio frequency spectrum. | Implicit by DMO_MSREP2_MAC_BV_SM_02 | Implicit by DMO_MSREP2_MAC_BV_SM_02 |
| 8.5.2.1.1 | Indication of master/slave role in synchronization burst | e, f | Incorrectly implemented indication of master/slave role may cause interference to other users of the radio frequency spectrum. | DMO_MSREP2_MAC_BV_SM_01C | DMO_MSREP2_MAC_BV_SM_01C |
| 8.5.7.2.1 | Indicating frames available for requests | e | Incorrectly implemented procedures for indicating frames available for requests may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSREP2_MAC_BV_SM_09, DMO_MSREP2_MAC_BV_SM_10 | DMO_MSREP2_MAC_BV_SM_09, DMO_MSREP2_MAC_BV_SM_10 |
| NOTE 1: The requirements are specified in EN 300 396-7 [21], under the given subclause. | | | | | |
| NOTE 2: The test purposes, as referenced, are specified in EN 300 394-4-11 [37], clause 6. | | | | | |
| NOTE 3: The test cases, as referenced, are specified in EN 300 394-4-13 [39], annex A. | | | | | |

Table 20: Additional Upper MAC layer requirements at the Ud air interface for Mobile station operation with Gateway

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--|--|------|--|---|---|
| 8.4.5.1.7 | Transmitting DM-OCCUPIED | e | Incorrectly implemented procedures for signalling of channel occupation may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSGW_MAC_BV_CU_02 | DMO_MSGW_MAC_BV_CU_02 |
| 8.5.7.2.1 | Indicating frames available for requests | e | Incorrectly implemented procedures for indicating frames available for requests may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSGW_DMCC_CM_BV_ID_04, DMO_MSGW_MAC_BV_SM_10 | DMO_MSGW_NWK_DMCC_CM_BV_ID_04, DMO_MSGW_MAC_BV_SM_10 |
| NOTE 1: The requirements are specified in ETS 300 396-5 [19], under the given subclause. NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-4-7 [33], clause 6. NOTE 3: The test cases, as referenced, are specified in ETS 300 394-4-9 [35], annex A. | | | | | |

4.3.1.3 Layer 3 requirements

This subclause contains the layer 3 requirements at the Ud air interface for Mobile station operation.

Table 21: Circuit mode requirements at the Ud air interface for Mobile station operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|--|------|--|---|---|
| 6.2.1.1 | Outgoing call set-up on available channel without presence check | e, f | Incorrectly implemented outgoing call set-up may cause unnecessary and disallowed transmission attempts. | DMO_MSMS_DMCC_CM_CA_01, DMO_MSMS_DMCC_CM_CA_03 | DMO_MSMS_DMCC_CM_CA_01, DMO_MSMS_DMCC_CM_CA_03 |
| 6.2.2.1 | Outgoing call set-up on available channel with presence check | e, f | Incorrectly implemented outgoing call set-up may cause unnecessary and disallowed transmission attempts. | DMO_MSMS_DMCC_CM_CA_02, DMO_MSMS_DMCC_CM_BV_ID_04, DMO_MSMS_DMCC_CM_TI_01 | DMO_MSMS_DMCC_CM_CA_02, DMO_MSMS_DMCC_CM_BV_ID_04, DMO_MSMS_DMCC_CM_TI_01 |
| 6.2.4.1 | Receipt by master MS of request for pre-emption during occupation | e | Incorrectly implemented pre-emption procedures may prevent a higher priority user from gaining access to the radio frequency spectrum. | DMO_MSMS_DMCC_CM_BV_TXO_03, DMO_MSMS_DMCC_CM_BV_TXO_04 | DMO_MSMS_DMCC_CM_BV_TXO_03, DMO_MSMS_DMCC_CM_BV_TXO_04 |
| 6.2.4.1 | Release of radio resource at the end of transmission | e | Incorrect release of the radio resource at the end of transmission may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSMS_DMCC_CM_BV_TXO_02 | DMO_MSMS_DMCC_CM_BV_TXO_02 |
| 6.2.4.1 | Master release of resource by user application | e | Incorrect release of the radio resource by user application may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSMS_DMCC_CM_BV_TXO_01 | DMO_MSMS_DMCC_CM_BV_TXO_01 |
| 6.2.4.1 | Release of radio resource at DT311 timeout | e | Incorrect release of the radio resource at the end of transmission may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSMS_DMCC_CM_TI_02 | DMO_MSMS_DMCC_CM_TI_02 |
| 6.2.4.2 | Request for pre-emption during occupation | e | Incorrectly implemented procedure for request for pre-emption during occupation may lead to unallowed transmission attempts causing interference to other users. | DMO_MSMS_DMCC_CM_BV_RO_02, DMO_MSMS_DMCC_CM_BV_RO_03 | DMO_MSMS_DMCC_CM_BV_RO_02, DMO_MSMS_DMCC_CM_BV_RO_03 |
| 6.2.5.1 | Receipt by master MS of request for pre-emption during reservation | e | Incorrectly implemented pre-emption procedures may prevent a higher priority user from gaining access to the radio frequency spectrum. | DMO_MSMS_DMCC_CM_BV_TR_02, DMO_MSMS_DMCC_CM_BV_TR_03, DMO_MSMS_DMCC_CM_BV_TR_07 | DMO_MSMS_DMCC_CM_BV_TR_02, DMO_MSMS_DMCC_CM_BV_TR_03, DMO_MSMS_DMCC_CM_BV_TR_07 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|---|---|------|--|---|---|
| 6.2.5.1 | Receipt by master MS of request for changeover during reservation | e | Incorrectly implemented changeover procedures may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSMS_DMCC_CM_BV_TR_04, DMO_MSMS_DMCC_CM_BV_TR_08 | DMO_MSMS_DMCC_CM_BV_TR_04, DMO_MSMS_DMCC_CM_BV_TR_08 |
| 6.2.5.1 | Release of radio resource during reservation | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | DMO_MSMS_DMCC_CM_BV_TR_01 | DMO_MSMS_DMCC_CM_BV_TR_01 |
| 6.2.5.2 | Request for changeover during reservation | e | Incorrect procedure for request for changeover during reservation may lead to unallowed transmission attempts causing interference to other users. | DMO_MSMS_DMCC_CM_BV_RR_03, DMO_MSMS_DMCC_CM_BV_RR_04 | DMO_MSMS_DMCC_CM_BV_RR_03, DMO_MSMS_DMCC_CM_BV_RR_04 |
| <p>NOTE 1: The requirements are specified in ETS 300 396-3 [17], under the given subclause. NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-4-1 [27], clause 6. NOTE 3: The test cases, as referenced, are specified in ETS 300 394-4-2 [28], annex A.</p> | | | | | |

Table 22: SDS requirements at the Ud air interface for MS-MS operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--|---|------|---|---|---|
| 6.3.1.1.1 | Sending unacknowledged short data on an available channel | e, f | Incorrectly implemented procedure for sending unacknowledged short data may cause unnecessary and disallowed transmission attempts. | DMO_MSMS_DMCC_SDS_CA_01 | DMO_MSMS_DMCC_SDS_CA_01 |
| 6.3.1.1.2 | Sending acknowledged short data on an available channel | e, f | Incorrectly implemented procedure for sending acknowledged short data may cause unnecessary and disallowed transmission attempts. | DMO_MSMS_DMCC_SDS_BV_ID_01, DMO_MSMS_DMCC_SDS_BV_ID_02, DMO_MSMS_DMCC_SDS_TI_01 | DMO_MSMS_DMCC_SDS_BV_ID_01, DMO_MSMS_DMCC_SDS_BV_ID_02, DMO_MSMS_DMCC_SDS_TI_01 |
| 6.3.2.2 | Receiving acknowledged short data | e | Incorrectly implemented procedure for receiving acknowledged short data may cause unnecessary transmission attempts by transmitting MS. | DMO_MSMS_DMCC_SDS_BV_ID_03, DMO_MSMS_DMCC_SDS_BV_ID_04, - | DMO_MSMS_DMCC_SDS_BV_ID_03, DMO_MSMS_DMCC_SDS_BV_ID_04, Implicit by testing of Security functions |
| 6.3.4 | FCS checking in reception | e, f | Incorrect FCS checking in reception will cause unnecessary transmission attempts. | DMO_MSMS_DMCC_SDS_BV_ID_04 | DMO_MSMS_DMCC_SDS_BV_ID_04 |
| 6.3.4 | FCS calculation in transmission | e, f | Incorrect FCS calculation in transmission will cause unnecessary transmission attempts. | DMO_MSMS_DMCC_SDS_BV_ID_05 | DMO_MSMS_DMCC_SDS_BV_ID_05 |
| NOTE 1: The requirements are specified in ETS 300 396-3 [17], under the given subclause. NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-4-1 [27], clause 6. NOTE 3: The test cases, as referenced, are specified in ETS 300 394-4-2 [28], annex A. | | | | | |

Table 23: Additional Circuit mode requirements at the Uu air interface for Mobile Station operation with Gateway

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--|--|------|--|---|---|
| 6.2.1.1 | Outgoing call set-up through a Gateway | e, f | Incorrectly implemented outgoing call set-up may cause unnecessary and disallowed transmission attempts. | DMO_MSGW_DMCC_CM_CA_01, DMO_MSGW_DMCC_CM_CA_02, DMO_MSGW_DMCC_CM_BV_ID_04, DMO_MSGW_DMCC_CM_BV_TI_01, DMO_MSGW_DMCC_CM_BV_TI_02 | DMO_MSGW_NWK_DMCC_CM_CA_01, DMO_MSGW_NWK_DMCC_CM_CA_02, DMO_MSGW_NWK_DMCC_CM_BV_ID_04, DMO_MSGW_NWK_DMCC_CM_BV_TI_01, DMO_MSGW_NWK_DMCC_CM_BV_TI_02 |
| 6.2.4.1 | Receipt by master MS of request for pre-emption generated by the Gateway during occupation | e | Incorrectly implemented pre-emption procedures may prevent a higher priority user from gaining access to the radio frequency spectrum. | DMO_MSGW_DMCC_CM_BV_TXO_04, DMO_MSGW_DMCC_CM_BV_TXO_06 | DMO_MSGW_NWK_DMCC_CM_BV_TXO_04, DMO_MSGW_NWK_DMCC_CM_BV_TXO_06 |
| 6.2.4.2 | Request for pre-emption during occupation | e | Incorrectly implemented procedure for request for pre-emption during occupation may lead to unallowed transmission attempts causing interference to other users. | DMO_MSGW_DMCC_CM_BV_RO_03, DMO_MSGW_DMCC_CM_BV_RO_05 | DMO_MSGW_NWK_DMCC_CM_BV_RO_03, DMO_MSGW_NWK_DMCC_CM_BV_RO_05 |
| 6.2.5.2 | Request for changeover during reservation | e | Incorrect procedure for request for changeover during reservation may lead to unallowed transmission attempts causing interference to other users. | DMO_MSGW_DMCC_CM_BV_RR_03, DMO_MSGW_DMCC_CM_BV_RR_04 | DMO_MSGW_NWK_DMCC_CM_BV_RR_03, DMO_MSGW_NWK_DMCC_CM_BV_RR_04 |
| 6.4.1 | Solicited registration | e | Incorrectly implemented registration may cause disallowed transmission attempts. | DMO_MSGW_DMMM_01 | DMO_MSGW_NWK_DMMM_01 |
| 6.4.2 | Unsolicited registration | e | Incorrectly implemented registration may cause disallowed transmission attempts. | DMO_MSGW_DMMM_02 | DMO_MSGW_NWK_DMMM_02 |
| 6.4.3 | Cancellation of registration by Gateway | e | Incorrectly implemented cancellation of registration may cause disallowed transmission attempts. | DMO_MSGW_DMMM_03 | DMO_MSGW_NWK_DMMM_03 |
| NOTE 1: The requirements are specified in ETS 300 396-5 [19], under the given subclause. | | | | | |
| NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-4-7 [33], clause 6. | | | | | |
| NOTE 3: The test cases, as referenced, are specified in ETS 300 394-4-9 [35], annex A. | | | | | |

4.3.1.4 Security requirements

This subclause contains the security requirements at the Ud air interface.

Table 24: Security requirements at the Ud air interface

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--------------------------------|---|------|---|---|--|
| 6.3 | Air interface encryption mechanism. | e | Incorrectly implemented air interface encryption may cause misuse of traffic channels. | - | Implicit by DMCC testing (note 4). |
| 7.5.1 | Key transfer mechanism for transferring the key from key holder to key user. | e | Incorrect ciphering key transfer may cause misuse of traffic channels preventing effective use of radio frequency spectrum. | TP/Sec_DM/L3/OTAR/BV/01, TP/Sec_DM/L3/OTAR/BV/02 | Sec_DM_L3_OTAR_BV_01, Sec_DM_L3_OTAR_BV_02 |
| 7.5.2 | Key transfer mechanism for transferring the key from key holder acting as a relay for key sealer to key user. | e | Incorrect ciphering key transfer may cause misuse of traffic channels preventing effective use of radio frequency spectrum. | TP/Sec_DM/L3/OTAR/BV/01, TP/Sec_DM/L3/OTAR/BV/02, TP/Sec_DM/L3/OTAR/BV/03 | Sec_DM_L3_OTAR_BV_01, Sec_DM_L3_OTAR_BV_02, Sec_DM_L3_OTAR_BV_03 |
| 7.5.3 | Key transfer mechanism for distributing the SCK unsolicited. | e | Incorrect ciphering key transfer may cause misuse of traffic channels preventing effective use of radio frequency spectrum. | TP/Sec_DM/L3/OTAR/BV/04 | Sec_DM_L3_OTAR_BV_04 |
| 8.7.3.1 | Disabling of target. | e | Incorrect MS operation when temporarily or permanently disabled may cause disallowed use of radio frequency spectrum. Disabling of equipment provides mechanism to prevent defective MS loading the air interface whilst disabling the user prevents unauthorized use of the air interface. | TP/Sec_DM/L3/SED/BV/PD/TAR/02 | Sec_DM_L3_SED_BV_PD_TAR_02 |
| 8.7.3.2 | Enabling of target. | e | Incorrectly implemented enabling procedure may result in disallowed transmission attempts and unnecessary occupation of a radio channel. | TP/Sec_DM/L3/SED/BV/EN/TAR/01, TP/Sec_DM/L3/SED/BV/EN/TAR/02 | Sec_DM_L3_SED_BV_EN_TAR_01, Sec_DM_L3_SED_BV_EN_TAR_02 |
| 8.7.3.3 | TEI delivery. | e | TEI delivery is required to perform disabling of equipment, which provides a mechanism to prevent defective MS loading the air interface. | TP/Sec_DM/L3/SED/BV/TEI/01 | Sec_DM_L3_SED_BV_TEI_01 |

NOTE 1: The requirements are specified in ETS 300 396-6 [20], under the given subclause.

NOTE 2: The test purposes, as referenced, are specified in ETS 300 394-5-2 [14], clause 7.

NOTE 3: The test cases, as referenced, are specified in ETS 300 394-5-3 [15], annex B.

NOTE 4: For the DMCC testing of the terminals supporting security, the security features shall be enabled.

4.3.2 Repeater type 1 air interface protocol

4.3.2.1 Physical layer requirements

This subclause contains the radio layer requirements for a Repeater type 1 at the Ud air interface.

Table 25: Repeater type 1 Radio layer requirements at the Ud air interface

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|--------------------------------|---|------|---|---|---|
| 9.4.1 | Usage of DM channel | d, e | Incorrect usage of DM channel may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 12.2 | Modulation type. | d, e | Incorrect modulation will lead to disturbance of other TETRA users. | - | Implicit by 10.1.3. |
| 12.3.2 | Frequency bands and channel arrangements | d, e | Incorrect use of frequency bands and channel arrangements may cause unnecessary interference in the radio spectrum. | - | Implicit by F.6.4.3 |
| 12.3.4 | Transmitter output power. | d, e | Maladjustment of the RF output power may either cause unnecessary interference in the radio spectrum or decrease the probability of successful radio connections. | 7.1.1.2 a) and F.5, table F.2 and EN 300 396-4 [18], subclause 12.3.4 | 8.1, 8.1.1 a), b) b2), c) and d) and F.4, table F.1 |
| 12.3.4 | Unwanted conducted emission over the useful part of the burst. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.3.2 | 8.3 and F.4, table F.1 |
| 12.3.4 | Unwanted conducted emission during the switching transients. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.4.2 | 8.4 |
| 12.3.4 | Unwanted conducted discrete spurious emission far from the carrier. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.5.2 and F.5 table F.2 | 8.5 |
| 12.3.4 | Unwanted conducted wideband noise emission far from the carrier. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.5.2 and F.5, table F.2 and EN 300 396-4 [18], subclause 12.3.4 | 8.5 |
| 12.3.4 | Unwanted conducted emission during LCH. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.7.2 | 8.7, and 8.7.1 |
| 12.3.4 | Unwanted conducted emission in the non-transmit state. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.8.2 | 9.8 |
| 12.3.4 | Unwanted radiated emissions. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.6.2 | 8.6 |
| 12.3.4 | RF output power time mask. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | F.6.2.1 | F.6.2.2 |
| 12.3.4 | RF output power in non-active transmit state. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | 7.1.2.2 | 8.2 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|--------------------------------|---|------|---|--|-----------------------------------|
| 12.3.4 | Transmitter intermodulation attenuation. | d, e | An intermodulation attenuation below an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.8.2.1 | 8.8 and 8.8.1 |
| 12.3.5 | Blocking characteristics. | e | Insufficient blocking characteristics of the receiver may lead to an unnecessarily high number of radio transmission attempts | 7.2.5.2 and F.5, table F.2 | 9.5 and 9.5.1 |
| 12.3.5 | Spurious response rejection. | d, e | Insufficient spurious response rejection may lead to an unnecessarily high number of radio transmission attempts. | 7.2.6.2 and F.5, table F.2 | 9.6 |
| 12.3.5 | Intermodulation response rejection. | d, e | Insufficient intermodulation response rejection may lead to an unnecessarily high number of radio transmission attempts | 7.2.7.2 and F.5, table F.2 | 9.7 and 9.7.1 |
| 12.3.5 | Unwanted conducted emission in reception. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.8.2 | 9.8 |
| 12.3.5 | Unwanted radiated emission. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.9.2 | 9.9 |
| 12.3.6 | Modulation accuracy. | e, f | Insufficient modulation accuracy may lead to the transmission of incorrect data. | 7.3.1.2 | 10.1, 10.1.1 and 10.1.3 |
| 12.3.6 | Nominal error rate. | e, f | An unacceptable nominal error rate may lead to the reception of incorrect data. | 7.2.2.2 and F.5, table F.2 | 9.2 and 9.2.1 |
| 12.3.6 | Dynamic reference sensitivity performance. | e, f | An unacceptable dynamic reference sensitivity performance may lead to the reception of incorrect data. | 7.2.3.2 and F.5, table F.2 | 9.3, 9.3.1 and 9.3.3 |
| 12.3.6 | Reference interference performance. | e, f | An unacceptable reference interference performance may lead to the reception of incorrect data. | 7.2.4.2 and F.5, table F.2 | 9.4 and 9.4.1 |
| 12.3.6 | Static reference sensitivity performance. | e, f | An unacceptable static reference sensitivity performance may lead to the reception of incorrect data. | Implicit by 7.2.5.2, 7.2.6.2, 7.2.7.2 and F.5, table F.2 | Implicit by 9.5.1, 9.6 and 9.7.1. |
| 12.3.6 | Receiver performance for synchronization burst acquisition. | d, e | An insufficient synchronization burst acquisition may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing. |
| 12.4.2 | DM-REP1 synchronization requirement. | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 12.4.3 | Relationship between counters | d, e | An incorrect relation between the counters may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing. |
| 12.4.4 | RF frequency accuracy | d, e | An insufficient RF frequency accuracy may cause unnecessary interference in the radio spectrum. | F.6.3.1 | F.6.3.2 |
| 12.4.5 | Requirement for synchronization of a DM-REP1 | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | F.6.4.2 | F.6.4.3 |
| 12.6 | Channel multiplexing for a type 1 DM-REP | d, e | Incorrect channel multiplexing through DM-REP may cause interference with other users. | - | Implicit by MAC layer testing. |

NOTE 1: The requirements are specified in EN 300 396-4 [18] under the given subclause, except when otherwise stated.

NOTE 2: The test case limit values are specified in ETS 300 394-1 [8], under the given subclause, except when otherwise stated.

NOTE 3: The test methods are specified in ETS 300 394-1 [8], under the given subclause.

In addition to the requirements specified in table 25, the following applies for the TETRA DMO civil access for the frequency bands and channel arrangements defined in subclauses 9.4.1 and 12.3.2 of EN 300 396-4 [18]:

The RF carrier frequencies shall be among the frequencies allocated to TETRA DMO for civil access within the ranges defined by ERC Decision ERC/DEC/(96)/4 [44], i.e. within one or more of the bands 410 MHz to 430 MHz, 870 MHz to 876 MHz, 915 MHz to 921 MHz, 450 MHz to 470 MHz, 385 MHz to 390 MHz and 395 MHz to 399.99 MHz.

The requirements for frequency bands are tested implicitly.

4.3.2.2 Layer 2 requirements

This subclause contains the layer 2 requirements at the Ud air interface for Repeater type 1 operation.

Table 26: Lower MAC layer requirements at the Ud air interface for Repeater type 1 operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference | Test case reference (note 2) |
|---|--|------|--|------------------------|--------------------------------------|
| 12.5 | Error control scheme for Synchronization Signalling CHannel (SCH/S). | d, e | Incorrect coding/decoding of SCH/S may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |
| 12.5 | Error control scheme for Half-slot Signalling CHannel (SCH/H) and Stealing CHannel (STCH). | d, e | Incorrect coding/decoding of SCH/H and STCH may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |
| 12.5 | Error control scheme for Full-slot Signalling Channel (SCH/F). | d, e | Incorrect coding/decoding of SCH/F may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |
| NOTE 1: The requirements are specified in EN 300 396-4 [18], under the given subclause. | | | | | |
| NOTE 2: The test cases, as referenced, are specified in EN 300 394-4-6 [32], annex A. | | | | | |

Table 27: Upper MAC layer requirements at the Ud air interface for Repeater type 1 operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|---|--|------|---|---|---|
| 9.4.2.2.2 | DM-REP channel surveillance at DM-MS call set-up | e, f | Incorrectly implemented procedures for channel surveillance at DM-MS call set-up may cause interference to other users of the radio frequency spectrum. | DMO_DMREP1_MAC_BI_01, Implicit by DMO_DMREP1_MAC_BV_05, DMO_DMREP1_MAC_BV_07 | DMO_DMREP1_MAC_BI_01, Implicit by DMO_DMREP1_MAC_BV_05, DMO_DMREP1_MAC_BV_07 |
| 9.4.2.3 | DM-REP channel surveillance during a call | e, f | Incorrectly implemented procedures for channel surveillance during a call may cause interference to other users of the radio frequency spectrum. | DMO_DMREP1_MAC_TI_01, DMO_DMREP1_MAC_TI_02 | DMO_DMREP1_MAC_TI_01, DMO_DMREP1_MAC_TI_02 |
| 9.4.5.1 | Signalling of channel state | e | Incorrectly implemented signalling of channel state may call may cause interference to other users of the radio frequency spectrum, or prevent other users from gaining access to the radio frequency spectrum. | DMO_DMREP1_MAC_CA_02 | DMO_DMREP1_MAC_CA_02 |
| 9.5.1.1 | Re-transmission of master DM-MS messages | e, f | Incorrectly implemented re-transmission of messages may cause interference to other users of the radio frequency spectrum. | DMO_DMREP1_MAC_BV_05 | DMO_DMREP1_MAC_BV_05 |
| 9.5.1.1.1 | Re-transmission of DM-SETUP or DM-SETUP PRES messages | e, f | Incorrectly implemented re-transmission of messages may cause interference to other users of the radio frequency spectrum. | DMO_DMREP1_MAC_BV_07 | DMO_DMREP1_MAC_BV_07 |
| 9.5.1.1.2 | Re-transmission of DM-SDS DATA or DM-SDS UDATA messages | e, f | Incorrectly implemented re-transmission of messages may cause interference to other users of the radio frequency spectrum. | DMO_DMREP1_MAC_BV_08 | DMO_DMREP1_MAC_BV_08 |
| 9.5.2 | Re-transmission of signalling messages received from a slave DM-MS | e, f | Incorrectly implemented re-transmission of messages may cause interference to other users of the radio frequency spectrum. | DMO_DMREP1_MAC_BI_02 | DMO_DMREP1_MAC_BI_02 |
| 9.5.2.1 | Re-transmission of response messages from a slave DM-MS | e, f | Incorrectly implemented re-transmission of messages may cause interference to other users of the radio frequency spectrum. | Implicit by DMO_DMREP1_MAC_BV_05 | Implicit by DMO_DMREP1_MAC_BV_05 |
| NOTE 1: The requirements are specified in EN 300 396-4 [18], under the given subclause. | | | | | |
| NOTE 2: The test purposes, as referenced, are specified in EN 300 394-4-4 [30], clause 6. | | | | | |
| NOTE 3: The test cases, as referenced, are specified in EN 300 394-4-6 [32], annex A. | | | | | |

4.3.3 Repeater type 2 air interface protocol

4.3.3.1 Physical layer requirements

This subclause contains the radio layer requirements for a Repeater type 2 at the Ud air interface.

Table 28: Repeater type 2 Radio layer requirements at the Ud air interface

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|--------------------------------|---|------|---|--|---|
| 9.4.1.1 | Channel structure | d, e | Incorrectly implemented channel structure may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 9.4.1.2 | Channel synchronization | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 12.2 | Modulation type. | d, e | Incorrect modulation will lead to disturbance of other TETRA users. | - | Implicit by 10.1.3. |
| 12.3.2 | Frequency bands and channel arrangements | d, e | Incorrect use of frequency bands and channel arrangements may cause unnecessary interference in the radio spectrum. | - | Implicit by F.6.4.3 |
| 12.3.4.2 | Transmitter output power and power classes. | d, e | Maladjustment of the RF output power may either cause unnecessary interference in the radio spectrum or decrease the probability of successful radio connections. | 7.1.1.2 a) and F.5, table F.2 and EN 300 396-7 [21], subclause 12.3.4.2 | 8.1, 8.1.1 a), b) b2), c) and d) and F.4, table F.1 |
| 12.3.4.3.2 | Unwanted emission close to the carrier. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.3.2 | 8.3 and F.4, table F.1 |
| 12.3.4.3.2 | Unwanted emission close to the carrier. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.4.2 | 8.4 |
| 12.3.4.3.3.1 | Unwanted conducted discrete spurious emission far from the carrier. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.5.2 and F.5 table F.2 and EN 300 396-7 [21], subclause 12.3.4.3.3.1 | 8.5 |
| 12.3.4.3.3.2 | Unwanted conducted wideband noise emission far from the carrier. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.5.2 and F.5, table F.2 and EN 300 396-7 [21], subclause 12.3.4.3.3.2 | 8.5 |
| 12.3.4.3.4 | Unwanted conducted emission during LCH. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.7.2 | 8.7, and 8.7.1 |
| 12.3.4.3.5 | Unwanted conducted emission in the non-transmit state. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.8.2 | 9.8 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|--------------------------------|---|------|---|--|-----------------------------------|
| 12.3.4.4 | Unwanted radiated emissions. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.6.2 | 8.6 |
| 12.3.4.6 | RF output power time mask. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | F.6.2.1 | F.6.2.2 |
| 12.3.4.6 | RF output power in non-active transmit state. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | 7.1.2.2 | 8.2 |
| 12.3.4.7 | Transmitter intermodulation attenuation. | d, e | An intermodulation attenuation below an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.8.2.1 | 8.8 and 8.8.1 |
| 12.3.5 | Blocking characteristics. | e | Insufficient blocking characteristics of the receiver may lead to an unnecessarily high number of radio transmission attempts | 7.2.5.2 and F.5, table F.2 | 9.5 and 9.5.1 |
| 12.3.5 | Spurious response rejection. | d, e | Insufficient spurious response rejection may lead to an unnecessarily high number of radio transmission attempts. | 7.2.6.2 and F.5, table F.2 | 9.6 |
| 12.3.5 | Intermodulation response rejection. | d, e | Insufficient intermodulation response rejection may lead to an unnecessarily high number of radio transmission attempts | 7.2.7.2 and F.5, table F.2 | 9.7 and 9.7.1 |
| 12.3.5 | Unwanted conducted emission in reception. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.8.2 | 9.8 |
| 12.3.5 | Unwanted radiated emission. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.2.9.2 | 9.9 |
| 12.3.6 | Modulation accuracy. | e, f | Insufficient modulation accuracy may lead to the transmission of incorrect data. | 7.3.1.2 | 10.1, 10.1.1 and 10.1.3 |
| 12.3.6 | Nominal error rate. | e, f | An unacceptable nominal error rate may lead to the reception of incorrect data. | 7.2.2.2 and F.5, table F.2 | 9.2 and 9.2.1 |
| 12.3.6 | Dynamic reference sensitivity performance. | e, f | An unacceptable dynamic reference sensitivity performance may lead to the reception of incorrect data. | 7.2.3.2 and F.5, table F.2 | 9.3, 9.3.1 and 9.3.3 |
| 12.3.6 | Reference interference performance. | e, f | An unacceptable reference interference performance may lead to the reception of incorrect data. | 7.2.4.2 and F.5, table F.2 | 9.4 and 9.4.1 |
| 12.3.6 | Static reference sensitivity performance. | e, f | An unacceptable static reference sensitivity performance may lead to the reception of incorrect data. | Implicit by 7.2.5.2, 7.2.6.2, 7.2.7.2 and F.5, table F.2 | Implicit by 9.5.1, 9.6 and 9.7.1. |
| 12.3.6 | Receiver performance for synchronization burst acquisition. | d, e | An insufficient synchronization burst acquisition may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing. |
| 12.4.2 | DM-REP2 synchronization requirement. | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing |
| 12.4.3 | Relationship between counters | d, e | An incorrect relation between the counters may cause unnecessary interference in the radio spectrum. | - | Implicit by MAC layer testing. |
| 12.4.4 | RF frequency accuracy | d, e | An insufficient RF frequency accuracy may cause unnecessary interference in the radio spectrum. | F.6.3.1 | F.6.3.2 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|---|--|------|---|--|--------------------------------|
| 12.4.5 | Requirement for synchronization of a DM-REP2 | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | F.6.4.2 | F.6.4.3 |
| 12.6 | Channel multiplexing for a type 2 DM-REP | d, e | Incorrect channel multiplexing through DM-REP may cause interference with other users. | - | Implicit by MAC layer testing. |
| NOTE 1: The requirements are specified in EN 300 396-7 [21] under the given subclause, except when otherwise stated. | | | | | |
| NOTE 2: The test case limit values are specified in ETS 300 394-1 [8], under the given subclause, except when otherwise stated. | | | | | |
| NOTE 3: The test methods are specified in ETS 300 394-1 [8], under the given subclause. | | | | | |

In addition to the requirements specified in table 28, the following applies for the TETRA DMO civil access for the frequency bands and channel arrangements defined in subclauses 9.4.1 and 12.3.2 of EN 300 396-7 [21]:

The RF carrier frequencies shall be among the frequencies allocated to TETRA DMO for civil access within the ranges defined by ERC Decision ERC/DEC/(96)/4 [44], i.e. within one or more of the bands 410 MHz to 430 MHz, 870 MHz to 876 MHz, 915 MHz to 921 MHz, 450 MHz to 470 MHz, 385 MHz to 390 MHz and 395 MHz to 399.99 MHz.

The requirements for frequency bands are tested implicitly.

4.3.3.2 Layer 2 requirements

This subclause contains the layer 2 requirements at the Ud air interface for Repeater type 2 operation.

Table 29: Lower MAC layer requirements at the Ud air interface for Repeater type 2 operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference | Test case reference (note 2) |
|---|--|------|--|------------------------|--------------------------------------|
| 12.5 | Error control scheme for Synchronization Signalling CHannel (SCH/S). | d, e | Incorrect coding/decoding of SCH/S may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |
| 12.5 | Error control scheme for Half-slot Signalling CHannel (SCH/H) and Stealing CHannel (STCH). | d, e | Incorrect coding/decoding of SCH/H and STCH may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |
| 12.5 | Error control scheme for Full-slot Signalling Channel (SCH/F). | d, e | Incorrect coding/decoding of SCH/F may cause unnecessary transmissions. | - | Implicit by Upper MAC layer testing. |
| NOTE 1: The requirements are specified in EN 300 396-7 [21], under the given subclause. | | | | | |
| NOTE 2: The test cases, as referenced, are specified in EN 300 394-4-14 [40], annex A. | | | | | |

Table 30: Upper MAC layer requirements at the Ud air interface for Repeater type 2 operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference (note 2) | Test case reference (note 3) |
|--|--|------|---|---|---|
| 9.4.2.2.3 | DM-REP channel surveillance at DM-MS call set-up | e, f | Incorrectly implemented procedures for channel surveillance at DM-MS call set-up may cause interference to other users of the radio frequency spectrum. | DMO_DMREP2_MAC_BI_01, Implicit by DMO_DMREP2_MAC_BV_05, DMO_DMREP2_MAC_BV_07 | DMO_DMREP2_MAC_BI_01, Implicit by DMO_DMREP2_MAC_BV_05, DMO_DMREP2_MAC_BV_07 |
| 9.4.2.3 | DM-REP channel surveillance during a call | e, f | Incorrectly implemented procedures for channel surveillance during a call may cause interference to other users of the radio frequency spectrum. | DMO_DMREP2_MAC_TI_01, DMO_DMREP2_MAC_TI_02 | DMO_DMREP2_MAC_TI_01, DMO_DMREP2_MAC_TI_02 |
| 9.4.4 | DM-REP channel monitoring procedures | e, f | Incorrectly implemented procedures for channel monitoring during a call may cause interference to other users of the radio frequency spectrum. | DMO_DMREP2_MAC_BV_02b | DMO_DMREP2_MAC_BV_02b |
| 9.4.5.1.1 | Signalling of channel state | e | Incorrectly implemented signalling of channel state may call may cause interference to other users of the radio frequency spectrum, or prevent other users from gaining access to the radio frequency spectrum. | DMO_DMREP2_MAC_CA_02 | DMO_DMREP2_MAC_CA_02 |
| 9.5.1.1.1 | Re-transmission of master DM-MS messages | e, f | Incorrectly implemented re-transmission of messages may cause interference to other users of the radio frequency spectrum. | DMO_DMREP2_MAC_BV_05 | DMO_DMREP2_MAC_BV_05 |
| 9.5.1.1.2 | Re-transmission of DM-SETUP or DM-SETUP PRES messages | e, f | Incorrectly implemented re-transmission of messages may cause interference to other users of the radio frequency spectrum. | DMO_DMREP2_MAC_BV_07 | DMO_DMREP2_MAC_BV_07 |
| 9.5.1.1.3 | Re-transmission of DM-SDS DATA or DM-SDS UDATA messages | e, f | Incorrectly implemented re-transmission of messages may cause interference to other users of the radio frequency spectrum. | DMO_DMREP2_MAC_BV_08 | DMO_DMREP2_MAC_BV_08 |
| 9.5.2.1 | Re-transmission of signalling messages received from a slave DM-MS | e, f | Incorrectly implemented re-transmission of messages may cause interference to other users of the radio frequency spectrum. | DMO_DMREP2_MAC_BI_02 | DMO_DMREP2_MAC_BI_02 |
| 9.5.2.2 | Re-transmission of response messages from a slave DM-MS | e, f | Incorrectly implemented re-transmission of messages may cause interference to other users of the radio frequency spectrum. | Implicit by DMO_DMREP2_MAC_BV_05 | Implicit by DMO_DMREP2_MAC_BV_05 |
| NOTE 1: The requirements are specified in EN 300 396-7 [21], under the given subclause. | | | | | |
| NOTE 2: The test purposes, as referenced, are specified in EN 300 394-4-12 [38], clause 6. | | | | | |
| NOTE 3: The test cases, as referenced, are specified in EN 300 394-4-14 [40], annex A. | | | | | |

4.3.4 Gateway air interface protocol

4.3.4.1 Physical layer requirements

This subclause contains the radio layer requirements for a Gateway at the Ud air interface.

Table 31: Gateway Radio layer requirements at the Ud air interface

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|--------------------------------|---|------|---|---|---|
| 16.2 | Modulation type. | d, e | Incorrect modulation will lead to disturbance of other TETRA users. | - | Implicit by testing at the Um air interface |
| 16.3.2 | Frequency bands and channel arrangements | d, e | Incorrect use of frequency bands and channel arrangements may cause unnecessary interference in the radio spectrum. | - | Implicit by testing at the Um air interface |
| 16.3.4.2 | Transmitter output power. | d, e | Maladjustment of the RF output power may either cause unnecessary interference in the radio spectrum or decrease the probability of successful radio connections. | 7.1.1.2 a) and F.5, table F.2 and ETS 300 396-5 [19], subclause 16.3.4.2 | 8.1, 8.1.1 a), b) b2), c) and d) |
| 16.3.4.3.2 | Unwanted conducted emission over the useful part of the burst. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | - | Implicit by testing at the Um air interface |
| 16.3.4.3.2 | Unwanted conducted emission during the switching transients. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | - | Implicit by testing at the Um air interface |
| 16.3.4.3.3.1 | Unwanted conducted discrete spurious emission far from the carrier. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.5.2 and F.5, table F.2 and ETS 300 396-5 [19], subclause 16.3.4.3.3.1 | 8.5 |
| 16.3.4.3.3.2 | Unwanted conducted wideband noise emission far from the carrier. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | 7.1.5.2 and F.5, table F.2 and ETS 300 396-5 [19], subclause 16.3.4.3.3.2 | 8.5 |
| 16.3.4.3.4 | Unwanted conducted emission during LCH. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | - | Implicit by testing at the Um air interface |
| 16.3.4.3.5 | Unwanted conducted emission in the non-transmit state. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | - | Implicit by testing at the Um air interface |
| 16.3.4.4 | Unwanted radiated emissions. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | - | Implicit by testing at the Um air interface |
| 16.3.4.6 | RF output power time mask. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | F.6.2.1 | F.6.2.2 |

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|--------------------------------|---|------|---|--|--|
| 16.3.4.6 | RF output power in non-active transmit state. | e | A violation of the given RF power time mask may lead to unnecessary interference in the radio spectrum. | - | Implicit by testing at the Um air interface |
| 16.3.4.7 | Intra-gateway transmitter intermodulation attenuation. | d, e | An intermodulation attenuation below an acceptable level may cause unnecessary interference in the radio spectrum. | - | Implicit by testing at the Um air interface |
| 16.3.5 | Blocking characteristics. | e | Insufficient blocking characteristics of the receiver may lead to an unnecessarily high number of radio transmission attempts | - | Implicit by testing at the Um air interface |
| 16.3.5 | Spurious response rejection. | d, e | Insufficient spurious response rejection may lead to an unnecessarily high number of radio transmission attempts. | - | Implicit by testing at the Um air interface |
| 16.3.5 | Intermodulation response rejection. | d, e | Insufficient intermodulation response rejection may lead to an unnecessarily high number of radio transmission attempts | - | Implicit by testing at the Um air interface |
| 16.3.5 | Unwanted conducted emission in reception. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | - | Implicit by testing at the Um air interface |
| 16.3.5 | Unwanted radiated emission. | d, e | Unwanted emissions above an acceptable level may cause unnecessary interference in the radio spectrum. | - | Implicit by testing at the Um air interface |
| 16.3.6 | Modulation accuracy. | e, f | Insufficient modulation accuracy may lead to the transmission of incorrect data. | - | Implicit by testing at the Um air interface |
| 16.3.6 | Nominal error rate. | e, f | An unacceptable nominal error rate may lead to the reception of incorrect data. | - | Implicit by testing at the Um air interface |
| 16.3.6 | Dynamic reference sensitivity performance. | e, f | An unacceptable dynamic reference sensitivity performance may lead to the reception of incorrect data. | - | Implicit by testing at the Um air interface |
| 16.3.6 | Reference interference performance. | e, f | An unacceptable reference interference performance may lead to the reception of incorrect data. | - | Implicit by testing at the Um air interface |
| 16.3.6 | Static reference sensitivity performance. | e, f | An unacceptable static reference sensitivity performance may lead to the reception of incorrect data. | - | Implicit by testing at the Um air interface |
| 16.3.6 | Receiver performance for synchronization burst acquisition. | d, e | An insufficient synchronization burst acquisition may cause unnecessary interference in the radio spectrum. | - | Implicit by layer 3 testing at the Um air interface. |
| 16.4.2 | Gateway synchronization requirement. | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by layer 3 testing at the Um air interface |
| 16.4.3 | DM timebase counters | d, e | An incorrect relation between the counters may cause unnecessary interference in the radio spectrum. | - | Implicit by layer 3 testing at the Um air interface. |
| 16.4.4 | RF frequency accuracy | d, e | An insufficient RF frequency accuracy may cause unnecessary interference in the radio spectrum. | F.6.3.1 | F.6.3.2 |
| 16.4.5 | Requirement for synchronization of a Gateway | d, e | An insufficient synchronization may cause unnecessary interference in the radio spectrum. | - | Implicit by layer 3 testing at the Um air interface |

| Requirement reference (note 1) | Description | Cat. | Justification | Test case limit value reference (note 2) | Test method reference (note 3) |
|---|-----------------------------|------|---|--|--|
| 16.6 | Mapping of logical channels | d, e | Incorrect mapping of logical channels into physical channels may cause interference with other users. | - | Implicit by layer 3 testing at the Um air interface. |
| NOTE 1: The requirements are specified in ETS 300 396-5 [19] under the given subclause. | | | | | |
| NOTE 2: The test case limit values are specified in ETS 300 394-1 [8], under the given subclause, except when otherwise stated. | | | | | |
| NOTE 3: The test methods are specified in ETS 300 394-1 [8], under the given subclause. | | | | | |

In addition to the requirements specified in table 31, the following applies for the TETRA DMO civil access for the frequency bands and channel arrangements defined in subclause 16.3.2 of ETS 300 396-5 [19]:

The RF carrier frequencies on the DM side shall be among the frequencies allocated to TETRA DMO for civil access within the ranges defined by ERC Decision ERC/DEC/(96)/4 [44], i.e. within one or more of the bands 410 MHz to 430 MHz, 870 MHz to 876 MHz, 915 MHz to 921 MHz, 450 MHz to 470 MHz, 385 MHz to 390 MHz and 395 MHz to 399.99 MHz.

The requirements for frequency bands are tested implicitly.

4.3.4.2 Layer 2 requirements

This subclause contains the layer 2 requirements at the Ud air interface for Gateway operation.

Table 32: Lower MAC layer requirements at the Ud air interface for Gateway operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference | Test case reference (note 2) |
|---|--|------|--|------------------------|--|
| 16.5 | Error control scheme for Synchronization Signalling CHannel (SCH/S). | d, e | Incorrect coding/decoding of SCH/S may cause unnecessary transmissions. | - | Implicit by layer 3 testing at the Um air interface. |
| 16.5 | Error control scheme for Half-slot Signalling CHannel (SCH/H) and Stealing CHannel (STCH). | d, e | Incorrect coding/decoding of SCH/H and STCH may cause unnecessary transmissions. | - | Implicit by testing layer 3 at the Um air interface. |
| 16.5 | Error control scheme for Full-slot Signalling Channel (SCH/F). | d, e | Incorrect coding/decoding of SCH/F may cause unnecessary transmissions. | - | Implicit by testing layer 3 at the Um air interface. |
| NOTE 1: The requirements are specified in ETS 300 396-5 [19] under the given subclause. | | | | | |
| NOTE 2: The test cases, as referenced, are specified in ETS 300 394-4-10 [36], annex A. | | | | | |

Table 33: Upper MAC layer requirements at the Ud air interface for Gateway operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference | Test case reference (note 2) |
|---|--|------|--|------------------------|--|
| 13.4.5.1.4 | Transmitting DM-OCCUPIED | e | Incorrectly implemented procedures for signalling of channel occupation may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Um air interface. |
| 13.4.6.1.1 | Transmitting DM-RESERVED | e | Incorrectly implemented procedures for signalling of channel reservation may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Um air interface. |
| 13.5.6.1 | Transmission of messages | e, f | Incorrectly implemented transmission of messages may cause unnecessary and disallowed transmission attempts. | - | Implicit by testing layer 3 at the Um air interface. |
| 13.5.7.2.1 | Indicating frames available for requests | e | Incorrectly implemented procedures for indicating frames available for requests may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Um air interface. |
| NOTE 1: The requirements are specified in ETS 300 396-5 [19] under the given subclause. | | | | | |
| NOTE 2: The test cases, as referenced, are specified in ETS 300 394-4-10 [36], annex A. | | | | | |

4.3.4.3 Layer 3 requirements

This subclause contains the layer 3 requirements at the Uu air interface for Gateway operation.

Table 34: Layer 3 requirements at the Uu air interface for Gateway operation

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference | Test case reference (note 2) |
|--------------------------------|---|------|---|------------------------|--|
| 9.3.1.1 | Outgoing individual call set-up to DM-MS | e, f | Incorrectly implemented outgoing call set-up may cause unnecessary and disallowed transmission attempts. | - | Implicit by testing layer 3 at the Uu air interface. |
| 9.3.1.2 | Outgoing group call set-up to DM-MS | e, f | Incorrectly implemented outgoing call set-up may cause unnecessary and disallowed transmission attempts. | - | Implicit by testing layer 3 at the Uu air interface. |
| 9.3.3.1.1 | Reception of DM-TX CEASED by end of DM-MS call | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Uu air interface. |
| 9.3.3.1.2 | Transmitting DM-TX CEASED by end of V+D call | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Uu air interface. |
| 9.3.3.2 | Transmitting DM-TX CEASED at receipt of interrupt from SwMI | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Uu air interface. |
| 9.3.3.3 | Receipt of request to continue ongoing call from SwMI during DM channel reservation | e, f | Incorrect transfer of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Uu air interface. |
| 9.3.3.4.1 | Response to request for change-over or pre-emption during DM-channel reservation | e, f | Incorrect transfer of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Uu air interface. |
| 9.3.3.5 | Termination of DM call on receipt of transmission interrupt from SwMI | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Uu air interface. |
| 9.3.3.9.1 | Receipt of DM-RELEASE from current master DM-MS | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Uu air interface. |
| 9.3.3.9.2 | Release of DM channel on receipt of D-RELEASE from SwMI | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Uu air interface. |

| Requirement reference (note 1) | Description | Cat. | Justification | Test purpose reference | Test case reference (note 2) |
|---|---|------|---|------------------------|--|
| 9.3.3.9.3 | Release of DM channel at expiry of call length timer | e | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Um air interface. |
| 9.3.4.1.3 | New call preemption during DM channel reservation | e | Incorrect transfer of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Um air interface. |
| 9.3.4.2.1 | Preemption of DM channel on receipt of transmission interrupt from SwMI | | Incorrect release of the radio resource may prevent other users from gaining access to the radio frequency spectrum. | - | Implicit by testing layer 3 at the Um air interface. |
| NOTE 1: The requirements are specified in ETS 300 396-5 [19] under the given subclause. | | | | | |
| NOTE 2: The test cases, as referenced, are specified in ETS 300 394-4-10 [36], annex A. | | | | | |

4.4 Other interfaces

There are no TETRA specific attachment requirements for:

- interface between TETRA network and the public network;
- interface between TETRA network and the Line Station (LS);
- interface between TETRA network and another TETRA network;
- Peripheral Equipment Interface (PEI);
- Subscriber Identity Module (SIM) card interface.

5 Test specification

5.1 Introduction

This clause provides the test references for the requirements of the present document used to determine the compliance of an IUT to the present document.

The tests referenced in this clause are defined in corresponding TETRA conformance testing specifications:

- a) radio conformance testing specification, ETS 300 394-1 [8];
- b) protocol conformance testing specifications:
 - Test Suite Structure (TSS) and Test Purposes (TPs) for V+D, ETS 300 394-2-1 [9];
 - Test Suite Structure (TSS) and Test Purposes (TPs) for DMO MS to MS, ETS 300 394-4-1 [27];
 - Test Suite Structure (TSS) and Test Purposes (TPs) for DMO MS to Repeater type 1, EN 300 394-4-3 [29];
 - Test Suite Structure (TSS) and Test Purposes (TPs) for DMO Repeater type 1, EN 300 394-4-4 [30];
 - Test Suite Structure (TSS) and Test Purposes (TPs) for DMO MS to Gateway, ETS 300 394-4-7 [33];
 - Test Suite Structure (TSS) and Test Purposes (TPs) for DMO Gateway, ETS 300 394-4-8 [34];
 - Test Suite Structure (TSS) and Test Purposes (TPs) for DMO MS to Repeater type 2, EN 300 394-4-11 [37];
 - Test Suite Structure (TSS) and Test Purposes (TPs) for DMO Repeater type 2, EN 300 394-4-12 [38];
 - Test Suite Structure (TSS) and Test Purposes (TPs) for Security, ETS 300 394-5-2 [14];
 - Test Suite Structure (TSS) and Test Purposes (TPs) for Managed DMO, annex C of the present document;
 - ATS for NWK layer, ETS 300 394-2-2 [10];
 - ATS for LLC layer, ETS 300 394-2-3 [11];
 - ATS for MAC layer, ETS 300 394-2-4 [12];
 - ATS for DMO MS to MS, ETS 300 394-4-2 [28];
 - ATS for DMO MS to Repeater type 1, EN 300 394-4-5 [31];
 - ATS for DMO Repeater type 1, EN 300 394-4-6 [32];
 - ATS for DMO MS to Gateway, ETS 300 394-4-9 [35];
 - ATS for DMO Gateway, ETS 300 394-4-10 [36];
 - ATS for DMO MS to Repeater type 2, EN 300 394-4-13 [39];
 - ATS for DMO Repeater type 2, EN 300 394-4-14 [40];
 - ATS for Security, ETS 300 394-5-3 [15];
 - ATS for Managed DMO, annex C of the present document.

NOTE: The ATSS for protocol testing are written in TTCN according to ISO/IEC 9646-3 [42].
 For detailed information on conventions used for TPs refer to ETS 300 394-2-1 [9], clause 5 for V+D; ETS 300 394-4-1 [27], clause 5 for DMO MS to MS and Managed DMO; EN 300 394-4-3 [29], clause 5 for DMO MS to Repeater type 1; EN 300 394-4-4 [30], clause 5 for DMO Repeater type 1; ETS 300 394-4-7 [33], clause 5 for DMO MS to Gateway; ETS 300 394-4-8 [34], clause 5 for DMO Gateway; EN 300 394-4-11 [37], clause 5 for DMO MS to Repeater type 2; EN 300 394-4-12 [38], clause 5 for DMO Repeater type 2; and ETS 300 394-5-2 [14], clause 5 for Security.
 For detailed information on ATS conventions refer to ETS 300 394-2-2 [10], clause 5 for NWK layer; ETS 300 394-2-3 [11], clause 5 for LLC layer; ETS 300 394-2-4 [12], clause 5 for upper MAC layer, EN 300 394-4-3 [29], clause 5 for DMO MS to Repeater type 1; EN 300 394-4-4 [30], clause 5 for DMO Repeater type 1; ETS 300 394-4-7 [33] clause 5 for DMO MS to Gateway; ETS 300 394-4-8 [34] clause 5 for DMO Gateway; EN 300 394-4-11 [37] clause 5 for DMO MS to Repeater type 2; EN 300 394-4-12 [38] clause 5 for DMO Repeater type 2; ETS 300 394-5-2 [14] clause 5 for Security, and annex C of the present document for Managed DMO.

Not all the tests defined for the conformance testing are relevant for type approval testing and the tests referenced in this clause are the ones corresponding to the justified requirements in clause 4 in the present document.

To allow test case selection for the purposes of the present document, the test case index and test case selection expression definitions are specified for the physical layer.

For protocol layers the TSS, test case index, test case selection expression definitions, and test suite parameter definitions are redefined and those tables are included for each ATS in this clause. The ATS conventions for the protocol conformance testing have been followed in the present document to allow one to one mapping with the test cases in the conformance test suites and the redefined structural parts in the present document.

All the tables for testing in this clause follow the TTCN format in ISO/IEC 9646-3 [42].

5.2 Environmental conditions

Radio type approval testing shall be performed at normal and (where required) extreme test conditions as specified in ETS 300 394-1 [8].

For tests on equipment at extreme ambient temperatures measurements shall be made at an upper temperature and a lower temperature defined as follows:

- the lower temperature shall be the lowest intended operational temperature;
- the upper temperature shall be the highest intended operational temperature.

Protocol type approval testing shall be performed within the intended environmental conditions of the IUT.

5.3 Test configuration

The test configurations given or referenced in the present document do not imply a specific realization of test equipment or arrangement or use of specific test devices for type approval testing. However, any test configuration and equipment used shall provide the test conditions specified in the tests to enable testing according to the present document.

Detailed test equipment accuracy, specification tolerance of the test devices, or test equipment conformity with the requirements set by the type approval tests are not subjects of the present document. Where such details are provided, they are considered as being an informative addition to the test specifications.

In the case of a protocol test resulting in a fail verdict, the corresponding test case execution will be repeated at least once to ensure the result being caused by the requirements in the test case.

The manufacturer of the IUT shall provide an interface for connecting the IUT to the test system for type approval testing according to the present document. This interface may be located in the IUT or it may exist in an additional device dedicated for testing purposes. The interface may be based on a specific test connector protocol or it may use radio interface. Specification for the actual interface being used is outside the scope of the present document.

The IUT may need parameterization or special initialization for testing. Those actions shall be performed according to any specific instructions provided by the manufacturer and are outside the scope of the present document.

5.4 Um air interface test specification

5.4.1 Physical layer test specification

5.4.1.1 Test case index for physical layer

Table 35: Test case index for physical layer

| Test Case Index | | | |
|--|---------------------------------|---|---|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| 7.1.1.2 a) | 8.1 and 8.1.1 a), b2) and d) | Mobile_Station | To test that the output power for the MS corresponds to the declared power class. |
| 7.1.1.2 b) | 8.1 and 8.1.1 a), b), c) and d) | Mobile_Station | To test the MS transmitter output power versus time. |
| 7.1.1.2 a) | 8.1 and 8.1.1 c) | Mobile_Station | To test the nominal MS power control levels. |
| 7.1.1.2 a) | 8.1 and 8.1.2 a), b2) and d) | Base_Station | To test that the output power for the BS corresponds to the declared power class. |
| 7.1.1.2 b) | 8.1 and 8.1.2 a), b) and d) | Base_Station_ Discontinuous_Transmission | To test the BS transmitter output power versus time. |

| Test Case Index | | | |
|--|--------------------------------|---|---|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| 7.1.1.2 a) and b) | 8.1 and 8.1.2 c) and d) | Base_Station_Several_Power_Classes | To test that the output power for the BS corresponds to the declared power class and transmitter output power versus time. |
| 7.1.2.2 | 8.2 | Discontinuous_Transmission | To test the output power in the non-active transmit state. |
| 7.1.3.2 | 8.3 | Applicable_to_all_Um_IUTs | To test the unwanted conducted emission over the useful part of the burst. |
| 7.1.4.2 | 8.4 | Discontinuous_Transmission | To test the unwanted conducted emission during switching transients. |
| 7.1.5.2 | 8.5 | Applicable_to_all_Um_IUTs | To test the unwanted conducted emission far from the carrier. |
| 7.1.6.2 | 8.6 | Applicable_to_all_Um_IUTs | To test the unwanted radiated emission in the active transmit state. |
| 7.1.7.2 | 8.7 and 8.7.1 | Mobile_Station | To test the MS unwanted conducted emission during CLCH. |
| 7.1.7.2 | 8.7 and 8.7.2 | Base_Station | To test the BS unwanted conducted emission during BLCH. |
| 7.1.8.2.1 | 8.8 and 8.8.1 | Mobile_Station | To test the MS transmitter intermodulation attenuation. |
| 7.1.8.2.2 | 8.8 and 8.8.2 | Base_Station_Several_Transmitters_Or_Collocated_With_Other_Radio_Equipment | To test the BS transmitter intermodulation: Minimum 70 dB attenuation. |
| 7.1.8.2.2 | 8.8 and 8.8.2 | Base_Station_Single_Transmitter_And_Not_Collocated_With_Other_Radio_Equipment | To test the BS transmitter intermodulation: Minimum 40 dB attenuation. |
| 7.1.8.2.3 | 8.8 and 8.8.3 | Base_Station_Several_Transmitters | To test the intra-BS transmitter intermodulation attenuation. |
| 7.2.2.2 | 9.2 and 9.2.1 | Mobile_Station_Class_A | To test the nominal error rate of a class A MS. ETS 300 394-1 [8], table A.1; nominal error: - TCH/7,2, TU50, - 85 dBm, - TCH/7,2, STAT, - 20 dBm. |
| 7.2.2.2 | 9.2 and 9.2.1 | Mobile_Station_Class_B | To test the nominal error rate of a class B MS. ETS 300 394-1 [8], table A.2; nominal error: - TCH/7,2, TU50, - 85 dBm, - TCH/7,2, STAT, - 20 dBm. |
| 7.2.2.2 | 9.2 and 9.2.1 | Mobile_Station_Class_E | To test the nominal error rate of a class E MS. ETS 300 394-1 [8], table A.3; nominal error: - TCH/7,2, TU50, - 85 dBm, - TCH/7,2, STAT, - 20 dBm. |
| 7.2.2.2 | 9.2 and 9.2.2 | Base_Station_Class_A | To test the nominal error rate of a class A BS. ETS 300 394-1 [8], table A.7; nominal error: - TCH/7,2, TU50, - 85 dBm, - TCH/7,2, STAT, - 20 dBm. |
| 7.2.2.2 | 9.2 and 9.2.2 | Base_Station_Class_B | To test the nominal error rate of a class B BS. ETS 300 394-1 [8], table A.8; nominal error: - TCH/7,2, TU50, - 85 dBm, - TCH/7,2, STAT, - 20 dBm. |
| 7.2.3.2 | 9.3 and 9.3.1 | Mobile_Station_Class_A | To test the dynamic reference sensitivity performance of a class A MS. ETS 300 394-1 [8], table A.1; sensitivity: - SCH/F, TU50, - 103 (- 97) dBm, - BSCH, HT200, - 103 dBm. |
| 7.2.3.2 | 9.3 and 9.3.1 | Mobile_Station_Class_A_Protected_Data | To test the dynamic reference sensitivity performance of a class A MS supporting protected circuit mode data. ETS 300 394-1 [8], table A.1; sensitivity: - TCH/2,4, N=1, HT200, - 103 dBm. |
| 7.2.3.2 | 9.3 and 9.3.1 | Mobile_Station_Class_B | To test the dynamic reference sensitivity performance of a class B MS. ETS 300 394-1 [8], table A.2; sensitivity: - SCH/F, TU50, - 103 (- 97) dBm, - BSCH, TU50, - 103 dBm. |

| Test Case Index | | | |
|--|--------------------------------|---------------------------------------|--|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| 7.2.3.2 | 9.3 and 9.3.1 | Mobile_Station_Class_B_Protected_Data | To test the dynamic reference sensitivity performance of a class B MS supporting protected circuit mode data. ETS 300 394-1 [8], table A.2; sensitivity: - TCH/2,4, N=1, TU50, - 103 dBm. |
| 7.2.3.2 | 9.3 and 9.3.1 | Mobile_Station_Class_E | To test the dynamic reference sensitivity performance of a class E MS. ETS 300 394-1 [8], table A.3; sensitivity: - SCH/F, TU50, - 103 (- 97) dBm, - BSCH, EQ200, - 103 dBm. |
| 7.2.3.2 | 9.3 and 9.3.1 | Mobile_Station_Class_E_Protected_Data | To test the dynamic reference sensitivity performance of a class E MS supporting protected circuit mode data. ETS 300 394-1 [8], table A.3; sensitivity: - TCH/2,4, N=1, EQ200, - 103 dBm. |
| 7.2.3.2 | 9.3 and 9.3.2 | Base_Station_Class_A | To test the dynamic reference sensitivity performance of a class A BS. ETS 300 394-1 [8], table A.7; sensitivity: - SCH/F, TU50, - 106 (- 100) dBm. |
| 7.2.3.2 | 9.3 and 9.3.2 | Base_Station_Class_A_Protected_Data | To test the dynamic reference sensitivity performance of a class A BS supporting protected circuit mode data. ETS 300 394-1 [8], table A.7; sensitivity: - TCH/2,4, N=1, HT200, - 106 dBm. |
| 7.2.3.2 | 9.3 and 9.3.2 | Base_Station_Class_B | To test the dynamic reference sensitivity performance of a class B BS. ETS 300 394-1 [8], table A.8; sensitivity: - SCH/F, TU50, - 106 (- 100) dBm. |
| 7.2.3.2 | 9.3 and 9.3.2 | Base_Station_Class_B_Protected_Data | To test the dynamic reference sensitivity performance of a class B BS supporting protected circuit mode data. ETS 300 394-1 [8], table A.8; sensitivity: - TCH/2,4, N=1, TU50, - 106 dBm. |
| 7.2.3.2 | 9.3 and 9.3.3 | Mobile_Station | To test the dynamic reference sensitivity performance of an MS. ETS 300 394-1 [8], table A.11: - SCH/F, TU50, - 103 dBm, - AACH, TU50, - 103 dBm. |
| 7.2.3.2 | 9.3 and 9.3.3 | Base_Station | To test the dynamic reference sensitivity performance of a BS. ETS 300 394-1 [8], table A.11: - SCH/F, TU50, - 106 dBm. |
| 7.2.4.2 | 9.4 and 9.4.1 | Mobile_Station_Class_A | To test the reference interference performance of a class A MS. ETS 300 394-1 [8], table A.1: - co-channel interference, - adjacent channel interference. |
| 7.2.4.2 | 9.4 and 9.4.1 | Mobile_Station_Class_B | To test the reference interference performance of a class B MS. ETS 300 394-1 [8], table A.2: - co-channel interference, - adjacent channel interference. |
| 7.2.4.2 | 9.4 and 9.4.1 | Mobile_Station_Class_E | To test the reference interference performance of a class E MS. ETS 300 394-1 [8], table A.3: - co-channel interference, - adjacent channel interference. |
| 7.2.4.2 | 9.4 and 9.4.2 | Base_Station_Class_A | To test the reference interference performance of a class A BS. ETS 300 394-1 [8], table A.7: - co-channel interference, - adjacent channel interference. |

| Test Case Index | | | |
|--|--------------------------------|---------------------------|--|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| 7.2.4.2 | 9.4 and 9.4.2 | Base_Station_Class_B | To test the reference interference performance of a class B BS. ETS 300 394-1 [8], table A.8: - co-channel interference, - adjacent channel interference. |
| 7.2.5.2 | 9.5 and 9.5.1 | Mobile_Station_Class_A | To test the blocking characteristics of a class A MS. ETS 300 394-1 [8], table A.1; blocking. |
| 7.2.5.2 | 9.5 and 9.5.1 | Mobile_Station_Class_B | To test the blocking characteristics of a class B MS. ETS 300 394-1 [8], table A.2; blocking. |
| 7.2.5.2 | 9.5 and 9.5.1 | Mobile_Station_Class_E | To test the blocking characteristics of a class E MS. ETS 300 394-1 [8], table A.3; blocking. |
| 7.2.5.2 | 9.5 and 9.5.2 | Base_Station_Class_A | To test the blocking characteristics of a class A BS. ETS 300 394-1 [8], table A.7; blocking. |
| 7.2.5.2 | 9.5 and 9.5.2 | Base_Station_Class_B | To test the blocking characteristics of a class B BS. ETS 300 394-1 [8], table A.8; blocking. |
| 7.2.6.2 | 9.6 | Mobile_Station_Class_A | To test the spurious response rejection of a class A MS. ETS 300 394-1 [8], table A.1; spurious response. |
| 7.2.6.2 | 9.6 | Mobile_Station_Class_B | To test the spurious response rejection of a class B MS. ETS 300 394-1 [8], table A.2; spurious response. |
| 7.2.6.2 | 9.6 | Mobile_Station_Class_E | To test the spurious response rejection of a class E MS. ETS 300 394-1 [8], table A.3; spurious response. |
| 7.2.6.2 | 9.6 | Base_Station_Class_A | To test the spurious response rejection of a class A BS. ETS 300 394-1 [8], table A.7; spurious response. |
| 7.2.6.2 | 9.6 | Base_Station_Class_B | To test the spurious response rejection of a class B BS. ETS 300 394-1 [8], table A.8; spurious response. |
| 7.2.7.2 | 9.7 and 9.7.1 | Mobile_Station_Class_A | To test the intermodulation response rejection of a class A MS. ETS 300 394-1 [8], table A.1; intermodulation. |
| 7.2.7.2 | 9.7 and 9.7.1 | Mobile_Station_Class_B | To test the intermodulation response rejection of a class B MS. ETS 300 394-1 [8], table A.2; intermodulation. |
| 7.2.7.2 | 9.7 and 9.7.1 | Mobile_Station_Class_E | To test the intermodulation response rejection of a class E MS. ETS 300 394-1 [8], table A.3; intermodulation. |
| 7.2.7.2 | 9.7 and 9.7.2 | Base_Station_Class_A | To test the intermodulation response rejection of a class A BS. ETS 300 394-1 [8], table A.7; intermodulation. |
| 7.2.7.2 | 9.7 and 9.7.2 | Base_Station_Class_B | To test the intermodulation response rejection of a class B BS. ETS 300 394-1 [8], table A.8; intermodulation. |
| 7.2.8.2 | 9.8 | Applicable_to_all_Um_IUTs | To test the unwanted conducted emission. |
| 7.2.9.2 | 9.9 | Applicable_to_all_Um_IUTs | To test the unwanted radiated emission. |
| 7.3.1.2 | 10.1, 10.1.1 and 10.1.3 | Mobile_Station | To test the modulation accuracy of an MS. |
| 7.3.1.2 | 10.1, 10.1.2 and 10.1.3 | Base_Station | To test the modulation accuracy of a BS. |
| 7.3.2.2 | 10.2, 10.2.1 | Mobile_Station | To test the carrier frequency error of an MS. |
| 7.3.2.2 | 10.2, 10.2.2 | Base_Station | To test the carrier frequency error of a BS. |
| 7.3.4.2 | 10.4 | Mobile_Station | To test the frame alignment performance of an MS. |
| 7.3.5.2 | 10.5 | Mobile_Station | To test the MS adaptive power control. |

| Test Case Index | | | |
|--|--------------------------------|---------------------|-------------|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| NOTE 1: The test case limit values, as referenced, are specified in ETS 300 394-1 [8], clause 7. | | | |
| NOTE 2: The test methods, as referenced, are specified in ETS 300 394-1 [8], clauses 8 to 10. | | | |

5.4.1.2 Test case selection expression definitions for physical layer

Table 36: Test case selection expression definitions for physical layer

| Test Case Selection Expression Definitions | | |
|--|---------------------------------------|--|
| Expression Name | Selection Expression | Comments |
| Applicable_to_all_Um_IUTs | A.1/1 | TETRA V+D equipment. |
| Mobile_Station | A.2/2 | MS equipment. |
| Base_Station | A.2/1 | BS equipment. |
| Base_Station_Several_Power_Classes | A.2/1 AND A.6/1 | BS equipment implementing more than one power class. |
| Base_Station_Several_Transmitters | A.2/1 AND NOT A.6/2 | BS equipment with more than one transmitter. |
| Base_Station_Several_Transmitters_Or_Collocated_With_Other_Radio_Equipment | A.2/1 AND NOT (A.6/2 AND A.6/3) | BS equipment with more than one transmitter or to be collocated with other radio equipment operating in the same frequency band. |
| Base_Station_Single_Transmitter_And_Not_Collocated_With_Other_Radio_Equipment | A.2/1 AND A.6/2 AND A.6/3 | BS equipment with single transmitter and not to be collocated with other radio equipment operating in the same frequency band. |
| Base_Station_Discontinuous_Transmission | A.2/1 AND (A.4/2 OR A.4/3) | BS equipment operating in discontinuous mode. |
| Discontinuous_Transmission | (A.2/1 AND (A.4/2 OR A.4/3)) OR A.2/2 | BS equipment operating in discontinuous mode or MS equipment. |
| Mobile_Station_Class_A | A.2/2 AND A.6/4 | MS equipment intended for class A environment. |
| Mobile_Station_Class_B | A.2/2 AND A.6/5 | MS equipment intended for class B environment. |
| Mobile_Station_Class_E | A.2/2 AND A.6/6 | MS equipment intended for class E environment. |
| Base_Station_Class_A | A.2/1 AND A.6/4 | BS equipment intended for class A environment. |
| Base_Station_Class_B | A.2/1 AND A.6/5 | BS equipment intended for class B environment. |
| Mobile_Station_Class_A_Protected_Data | A.2/2 AND A.2/3 AND A.6/4 | MS equipment intended for class A environment supporting protected circuit mode data. |
| Mobile_Station_Class_B_Protected_Data | A.2/2 AND A.2/3 AND A.6/5 | MS equipment intended for class B environment supporting protected circuit mode data. |
| Mobile_Station_Class_E_Protected_Data | A.2/2 AND A.2/3 AND A.6/6 | MS equipment intended for class E environment supporting protected circuit mode data. |
| Base_Station_Class_A_Protected_Data | A.2/1 AND A.2/3 AND A.6/4 | BS equipment intended for class A environment supporting protected circuit mode data. |
| Base_Station_Class_B_Protected_Data | A.2/1 AND A.2/3 AND A.6/5 | BS equipment intended for class B environment supporting protected circuit mode data. |
| Detailed Comments | | |
| The selection expressions given in the Selection Expression-column are Boolean expressions, referring to the declarations made in requirement tables in annex A in the present document. | | |

5.4.2 Layer 2 test specification

5.4.2.1 Test suite structure for MAC layer

Table 37: Test suite structure for MAC layer

| Test Suite Structure | | |
|--|---|---|
| Suite Name: MAC | | |
| Standards Ref.: EN 300 392-2 [1] | | |
| PICS Ref.: ETS 300 392-14 [6] | | |
| PIXIT Ref.: ETS 300 394-2-4 [12], annex B | | |
| Test Method(s): Embedded single party remote test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| MAC/ | Applicable_to_all_IUTs | Check the dynamic requirements of the MAC layer. |
| MAC/CA/ | Applicable_to_all_IUTs | Check the basic capabilities of the MAC layer. |
| MAC/BV/ | Applicable_to_all_IUTs | Check the valid behaviour requirements of the MAC layer. |
| MAC/BV/MI/ | Minimum_mode_supported | Check the minimum mode functionality. |
| MAC/BV/RA/ | Applicable_to_all_IUTs | Check random access. |
| MAC/BV/RE/ | Applicable_to_all_IUTs | Check reserved access. |
| MAC/BI/ | Applicable_to_all_IUTs | Check invalid behaviour of the MAC layer. |
| MAC/BI/MI/ | Minimum_mode_not_supported_and_CC_supported | Check invalid behaviour of MS not supporting minimum mode operations. |
| MAC/BI/RA/ | Applicable_to_all_IUTs | Check invalid behaviour of random access. |
| MAC/BI/ | Applicable_to_all_IUTs | Check the timers of the MAC layer. |

5.4.2.2 Test case index for MAC layer

Table 38: Test case index for MAC layer

| Test Case Index | | | |
|----------------------|--------------|---|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| MAC/CA/ | MAC_CA_01 | Applicable_to_all_IUTs | Check the random access using an LLC acknowledgement. |
| MAC/BV/MI/ | MAC_BV_MI_01 | Minimum_mode_supported | Check the uplink transmission in minimum mode. |
| MAC/BV/MI/ | MAC_BV_MI_02 | Minimum_mode_supported | Check uplink transmission after end of minimum mode. |
| MAC/BV/RA/ | MAC_BV_RA_01 | Applicable_to_all_IUTs | Check the downlink transmission of a fragmented message. |
| MAC/BV/RE/ | MAC_BV_RE_01 | Applicable_to_all_IUTs | Check uplink transmission of a fragmented message when capacity has been granted. |
| MAC/BV/RE/ | MAC_BV_RE_02 | Applicable_to_all_IUTs | Check the delay mechanism of allocated uplink signalling capacity. |
| MAC/BV/RE/ | MAC_BV_RE_03 | Applicable_to_all_IUTs | Check uplink transmission of a fragmented message when capacity is requested when starting the transmission. |
| MAC/BI/MI/ | MAC_BI_MI_01 | Minimum_mode_not_supported_and_CC_supported | Check that an IUT not supporting minimum mode does not initiate random access during minimum mode. |
| MAC/BI/RA/ | MAC_BI_RA_01 | Applicable_to_all_IUTs | Check that the IUT does not transmit when no random access transmission is allowed for the IUT. |
| MAC/BI/RA/ | MAC_BI_RA_02 | Applicable_to_all_IUTs | Check that the IUT retries random access according to the ALOHA parameter Nu. |
| MAC/BI/ | MAC_TI_02 | Applicable_to_all_IUTs | Check that the random access attempt is repeated within WT downlink signalling opportunities. |

5.4.2.3 Test case selection expression definitions for MAC layer

Table 39: Test case selection expression definitions for MAC layer

| Test Case Selection Expression Definitions | | |
|---|---|---|
| Expression Name | Selection Expression | Comments |
| Applicable_to_all_IUTs | TBR_RT_UM_MS | IUT is TETRA V+D MS. |
| Minimum_mode_supported | PIC_MINIMUM_MODE | IUT is TETRA V+D MS supporting minimum mode. |
| Minimum_mode_not_supported_and_CC_supported | NOT (PIC_MINIMUM_MODE) AND (PIC_CALL_CONTROL) | IUT is TETRA V+D MS not supporting minimum mode, but supporting CC. |

5.4.2.4 Test suite parameter definitions for MAC layer

Table 40: Test suite parameter definitions for MAC layer

| Test Suite Parameter Declarations | | | |
|---|---------------------|-------------------------|--|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| TBR_RT_UM_MS | BOOLEAN | A.3.1, table A.2/2 | TETRA V+D MS. |
| PIC_MINIMUM_MODE | BOOLEAN | A.3.3.2, table A.11/2 | Indicate whether minimum mode procedures are supported. |
| PIC_CALL_CONTROL | BOOLEAN | A.3.4.1.1, table A.28/1 | Indicate whether CMCE call control service is supported. |
| PIX_GSSI_1 | GSSI_Type | B.2.2.1, table B.2/1 | A group identifier. |
| PIX_GSSI_2 | GSSI_Type | B.2.2.1, table B.2/2 | A group identifier. |
| PIX_GSSI_3 | GSSI_Type | B.2.2.1, table B.2/3 | A group identifier. |
| PIX_SSI | SSI_Type | B.2.2.1, table B.2/4 | The ITSI value of the MS. |
| PIX_HOME_LA | MM_LocationAreaType | B.2.2.1, table B.2/5 | Home location area of the MS. |
| PIX_HOME_MCC | MM_MCC_Type | B.2.2.1, table B.2/6 | Home mobile country code of the MS. |
| PIX_HOME_MNC | MM_MNC_Type | B.2.2.1, table B.2/7 | Home mobile network code of the MS. |
| PIX_NEW_LOCATION_AREA_1 | MM_LocationAreaType | B.2.2.1, table B.2/8 | Unique registration area in the home MCC and MNC. |
| PIX_NEW_LOCATION_AREA_2 | MM_LocationAreaType | B.2.2.1, table B.2/9 | Unique registration area in the home MCC and MNC. |
| PIX_NEW_LOCATION_AREA_3 | MM_LocationAreaType | B.2.2.1, table B.2/10 | Unique registration area in the home MCC and MNC. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.4.2.5 Test suite structure for LLC layer

Table 41: Test suite structure for LLC layer

| Test Suite Structure | | |
|--|---------------------------------------|---|
| Suite Name: LLC | | |
| Standards Ref.: EN 300 392-2 [1] | | |
| PICS Ref.: ETS 300 392-14 [6] | | |
| PIXIT Ref.: ETS 300 394-2-3 [11], annex B | | |
| Test Method(s): The embedded version of the remote single party testing method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| LLC/CA/ | Applicable_to_all_IUTs | To test the basic capabilities of the LLC entity of the IUT. |
| LLC/CA/BA/ | Applicable_to_all_IUTs | To test the basic capabilities of the LLC entity of the IUT, when operating in basic link, acknowledged data transfer mode. |
| LLC/CA/BU/ | Applicable_to_all_IUTs | To test the basic capabilities of the LLC entity of the IUT, when operating in basic link, unacknowledged data transfer mode. |
| LLC/BV/ | Applicable_to_all_IUTs | To test the valid behaviour of the LLC entity of the IUT. |
| LLC/BV/BA/ | Applicable_to_all_IUTs | To test the valid behaviour of the LLC entity of the IUT, when using the basic link, acknowledged data transfer. |
| LLC/BI/ | Applicable_to_all_IUTs | To test the invalid behaviour of the LLC entity of the IUT. |
| LLC/BI/BA/ | BLA_with_FCS_in_reception_supported | To test the invalid behaviour of the LLC entity of the IUT, when using the basic link, acknowledged data transfer. |
| LLC/BI/BU/ | BLU_data_reception_with_FCS_supported | To test the invalid behaviour of the LLC entity of the IUT, when using the basic link, unacknowledged data transfer. |
| LLC/TI/ | Applicable_to_all_IUTs | To test the protocol behaviour related to timers of the LLC entity of the IUT. |
| LLC/TI/BA/ | Applicable_to_all_IUTs | To test the protocol behaviour related to timers of the LLC entity of the IUT when using basic link, acknowledged service. |

5.4.2.6 Test case index for LLC layer

Table 42: Test case index for LLC layer

| Test Case Index | | | |
|----------------------|--------------|--|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| LLC/CA/BA/ | LLC_CA_BA_01 | Applicable_to_all_IUTs | IUT transmits a BL-DATA or BL-DATA PDU with SDU number 0 at the first time after power up. |
| LLC/CA/BA/ | LLC_CA_BA_02 | Applicable_to_all_IUTs | IUT transmits BL-DATA correctly when no data is to be acknowledged. |
| LLC/CA/BA/ | LLC_CA_BA_03 | Applicable_to_all_IUTs | IUT accepts a BL-ACK without data as an acknowledgement to BL-DATA. |
| LLC/CA/BA/ | LLC_CA_BA_04 | Applicable_to_all_IUTs | IUT accepts a BL-ACK with data as an acknowledgement to BL-DATA. |
| LLC/CA/BA/ | LLC_CA_BA_05 | Applicable_to_all_IUTs | IUT accepts a BL-ADATA as an acknowledgement to BL-DATA. |
| LLC/CA/BA/ | LLC_CA_BA_06 | BLA_with_FCS_in_transmission_supported | IUT calculates the FCS correctly with basic link acknowledged data transfer PDUs. |
| LLC/CA/BA/ | LLC_CA_BA_07 | Applicable_to_all_IUTs | IUT sends an acknowledgement to BL-DATA with no FCS. |
| LLC/CA/BA/ | LLC_CA_BA_08 | Applicable_to_all_IUTs | IUT sends an acknowledgement to BL-DATA with correct FCS. |
| LLC/CA/BA/ | LLC_CA_BA_09 | Applicable_to_all_IUTs | IUT sends an acknowledgement to BL-ADATA. |
| LLC/CA/BU/ | LLC_CA_BU_03 | Applicable_to_all_IUTs | IUT accepts a BL-UDATA PDU with no FCS. |
| LLC/CA/BU/ | LLC_CA_BU_04 | BLU_data_reception_with_FCS_supported | IUT accepts a BL-UDATA with a correct FCS. |
| LLC/BV/BA/ | LLC_BV_BA_01 | Applicable_to_all_IUTs | IUT increments the SDU numbers correctly in basic link acknowledged data transfer. |
| LLC/BV/BA/ | LLC_BV_BA_02 | Applicable_to_all_IUTs | IUT repeats an unacknowledged BL-DATA PDU up to the minimum value of N.252 times. |
| LLC/BV/BA/ | LLC_BV_BA_03 | Applicable_to_all_IUTs | IUT sends the acknowledgements with correct SDU numbers in acknowledged basic link. |
| LLC/BI/BA/ | LLC_BI_BA_01 | BLA_with_FCS_in_reception_supported | IUT does not accept a BL-DATA with incorrect FCS. |
| LLC/BI/BU/ | LLC_BI_BU_01 | BLU_data_reception_with_FCS_supported | IUT does not accept a BL-UDATA with incorrect FCS. |
| LLC/BI/BA/ | LLC_TI_BA_01 | Applicable_to_all_IUTs | IUT implements timer T.251 correctly. |

5.4.2.7 Test case selection expression definitions for LLC layer

Table 43: Test case selection expression definitions for LLC layer

| Test Case Selection Expression Definitions | | |
|--|---------------------------------|---|
| Expression Name | Selection Expression | Comments |
| Applicable_to_all_IUTs | TBR_RT_UM_MS | The test case selected by this expression is applicable to all IUTs and should restrict to mandatory features to be tested. |
| BLA_with_FCS_in_transmission_supported | PIC_BLA_FCS_IN_TRANSMISSION | Acknowledged basic link data transmission implemented with optional FCS calculation. |
| BLA_with_FCS_in_reception_supported | PIC_BLA_FCS_IN_RECEPTION | Acknowledged basic link data reception implemented with optional FCS checking. |
| BLU_data_reception_with_FCS_supported | PIC_BLU_DATA_RECEPTION_WITH_FCS | Unacknowledged basic link data reception with FCS implemented. |

5.4.2.8 Test suite parameter definitions for LLC layer

Table 44: Test suite parameter definitions for LLC layer

| Test Suite Parameter Declarations | | | |
|---|---------|-----------------------|---|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| TBR_RT_UM_MS | BOOLEAN | A.3.1, table A.2/2 | TETRA V+D MS |
| PIC_N_252_MIN | INTEGER | A.3.3.3, table A.26/1 | The minimum value of LLC constant N.252 whether the stealing repeats are used or not. |
| PIC_T_251 | INTEGER | A.3.3.3, table A.27/1 | The value of LLC timer T.251. |
| PIC_BLA_FCS_IN_RECEPTION | BOOLEAN | A.3.3.3, table A.22/3 | Acknowledged basic link data reception implemented with optional FCS checking. |
| PIC_BLA_FCS_IN_TRANSMISSION | BOOLEAN | A.3.3.3, table A.22/4 | Acknowledged basic link data transmission implemented with optional FCS calculation. |
| PIC_BLU_DATA_RECEPTION_WITH_FCS | BOOLEAN | A.3.3.3, table A.23/2 | Unacknowledged basic link data reception with FCS implemented. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.4.3 Layer 3 test specification

5.4.3.1 Test suite structure for layer 3

Table 45: Test suite structure for layer 3

| Test Suite Structure | | |
|---|---------------------------|---|
| Suite Name: NWK | | |
| Standards Ref.: EN 300 392-2 [1] | | |
| PICS Ref.: ETS 300 392-14 [6] | | |
| PIXIT Ref.: ETS 300 394-2-2 [10], annex B | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| NWK/ | Applicable_to_all_IUTs | Check the dynamic behaviour requirements of the network layer protocols. |
| NWK/CMCE/ | CMCE_supported | To test the behaviour of the CMCE module of the IUT. |
| NWK/CMCE/IC/ | Individual_call_supported | To test the behaviour of the CMCE module of the IUT, when operating in individual call mode. |
| NWK/CMCE/IC/CA/ | Individual_call_supported | To test the basic capabilities of the CMCE module of the IUT, when operating in individual call mode. |
| NWK/CMCE/IC/CA/SU/ | Call_setup_supported | To test the basic capabilities of the CMCE module of the IUT during call set-up, when operating in individual call mode. |
| NWK/CMCE/IC/CA/CD/ | Individual_call_supported | To test the basic capabilities of the CMCE module of the IUT during call disconnection, when operating in individual call mode. |
| NWK/CMCE/IC/BV/ | Call_setup_supported | To test the valid behaviour of the CMCE module of the IUT, when operating in individual call mode. |
| NWK/CMCE/IC/BV/OC/ | Call_setup_supported | To test the valid behaviour of the CMCE module of the IUT during outgoing call, when operating in individual call mode. |
| NWK/CMCE/IC/BV/CC/ | Call_setup_supported | To test the valid behaviour of the CMCE module of the IUT during Colliding calls, when operating in individual call mode. |
| NWK/CMCE/IC/BV/MA/ | Call_setup_supported | To test the valid behaviour of the CMCE module of the IUT during call maintenance, when operating in individual call mode. |
| NWK/CMCE/IC/BV/MA/TC/ | Call_setup_supported | To test the valid behaviour of the CMCE module of the IUT during transmission control, when operating in individual call mode. |
| NWK/CMCE/IC/TV/ | Call_setup_supported | To test the timers of the CMCE module of the IUT, when operating in individual call mode. |
| NWK/CMCE/GC/ | Group_call_supported | To test the behaviour of the CMCE module of the IUT, when operating in group call mode. |
| NWK/CMCE/GC/CA/ | Group_call_supported | To test the basic capabilities of the CMCE module of the IUT, when operating in group call mode. |
| NWK/CMCE/GC/CA/SU/ | Group_call_supported | To test the basic capabilities of the CMCE module of the IUT during call set-up, when operating in group call mode. |
| NWK/CMCE/GC/CA/CD/ | Group_call_supported | To test the basic capabilities of the CMCE module of the IUT during call disconnection, when operating in group call mode. |

| Test Suite Structure | | |
|---|--|---|
| Suite Name: NWK | | |
| Standards Ref.: EN 300 392-2 [1] | | |
| PICS Ref.: ETS 300 392-14 [6] | | |
| PIXIT Ref.: ETS 300 394-2-2 [10], annex B | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| NWK/CMCE/GC/BV/ | Group_call_supported | To test the valid behaviour of the CMCE module of the IUT, when operating in group call mode. |
| NWK/CMCE/GC/BV/OC/ | Group_call_supported | To test the valid behaviour of the CMCE module of the IUT during outgoing call, when operating in group call mode. |
| NWK/CMCE/GC/BV/CC/ | User_initiated_group_call_disconnection_supported | To test the valid behaviour of the CMCE module of the IUT during colliding calls, when operating in group call mode. |
| NWK/CMCE/GC/BV/MA/ | Group_call_supported | To test the valid behaviour of the CMCE module of the IUT during call maintenance, when operating in group call mode. |
| NWK/CMCE/GC/BV/MA/TC/ | Group_call_supported | To test the valid behaviour of the CMCE module of the IUT during transmission control, when operating in group call mode. |
| NWK/CMCE/GC/BV/MA/CR/ | Group_call_supported | To test the valid behaviour of the CMCE module of the IUT during call restoration, when operating in group call mode. |
| NWK/CMCE/GC/BV/CD/ | Group_call_supported | To test the valid behaviour of the CMCE module of the IUT during call disconnection, when operating in group call mode. |
| NWK/CMCE/GC/TI/ | Group_call_supported | To test the timers of the CMCE module of the IUT, when operating in group call mode. |
| NWK/MM/ | MM_supported | Check the dynamic behaviour requirements of the MM protocol. |
| NWK/MM/CA/ | MM_supported | To test the basic capabilities of the MM module of the IUT. |
| NWK/MM/BV/ | MM_supported | To test the valid behaviour of the MM module of the IUT. |
| NWK/MM/BV/RE/ | MM_supported | To test the valid registration behaviour of the MM module of the IUT. |
| NWK/MM/BV/AT/ | SwMI_or_IUT_initiated_group_ID_handling_supported | To test the valid attachment/detachment of group identities behaviour of the MM module of the IUT. |
| NWK/MLE/ | Applicable_to_all_IUTs | Check the dynamic behaviour requirements of the MLE protocol. |
| NWK/MLE/CA/ | Applicable_to_all_IUTs | Check basic MLE protocol capabilities. |
| NWK/MLE/CA/CR/ | Applicable_to_all_IUTs | Check cell re-selection basic features. |
| NWK/MLE/BV/ | Individual_or_group_call_or_neighbour_cell_enquiry_supported | Check MLE valid behaviour. |
| NWK/MLE/BV/CR/ | Individual_or_group_call_supported | Check cell re-selection procedures. |
| NWK/MLE/BV/NB/ | Neighbour_cell_enquiry_supported | Check neighbour cell enquiry procedure. |
| NWK/MLE/BV/RE/ | Individual_or_group_call_supported | Check CMCE call restoration after cell re-selection. |
| NWK/MLE/TI/ | Individual_call_supported | Check timers during cell re-selection. |

Table 46: Test suite structure for layer 3 of a Gateway

| Test Suite Structure | | |
|---|------------------------|---|
| Suite Name: DMO_GATE | | |
| Standards Ref.: ETS 300 396-5 [19] | | |
| PICS Ref.: ETS 300 396-8-3 [24] | | |
| PIXIT Ref.: ETS 300 394-4-10 [36], annex B | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| DMO_GATE/ | Applicable_to_Gateways | Check the dynamic behaviour requirements of the network layer protocols of a Gateway. |
| DMO_GATE/GWCC/ | GWCC_supported | To test the dynamic behaviour requirements of the GWCC protocol. |
| DMO_GATE/GWCC/CM/ | Circuit_Mode_Call | To test the valid behaviour of the GWCC module when operating a CM call. |
| DMO_GATE/GWCC/CM/BV/ | Circuit_Mode_Call | To test the valid behaviour of the GWCC module. |
| DMO_GATE/GWCC/CM/BV/SU/ | Circuit_Mode_Call | To test the basic capabilities of the GWCC module of the IUT during call setup. |
| DMO_GATE/GWCC/CM/BV/CD/ | Circuit_Mode_Call | To test the basic capabilities of the GWCC module of the IUT during call disconnection. |
| DMO_GATE/GWCC/CM/BV/CC/ | Circuit_Mode_Call | To test the basic capabilities of the GWCC module of the IUT during call collision. |
| DMO_GATE/GWCC/CM/BV/CT/ | Circuit_Mode_Call | To test the basic capabilities of the GWCC module of the IUT during call transmission. |
| DMO_GATE/GWCC/CM/BV/TI/ | Circuit_Mode_Call | To test the timers of the GWCC module of the IUT. |
| DMO_GATE/GWMM/ | GWMM_ILU | To test the dynamic behaviour requirements of the GWMM protocol. |
| DMO_GATE/GWMM/CA/ | GWMM_ILU | To test the basic capabilities of the GWMM module of the IUT. |
| DMO_GATE/GWMM/BV/ | GWMM_ILU | To test the valid behaviour of the GWMM module of the IUT. |

5.4.3.2 Test case index for layer 3

Table 47: Test case index for layer 3

| Test Case Index | | | |
|-----------------------|-------------------------|--|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| NWK/CMCE/IC/CA/SU/ | NWK_CMCE_IC_CA_SU_01 | Hook_signalling_supported | Incoming individual call to IUT, On-hook/Off-hook signalling, verify IUT sends U-ALERT. |
| NWK/CMCE/IC/CA/SU/ | NWK_CMCE_IC_CA_SU_02 | Hook_signalling_supported | Incoming individual call to IUT, Hook signalling, verify IUT sends U-ALERT and U-CONNECT. |
| NWK/CMCE/IC/CA/SU/ | NWK_CMCE_IC_CA_SU_03 | Direct_signalling_supported | Incoming individual call to IUT, Direct signalling, verify IUT sends U-CONNECT. |
| NWK/CMCE/IC/CA/SU/ | NWK_CMCE_IC_CA_SU_04 | Hook_signalling_supported | IUT sends outgoing call using U-SETUP, accepts D-ALERT in response. |
| NWK/CMCE/IC/CA/SU/ | NWK_CMCE_IC_CA_SU_05 | Direct_signalling_supported | IUT sends U-SETUP for Direct signalling, individual mode outgoing call, accepts D-CONNECT. |
| NWK/CMCE/IC/CA/CD/ | NWK_CMCE_IC_CA_CD_01 | User_initiated_individual_call_disconnection_supported | Incoming call from tester, IUT initiates clearing, sending U-DISCONNECT. |
| NWK/CMCE/IC/CA/CD/ | NWK_CMCE_IC_CA_CD_02 | Individual_call_supported | Incoming call from tester, call released by tester with D-RELEASE. |
| NWK/CMCE/IC/CA/CD/ | NWK_CMCE_IC_CA_CD_03 | Individual_call_supported | Incoming call from tester, tester initiates clearing sending D-DISCONNECT, expects U-RELEASE in response. |
| NWK/CMCE/IC/BV/OC/ | NWK_CMCE_IC_BV_OC_01 | Hook_signalling_supported | IUT establishes outgoing call with hook signalling, tester replies with D-CALL-PROCEEDING, D-ALERT and then D-CONNECT. |
| NWK/CMCE/IC/BV/OC/ | NWK_CMCE_IC_BV_OC_02 | Hook_signalling_supported | IUT establishes outgoing call with hook signalling, tester replies with D-CONNECT. |
| NWK/CMCE/IC/BV/OC/ | NWK_CMCE_IC_BV_OC_03 | Direct_signalling_supported | IUT establishes outgoing call with direct signalling, tester replies with D-CALL-PROCEEDING followed by D-CONNECT. |
| NWK/CMCE/IC/BV/CC/ | NWK_CMCE_IC_BV_CC_01 | Hook_signalling_supported | Call Collision between 2 calls using hook signalling - IUT keeps one and releases the other. |
| NWK/CMCE/IC/BV/CC/ | NWK_CMCE_IC_BV_CC_02 | Direct_signalling_supported | Call Collision between 2 calls using direct signalling - IUT keeps one and releases the other. |
| NWK/CMCE/IC/BV/MA/TC/ | NWK_CMCE_IC_BV_MA_TC_01 | Direct_signalling_supported | Direct signalling call established, check IUT's u-plane is transmitting. |
| NWK/CMCE/IC/BV/MA/TC/ | NWK_CMCE_IC_BV_MA_TC_02 | Call_setup_supported | Call established with TX permission for IUT, IUT sends U-TX-CEASED and stops transmitting. |
| NWK/CMCE/IC/BV/MA/TC/ | NWK_CMCE_IC_BV_MA_TC_03 | Call_setup_supported | Call established with TX permission for IUT, IUT sends TX-CEASED, receives TX-GRANTED but granted to another user, check IUT doesn't transmit. |
| NWK/CMCE/IC/BV/MA/TC/ | NWK_CMCE_IC_BV_MA_TC_04 | Call_setup_supported | Call established with no TX permission for IUT, IUT requests and is granted TX permission, check IUT does transmit. |

| Test Case Index | | | |
|-----------------------|-------------------------|--|---|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| NWK/CMCE/IC/BV/MA/TC/ | NWK_CMCE_IC_BV_MA_TC_05 | Call_setup_supported | Call established to IUT, no TX permission granted, IUT requests TX permission, is refused, check IUT is still receiving. |
| NWK/CMCE/IC/BV/MA/TC/ | NWK_CMCE_IC_BV_MA_TC_06 | Hook_signalling_supported | IUT sends outgoing call indicating Hook signalling, receives D-ALERT and D-CONNECT with TX permission granted to another user. |
| NWK/CMCE/IC/TI/ | NWK_CMCE_IC_TI_01 | Hook_signalling_supported | Test Duration of T301, IUT should clear call if it doesn't receive D-CONNECT-ACK before T301 expires, during incoming individual call, hook signalling. |
| NWK/CMCE/IC/TI/ | NWK_CMCE_IC_TI_02 | Hook_signalling_supported | Test Duration of T310 for individual call, hook signalling. IUT should clear call if call doesn't end before T310 expires. T310 set by tester. |
| NWK/CMCE/IC/TI/ | NWK_CMCE_IC_TI_03 | Direct_signalling_supported | Test Duration of T301, IUT should clear call if it doesn't receive D-CONNECT-ACK before T301 expires, during incoming individual call, direct signalling. |
| NWK/CMCE/IC/TI/ | NWK_CMCE_IC_TI_04 | Direct_signalling_supported | Test Duration of T310 for individual call, direct signalling. IUT should clear call if call doesn't end before T310 expires. T310 set by tester. |
| NWK/CMCE/IC/TI/ | NWK_CMCE_IC_TI_05 | Hook_signalling_supported | Test duration of T303, IUT should clear call if it doesn't receive a response to its U-SETUP before T303 expires, during outgoing individual call using hook signalling. |
| NWK/CMCE/IC/TI/ | NWK_CMCE_IC_TI_06 | Hook_signalling_supported | Test duration of T302, IUT should clear call if it doesn't receive a D-CONNECT in response to its U-SETUP before T302 expires, during outgoing individual call using hook signalling. |
| NWK/CMCE/IC/TI/ | NWK_CMCE_IC_TI_07 | Direct_signalling_supported | Test duration of T303, IUT should clear call if it doesn't receive a response to its U-SETUP before T303 expires, during outgoing individual call using direct signalling. |
| NWK/CMCE/IC/TI/ | NWK_CMCE_IC_TI_08 | Direct_signalling_supported | Test duration of T302, IUT should clear call if it doesn't receive a D-CONNECT in response to its U-SETUP before T302 expires, during outgoing individual call using direct signalling. |
| NWK/CMCE/IC/TI/ | NWK_CMCE_IC_TI_10 | Hook_signalling_supported | Receive outgoing hook signalling call, send a D-ALERT in response, but before continuing with a D-CONNECT, restart the call set-up timer T302 by sending a D-INFO. |
| NWK/CMCE/IC/TI/ | NWK_CMCE_IC_TI_11 | Call_setup_supported | Test call restoration timer T306. |
| NWK/CMCE/IC/TI/ | NWK_CMCE_IC_TI_12 | User_initiated_individual_call_disconnection_supported | Test call disconnect timer T308. |

| Test Case Index | | | |
|-----------------------|-------------------------|-----------------------------|---|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| NWK/CMCE/IC/CI/ | NWK_CMCE_IC_CI_13 | Call_setup_supported | Establish incoming call, receive a U-CONNECT in response, respond with a D-CONNECT-ACK, restart the call time-out T310 by sending a D-INFO, and check that T310 is reset. |
| NWK/CMCE/GC/CA/SU/ | NWK_CMCE_GC_CA_SU_01 | Group_call_supported | IUT establishes outgoing point to multipoint call with direct signalling, tester replies with D-CALL-PROCEEDING followed by D-CONNECT. |
| NWK/CMCE/GC/CA/CD/ | NWK_CMCE_GC_CA_CD_01 | Group_call_supported | Call disconnection capability test. |
| NWK/CMCE/GC/BV/OC/ | NWK_CMCE_GC_BV_OC_01 | Group_call_supported | Outgoing call, normal case. |
| NWK/CMCE/GC/BV/CC/ | NWK_CMCE_GC_BV_CC_01 | Group_call_supported | Colliding calls. |
| NWK/CMCE/GC/BV/MA/TC/ | NWK_CMCE_GC_BV_MA_TC_01 | Group_call_supported | Test behaviour after giving TX Granted permission in D-CONNECT. |
| NWK/CMCE/GC/BV/MA/TC/ | NWK_CMCE_GC_BV_MA_TC_02 | Group_call_supported | Call established with TX permission for IUT, IUT sends U-TX-CEASED and stops transmitting. |
| NWK/CMCE/GC/BV/MA/TC/ | NWK_CMCE_GC_BV_MA_TC_03 | Group_call_supported | Call established with TX permission for IUT, IUT sends TX-CEASED, receives TX-GRANTED but granted to another user, check IUT doesn't transmit. |
| NWK/CMCE/GC/BV/MA/TC/ | NWK_CMCE_GC_BV_MA_TC_04 | Group_call_supported | Check that IUT can make TX request and accepts TX Granted. |
| NWK/CMCE/GC/BV/MA/TC/ | NWK_CMCE_GC_BV_MA_TC_05 | Group_call_supported | Check that IUT behaves correctly having received TX Not Granted to its TX Grant request. |
| NWK/CMCE/GC/BV/MA/TC/ | NWK_CMCE_GC_BV_MA_TC_06 | Group_call_supported | Check IUT behaviour after D-TX INTERRUPT where TX is granted to another user. |
| NWK/CMCE/GC/BV/MA/TC/ | NWK_CMCE_GC_BV_MA_TC_07 | Group_call_supported | Check IUT behaviour after D-TX WAIT reception. |
| NWK/CMCE/GC/BV/MA/CR/ | NWK_CMCE_GC_BV_MA_CR_01 | Group_call_supported | Call restoration. |
| NWK/CMCE/GC/BV/CD/ | NWK_CMCE_GC_BV_CD_01 | Group_call_supported | Call released by tester with D-RELEASE. |
| NWK/CMCE/GC/CI/ | NWK_CMCE_GC_CI_01 | Group_call_supported | Test call length timer T310 by pressing the IUT tangent. |
| NWK/CMCE/GC/CI/ | NWK_CMCE_GC_CI_02 | Group_call_supported | Test call initiated timer T303. |
| NWK/CMCE/GC/CI/ | NWK_CMCE_GC_CI_03 | Group_call_supported | Test call set-up timer T302. |
| NWK/CMCE/GC/CI/ | NWK_CMCE_GC_CI_04 | Group_call_supported | Test call length timer T310 using outgoing call. |
| NWK/CMCE/GC/CI/ | NWK_CMCE_GC_CI_05 | Group_call_supported | Test call time-out timer T310 reset after D-INFO PDU. |
| NWK/CMCE/GC/CI/ | NWK_CMCE_GC_CI_06 | Group_call_supported | Test call restoration timer T307. |
| NWK/CMCE/GC/CI/ | NWK_CMCE_GC_CI_07 | Group_call_supported | Test call transmission timer T311. |
| NWK/MM/CA/ | NWK_MM_CA_02 | MM_supported | Power on with registration capability. |
| NWK/MM/CA/ | NWK_MM_CA_03 | Direct_call_setup_supported | User initiated registration capability. |
| NWK/MM/BV/RE/ | NWK_MM_BV_RE_01 | MM_supported | Registration to home network. |

| Test Case Index | | | |
|-------------------------|---------------------------|--|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| NWK/MM/BV/RE/ | NWK_MM_BV_RE_02 | MM_supported | Roaming registration. |
| NWK/MM/BV/RE/ | NWK_MM_BV_RE_07 | MM_supported | SwMI initiated registration. |
| NWK/MM/BV/AT/ | NWK_MM_BV_AT_01 | SwMI_initiated_group_ID_handling_with_report_request_supported | Check SwMI initiated attachment of group IDs. |
| NWK/MM/BV/AT/ | NWK_MM_BV_AT_02 | SwMI_initiated_group_ID_handling_with_report_request_supported | Check SwMI initiated detachment of group IDs. |
| NWK/MM/BV/AT/ | NWK_MM_BV_AT_03 | IUT_initiated_group_ID_handling_supported | Check IUT initiated attachment of group IDs. |
| NWK/MM/BV/AT/ | NWK_MM_BV_AT_04 | IUT_initiated_group_ID_handling_supported | Check IUT initiated detachment of group IDs. |
| NWK/MLE/CA/CR/ | NWK_MLE_CA_CR_01 | Applicable_to_all_IUTs | Check initial cell selection. |
| NWK/MLE/CA/CR/ | NWK_MLE_CA_CR_02 | Applicable_to_all_IUTs | Check undeclared cell re-selection. |
| NWK/MLE/CA/CR/ | NWK_MLE_CA_CR_03 | Individual_call_supported | Check unannounced cell re-selection. |
| NWK/MLE/CA/CR/ | NWK_MLE_CA_CR_04 | Individual_call_supported | Check announced type 3 cell re-selection. |
| NWK/MLE/BV/CR/ | NWK_MLE_BV_CR_01 | Individual_call_supported | Check cell re-selection when a radio link failure occurs. |
| NWK/MLE/BV/CR/ | NWK_MLE_BV_CR_02 | Group_call_supported | Check unannounced cell re-selection with CMCE call restoration. |
| NWK/MLE/BV/CR/ | NWK_MLE_BV_CR_03 | Individual_call_supported | Check announced type 3 cell re-selection with CMCE call restoration. |
| NWK/MLE/BV/NB/ | NWK_MLE_BV_NB_02 | Individual_call_and_neighbour_cell_enquiry_supported | Check that neighbour cell enquiry is used only when supported by the serving cell. |
| NWK/MLE/BV/RE/ | NWK_MLE_BV_RE_01 | Group_call_supported | Check CMCE call restoration when cell re-selection within the same location area. |
| NWK/MLE/BV/RE/ | NWK_MLE_BV_RE_03 | Individual_call_supported | Check CMCE call restoration that is failed by the tester. |
| NWK/MLE/TI/ | NWK_MLE_TI_01 | Individual_call_supported | Check type 3 cell re-selection with time-out of timer T.370. |
| NWK/MLE/TI/ | NWK_MLE_TI_02 | Individual_call_supported | Check announced type 3 re-selection with BS controlled delay. |
| DMO_GATE/GWCC/CM/BV/SU/ | DMO_GATE_GWCC_CM_BV_SU_01 | Outgoing_CM_Call | Individual outgoing call set-up, TX granted to the Gateway. |
| DMO_GATE/GWCC/CM/BV/SU/ | DMO_GATE_GWCC_CM_BV_SU_02 | Outgoing_CM_Call | Individual outgoing call set-up, TX granted to the called party. |
| DMO_GATE/GWCC/CM/BV/SU/ | DMO_GATE_GWCC_CM_BV_SU_10 | Outgoing_CM_Call | Individual outgoing call set-up (without D-CALL PROCEEDING), TX granted to no party. |
| DMO_GATE/GWCC/CM/BV/CD/ | DMO_GATE_GWCC_CM_BV_CD_01 | Outgoing_CM_Call | Check disconnection from master DM-MS. |
| DMO_GATE/GWCC/CM/BV/CD/ | DMO_GATE_GWCC_CM_BV_CD_02 | Circuit_Mode_Call | Check disconnection initiated by the SwMI. |
| DMO_GATE/GWCC/CM/BV/CD/ | DMO_GATE_GWCC_CM_BV_CD_03 | Circuit_Mode_Call | Check release initiated by the network. |
| DMO_GATE/GWCC/CM/BV/CC/ | DMO_GATE_GWCC_CM_BV_CC_01 | Incoming_Outgoing_Individual_Call | Individual call collision. |
| DMO_GATE/GWCC/CM/BV/CC/ | DMO_GATE_GWCC_CM_BV_CC_02 | Incoming_Outgoing_Group_Call | Group call collision. |
| DMO_GATE/GWCC/CM/BV/CT/ | DMO_GATE_GWCC_CM_BV_CT_01 | Outgoing_CM_Call_ITC | End of transmission from DM-MS, or pre-emption from Gate for ongoing call. |
| DMO_GATE/GWCC/CM/BV/CT/ | DMO_GATE_GWCC_CM_BV_CT_02 | Outgoing_CM_Call | End of transmission from V+D. |

| Test Case Index | | | |
|-----------------------------|-------------------------------|------------------------------|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| DMO_GATE/GWCC/ CM/BV/CT/ | DMO_GATE_GWCC _CM_BV_CT_03 | Incoming_Individual_Call | Incoming V+D transmission during DM channel reservation TX granted to another party. |
| DMO_GATE/GWCC/ CM/BV/CT/ | DMO_GATE_GWCC _CM_BV_CT_04 | Incoming_Individual_Call | Transmission interruption during channel occupation (Gateway master). |
| DMO_GATE/GWCC/ CM/BV/CT/ | DMO_GATE_GWCC _CM_BV_CT_05 | Incoming_Individual_Call_ITD | Demand for transmission from DM-MS during channel reservation. |
| DMO_GATE/GWCC/ CM/BV/CT/ | DMO_GATE_GWCC _CM_BV_CT_06 | Incoming_Individual_Call | V+D permission to transmit withdrawn. |
| DMO_GATE/GWCC/ CM/BV/CT/ | DMO_GATE_GWCC _CM_BV_CT_08 | Incoming_Individual_Call_ITD | Demand for transmission from DM-MS during channel occupation. |
| DMO_GATE/GWCC/ CM/BV/CT/ | DMO_GATE_GWCC _CM_BV_CT_09 | Outgoing_CM_Call | Transmission interruption during channel occupation (Gateway slave). |
| DMO_GATE/GWCC/ CM/BV/TI/ | DMO_GATE_GWCC _CM_BV_TI_02 | Incoming_Individual_Call | Check T310 time out. |
| DMO_GATE/GWCC/ CM/BV/TI/ | DMO_GATE_GWCC _CM_BV_TI_04 | Outgoing_CM_Call | Check T303 time out. |
| DMO_GATE/GWCC/ CM/BV/TI/ | DMO_GATE_GWCC _CM_BV_TI_05 | Outgoing_CM_Call | Check T302 time out. |
| DMO_GATE/GWMM/ CA/ | DMO_GATE_GWMM _CA_02 | GWMM_ILU | MM initiates registration. |
| DMO_GATE/GWMM/ BV/ | DMO_GATE_GWMM _BV_01 | GWMM_ILU | Check U-LOCATION UPDATE DEMAND PDU parameters. |
| DMO_GATE/GWMM/ BV/ | DMO_GATE_GWMM _BV_04 | GWMM_ILU | Check U-LOCATION UPDATE DEMAND PDU when having received the D-LOCATION UPDATE COMMAND PDU. |

5.4.3.3 Test case selection expression definitions for layer 3

Table 48: Test case selection expression definitions for layer 3

| Test Case Selection Expression Definitions | | |
|--|---|---|
| Expression Name | Selection Expression | Comments |
| Applicable_to_all_IUTs | TBR_RT_UM_MS | IUT is TETRA V+D MS. |
| CMCE_supported | PIC_CMCE_SUPPORTED | IUT supports CMCE for non-Gateway. |
| Individual_call_supported | PIC_INDIVIDUAL_CALL_SUPPORTED | IUT supports individual call. |
| Group_call_supported | PIC_GROUP_CALL_SUPPORTED | IUT supports group call. |
| Hook_signalling_supported | PIC_ON_OFF_HOOK_SIGNALLING_SUPPORTED | IUT supports on/off hook signalling. |
| Direct_signalling_supported | PIC_DIRECT_SETUP_SIGNALLING_SUPPORTED | IUT supports direct setup signalling. |
| Call_setup_supported | PIC_DIRECT_SETUP_SIGNALLING_SUPPORTED OR PIC_ON_OFF_HOOK_SIGNALLING_SUPPORTED | Used in MM and CMCE. |
| Direct_call_setup_supported | PIC_DIRECT_SETUP_SIGNALLING_SUPPORTED | Used in MM. |
| User_initiated_individual_call_disconnection_supported | PIC_USER_INITIATED_INDIVIDUAL_CALL_DISCONNECTION_SUPPORTED | Used in CMCE. |
| MM_supported | PIC_CMCE_SUPPORTED | IUT supports MM for non-Gateway. |
| SwMI_initiated_group_ID_handling_with_report_request_supported | PIC_MM_SWMI_INITIATED_GID_REPORT_REQUEST_SUPPORTED | Used in MM. |
| IUT_initiated_group_ID_handling_supported | PIC_MM_IUT_INITIATED_GID_HANDLING_SUPPORTED | Used in MM. |
| SwMI_or_IUT_initiated_group_ID_handling_supported | PIC_MM_SWMI_INITIATED_GID_REPORT_REQUEST_SUPPORTED OR PIC_MM_IUT_INITIATED_GID_HANDLING_SUPPORTED | Used in MM. |
| Neighbour_cell_enquiry_supported | PIC_NEIGHBOUR_CELL_ENQUIRY_SUPPORTED | Used in MLE. |
| Individual_call_and_neighbour_cell_enquiry_supported | (PIC_INDIVIDUAL_CALL_SUPPORTED AND PIC_NEIGHBOUR_CELL_ENQUIRY_SUPPORTED) | Used in MLE. |
| Individual_or_group_call_supported | PIC_INDIVIDUAL_CALL_SUPPORTED OR PIC_GROUP_CALL_SUPPORTED | Used in MLE. |
| Individual_or_group_call_or_neighbour_cell_enquiry_supported | PIC_INDIVIDUAL_CALL_SUPPORTED OR PIC_GROUP_CALL_SUPPORTED OR PIC_NEIGHBOUR_CELL_ENQUIRY_SUPPORTED | Used in MLE. |
| Applicable_to_Gateways | PIC_GATEWAY | IUT is a Gateway. |
| GWCC_supported | PIC_GWCC | GWCC supported. |
| Circuit_Mode_Call | PIC_CIRCUIT_MODE_CALL | IUT supports circuit mode call. |
| Outgoing_CM_Call | PIC_INCOMING_DM_CALL AND PIX_IMP_U_SETUP_PDU | True if the IUT supports outgoing call |
| Incoming_Outgoing_Individual_Call | PIC_ACCEPT_INDIVIDUAL_CALL AND PIC_INCOMING_VD_CALL AND PIC_INCOMING_DM_CALL AND PIX_IMP_U_SETUP_PDU | True if the IUT accepts incoming individual and outgoing call from V+D. |
| Incoming_Outgoing_Group_Call | PIC_ACCEPT_GROUP_CALL AND PIC_INCOMING_VD_CALL AND PIC_INCOMING_DM_CALL AND PIX_IMP_U_SETUP_PDU | True if the IUT accepts incoming group and outgoing call from V+D. |

| Test Case Selection Expression Definitions | | |
|--|---|---|
| Expression Name | Selection Expression | Comments |
| Outgoing_CM_Call_ITC | PIC_INCOMING_DM_CALL AND PIX_IMP_U_SETUP_PDU AND PIX_IMP_U_TX_CEASED_PDU | True if the IUT supports outgoing call (i.e. incoming call from DM-MS) and it is possible to cause the IUT to send a U-TX CEASED PDU. |
| Incoming_Individual_Call | PIC_ACCEPT_INDIVIDUAL_CALL AND PIC_INCOMING_VD_CALL | True if the IUT accepts incoming individual call from V+D. |
| Incoming_Individual_Call_ITD | PIC_ACCEPT_INDIVIDUAL_CALL AND PIC_INCOMING_VD_CALL AND PIX_IMP_U_TX_DEMAND_PDU | True if the IUT accepts incoming individual call from V+D and it is possible to cause the IUT to send a U-TX DEMAND PDU. |
| GWMM_ILU | PIC_GWMM AND PIX_IMP_U_LOCATION_UPDATE_P DU | True if GW MM supported. |

5.4.3.4 Test suite parameter definitions for layer 3

Table 49: Test suite parameter definitions for layer 3

| Test Suite Parameter Declarations | | | |
|--|-------------------|---|---|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| TBR_RT_UM_MS | BOOLEAN | A.3.1, table A.2/2 | TETRA V+D MS. |
| PIC_CMCE_SUPPORTED | BOOLEAN | A.3.1, table A.5/1 | CMCE supported. |
| PIC_MM_SUPPORTED | BOOLEAN | A.3.1, table A.5/2 | MM supported. |
| PIC_GWCC | BOOLEAN | A.3.1, table A.5/8 | GWCC supported. |
| PIC_GWMM | BOOLEAN | A.3.1, table A.5/9 | GWMM supported. |
| PIC_ON_OFF_HOOK_SIGN ALLING_SUPPORTED | BOOLEAN | A.3.4.1.1, table A.29/1 | Indicate whether on/off hook signalling is supported. |
| PIC_DIRECT_SETUP_SIGN ALLING_SUPPORTED | BOOLEAN | A.3.4.1.1, table A.29/2 | Indicate if direct set-up signalling is supported. |
| PIC_INDIVIDUAL_CALL_SU PPORTED | BOOLEAN | A.3.4.1.1, table A.29/1 | IUT supports individual call. |
| PIC_GROUP_CALL_SUPP ORTED | BOOLEAN | A.3.4.1.1, table A.29/2 | IUT supports group call. |
| PIC_USER_INITIATED_INDI VIDUAL_CALL_DISCONNE CTION_SUPPORTED | BOOLEAN | A.3.4.1.1, table A.37/1 | IUT supports user initiated individual call disconnection. |
| PIC_CIRCUIT_MODE_CALL | BOOLEAN | A.3.4.1.2, table A.41/1 | IUT supports circuit mode call. |
| PIC_ACCEPT_INDIVIDUAL _CALL | BOOLEAN | A.3.4.1.2, table A.42/1 | IUT accepts individual circuit mode calls. |
| PIC_ACCEPT_GROUP_CA LL | BOOLEAN | A.3.4.1.2, table A.42/2 | IUT accepts group circuit mode calls. |
| PIC_INCOMING_VD_CALL | BOOLEAN | A.3.4.1.2, table A.42/3 | IUT accepts incoming calls from V+D. |
| PIC_INCOMING_DM_CALL | BOOLEAN | A.3.4.1.2, table A.42/4 | IUT accepts incoming calls from DM-MS. |
| PIC_MM_SWMI_INITIATED _GID_REPORT_REQUEST _SUPPORTED | BOOLEAN | A.3.4.2.1, table A.50/3 | SwMI initiated group ID attachment/detachment report request. |
| PIC_MM_IUT_INITIATED_G ID_HANDLING_SUPPORTE D | BOOLEAN | A.3.4.2.1, table A.50/2 | IUT initiated group ID attachment/detachment. |
| PIC_NEIGHBOUR_CELL_E NQUIRY_SUPPORTED | BOOLEAN | A.3.4.3, table A.54/3 | Neighbour cell enquiry supported. |
| PIC_GATEWAY | BOOLEAN | A.4.1, table A.69/4 | IUT is a Gateway. |
| PIX_CHANNEL_1 | MainCarrierNoType | B.2.3.3, table B.7/1 | Define the channel that the MS initially tries to camp on to. |
| PIX_CHANNEL_2 | MainCarrierNoType | B.2.3.3, table B.7/2 | Another channel that the MS is capable of receiving. |
| PIX_COUNTRY_CODE | MCC_Type | B.2.3.2, table B.5/1; B.2.3.3, table B.7/3 | Home country code of the MS. |

| Test Suite Parameter Declarations | | | |
|---|------------------|--|---|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIX_NETWORK_CODE | MNC_Type | B.2.3.2, table B.5/2; B.2.3.3, table B.7/4 | Home network code of the MS. |
| PIX_LOCATION_AREA | LocationAreaType | B.2.3.2, table B.5/3; B.2.3.3, table B.7/5 | Home location area of the MS. |
| PIX_NEW_LOCATION_AREA | LocationAreaType | B.2.3.2, table B.5/4; B.2.3.3, table B.7/6 | A location area outside the MS home location area. |
| PIX_MS_TEI | TEI_Type | B.2.3.2, table B.5/5 | TEI of the IUT, 60 bits. |
| PIX_MS_ITSI | ITSI_Type | B.2.3.1, table B.3/4; B.2.3.1, table B.4/2 B.2.3.2, table B.5/6; B.2.3.2, table B.6/1 B.2.3.3, table B.7/7 | ITSI of the IUT. |
| PIX_DM_MS_MNI | MNI_Type | B.2.3.1, table B.4/3 | Value of the MNI of the DM-MS |
| PIX_DM_MS_SSI | SSI_Type | B.2.3.1, table B.4/4 | Value of the SSI of the DM-MS |
| PIX_IMP_U_SETUP_PDU | BOOLEAN | B.2.3.1, table B.4/5 | It is possible to cause the IUT to initiate an outgoing call. |
| PIX_IMP_U_TX_DEMAND_PDU | BOOLEAN | B.2.3.1, table B.4/6 | It is possible to cause the IUT to send a U-TX DEMAND PDU. |
| PIX_IMP_U_TX_CEASED_PDU | BOOLEAN | B.2.3.1, table B.4/7 | It is possible to cause the IUT to send a U-TX CEASED PDU. |
| PIX_IMP_U_LOCATION_UPDATE_PDU | BOOLEAN | B.2.3.2, table B.6/2 | It is possible to cause the IUT to send a U-LOCATION UPDATE PDU |
| PIX_T303 | INTEGER | B.2.3.1, table B.3/1 B.2.3.1, table B.4/1 | Duration of the T303 in the IUT in seconds. |
| PIX_T308 | INTEGER | B.2.3.1, table B.3/2 | Duration of the T308 in the IUT in seconds. |
| PIX_T311 | INTEGER | B.2.3.1, table B.3/3 | Duration of the T311 in the IUT in seconds. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.4.4 Security test specification

5.4.4.1 Test suite structure for Um security

Table 50: Test suite structure for Um security

| Test Suite Structure | | |
|---|-----------------------------|--|
| Suite Name: Security | | |
| Standards Ref.: EN 300 392-7 [2] | | |
| PICS Ref.: ETS 300 394-5-1 [13] | | |
| PIXIT Ref.: ETS 300 394-5-3 [15], annex C | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| Sec_VD/ | VD_Security_Supp | To test the behaviour of the Voice + Data security module of the IUT. |
| Sec_VD/AU/ | VD_Auth_Supp | To test the V+D security module of the IUT, when operating the authentication at layer 3. |
| Sec_VD/AU/BV/ | VD_Auth_Supp | To test the valid behaviour of the V+D security module of the IUT, when operating the authentication. |
| Sec_VD/AU/BV/II/ | VD_Infrastructure_Auth_Supp | To test the valid behaviour of infrastructure initiated authentication procedures of the IUT for the V+D security protocols. |
| Sec_VD/AU/BV/TI/ | VD_Terminal_Auth_Supp | To test the valid behaviour of terminal initiated authentication procedures of the V+D security protocols. |
| Sec_VD/AU/BV/REG/ | VD_Auth_Supp | To test the valid behaviour of the authentication procedures of the V+D security protocols when authentication is initiated during registration. |
| Sec_VD/AU/BV/REG/TEI/ | VD_Auth_Supp | To test the valid behaviour of the authentication procedures of the V+D security protocols when authentication is initiated during registration. |
| Sec_VD/OTAR/ | VD_OTAR_Supp | To test the V+D security module of the IUT, when operating the OTAR procedures at layer 3. |
| Sec_VD/OTAR/BV/ | VD_OTAR_Supp | To test the valid behaviour of OTAR scenarios of the V+D security protocols. |
| Sec_VD/OTAR/BV/CCK/ | VD_OTAR_CCK_Supp | To test the valid behaviour of OTAR scenarios for CCK of the V+D security protocols. |
| Sec_VD/OTAR/BV/GCK/ | VD_OTAR_GCK_Supp | To test the valid behaviour of OTAR scenarios for GCK of the V+D security protocol. |
| Sec_VD/OTAR/BV/SCK/ | VD_OTAR_SCK_Supp | To test the valid behaviour of OTAR scenarios for SCK of the V+D security protocols. |
| Sec_VD/SED/ | VD_SED_Supp | To test the V+D security module of the IUT, when operating the enable and disable procedures at layer 3. |
| Sec_VD/SED/BV/ | VD_SED_Supp | To test the V+D security module of the IUT, when operating the valid behaviour of the enable and disable procedures. |
| Sec_VD/SED/PD/ | VD_SED_Supp | To test the V+D security module of the IUT, when operating the permanent disabling procedures. |
| Sec_VD/SED/BV/EN/ | VD_SED_Supp | To test the V+D security module of the IUT, when operating the enable procedures. |

5.4.4.2 Test case index for Um security

Table 51: Test case index for Um security

| Test Case Index | | | |
|-----------------------|-------------------------|------------------------------|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| Sec_VD/AU/BV/II/ | Sec_VD_AU_BV_II_01 | VD_Infrastructure_Auth_Supp | SwMI (testset) authenticates MS (IUT). |
| Sec_VD/AU/BV/II/ | Sec_VD_AU_BV_II_02 | VD_Infrastructure_Auth_Supp | Mutual authentication initiated by SwMI (testset). |
| Sec_VD/AU/BV/II/ | Sec_VD_AU_BV_TI_01 | VD_Terminal_Auth_Supp | MS (IUT) authenticates SwMI (testset). |
| Sec_VD/AU/BV/II/ | Sec_VD_AU_BV_TI_02 | VD_Terminal_Auth_Supp | Mutual authentication initiated by MS (IUT). |
| Sec_VD/AU/BV/REG/ | Sec_VD_AU_BV_REG_01 | VD_Infrastructure_Auth_Supp | SwMI (testset) authenticates MS (IUT) during registration. |
| Sec_VD/AU/BV/REG/ | Sec_VD_AU_BV_REG_02 | VD_Terminal_Auth_LU_IMP_Supp | MS (IUT) authenticates SwMI (testset) during registration. |
| Sec_VD/AU/BV/REG/TEI/ | Sec_VD_AU_BV_REG_TEI_03 | VD_Terminal_Auth_LU_IMP_Supp | Authentication initiated by MS (IUT) during registration including TEI exchange and made mutual by SwMI (test system). |
| Sec_VD/AU/BV/REG/TEI/ | Sec_VD_AU_BV_REG_TEI_04 | VD_Infrastructure_Auth_Supp | SwMI (test system) authentication initiated during registration and made mutual by the MS (IUT) with TEI exchange. |
| Sec_VD/OTAR/BV/CCK/ | Sec_VD_OTAR_BV_CCK_01 | VD_OTAR_CCK_IMP_Supp | SwMI (testset) initiated OTAR current CCK provision. |
| Sec_VD/OTAR/BV/CCK/ | Sec_VD_OTAR_BV_CCK_03 | VD_OTAR_CCK_request_IMP_Supp | MS (IUT) initiated OTAR current CCK provision. |
| Sec_VD/OTAR/BV/GCK/ | Sec_VD_OTAR_BV_GCK_01 | VD_OTAR_GCK_request_Supp | MS (IUT) requests provision for GCK. |
| Sec_VD/OTAR/BV/GCK/ | Sec_VD_OTAR_BV_GCK_02 | VD_OTAR_GCK_Supp | SwMI (testset) provides GCK to MS (IUT). |
| Sec_VD/OTAR/BV/SCK/ | Sec_VD_OTAR_BV_SCK_01 | VD_OTAR_SCK_Supp | SwMI (testset) provides SCK to MS (IUT). |
| Sec_VD/SED/PD/ | Sec_VD_SED_BV_PD_02 | VD_Infrastructure_Auth_Supp | Permanently disable terminal (ITSI) with authentication. |
| Sec_VD/SED/BV/EN/ | Sec_VD_SED_BV_EN_01 | VD_Infrastructure_Auth_Supp | Enable terminal (TEI) with authentication. |
| Sec_VD/SED/BV/EN/ | Sec_VD_SED_BV_EN_05 | VD_SED_Non_Auth_Enable_Supp | Enable equipment (ITSI) without authentication. |

5.4.4.3 Test case selection expression definitions for Um security

Table 52: Test case selection expression definitions for Um security

| Test Case Selection Expression Definitions | | |
|--|--|--|
| Expression Name | Selection Expression | Comments |
| VD_Security_Supp | PIC_VD_SEC_SUPP AND PIX_VD_L3 | IUT supports V+D security. |
| VD_Auth_Supp | PIC_VD_AUTH_SUPP AND PIX_VD_L3 | IUT supports authentication. |
| VD_Infrastructure_Auth_Supp | PIC_VD_IAUTH_SUPP AND PIX_IMP_LOCATION_UPDATE_Type AND PIX_VD_L3 | Infrastructure initiated authentication supported. |
| VD_Terminal_Auth_Supp | PIC_VD_TAUTH_SUPP AND PIX_IMP_AUTHENTICATION_DEMAND AND PIX_IMP_LOCATION_UPDATE_Type AND PIX_VD_L3 | Terminal initiated authentication supported. |
| VD_Terminal_Auth_LU_IMP_Supp | PIC_VD_TAUTH_SUPP AND PIX_IMP_LOCATION_UPDATE_DEMAND AND AuthReq AND PIX_IMP_LOCATION_UPDATE_Type AND PIX_VD_L3 | Terminal initiated authentication during registration supported. |
| VD_OTAR_Supp | PIC_VD_OTAR_SUPP AND PIX_VD_L3 | IUT supports OTAR. |
| VD_OTAR_CCK_request_IMP_Supp | PIC_VD_OTAR_CCK_SUPP AND PIC_VD_OTAR_CCK_DEMAND_PDU_SUPP AND PIX_IMP_LOCATION_UPDATE_Type AND PIX_IMP_OTAR_CCK_DEMAND_Normal AND PIX_VD_L3 | IUT request CCK supported. |
| VD_OTAR_CCK_IMP_Supp | PIC_VD_OTAR_CCK_SUPP AND PIX_IMP_LOCATION_UPDATE_Type AND PIX_VD_L3 | CCK supported. |
| VD_OTAR_CCK_Supp | PIC_VD_OTAR_CCK_SUPP AND PIX_VD_L3 | CCK supported. |
| VD_OTAR_GCK_request_Supp | PIC_VD_OTAR_GCK_SUPP AND PIC_VD_OTAR_GCK_DEMAND_PDU_SUPP AND PIX_IMP_LOCATION_UPDATE_Type AND PIX_IMP_OTAR_GCK_DEMAND_Normal AND PIX_VD_L3 | IUT request GCK supported. |
| VD_OTAR_GCK_Supp | PIC_VD_OTAR_GCK_SUPP AND PIX_IMP_LOCATION_UPDATE_Type AND PIX_VD_L3 | GCK supported. |
| VD_OTAR_SCK_Supp | PIC_VD_OTAR_SCK_SUPP AND PIX_IMP_LOCATION_UPDATE_Type AND PIX_VD_L3 | SCK supported. |
| VD_SED_Supp | PIC_VD_SED_SUPP AND PIX_VD_L3 AND PIX_IMP_LOCATION_UPDATE_Type | Enable/Disable procedures supported. |
| VD_SED_Non_Auth_Enable_Supp | PIC_VD_SED_Enable_Non_Auth_SUPP AND PIX_VD_L3 AND PIX_IMP_LOCATION_UPDATE_Type | Enable without authentication procedure supported. |

5.4.4.4 Test suite parameter definitions for Um security

Table 53: Test suite parameter definitions for Um security

| Test Suite Parameter Declarations | | | |
|--|---------|-----------------------|---|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_VD_SEC_SUPP | BOOLEAN | A.3.1, table A.2 /7 | V+D security supported. |
| PIC_VD_AUTH_SUPP | BOOLEAN | A.3.5, table A.59/1 | Authentication supported. |
| PIC_VD_TAUTH_SUPP | BOOLEAN | A.3.5.1, table A.60/2 | Terminal initiated authentication supported. |
| PIC_VD_IAUTH_SUPP | BOOLEAN | A.3.5.1, table A.60/1 | Infrastructure initiated authentication supported. |
| PIC_VD_OTAR_SUPP | BOOLEAN | A.3.5, table A.59/2 | OTAR supported. |
| PIC_VD_OTAR_CCK_SUPP | BOOLEAN | A.3.5.2, table A.63/1 | CCK for OTAR. |
| PIC_VD_OTAR_GCK_SUPP | BOOLEAN | A.3.5.2, table A.63/2 | GCK for OTAR. |
| PIC_VD_OTAR_SCK_SUPP | BOOLEAN | A.3.5.2, table A.63/3 | SCK for OTAR. |
| PIC_VD_OTAR_CCK_DEM AND_PDU_SUPP | BOOLEAN | A.3.5.2, table A.64/6 | True if the IUT supports the CCK DEMAND PDU. |
| PIC_VD_OTAR_GCK_DEM AND_PDU_SUPP | BOOLEAN | A.3.5.2, table A.64/8 | True if the IUT supports the GCK DEMAND PDU. |
| PIC_VD_SED_SUPP | BOOLEAN | A.3.5, table A.59/3 | Secure enable/disable supported. |
| PIC_VD_SED_Enable_Non_Auth_SUPP | BOOLEAN | A.3.5.3, table A.66/5 | True if the IUT supports enabling without authentication. |
| PIX_IMP_AUTHENTICATION_DEMAND | BOOLEAN | B.2.4, table B.8/1 | Sending of U-AUTHENTICATION DEMAND PDU implemented. |
| PIX_IMP_LOCATION_UPDATE_Type | BOOLEAN | B.2.4, table B.8/2 | Sending of U-LOCATION UPDATE PDU implemented. |
| PIX_IMP_LOCATION_UPDATE_DEMAND_AuthReq | BOOLEAN | B.2.4, table B.8/3 | Sending of U-LOCATION UPDATE PDU containing an authentication demand implemented. |
| PIX_IMP_OTAR_CCK_DEMAND_Normal | BOOLEAN | B.2.4, table B.8/4 | Sending of U-OTAR CCK DEMAND PDU implemented. |
| PIX_IMP_OTAR_GCK_DEMAND_Normal | BOOLEAN | B.2.4, table B.8/5 | Sending of U-OTAR GCK DEMAND PDU implemented. |
| PIX_IMP_OTAR_SCK_DEMAND_1 | BOOLEAN | B.2.4, table B.8/6 | Sending of U-OTAR SCK DEMAND PDU requesting the provision of 1 SCK implemented. |
| PIX_VD_L3 | BOOLEAN | B.2.4, table B.9/1 | Testing the layer 3 of the security Voice + Data protocol. |

| Test Suite Parameter Declarations | | | |
|---|---------------------|----------------------|---|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIX_MS_ITSI | TSI_Type | B.2.4, table B.10/1 | ITSI of the IUT. |
| PIX_TEI | TEI_Type | B.2.4, table B.10/2 | TEI. |
| PIX_GSSI | GSSI_Type | B.2.4, table B.10/3 | GSSI. |
| PIX_RAND1 | RandomChallengeType | B.2.4, table B.11/1 | Value of Random challenge (RAND1). |
| PIX_RS | RandomSeedType | B.2.4, table B.11/2 | Value of the Random seed (RS). |
| PIX_RES2 | ResponseValueType | B.2.4, table B.11/3 | Value of the result RES2. |
| PIX_CURRENT_CCK | CCK_IdType | B.2.4, table B.12/1 | Value of the CCK of the current LA. |
| PIX_OTHER_CCK | CCK_IdType | B.2.4, table B.12/2 | Value of the CCK of another LA. |
| PIX_CURRENT_SCCK | SealedKeyType | B.2.4, table B.12/3 | Value of the sealed SCCK of the current LA. |
| PIX_OTHER_SCCK | SealedKeyType | B.2.4, table B.12/4 | Value of the sealed SCCK of another LA. |
| PIX_SCKN | SCK_NbrType | B.2.4, table B.12/5 | SCK number. |
| PIX_SCK_VN | SCK_VersionNbrType | B.2.4, table B.12/6 | SCK version number. |
| PIX_SSCK | SealedKeyType | B.2.4, table B.12/7 | Sealed SCK. |
| PIX_GCK_VN | GCK_VersionNbrType | B.2.4, table B.12/8 | GCK version number. |
| PIX_SGCK | SealedKeyType | B.2.4, table B.12/9 | Sealed GCK. |
| PIX_CURRENT_LA | LocationAreaType | B.2.4, table B.12/10 | Current location area. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5 Ud air interface test specification

5.5.1 DMO Mobile Station test specification

5.5.1.1 Physical layer test specification

5.5.1.1.1 Test case index for physical layer

Table 54: Test case index for physical layer

| Test Case Index | | | |
|--|---|---------------------------|--|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| 7.1.1.2 a) and F.5, table F.2 | 8.1, 8.1.1 a), b), b2) and d) | Dual_Ud_Um | To test that the output power corresponds to the declared single or highest power class. |
| 7.1.1.2 a) and F.5, table F.2 | 8.1, 8.1.1 a), b), b2) and d), and F.4, table F.1 | DO-MS | To test that the output power corresponds to the declared single or highest power class. |
| 7.1.1.2 a) and F.5, table F.2 | 8.1 and 8.1.1 c) | Dual_Ud_Um_Multiple_Class | To test that the output power corresponds to the declared lower power class(es). |
| 7.1.1.2 a) and F.5, table F.2 | 8.1, 8.1.1 c) and F.4, table F.1 | DO-MS_Multiple Class | To test that the output power corresponds to the declared lower power class(es). |
| 7.1.2.2 | 8.2 | DO-MS | To test the output power in the non-active transmit state. |
| 7.1.3.2 | 8.3 and F.4, table F.1 | DO-MS | To test the unwanted conducted emission over the useful part of the burst. |
| 7.1.4.2 | 8.4 | DO-MS | To test the unwanted conducted emission during switching transients. |
| 7.1.5.2 and F.5, table F.2 | 8.5 | Applicable_to_all_Ud_MSs | To test the unwanted conducted discrete spurious and wideband noise emission far from the carrier. |

| Test Case Index | | | |
|--|--------------------------------|--------------------------|--|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| 7.1.6.2 | 8.6 | DO-MS | To test the unwanted radiated emission in the active transmit state. |
| 7.1.7.2 | 8.7 and 8.7.1 | DO-MS | To test the unwanted conducted emission during LCH. |
| 7.1.8.2.1 | 8.8 and 8.8.1 | DO-MS | To test the MS transmitter intermodulation attenuation. |
| 7.2.2.2 and F.5, table F.2 | 9.2 and 9.2.1 | DO-MS | To test the nominal error rate. ETS 300 394-1 [8], table A.2; nominal error and F.5, table F.2: - TCH/7,2, DR50, - 85 dBm, - TCH/7,2, STAT, - 20 dBm. |
| 7.2.3.2 and F.5, table F.2 | 9.3 and 9.3.1 | DO-MS | To test the dynamic reference sensitivity performance. ETS 300 394-1 [8], table A.2; sensitivity and F.5, table F.2: - SCH/F, DR50, - 103 (- 97) dBm, - SCH/S, DR50, - 103 dBm. |
| 7.2.3.2 and F.5, table F.2 | 9.3 and 9.3.1 | DO-MS_Protected_Data | To test the dynamic reference sensitivity performance of a DMO MS supporting protected circuit mode data. ETS 300 394-1 [8], table A.2; sensitivity and F.5, table F.2: - TCH/2,4, N=1, DR50, - 103 dBm. |
| 7.2.3.2 and F.5, table F.2 | 9.3 and 9.3.3 | DO-MS | To test the dynamic reference sensitivity performance of an MS. ETS 300 394-1 [8], table A.11 and F.5, table F.2: - SCH/F, DR50, - 103 dBm. |
| 7.2.4.2 and F.5, table F.2 | 9.4 and 9.4.1 | DO-MS | To test the reference interference performance ETS 300 394-1 [8], table A.2 and F.5, table F.2: - co-channel interference, - adjacent channel interference. |
| 7.2.5.2 and F.5, table F.2 | 9.5 and 9.5.1 | DO-MS | To test the blocking characteristics ETS 300 394-1 [8], table A.2; blocking and F.5, table F.2. |
| 7.2.6.2 and F.5, table F.2 | 9.6 | DO-MS | To test the spurious response rejection ETS 300 394-1 [8], table A.2; spurious response and F.5, table F.2. |
| 7.2.7.2 and F.5, table F.2 | 9.7 and 9.7.1 | DO-MS | To test the intermodulation response rejection ETS 300 394-1 [8], table A.2; intermodulation and F.5, table F.2. |
| 7.2.8.2 | 9.8 | DO-MS | To test the unwanted conducted emission. |
| 7.2.9.2 | 9.9 | DO-MS | To test the unwanted radiated emission. |
| 7.3.1.2 | 10.1, 10.1.1 and 10.1.3 | DO-MS | To test the modulation accuracy. |
| F.6.2.1 | F.6.2.2 | Applicable_to_all_Ud_MSs | To test the transmitter output power versus time within a burst. |
| F.6.3.1 | F.6.3.2 | Applicable_to_all_Ud_MSs | To test the RF frequency accuracy. |
| F.6.4.2 | F.6.4.3 | Applicable_to_all_Ud_MSs | To test the DM synchronization accuracy. |
| NOTE 1: The test case limit values, as referenced, are specified in ETS 300 394-1 [8], clause 7 and annex F. | | | |
| NOTE 2: The test methods, as referenced, are specified in ETS 300 394-1 [8], clauses 8 to 10 and annex F. | | | |

5.5.1.1.2 Test case selection expression definitions for physical layer

Table 55: Test case selection expression definitions for physical layer

| Test Case Selection Expression Definitions | | |
|--|---------------------------------|--|
| Expression Name | Selection Expression | Comments |
| Applicable_to_all_Ud_MSs | A.72/5 | TETRA DMO MS equipment. |
| Dual_Ud_Um | A.72/5 AND A.1/1 | DMO equipment also supporting trunked (V+D) mode |
| DO-MS | A.72/5 AND NOT A.1/1 | DMO-only equipment not supporting trunked (V+D) mode |
| DO-MS_Protected_Data | A.72/5 AND NOT A.1/1 AND A.90/1 | DMO-only equipment supporting protected circuit mode data. |
| Dual_Ud_Um_Multiple_Class | A.72/5 AND A.1/1 AND A.90/2 | Dual mode DMO / V+D equipment supporting more than one power class |
| DO-MS_Multiple Class | A.72/5 AND NOT A.1/1 AND A.90/2 | DMO-only equipment supporting more than one power class |
| Detailed Comments | | |
| The selection expressions given in the Selection Expression-column are Boolean expressions, referring to the declarations made in requirement tables in annex A in the present document. | | |

5.5.1.2 Layer 2 test specification

5.5.1.2.1 Layer 2 test specification for Mobile Station

5.5.1.2.1.1 Test suite structure for layer 2

Table 56: Test suite structure for layer 2

| Test Suite Structure | | |
|---|-------------------------|---|
| Suite Name: DMO/MSMS/MAC | | |
| Standards Ref.: ETS 300 396-3 [17] | | |
| PICS Ref.: ETS 300 396-8-1 [22] | | |
| PIXIT Ref.: ETS 300 394-4-2 [28], annex B | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| DMO_MSMS_MAC/ | MAC_supported | Check the dynamic requirements of the MAC layer |
| DMO_MSMS_MAC/BV/ | MAC_supported | Check the valid behaviour of the MAC layer. |
| DMO_MSMS_MAC/BV/CU/ | Initiate_CM_or_SDS_Call | To test DM channel usage procedures of the DM-MAC entity. |
| DMO_MSMS_MAC/BV/SM/ | Initiate_CM_Call | To test the signalling procedures of the DM-MAC entity. |

5.5.1.2.1.2 Test case index for layer 2

Table 57: Test case index for layer 2

| Test Case Index | | | |
|----------------------|-----------------------|-------------------------|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| DMO_MSMS_MAC/BV/CU/ | DMO_MSMS_MAC_BV_CU_02 | Initiate_CM_Call | Transmission of the DM-OCCUPIED SDU when the channel is busy. |
| DMO_MSMS_MAC/BV/CU/ | DMO_MSMS_MAC_BV_CU_04 | Initiate_CM_Call | The sending of the DM-RESERVED SDU stopped when the reservation period expired. |
| DMO_MSMS_MAC/BV/CU/ | DMO_MSMS_MAC_BV_CU_06 | Initiate_CM_or_SDS_Call | Specified number of re-transmission is fulfilled with respect to the frame count down element. |
| DMO_MSMS_MAC/BV/SM/ | DMO_MSMS_MAC_BV_SM_09 | Initiate_CM_Call | Pre-emption flag in the DM-OCCUPIED SDU. |
| DMO_MSMS_MAC/BV/SM/ | DMO_MSMS_MAC_BV_SM_10 | Initiate_CM_Call | Pre-emption flag in the DM-RESERVED SDU. |

5.5.1.2.1.3

Test case selection expression definitions for layer 2

Table 58: Test case selection expression definitions for layer 2

| Test Case Selection Expression Definitions | | |
|--|--|---|
| Expression Name | Selection Expression | Comments |
| MAC_supported | PIC_MAC_SUPPORTED | IUT supports MAC. |
| Initiate_CM_Call | (PIC_CALL_SETUP_NO_PRESENCE_CHECK AND PIX_IMP_SYNC_SETUP) OR (PIC_CALL_SETUP_PRESENCE_CHECK AND PIX_IMP_SYNC_SETUP_PRES) | IUT supports initiation of a CM call with or without presence check. |
| Initiate_CM_or_SDS_Call | (PIC_CALL_SETUP_NO_PRESENCE_CHECK AND PIX_IMP_SYNC_SETUP) OR (PIC_CALL_SETUP_PRESENCE_CHECK AND PIX_IMP_SYNC_SETUP_PRES) OR (PIC_SEND_U_SDS AND PIX_IMP_SYNC_SDS_UDATA) OR (PIC_SEND_A_SDS AND PIX_IMP_SYNC_SDS_DATA) | IUT supports initiation of a CM call with or without presence check or initiation of an SDS call with or without acknowledgement. |

5.5.1.2.1.4

Test suite parameter definitions for layer 2

Table 59: Test suite parameter definitions for layer 2

| Test Suite Parameter Declarations | | | |
|---------------------------------------|---------|--------------------------|--|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_MAC_SUPPORTED | BOOLEAN | A.4.2.1, table A.72/2 | MAC supported. |
| PIC_SETUP_NewCall_FrameCountDown | INTEGER | A.4.2.3.2, table A.102/1 | Value of the number of frame transmission for the DM-SETUP PDU for a new call. [2..4] |
| PIC_SETUP_PRES_NewCall_FrameCountDown | INTEGER | A.4.2.3.2, table A.102/2 | Value of the number of frame transmission for the DM-SETUP PRES PDU for a new call. [2..4] |
| PIC_SDS_DATA_NewCall_FrameCountDown | INTEGER | A.4.2.3.2, table A.102/3 | Value of the number of frame transmission for the DM-SDS DATA PDU for a new call. [2..4] |
| PIC_SDS_UDATA_NewCall_FrameCountDown | INTEGER | A.4.2.3.2, table A.102/4 | Value of the number of frame transmission for the DM-SDS UDATA PDU for a new call. [2..4] |
| PIC_CALL_SETUP_NO_PRESENCE_CHECK | BOOLEAN | A.4.2.4.1, table A.113/1 | IUT supports outgoing call setup without presence check. |
| PIC_CALL_SETUP_PRESENCE_CHECK | BOOLEAN | A.4.2.4.1, table A.113/2 | IUT supports outgoing call setup with presence check. |
| PIC_SEND_U_SDS | BOOLEAN | A.4.2.4.1, table A.114/1 | IUT supports sending of unacknowledge data service |
| PIC_SEND_A_SDS | BOOLEAN | A.4.2.4.1, table A.114/2 | IUT supports sending of acknowledge data service |
| PIX_IMP_SYNC_SETUP | BOOLEAN | B.3.2.1, table B.14/1 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP SDU. |
| PIX_IMP_SYNC_SETUP_PRES | BOOLEAN | B.3.2.1, table B.14/2 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP PRES SDU. |

| | | | |
|---|----------|-----------------------|--|
| PIX_IMP_SYNC_SDS_DAT A | BOOLEAN | B.3.2.1, table B.14/3 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS DATA SDU. |
| PIX_IMP_SYNC_SDS_UDA TA | BOOLEAN | B.3.2.1, table B.14/4 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS UDATA SDU. |
| PIX_MS_SSI | SSI_Type | B.3.2.1, table B.15/1 | SSI of the IUT |
| PIX_TESTER_MNI | MNI_Type | B.3.2.1, table B.15/2 | MNI of the tester |
| PIX_TESTER_SSI | SSI_Type | B.3.2.1, table B.15/3 | SSI of the tester |
| Detailed Comments The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.1.2.2 Layer 2 test specification for operation with Repeater type 1

5.5.1.2.2.1 Test suite structure for layer 2 for operation with Repeater type 1

Table 60: Test suite structure for layer 2 for operation with Repeater type 1

| Test Suite Structure | | |
|---|----------------------|--|
| Suite Name: DMO/MSREP1/MAC | | |
| Standards Ref.: EN 300 396-4 [18] | | |
| PICS Ref.: EN 300 396-8-2 [23] | | |
| PIXIT Ref.: EN 300 394-4-5 [31], annex B | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| DMO_MSREP1_MAC/ | MSREP1_MAC_supported | Check the dynamic requirements of the MAC layer for operation with Repeater type 1. |
| DMO_MSREP1_MAC/BV/ | MSREP1_MAC_supported | Check the valid behaviour of the MAC layer for operation with Repeater type 1. |
| DMO_MSREP1_MAC/BV/SM/ | MSREP1_Initiate_Call | To test the signalling procedures of the DM-MAC entity for operation with Repeater type 1. |

5.5.1.2.2.2 Test case index for layer 2 for operation with Repeater type 1

Table 61: Test case index for layer 2 for operation with Repeater type 1

| Test Case Index | | | |
|-----------------------|-------------------------|--------------------------------------|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| DMO_MSREP1_MAC/BV/SM/ | DMO_REP1_MAC_S M_01C | MSREP1_Initiate_Call | Addressing in synchronization burst. Master/slave link flag. |
| DMO_MSREP1_MAC/BV/SM/ | DMO_REP1_MAC_S M_02 | MSREP1_Initiate_Call _Pre-emption | Synchronization burst for a random access message. |
| DMO_MSREP1_MAC/BV/SM/ | DMO_REP1_MAC_S M_09 | MSREP1_Initiate_CM _Call | Pre-emption flag in the DM-OCCUPIED SDU. |
| DMO_MSREP1_MAC/BV/SM/ | DMO_REP1_MAC_S M_10 | MSREP1_Initiate_CM _Call | Request and change over flags in the DM-RESERVED SDU. |

5.5.1.2.2.3 Test case selection expression definitions for layer 2 for operation with Repeater type 1

Table 62: Test case selection expression definitions for layer 2 for operation with Repeater type 1

| Test Case Selection Expression Definitions | | |
|---|---|---|
| Expression Name | Selection Expression | Comments |
| MSREP1_MAC_supported | PIC_MSREP1_SUPPORTED | IUT supports operation with Repeater type 1. |
| MSREP1_Initiate_Call | PIC_MSREP1_SUPPORTED AND ((PIC_CALL_SETUP AND (PIX_IMP_SYNC_SETUP OR PIX_IMP_SYNC_SETUP_PRES)) OR (PIC_SEND_U_SDS AND PIX_IMP_SYNC_SDS_UDATA) OR (PIC_SEND_A_SDS AND PIX_IMP_SYNC_SDS_DATA)) | IUT supports initiation of call via a Repeater type 1. |
| MSREP1_Initiate_Call_Pre-emption | PIC_INITIATE_CALL_PREEMPTION AND PIX_IMP_SYNC_PREEMPT_ONGOING | IUT supports initiation of pre-emption of an ongoing call. |
| MSREP1_Initiate_CM_Call | PIC_MSREP1_SUPPORTED AND PIC_CALL_SETUP AND (PIX_IMP_SYNC_SETUP OR PIX_IMP_SYNC_SETUP_PRES) | IUT supports initiation of circuit mode call via a Repeater type 1. |

5.5.1.2.2.4

Test suite parameter definitions for layer 2 for operation with Repeater type 1

Table 63: Test suite parameter definitions for layer 2 for operation with Repeater type 1

| Test Suite Parameter Declarations | | | |
|---|-------------------------|-------------------------|--|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_MSREP1_SUPPORTE D | BOOLEAN | A.4.2.1, table A.71/2 | Operation with DMO Repeater type 1 supported. |
| PIC_CALL_SETUP | BOOLEAN | A.4.2.1.1, table A.81/3 | IUT supports outgoing call setup. |
| PIC_INITIATE_CALL_PREE MPTION | BOOLEAN | A.4.2.1.1, table A.81/5 | IUT supports the initiation of pre-emption in ongoing call. |
| PIC_SEND_U_SDS | BOOLEAN | A.4.2.1.1, table A.82/1 | IUT supports sending of unacknowledged SDS. |
| PIC_SEND_A_SDS | BOOLEAN | A.4.2.1.1, table A.82/2 | IUT supports sending of acknowledged SDS. |
| PIX_IMP_SYNC_PREE MPT_ONGOING | BOOLEAN | B.3.2.2, table B.18/1 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-PREEMPT SDU to preempt the ongoing call. |
| PIX_IMP_SYNC_SETUP | BOOLEAN | B.3.2.2, table B.18/2 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP SDU. |
| PIX_IMP_SYNC_SETUP_P RES | BOOLEAN | B.3.2.2, table B.18/3 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP PRES SDU. |
| PIX_IMP_SYNC_SDS_DAT A | BOOLEAN | B.3.2.2, table B.18/4 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS DATA SDU. |
| PIX_IMP_SYNC_SDS_UDA TA | BOOLEAN | B.3.2.2, table B.18/5 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS UDATA SDU. |
| PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | B.3.2.2, table B.19/1 | Traffic channel type and interleaving depth supported by the IUT. |
| PIX_POWER_CLASS | Power_Class_Type | B.3.2.2, table B.19/2 | The power class of the IUT. |
| PIX_POWER_CONTROL_F LAG | Power_Control_Flag_Type | B.3.2.2, table B.19/3 | Power control flag, which indicate whether or not power control by slave is permitted. |
| PIX_MS_SSI | SSI_Type | B.3.2.2, table B.19/4 | SSI of the IUT. |
| PIX_TESTER_MNI | MNI_Type | B.3.2.2, table B.19/5 | MNI of the tester. |
| PIX_TESTER_SSI | SSI_Type | B.3.2.2, table B.19/6 | SSI of the tester. |
| PIX_MS_SLAVE_MNI | MNI_Type | B.3.2.2, table B.19/7 | MNI of a slave MS |
| PIX_MS_SLAVE_SSI | SSI_Type | B.3.2.2, table B.19/8 | SSI of a slave MS |
| PIX_MS_MASTER_MNI | MNI_Type | B.3.2.2, table B.19/9 | MNI of a master MS |
| PIX_MS_MASTER_SSI | SSI_Type | B.3.2.2, table B.19/10 | SSI of a master MS |
| PIX_TESTER_REPEATER_ ADDRESS | Repeater_Address_Type | B.3.2.2, table B.19/11 | Repeater address of the tester. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.1.2.3 Layer 2 test specification for operation with Repeater type 2

5.5.1.2.3.1 Test suite structure for layer 2 for operation with Repeater type 2

Table 64: Test suite structure for layer 2 for operation with Repeater type 2

| Test Suite Structure | | |
|---|----------------------|--|
| Suite Name: DMO/MSREP2/MAC | | |
| Standards Ref.: EN 300 396-7 [21] | | |
| PICS Ref.: ETS 300 396-8-4 [25] | | |
| PIXIT Ref.: EN 300 394-4-13 [39], annex B | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| DMO_MSREP2_MAC/ | MSREP2_MAC_supported | Check the dynamic requirements of the MAC layer for operation with Repeater type 2. |
| DMO_MSREP2_MAC/BV/ | MSREP2_MAC_supported | Check the valid behaviour of the MAC layer for operation with Repeater type 2. |
| DMO_MSREP2_MAC/BV/SM/ | MSREP2_Initiate_Call | To test the signalling procedures of the DM-MAC entity for operation with Repeater type 2. |

5.5.1.2.3.2 Test case index for layer 2 for operation with Repeater type 2

Table 65: Test case index for layer 2 for operation with Repeater type 2

| Test Case Index | | | |
|-----------------------|----------------------|----------------------------------|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| DMO_MSREP2_MAC/BV/SM/ | DMO_REP2_MAC_S M_01C | MSREP2_Initiate_Call | Addressing in synchronization burst. Master/slave link flag. |
| DMO_MSREP2_MAC/BV/SM/ | DMO_REP2_MAC_S M_02 | MSREP2_Initiate_Call_Pre-emption | Synchronization burst for a random access message. |
| DMO_MSREP2_MAC/BV/SM/ | DMO_REP2_MAC_S M_09 | MSREP2_Initiate_CM_Call | Pre-emption flag in the DM-OCCUPIED SDU. |
| DMO_MSREP2_MAC/BV/SM/ | DMO_REP2_MAC_S M_10 | MSREP2_Initiate_CM_Call | Request and change over flags in the DM-RESERVED SDU. |

5.5.1.2.3.3 Test case selection expression definitions for layer 2 for operation with Repeater type 2

Table 66: Test case selection expression definitions for layer 2 for operation with Repeater type 2

| Test Case Selection Expression Definitions | | |
|---|---|---|
| Expression Name | Selection Expression | Comments |
| MSREP2_MAC_supported | PIC_MSREP2_SUPPORTED | IUT supports operation with Repeater type 2. |
| MSREP2_Initiate_Call | PIC_MSREP2_SUPPORTED AND ((PIC_CALL_SETUP AND (PIX_IMP_SYNC_SETUP OR PIX_IMP_SYNC_SETUP_PRES)) OR (PIC_SEND_U_SDS AND PIX_IMP_SYNC_SDS_UDATA) OR (PIC_SEND_A_SDS AND PIX_IMP_SYNC_SDS_DATA)) | IUT supports initiation of call via a Repeater type 2. |
| MSREP2_Initiate_Call_Pre-emption | PIC_INITIATE_CALL_PREEMPTION AND PIX_IMP_SYNC_PREEMPT_ONGOING | IUT supports initiation of pre-emption of an ongoing call. |
| MSREP2_Initiate_CM_Call | PIC_MSREP2_SUPPORTED AND PIC_CALL_SETUP AND (PIX_IMP_SYNC_SETUP OR PIX_IMP_SYNC_SETUP_PRES) | IUT supports initiation of circuit mode call via a Repeater type 2. |

5.5.1.2.3.4

Test suite parameter definitions for layer 2 for operation with Repeater type 2

Table 67: Test suite parameter definitions for layer 2 for operation with Repeater type 2

| Test Suite Parameter Declarations | | | |
|---|-------------------------|-------------------------|--|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_MSREP2_SUPPORTE D | BOOLEAN | A.4.2.1, table A.71/4 | Operation with DMO Repeater type 2 supported. |
| PIC_CALL_SETUP | BOOLEAN | A.4.2.1.2, table A.85/3 | IUT supports outgoing call setup. |
| PIC_INITIATE_CALL_PREE MPTION | BOOLEAN | A.4.2.1.2, table A.85/5 | IUT supports the initiation of pre-emption in ongoing call. |
| PIC_SEND_U_SDS | BOOLEAN | A.4.2.1.2, table A.86/1 | IUT supports sending of unacknowledged SDS. |
| PIC_SEND_A_SDS | BOOLEAN | A.4.2.1.2, table A.86/2 | IUT supports sending of acknowledged SDS. |
| PIX_IMP_SYNC_PREE MPT _ONGOING | BOOLEAN | B.3.2.3, table B.18/1 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-PREEMPT SDU to preempt the ongoing call. |
| PIX_IMP_SYNC_SETUP | BOOLEAN | B.3.2.3, table B.18/2 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP SDU. |
| PIX_IMP_SYNC_SETUP_P RES | BOOLEAN | B.3.2.3, table B.18/3 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP PRES SDU. |
| PIX_IMP_SYNC_SDS_DAT A | BOOLEAN | B.3.2.3, table B.18/4 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS DATA SDU. |
| PIX_IMP_SYNC_SDS_UD ATA | BOOLEAN | B.3.2.3, table B.18/5 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS UDATA SDU. |
| PIX_CIRCUIT_MODE_T YPE | Circuit_Mode_Type_Type | B.3.2.3, table B.19/1 | Traffic channel type and interleaving depth supported by the IUT. |
| PIX_POWER_CLASS | Power_Class_Type | B.3.2.3, table B.19/2 | The power class of the IUT. |
| PIX_POWER_CONTROL_F LAG | Power_Control_Flag_Type | B.3.2.3, table B.19/3 | Power control flag, which indicate whether or not power control by slave is permitted. |
| PIX_MS_SSI | SSI_Type | B.3.2.3, table B.19/4 | SSI of the IUT. |
| PIX_TESTER_MNI | MNI_Type | B.3.2.3, table B.19/5 | MNI of the tester. |
| PIX_TESTER_SSI | SSI_Type | B.3.2.3, table B.19/6 | SSI of the tester. |
| PIX_MS_SLAVE_MNI | MNI_Type | B.3.2.3, table B.19/7 | MNI of a slave MS |
| PIX_MS_SLAVE_SSI | SSI_Type | B.3.2.3, table B.19/8 | SSI of a slave MS |
| PIX_MS_MASTER_MNI | MNI_Type | B.3.2.3, table B.19/9 | MNI of a master MS |
| PIX_MS_MASTER_SSI | SSI_Type | B.3.2.3, table B.19/10 | SSI of a master MS |
| PIX_TESTER_REPEAT ER_ADDRESS | Repeater_Address_Type | B.3.2.3, table B.19/11 | Repeater address of the tester. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.1.2.4 Layer 2 test specification for operation with Gateway

5.5.1.2.4.1 Test suite structure for layer 2 for operation with Gateway

Table 68: Test suite structure for layer 2 for operation with Gateway

| Test Suite Structure | | |
|---|--------------------|--|
| Suite Name: DMO/MSGW/MAC | | |
| Standards Ref.: ETS 300 396-5 [19] | | |
| PICS Ref.: ETS 300 396-8-3 [24] | | |
| PIXIT Ref.: ETS 300 394-4-9 [35], annex B | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| DMO_MSGW_MAC/ | MSGW_MAC_supported | Check the dynamic requirements of the MAC layer for operation with Gateway. |
| DMO_MSGW_MAC/BV/ | MSGW_MAC_supported | Check the valid behaviour of the MAC layer for operation with Gateway. |
| DMO_MSGW_MAC/BV/CU/ | MSGW_Initiate_Call | To test DM channel usage procedures of the DM-MAC entity for operation with Gateway. |
| DMO_MSGW_MAC/BV/SM/ | MSGW_Initiate_Call | To test the signalling procedures of the DM-MAC entity for operation with Gateway. |

5.5.1.2.4.2 Test case index for layer 2 for operation with Gateway

Table 69: Test case index for layer 2 for operation with Gateway

| Test Case Index | | | |
|----------------------|--------------------|--------------------|---|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| DMO_MSGW_MAC/BV/CU/ | DMO_MSGW_MAC_CU_02 | MSGW_Initiate_Call | Transmission of the DM-OCCUPIED SDU when the channel is busy. |
| DMO_MSGW_MAC/BV/SM/ | DMO_MSGW_MAC_SM_10 | MSGW_Initiate_Call | Pre-emption flag in the DM-OCCUPIED SDU. |

5.5.1.2.4.3 Test case selection expression definitions for layer 2 for operation with Gateway

Table 70: Test case selection expression definitions for layer 2 for operation with Gateway

| Test Case Selection Expression Definitions | | |
|--|---|---|
| Expression Name | Selection Expression | Comments |
| MSGW_MAC_supported | PIC_MSGW_SUPPORTED | IUT supports operation with Gateway. |
| MSGW_Initiate_Call | PIC_MSGW_SUPPORTED AND PIC_CALL_SETUP AND PIX_IMP_SYNC_GSETUP | IUT supports initiation of call to a Gateway. |

5.5.1.2.4.4 Test suite parameter definitions for layer 2 for operation with Gateway

Table 71: Test suite parameter definitions for layer 2 for operation with Gateway

| Test Suite Parameter Declarations | | | |
|---|-------------------------|----------------------------|--|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_MSGW_SUPPORTED | BOOLEAN | A.4.2.1, table A.71/3 | Operation with DMO Gateway supported. |
| PIC_DMMM | BOOLEAN | A.4.2.1.3, table A.87/2 | IUT supports DMMM. |
| PIC_CALL_SETUP | BOOLEAN | A.4.2.1.3, table A.89/3 | IUT supports outgoing call setup. |
| PIC_UNINVITED_REGISTRATION | BOOLEAN | A.4.2.4.2.1, table A.123/2 | IUT supports unsolicited registration. |
| PIX_IMP_SYNC_GSETUP | BOOLEAN | B.3.2.4, table B.22/1 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-GSETUP SDU. |
| PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | B.3.2.4, table B.23/1 | Traffic channel type and interleaving depth supported by the IUT. |
| PIX_POWER_CLASS | Power_Class_Type | B.3.2.4, table B.23/2 | The power class of the IUT. |
| PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | B.3.2.4, table B.23/3 | Power control flag, which indicate whether or not power control by slave is permitted. |
| PIX_GATEWAY_ADDRESS | Gateway_Address_Type | B.3.2.4, table B.23/4 | Value of the Gateway (tester) address. |
| PIX_TESTER_MNI | MNI_Type | B.3.2.4, table B.23/5 | MNI of the tester |
| PIX_TESTER_SSI | SSI_Type | B.3.2.4, table B.23/6 | SSI of the tester |
| PIX_REGISTRATION_LABEL | BITSTRING | B.3.2.4, table B.23/7 | Value of the registration label |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.1.3 Layer 3 test specification

5.5.1.3.1 Layer 3 test specification for Mobile Station

5.5.1.3.1.1 Test suite structure for layer 3

Table 72: Test suite structure for layer 3

| Test Suite Structure | | |
|---|----------------------------|---|
| Suite Name: DMO/MSMS | | |
| Standards Ref.: ETS 300 396-3 [17] | | |
| PICS Ref.: ETS 300 396-8-1 [22] | | |
| PIXIT Ref.: ETS 300 394-4-2 [28], annex B | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| DMO_MSMS_DMCC/ | DMCC_supported | Check the dynamic requirements of the DMCC layer |
| DMO_MSMS_DMCC/CM/ | Circuit_Mode | To test the CM behaviour of the DMCC entity of the IUT |
| DMO_MSMS_DMCC/CM/CA/ | Initiate_Call | To test the basic CM capabilities of the DMCC entity of the IUT |
| DMO_MSMS_DMCC/CM/BV/ | Circuit_Mode | To test the valid behaviour of the CM entity of the IUT |
| DMO_MSMS_DMCC/CM/BV/ID/ | Initiate_Call_WithPresence | To test the protocol behaviour of the CM entity of the IUT, when the IUT is in idle state, and the DMO channel is free |
| DMO_MSMS_DMCC/CM/BV/TXO/ | Initiate_Call | To test the protocol behaviour of the CM entity of the IUT, when the IUT is in TX occupation state |
| DMO_MSMS_DMCC/CM/BV/RXO/ | Initiate_Call_Preemption | To test the protocol behaviour of the CM entity of the IUT, when the IUT is in RX occupation state |
| DMO_MSMS_DMCC/CM/BV/TXRR/ | Initiate_Call | To test the protocol behaviour of the CM entity of the IUT, when the IUT is in TX reservation state |
| DMO_MSMS_DMCC/CM/BV/RXRR/ | Circuit_Mode_Changeover | To test the protocol behaviour of the CM entity of the IUT, when the IUT is in RX reservation state |
| DMO_MSMS_DMCC/CM/TI/ | Initiate_Call | To test the protocol behaviour related to timers and constants of the CM entity of the IUT |
| DMO_MSMS_DMCC/SDS/ | Short_Data_Service | To test the SDS behaviour of the DMCC entity of the IUT |
| DMO_MSMS_DMCC/SDS/CA/ | Send_U_SDS | To test the basic SDS capabilities of the DMCC entity of the IUT |
| DMO_MSMS_DMCC/SDS/BV/ | Short_Data_Service | To test the valid protocol behaviour of the SDS entity of the IUT |
| DMO_MSMS_DMCC/SDS/BV/ID/ | Short_Data_Service | To test the valid protocol behaviour of the SDS entity of the IUT, when the IUT is in idle state, and the DMO channel is free |
| DMO_MSMS_DMCC/SDS/TI/ | Send_A_SDS | To test the protocol behaviour related to timers and constants of the SDS entity of the IUT |

5.5.1.3.1.2

Test case index for layer 3

Table 73: Test case index for layer 3

| Test Case Index | | | |
|--------------------------|----------------------------|-------------------------------|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| DMO_MSMS_DMCC/CM/CA/ | DMO_MSMS_DMCC_CM_CA_01 | Initiate_Group_Call | Setup and terminate a group call without presence check |
| DMO_MSMS_DMCC/CM/CA/ | DMO_MSMS_DMCC_CM_CA_02 | Initiate_Call_WithPresence | Setup and terminate an individual call with presence check |
| DMO_MSMS_DMCC/CM/CA/ | DMO_MSMS_DMCC_CM_CA_03 | Initiate_Call_WithoutPresence | Establish and terminate an individual call, when operating without presence check |
| DMO_MSMS_DMCC/CM/BV/ID/ | DMO_MSMS_DMCC_CM_BV_ID_04 | Initiate_Call_WithPresence | Release a call setup attempt when receiving a disconnect |
| DMO_MSMS_DMCC/CM/BV/TXO/ | DMO_MSMS_DMCC_CM_BV_TXO_01 | Initiate_Call_IRO | Initiate the release of a call during occupation |
| DMO_MSMS_DMCC/CM/BV/TXO/ | DMO_MSMS_DMCC_CM_BV_TXO_02 | Initiate_Call_ITO | Initiated end of transmission during occupation |
| DMO_MSMS_DMCC/CM/BV/TXO/ | DMO_MSMS_DMCC_CM_BV_TXO_03 | Initiate_Call | Receive pre-emption for an ongoing individual call |
| DMO_MSMS_DMCC/CM/BV/TXO/ | DMO_MSMS_DMCC_CM_BV_TXO_04 | Initiate_Call | Receive pre-emption for a new individual call |
| DMO_MSMS_DMCC/CM/BV/RO/ | DMO_MSMS_DMCC_CM_BV_RO_02 | Initiate_Call_Preemption | Initiate pre-emption to establish a call (either ongoing or new call) |
| DMO_MSMS_DMCC/CM/BV/RO/ | DMO_MSMS_DMCC_CM_BV_RO_03 | Initiate_Call_Preemption | Handle the reject of a pre-emption |
| DMO_MSMS_DMCC/CM/BV/TR/ | DMO_MSMS_DMCC_CM_BV_TR_01 | Initiate_Call_IRR | Initiate release of a call during reservation |
| DMO_MSMS_DMCC/CM/BV/TR/ | DMO_MSMS_DMCC_CM_BV_TR_02 | Initiate_Call | Receive and accept pre-emption for a new call during reservation |
| DMO_MSMS_DMCC/CM/BV/TR/ | DMO_MSMS_DMCC_CM_BV_TR_03 | Initiate_Call | Receive and accept pre-emption for continuation of ongoing call during reservation |
| DMO_MSMS_DMCC/CM/BV/TR/ | DMO_MSMS_DMCC_CM_BV_TR_04 | Initiate_Call | Receive and accept changeover during reservation |
| DMO_MSMS_DMCC/CM/BV/TR/ | DMO_MSMS_DMCC_CM_BV_TR_07 | Initiate_Call | Receive and reject pre-emption for a new call during reservation |
| DMO_MSMS_DMCC/CM/BV/TR/ | DMO_MSMS_DMCC_CM_BV_TR_08 | Initiate_Call | Receive and reject changeover during reservation |
| DMO_MSMS_DMCC/CM/BV/RR/ | DMO_MSMS_DMCC_CM_BV_RR_03 | Circuit_Mode_Changeover | Initiate changeover to establish ongoing CM call |
| DMO_MSMS_DMCC/CM/BV/RR/ | DMO_MSMS_DMCC_CM_BV_RR_04 | Circuit_Mode_Changeover | Handle the reject of a changeover request |
| DMO_MSMS_DMCC/CM/TI/ | DMO_MSMS_DMCC_CM_TI_01 | Initiate_Call_WithPresence | Time out DT303 for response to DM SET UP PRES. |
| DMO_MSMS_DMCC/CM/TI/ | DMO_MSMS_DMCC_CM_TI_02 | Initiate_Call | Initiate end of transmission after time out of DT311 call transaction timer |
| DMO_MSMS_DMCC/SDS/CA/ | DMO_MSMS_DMCC_SDS_CA_01 | Send_U_SDS | Establish a SDS with unacknowledged service |
| DMO_MSMS_DMCC/SDS/BV/ID/ | DMO_MSMS_DMCC_SDS_BV_ID_01 | Send_A_SDS | Establish an SDS with acknowledged service |
| DMO_MSMS_DMCC/SDS/BV/ID/ | DMO_MSMS_DMCC_SDS_BV_ID_02 | Send_A_SDS | Handle the reject of an SDS with acknowledged service |
| DMO_MSMS_DMCC/SDS/BV/ID/ | DMO_MSMS_DMCC_SDS_BV_ID_03 | Accept_A_SDS | Receive an incoming SDS with acknowledged service |
| DMO_MSMS_DMCC/SDS/BV/ID/ | DMO_MSMS_DMCC_SDS_BV_ID_04 | Accept_A_SDS | Receive an incoming SDS with acknowledged service and with FCS |
| DMO_MSMS_DMCC/SDS/BV/ID/ | DMO_MSMS_DMCC_SDS_BV_ID_05 | Send_A_SDS_FCS | Establish an SDS with acknowledged service using the FCS |
| DMO_MSMS_DMCC/SDS/TI/ | DMO_MSMS_DMCC_SDS_TI_01 | Send_A_SDS | Time out on DT316 timer and retry an SDS DATA with acknowledged service |

5.5.1.3.1.3

Test case selection expression definitions for layer 3

Table 74: Test case selection expression definitions for layer 3

| Test Case Selection Expression Definitions | | |
|--|--|--|
| Expression Name | Selection Expression | Comments |
| DMCC_supported | PIC_DMCC_SUPPORTED | IUT supports DMCC. |
| Circuit_Mode | PIC_CM | IUT supports circuit mode call. |
| Short_Data_Service | PIC_SDS | IUT supports short data service call. |
| Initiate_Group_Call | PIC_GROUP_CALL AND PIC_CALL_SETUP_NO_PRESENCE_CHECK AND PIX_IMP_DM_SETUP_Group | IUT supports the initiation of a group call. |
| Initiate_Call_WithPresence | PIC_CALL_SETUP_PRESENCE_CHECK AND PIX_IMP_DM_SETUP_PRES | IUT supports initiation of a call with presence check. |
| Initiate_Call_WithoutPresence | PIC_CALL_SETUP_NO_PRESENCE_CHECK AND PIX_IMP_DM_SETUP | IUT supports initiation of a call without presence check. |
| Initiate_Call_IRO | ((PIC_CALL_SETUP_PRESENCE_CHECK AND PIX_IMP_DM_SETUP_PRES) OR (PIC_CALL_SETUP_NO_PRESENCE_CHECK AND PIX_IMP_DM_SETUP)) AND (PIC_CALL_RELEASE_OCCUPATION AND PIX_IMP_DM_RELEASE) | IUT supports initiation of a call with or without presence check and it is possible to cause the IUT to send the DM-RELEASE PDU. |
| Initiate_Call_ITO | ((PIC_CALL_SETUP_PRESENCE_CHECK AND PIX_IMP_DM_SETUP_PRES) OR (PIC_CALL_SETUP_NO_PRESENCE_CHECK AND PIX_IMP_DM_SETUP)) AND (PIC_END_OF_TRANSMISSION AND PIX_IMP_DM_TX_CEASED) | IUT supports initiation of a call with or without presence check and it is possible to cause the IUT to send the DM-TX CEASED PDU. |
| Initiate_Call | (PIC_CALL_SETUP_PRESENCE_CHECK AND PIX_IMP_DM_SETUP_PRES) OR (PIC_CALL_SETUP_NO_PRESENCE_CHECK AND PIX_IMP_DM_SETUP) | IUT supports initiation of a call with or without presence check. |
| Initiate_Call_Preemption | PIC_INITIATE_CALL_PREEMPTION AND PIX_IMP_DM_PREEMPT | IUT supports the initiation of call preemption. |
| Initiate_Call_IRR | ((PIC_CALL_SETUP_PRESENCE_CHECK AND PIX_IMP_DM_SETUP_PRES) OR (PIC_CALL_SETUP_NO_PRESENCE_CHECK AND PIX_IMP_DM_SETUP)) AND (PIC_CALL_RELEASE_RESERVATION AND PIX_IMP_DM_RELEASE) | IUT supports initiation of a call with or without presence check and it is possible to cause the IUT to send the DM-RELEASE PDU. |
| Circuit_Mode_Changeover | PIC_CALL_CHANGEOVER AND PIX_IMP_DM_TX_REQUEST | IUT supports call changeover and it is possible to cause the IUT to send the DM-TX REQUEST PDU. |
| Send_U_SDS | PIC_SEND_U_SDS AND PIX_IMP_DM_SDS_UDATA | IUT supports sending of unacknowledge data service on group or individual address. |
| Send_A_SDS | PIC_SEND_A_SDS AND PIX_IMP_DM_SDS_DATA | IUT supports sending of acknowledge data service with or without data in the acknowledgement |
| Send_A_SDS_FCS | PIC_SEND_SDS_FCS AND PIC_SEND_A_SDS AND PIX_IMP_DM_SDS_DATA | IUT supports sending of acknowledge data service with FCS and with or without data in the acknowledgement |
| Accept_A_SDS | PIC_RECEIPT_A_SDS | IUT supports receipt of acknowledge SDS with or without data in the acknowledgement |

5.5.1.3.1.4

Test suite parameter definitions for layer 3

Table 75: Test suite parameter definitions for layer 3

| Test Suite Parameter Declarations | | | |
|-----------------------------------|---------|---------------------------|--|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_DMCC_SUPPORTED | BOOLEAN | A.4.2.1, table A.72/1 | DMCC supported. |
| PIC_CM | BOOLEAN | A.4.2.1, table A.73/1 | IUT supports circuit mode call. |
| PIC_SDS | BOOLEAN | A.4.2.1, table A.73/2 | IUT supports short data service call. |
| PIC_INDIVIDUAL_CALL | BOOLEAN | A.4.2.1, table A.75/1 | IUT supports individual CM call. |
| PIC_GROUP_CALL | BOOLEAN | A.4.2.1, table A.75/2 | IUT supports group CM call. |
| PIC_SEND_SDS_FCS | BOOLEAN | A.4.2.1, table A.76/8 | IUT supports inclusion of FCS in transmission |
| PIC_SDS_DATA1 | BOOLEAN | A.4.2.1, table A.78/1 | True if the IUT supports the SDS User defined data 1 type |
| PIC_SDS_DATA2 | BOOLEAN | A.4.2.1, table A.78/2 | True if the IUT supports the SDS User defined data 2 type |
| PIC_SDS_DATA3 | BOOLEAN | A.4.2.4.1, table A.78/3 | True if the IUT supports the SDS User defined data 3 type |
| PIC_SDS_DATA4 | BOOLEAN | A.4.2.4.1, table A.78/4 | True if the IUT supports the SDS User defined data 4 type |
| PIC_CALL_SETUP_NO_PRESENCE_CHECK | BOOLEAN | A.4.2.4.1, table A.113/1 | IUT supports outgoing call setup without presence check. |
| PIC_CALL_SETUP_PRESENCE_CHECK | BOOLEAN | A.4.2.4.1, table A.113/2 | IUT supports outgoing call setup with presence check. |
| PIC_END_OF_TRANSMISSION | BOOLEAN | A.4.2.4.1, table A.113/4 | IUT supports release of radio resource during occupation |
| PIC_CALL_RELEASE_OCCUPATION | BOOLEAN | A.4.2.4.1, table A.113/5 | IUT supports release of call during occupation |
| PIC_INITIATE_CALL_PREEMPTION | BOOLEAN | A.4.2.4.1, table A.113/7 | IUT supports call pre-emption |
| PIC_CALL_RELEASE_RESERVATION | BOOLEAN | A.4.2.4.1, table A.113/10 | IUT supports release of call during reservation |
| PIC_CALL_CHANGEOVER | BOOLEAN | A.4.2.4.1, table A.113/11 | IUT supports call changeover |
| PIC_SEND_U_SDS | BOOLEAN | A.4.2.4.1, table A.114/1 | IUT supports sending of unacknowledge data service |
| PIC_SEND_A_SDS | BOOLEAN | A.4.2.4.1, table A.114/2 | IUT supports sending of acknowledge data service |
| PIC_RECEIPT_A_SDS | BOOLEAN | A.4.2.4.1, table A.114/3 | IUT supports receipt of acknowledge data service |
| PIC_DN303 | INTEGER | A.4.2.4.1, table A.117/1 | DN303 value [from 0 to 3]. Number of attempts to send DM-SETUP PRES if no response received. |
| PIC_DN314 | INTEGER | A.4.2.4.1, table A.117/2 | DN314 value (1 to 6). Number of transmissions of DM-SDS UDATA. |
| PIC_DN316 | INTEGER | A.4.2.4.1, table A.117/3 | DN316 value (1 to 4). Number of attempts to send DM-SDS DATA if no response received. |
| PIC_T_303 | INTEGER | A.4.2.4.1, table A.118/1 | Value in msec of the timer DT303 |
| PIC_T_311 | INTEGER | A.4.2.4.1, table A.118/2 | Value in seconds of the timer DT311 |
| PIC_T_316 | INTEGER | A.4.2.4.1, table A.118/3 | Value in ms of the timer DT316 |
| PIX_IMP_DM_SETUP | BOOLEAN | B.3.3.1, table B.26/1 | It is possible to cause the IUT to send a DM-SETUP PDU |
| PIX_IMP_DM_SETUP_Group | BOOLEAN | B.3.3.1, table B.26/2 | It is possible to cause the IUT to send a DM-SETUP PDU for a group call |
| PIX_IMP_DM_SETUP_PRES | BOOLEAN | B.3.3.1, table B.26/3 | It is possible to cause the IUT to send a DM-SETUP PRES PDU |
| PIX_IMP_DM_TX_REQUEST | BOOLEAN | B.3.3.1, table B.26/4 | It is possible to cause the IUT to send a DM-TX REQUEST PDU. |
| PIX_IMP_DM_PREEMPT | BOOLEAN | B.3.3.1, table B.26/5 | It is possible to cause the IUT to send a DM-PREEMPT PDU. |
| PIX_IMP_DM_RELEASE | BOOLEAN | B.3.3.1, table B.26/6 | It is possible to cause the IUT to send a DM-RELEASE PDU. |
| PIX_IMP_DM_TX_CEASED | BOOLEAN | B.3.3.1, table B.26/7 | It is possible to cause the IUT to send a DM-TX CEASED PDU. |
| PIX_IMP_DM_SDS_DATA | BOOLEAN | B.3.3.1, table B.26/8 | It is possible to cause the IUT to send |

| Test Suite Parameter Declarations | | | |
|---|---------------------------------|------------------------|---|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| | | | a DM-SDS DATA PDU. |
| PIX_IMP_DM_SDS_UDATA | BOOLEAN | B.3.3.1, table B.26/9 | It is possible to cause the IUT to send a DM-SDS UDATA PDU. |
| PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type | B.3.3.1, table B.27/1 | Traffic channel type and interleaving depth supported by the IUT. |
| PIX_OTHER_TSI | TSI_Type | B.3.3.1, table B.27/2 | The TSI not recognized by the IUT and the tester. |
| PIX_POWER_CLASS | Power_Class_Type | B.3.3.1, table B.27/3 | The power class of the IUT. |
| PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | B.3.3.1, table B.27/4 | Power control flag, which indicate whether or not power control by slave is permitted. |
| PIX_RESERVATION_TIME | Reservation_Time_Remaining_Type | B.3.3.1, table B.27/5 | Value of the reservation time remaining used by the master MS. |
| PIX_SDS_TIME_REMAINING | SDS_Time_Remaining_Type | B.3.3.1, table B.27/6 | Value of the SDS time remaining element used to indicate the current estimate of the SDS channel occupation time. |
| PIX_SDS_DATA_1 | User_Defined_Data_1_Type | B.3.3.1, table B.27/7 | Value of SDS data type 1. |
| PIX_SDS_DATA_1_FCS | FCS_Type | B.3.3.1, table B.27/8 | Value of the Frame Check Sequence for the SDS DATA 1 data. |
| PIX_SDS_DATA_2 | User_Defined_Data_2_Type | B.3.3.1, table B.27/9 | Value of SDS data type 2. |
| PIX_SDS_DATA_2_FCS | FCS_Type | B.3.3.1, table B.27/10 | Value of the Frame Check Sequence for the SDS DATA 2 data. |
| PIX_SDS_DATA_3 | User_Defined_Data_3_Type | B.3.3.1, table B.27/11 | Value of SDS data type 3. |
| PIX_SDS_DATA_3_FCS | FCS_Type | B.3.3.1, table B.27/12 | Value of the Frame Check Sequence for the SDS DATA 3 data. |
| PIX_SDS_DATA_4 | User_Defined_Data_4_Type | B.3.3.1, table B.27/13 | Value of SDS data type 4. |
| PIX_SDS_DATA_4_FCS | FCS_Type | B.3.3.1, table B.27/14 | Value of the Frame Check Sequence for the SDS DATA 4 data. |
| PIX_SDS_DATA_4_LENGTH | Length_Indicator_Type | B.3.3.1, table B.27/15 | Length of the value of the SDS data type 4. |
| PIX_SDS_CURRENTLY_TESTING | INTEGER | B.3.3.1, table B.27/16 | The type (1 to 4) of SDS data currently testing. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.1.3.2 Layer 3 test specification for operation with Repeater type 1

5.5.1.3.2.1 Test suite structure for layer 3 for operation with Repeater type 1

Table 76: Test suite structure for layer 3 for operation with Repeater type 1

| Test Suite Structure | | |
|---|-----------------------|---|
| Suite Name: DMO/MSREP1/DMCC | | |
| Standards Ref.: EN 300 396-4 [18] | | |
| PICS Ref.: EN 300 396-8-2 [23] | | |
| PIXIT Ref.: EN 300 394-4-5 [31], annex B | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| DMO_MSREP1_DMCC/ | MSREP1_DMCC_supported | Check the dynamic requirements of the DMCC entity |
| DMO_MSREP1_DMCC/CM/ | MSREP1_Circuit_Mode | To test the CM behaviour of the DMCC entity of the IUT |
| DMO_MSREP1_DMCC/CM/B V/ | MSREP1_Circuit_Mode | To test the valid behaviour of the CM entity of the IUT |
| DMO_MSREP1_DMCC/CM/B V/TXO/ | MSREP1_Initiate_Call | To test the CM capabilities in TX occupation state |
| DMO_MSREP1_DMCC/CM/B V/TR/ | MSREP1_Initiate_Call | To test the CM capabilities in TX reservation state |

5.5.1.3.2.2 Test case index for layer 3 for operation with Repeater type 1

Table 77: Test case index for layer 3 for operation with Repeater type 1

| Test Case Index | | | |
|--------------------------------|----------------------------------|----------------------|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| DMO_MSREP1_DMC C/CM/BV/TXO/ | DMO_MSREP1_DMCC_ CM_BV_TXO_03 | MSREP1_Initiate_Call | Receive pre-emption for an ongoing individual call. |
| DMO_MSREP1_DMC C/CM/BV/TR/ | DMO_MSREP1_DMCC_ CM_BV_TR_02 | MSREP1_Initiate_Call | Receive and accept pre-emption for a new call. |
| DMO_MSREP1_DMC C/CM/BV/TR/ | DMO_MSREP1_DMCC_ CM_BV_TR_04 | MSREP1_Initiate_Call | Receive and accept pre-emption for continuation of ongoing call. |

5.5.1.3.2.3 Test case selection expression definitions for layer 3 for operation with Repeater type 1

Table 78: Test case selection expression definitions for layer 3 for operation with Repeater type 1

| Test Case Selection Expression Definitions | | |
|--|---|--|
| Expression Name | Selection Expression | Comments |
| MSREP1_DMCC_supported | PIC_MSREP1_DMCC_SUPPORTED | IUT supports DMCC. |
| MSREP1_Circuit_Mode | PIC_MSREP1_CM | IUT supports Circuit mode call. |
| MSREP1_Initiate_Call | PIC_INITIATE_CALL AND (PIX_IMP_DM_SETUP OR PIX_IMP_DM_SETUP_PRES) | IUT supports initiation of call via a Repeater type 1. |

5.5.1.3.2.4 Test suite parameter definitions for layer 3 for operation with Repeater type 1

Table 79: Test suite parameter definitions for layer 3 for operation with Repeater type 1

| Test Suite Parameter Declarations | | | |
|---|---------------------------------|-------------------------|--|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_MSREP1_DMCC_SUPPORTED | BOOLEAN | A.4.2.1.1, table A.79/1 | IUT supports DMCC for operation with DMO Repeater type 1. |
| PIC_MSREP1_CM | BOOLEAN | A.4.2.1.1, table A.80/1 | IUT supports circuit mode call. |
| PIC_INITIATE_CALL | BOOLEAN | A.4.2.1.1, table A.81/3 | IUT supports outgoing call setup. |
| PIX_IMP_DM_SETUP | BOOLEAN | B.3.3.2, table B.28/1 | It is possible to cause the IUT to send a DM-SETUP PDU |
| PIX_IMP_DM_SETUP_PRES | BOOLEAN | B.3.3.2, table B.28/2 | It is possible to cause the IUT to send a DM-SETUP PRES PDU |
| PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type | B.3.3.2, table B.29/1 | Traffic channel type and interleaving depth supported by the IUT. |
| PIX_POWER_CLASS | Power_Class_Type | B.3.3.2, table B.29/2 | The power class of the IUT. |
| PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | B.3.3.2, table B.29/3 | Power control flag, which indicate whether or not power control by slave is permitted. |
| PIX_RESERVATION_TIME | Reservation_Time_Remaining_Type | B.3.3.2, table B.29/4 | Value of the reservation time remaining used by the master MS. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.1.3.3 Layer 3 test specification for operation with Repeater type 2

5.5.1.3.3.1 Test suite structure for layer 3 for operation with Repeater type 2

Table 80: Test suite structure for layer 3 for operation with Repeater type 2

| Test Suite Structure | | |
|---|-----------------------|---|
| Suite Name: DMO/MSREP2/DMCC | | |
| Standards Ref.: EN 300 396-7 [21] | | |
| PICS Ref.: ETS 300 396-8-4 [25] | | |
| PIXIT Ref.: EN 300 394-4-13 [39], annex B | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| DMO_MSREP2_DMCC/ | MSREP2_DMCC_supported | Check the dynamic requirements of the DMCC entity |
| DMO_MSREP2_DMCC/CM/ | MSREP2_Circuit_Mode | To test the CM behaviour of the DMCC entity of the IUT |
| DMO_MSREP2_DMCC/CM/BV/ | MSREP2_Circuit_Mode | To test the valid behaviour of the CM entity of the IUT |
| DMO_MSREP2_DMCC/CM/BV/TXO/ | MSREP2_Initiate_Call | To test the CM capabilities in TX occupation state |
| DMO_MSREP2_DMCC/CM/BV/TR/ | MSREP2_Initiate_Call | To test the CM capabilities in TX reservation state |

5.5.1.3.3.2 Test case index for layer 3 for operation with Repeater type 2

Table 81: Test case index for layer 3 for operation with Repeater type 2

| Test Case Index | | | |
|----------------------------|------------------------------|----------------------|--|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| DMO_MSREP2_DMCC/CM/BV/TXO/ | DMO_MSREP2_DMCC_CM_BV_TXO_03 | MSREP2_Initiate_Call | Receive pre-emption for an ongoing individual call. |
| DMO_MSREP2_DMCC/CM/BV/TR/ | DMO_MSREP2_DMCC_CM_BV_TR_02 | MSREP2_Initiate_Call | Receive and accept pre-emption for a new call. |
| DMO_MSREP2_DMCC/CM/BV/TR/ | DMO_MSREP2_DMCC_CM_BV_TR_04 | MSREP2_Initiate_Call | Receive and accept pre-emption for continuation of ongoing call. |

5.5.1.3.3.3 Test case selection expression definitions for layer 3 for operation with Repeater type 2

Table 82: Test case selection expression definitions for layer 3 for operation with Repeater type 2

| Test Case Selection Expression Definitions | | |
|--|---|--|
| Expression Name | Selection Expression | Comments |
| MSREP2_DMCC_supported | PIC_MSREP2_DMCC_SUPPORTED | IUT supports DMCC. |
| MSREP2_Circuit_Mode | PIC_MSREP2_CM | IUT supports Circuit mode call. |
| MSREP2_Initiate_Call | PIC_INITIATE_CALL AND (PIX_IMP_DM_SETUP OR PIX_IMP_DM_SETUP_PRES) | IUT supports initiation of call via a Repeater type 2. |

5.5.1.3.3.4 Test suite parameter definitions for layer 3 for operation with Repeater type 2

Table 83: Test suite parameter definitions for layer 3 for operation with Repeater type 2

| Test Suite Parameter Declarations | | | |
|---|---------------------------------|-------------------------|--|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_MSREP2_DMCC_SUPPORTED | BOOLEAN | A.4.2.1.2, table A.83/1 | IUT supports DMCC for operation with DMO Repeater type 2. |
| PIC_MSREP2_CM | BOOLEAN | A.4.2.1.2, table A.84/1 | IUT supports circuit mode call. |
| PIC_INITIATE_CALL | BOOLEAN | A.4.2.1.2, table A.85/3 | IUT supports outgoing call setup. |
| PIX_IMP_DM_SETUP | BOOLEAN | B.3.3.3, table B.30/1 | It is possible to cause the IUT to send a DM-SETUP PDU |
| PIX_IMP_DM_SETUP_PRES | BOOLEAN | B.3.3.3, table B.30/2 | It is possible to cause the IUT to send a DM-SETUP PRES PDU |
| PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | B.3.3.3, table B.31/1 | Traffic channel type and interleaving depth supported by the IUT. |
| PIX_POWER_CLASS | Power_Class_Type | B.3.3.3, table B.31/2 | The power class of the IUT. |
| PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | B.3.3.3, table B.31/3 | Power control flag, which indicate whether or not power control by slave is permitted. |
| PIX_RESERVATION_TIME | Reservation_Time_Remaining_Type | B.3.3.3, table B.31/4 | Value of the reservation time remaining used by the master MS. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.1.3.4 Layer 3 test specification for operation with Gateway

5.5.1.3.4.1 Test suite structure for layer 3 for operation with Gateway

Table 84: Test suite structure for layer 3 for operation with Gateway

| Test Suite Structure | | |
|---|-----------------------|---|
| Suite Name: DMO/MSGW/NWK | | |
| Standards Ref.: ETS 300 396-5 [19] | | |
| PICS Ref.: ETS 300 396-8-3 [24] | | |
| PIXIT Ref.: ETS 300 394-4-9 [35], annex B | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| DMO_MSGW_NWK/ | MSGW_supported | Check the dynamic behaviour requirements of the network layer |
| DMO_MSGW_NWK/DMCC/ | MSGW_DMCC_supported | Check the dynamic requirements of the DMCC entity |
| DMO_MSGW_NWK/DMCC/C M/ | MSGW_Circuit_Mode | To test the CM behaviour of the DMCC entity of the IUT |
| DMO_MSGW_NWK/DMCC/C M/CA/ | MSGW_Initiate_Call | To test the basic CM capabilities of the DMCC entity of the IUT |
| DMO_MSGW_NWK/DMCC/C M/BV/ | MSGW_Circuit_Mode | To test the valid behaviour of the CM entity of the IUT |
| DMO_MSGW_NWK/DMCC/C M/BV/ID/ | MSGW_Circuit_Mode | To test the CM capabilities from idle state |
| DMO_MSGW_NWK/DMCC/C M/BV/TXO/ | MSGW_Initiate_Call | To test the CM capabilities in TX occupation state |
| DMO_MSGW_NWK/DMCC/C M/BV/RO/ | MSGW_Circuit_Mode | To test the CM capabilities in RX occupation state |
| DMO_MSGW_NWK/DMCC/C M/BV/RR/ | MSGW_Circuit_Mode | To test the CM capabilities in RX reservation state |
| DMO_MSGW_NWK/DMCC/C M/BV/TI/ | MSGW_Circuit_Mode | To test the timer capabilities in Circuit mode |
| DMO_MSGW_NWK/DMMM/ | MSGW_DMMM_Supported | Check the dynamic requirements of the DMMM entity |

5.5.1.3.4.2 Test case index for layer 3 for operation with Gateway

Table 85: Test case index for layer 3 for operation with Gateway

| Test Case Index | | | |
|------------------------------|--------------------------------|----------------------------------|---|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| DMO_MSGW_NWK/DMCC/CM/CA/ | DMO_MSGW_NWK_DMCC_CM_CA_01 | MSGW_Initiate_Group_Call | Set-up a group call. |
| DMO_MSGW_NWK/DMCC/CM/CA/ | DMO_MSGW_NWK_DMCC_CM_CA_02 | MSGW_Initiate_Individual_Call | Establish an individual call. |
| DMO_MSGW_NWK/DMCC/CM/BV/ID/ | DMO_MSGW_NWK_DMCC_CM_BV_ID_04 | MSGW_Initiate_Call_and_Cease_TX | Pre-emption flags in DM-SETUP and DM-TX-CEASED PDU. |
| DMO_MSGW_NWK/DMCC/CM/BV/TXO/ | DMO_MSGW_NWK_DMCC_CM_BV_TXO_04 | MSGW_Initiate_Call | Accept pre-emption for an ongoing individual call without a pre-emptive priority. |
| DMO_MSGW_NWK/DMCC/CM/BV/TXO/ | DMO_MSGW_NWK_DMCC_CM_BV_TXO_06 | MSGW_Initiate_Call | Receive pre-emption for a new individual call without a pre-emptive priority. |
| DMO_MSGW_NWK/DMCC/CM/BV/RO/ | DMO_MSGW_NWK_DMCC_CM_BV_RO_03 | MSGW_Preemption_Ongoing_Call_IGP | Initiate pre-emption to establish ongoing call. |
| DMO_MSGW_NWK/DMCC/CM/BV/RO/ | DMO_MSGW_NWK_DMCC_CM_BV_RO_05 | MSGW_Preemption_Ongoing_Call_IGP | Handle the reject of a pre-emption. |
| DMO_MSGW_NWK/DMCC/CM/BV/RR/ | DMO_MSGW_NWK_DMCC_CM_BV_RR_03 | MSGW_Call_Changeover_IGT | Initiate changeover to establish ongoing CM call. |
| DMO_MSGW_NWK/DMCC/CM/BV/RR/ | DMO_MSGW_NWK_DMCC_CM_BV_RR_04 | MSGW_Call_Changeover_IGT | Handle the rejection of a changeover request. |
| DMO_MSGW_NWK/DMCC/CM/BV/TI/ | DMO_MSGW_NWK_DMCC_CM_BV_TI_01 | MSGW_Initiate_Call | Time-out of DT301 for response to DM-GSETUP. |
| DMO_MSGW_NWK/DMCC/CM/BV/TI/ | DMO_MSGW_NWK_DMCC_CM_BV_TI_02 | MSGW_Initiate_Call | Time out DT302 for response DM-GCONNECT after receiving DM-GACK. |
| DMO_MSGW_NWK/DMMM/ | DMO_MSGW_NWK_DMMM_MM_01 | MSGW_DMMM_Supported | Registration by invitation. |
| DMO_MSGW_NWK/DMMM/ | DMO_MSGW_NWK_DMMM_MM_02 | MSGW_Uninvited_Registration | Un-invited registration. |
| DMO_MSGW_NWK/DMMM/ | DMO_MSGW_NWK_DMMM_MM_03 | MSGW_DMMM_Supported | Registration cancellation. |

5.5.1.3.4.3 Test case selection expression definitions for layer 3 for operation with Gateway

Table 86: Test case selection expression definitions for layer 3 for operation with Gateway

| Test Case Selection Expression Definitions | | |
|--|---|---|
| Expression Name | Selection Expression | Comments |
| MSGW_supported | PIC_MSGW_SUPPORTED | IUT supports operation with Gateway. |
| MSGW_DMCC_supported | PIC_DMCC | IUT supports DMCC. |
| MSGW_Circuit_Mode | PIC_MSGW_CM | IUT supports Circuit mode call. |
| MSGW_Initiate_Call | PIC_INITIATE_CALL AND PIX_IMP_GSETUP | IUT supports initiation of call to a Gateway. |
| MSGW_DMMM_Supported | PIC_DMMM | IUT supports DMMM. |
| MSGW_Initiate_Group_Call | PIC_GROUP_CALL AND PIC_INITIATE_CALL AND PIX_IMP_GSETUP | IUT supports the initiation of a group call. |
| MSGW_Initiate_Individual_Call | PIC_INDIVIDUAL_CALL AND PIC_INITIATE_CALL AND PIX_IMP_GSETUP | IUT supports the initiation of an individual call. |
| MSGW_Initiate_Call_and_Cease_TX | PIC_INITIATE_CALL AND PIX_IMP_GSETUP AND PIX_IMP_DM_TX_CEASED | IUT supports initiation of call and sending of TX-CEASED. |
| MSGW_Preemption_Ongoing_Call_IGP | PIC_PREEMPT_ONGOING AND PIX_IMP_GPREEMPT | IUT supports the initiation of call changeover. |
| MSGW_Call_Changeover_IGT | PIC_CALL_CHANGEOVER AND PIX_IMP_GTX_REQUEST | IUT supports the initiation of call pre-emption. |
| MSGW_Uninvited_Registration | PIC_UNINVITED_REGISTRATION | IUT supports unsolicited registration. |

5.5.1.3.4.4

Test suite parameter definitions for layer 3 for operation with Gateway

Table 87: Test suite parameter definitions for layer 3 for operation with Gateway

| Test Suite Parameter Declarations | | | |
|---|--|----------------------------|--|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_MSGW_SUPPORTED | BOOLEAN | A.4.2.1, table A.71/3 | Operation with DMO Gateway supported. |
| PIC_DMCC | BOOLEAN | A.4.2.1.3, table A.87/1 | IUT supports DMCC. |
| PIC_DMMM | BOOLEAN | A.4.2.1.3, table A.87/2 | IUT supports DMMM. |
| PIC_MSGW_CM | BOOLEAN | A.4.2.1.3, table A.88/1 | IUT supports Circuit mode call through DMO Gateway |
| PIC_INDIVIDUAL_CALL | BOOLEAN | A.4.2.1.3, table A.89/1 | IUT supports individual circuit mode call. |
| PIC_GROUP_CALL | BOOLEAN | A.4.2.1.3, table A.89/2 | IUT supports group circuit mode call. |
| PIC_INITIATE_CALL | BOOLEAN | A.4.2.1.3, table A.89/3 | IUT supports outgoing call setup. |
| PIC_PREEMPT_ONGOING | BOOLEAN | A.4.2.4.1.1, table A.119/3 | IUT supports pre-emption of ongoing call. |
| PIC_CALL_CHANGEOVER | BOOLEAN | A.4.2.4.1.1, table A.119/4 | IUT supports call change-over. |
| PIC_DN301 | INTEGER | A.4.2.4.1.1, table A.121/1 | DN301 value [from 0 to 3]. Number of attempts to send DM-GSETUP if no response received. |
| PIC_DN302 | INTEGER | A.4.2.4.1.1, table A.121/2 | DN302 value [from 0 to 3]. Number of attempts to send DM-GSETUP if no response received after DM-GACK. |
| PIC_T_301 | INTEGER | A.4.2.4.1.1, table A.122/1 | Value in msec of timer DT301. |
| PIC_T_302 | INTEGER | A.4.2.4.1.1, table A.122/2 | Value in msec of timer DT302. |
| PIC_UNINVITED_REGISTRATION | BOOLEAN | A.4.2.4.2.1, table A.123/2 | IUT supports unsolicited registration. |
| PIX_IMP_GSETUP | BOOLEAN | B.3.3.4, table B.32/1 | It is possible to cause the IUT to send a DM-GSETUP PDU. |
| PIX_IMP_GPREEMPT | BOOLEAN | B.3.3.4, table B.32/2 | It is possible to cause the IUT to send a DM-GPREEMPT PDU. |
| PIX_IMP_GTX_REQUEST | BOOLEAN | B.3.3.4, table B.32/3 | It is possible to cause the IUT to send a DM-GTX REQUEST PDU. |
| PIX_IMP_DM_TX_CEASED | BOOLEAN | B.3.3.4, table B.32/4 | It is possible to cause the IUT to send a DM-TX CEASED PDU. |
| PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | B.3.3.4, table B.33/1 | Traffic channel type and interleaving depth supported by the IUT. |
| PIX_POWER_CLASS | Power_Class_Type | B.3.3.4, table B.33/2 | The power class of the IUT. |
| PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | B.3.3.4, table B.33/3 | Power control flag, which indicate whether or not power control by slave is permitted. |
| PIX_DMMS_WAITING_TIMER | DMMS_Waiting_Timer_Type | B.3.3.4, table B.33/4 | Value of the DM-MS waiting timer (that the DM-MS should use for timer DT302, DT308 or DT309) |
| PIX_REGISTRATION_LABEL | Registration_Label_Type | B.3.3.4, table B.33/5 | Value of the registration label |
| PIX_REGISTRATION_TIME_REMAINING | Registration_Transaction_Time_Remaining_Type | B.3.3.4, table B.33/6 | Registration transaction time remaining |
| PIX_RESERVATION_TIME | Reservation_Time_Remaining_Type | B.3.3.4, table B.33/7 | Value of the reservation time remaining used by the master MS. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.1.4 Security test specification

5.5.1.4.1 Test suite structure for Ud security

Table 88: Test suite structure for Ud security

| Test Suite Structure | | |
|---|--------------------|---|
| Suite Name: Security | | |
| Standards Ref.: ETS 300 396-6 [20] | | |
| PICS Ref.: ETS 300 394-5-1 [13] | | |
| PIXIT Ref.: ETS 300 394-5-3 [15], annex D | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| Sec_DM/ | DML3_Security_Supp | To test the behaviour of the Direct Mode security module of the IUT. |
| Sec_DM/L3/ | DML3_Security_Supp | To test the DM security module at layer 3. |
| Sec_DM/L3/OTAR/ | DML3_OTAR_Supp | To test the DM security module of the IUT, when operating the OTAR procedures. |
| Sec_DM/L3/OTAR/BV/ | DML3_OTAR_Supp | To test the valid behaviour of OTAR scenarios of the DM security protocols. |
| Sec_DM/L3/SED/ | DML3_SED_Supp | To test the DM security module of the IUT, when operating the enable and disable procedures. |
| Sec_DM/L3/SED/BV/ | DML3_SED_Supp | To test the DM security module of the IUT, when operating the valid behaviour of the enable and disable procedures. |
| Sec_DM/L3/SED/BV/PD/ | DML3_SED_Supp | To test the DM security module of the IUT, when operating the permanent disabling procedures. |
| Sec_DM/L3/SED/BV/PD/TAR/ | DML3_Target_Supp | To test the DM security module of the IUT, when operating the permanent disabling procedures and when IUT acts as a target. |
| Sec_DM/L3/SED/BV/EN/ | DML3_Target_Supp | To test the DM security module of the IUT, when operating the enabling procedures. |
| Sec_DM/L3/SED/BV/EN/TAR/ | DML3_Target_Supp | To test the DM security module of the IUT, when operating the enabling procedures and when IUT acts as a target. |
| Sec_DM/L3/SED/BV/TEI/ | DML3_Target_Supp | To test the DM security module of the IUT, when operating the TEI exchange procedure. |

5.5.1.4.2 Test case index for Ud security

Table 89: Test case index for Ud security

| Test Case Index | | | |
|--------------------------|----------------------------|------------------|---|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| Sec_DM/L3/OTAR/BV/ | Sec_DM_L3_OTAR_BV_01 | DML3_KU_IMP_Supp | IUT requests SCK. |
| Sec_DM/L3/OTAR/BV/ | Sec_DM_L3_OTAR_BV_02 | DML3_KS_KH_Supp | Testset request key from IUT acting as a key sealer or as key holder (as a relay for key sealer). |
| Sec_DM/L3/OTAR/BV/ | Sec_DM_L3_OTAR_BV_03 | DML3_KH_IMP_Supp | IUT acts as a key holder, testset as a key sealer. |
| Sec_DM/L3/OTAR/BV/ | Sec_DM_L3_OTAR_BV_04 | DML3_KU_Supp | Testset initiates the provision of SCK. |
| Sec_DM/L3/SED/BV/PD/TAR/ | Sec_DM_L3_SED_BV_PD_TAR_02 | DML3_Target_Supp | Permanently disable equipment (IUT acts as a target). |
| Sec_DM/L3/SED/BV/EN/TAR/ | Sec_DM_L3_SED_BV_EN_TAR_01 | DML3_Target_Supp | Enable equipment (IUT acts as a target). |
| Sec_DM/L3/SED/BV/EN/TAR/ | Sec_DM_L3_SED_BV_EN_TAR_02 | DML3_Target_Supp | Enable subscriber (IUT acts as a target). |
| Sec_DM/L3/SED/BV/TEI/ | Sec_DM_L3_SED_BV_TEI_01 | DML3_Target_Supp | TEI delivery (IUT acts as a target) |

5.5.1.4.3 Test case selection expression definitions for Ud security

Table 90: Test case selection expression definitions for Ud security

| Test Case Selection Expression Definitions | | |
|--|---|---|
| Expression Name | Selection Expression | Comments |
| DML3_Security_Supp | PIC_DM_SEC_SUPP AND PIX_DM | IUT supports DM security. |
| DML3_OTAR_Supp | PIC_DM_OTAR_SUPP AND PIX_DM | IUT supports OTAR. |
| DML3_SED_Supp | PIC_DM_SED_SUPP AND PIX_DM | Enable/Disable procedures supported. |
| DML3_KS_KH_Supp | PIC_DM_KS_KH_SUPP AND PIX_DM | Key sealer or key holder role supported. |
| DML3_KH_IMP_Supp | PIC_DM_KH_SUPP AND PIX_IMP_SDS_DATA_SCK_Demand AND PIX_DM | Key holder role supported and the sending of the SDS DATA PDU containing the OTAR SCK demand implemented. |
| DML3_KU_IMP_Supp | PIC_DM_KU_SUPP AND PIX_IMP_SDS_DATA_SCK_Demand AND PIX_DM | Key user role supported and the sending of the SDS DATA PDU containing the OTAR SCK demand implemented. |
| DML3_KU_Supp | PIC_DM_KU_SUPP AND PIX_DM | Key user role supported. |
| DML3_Target_Supp | PIC_DM_TARGET_SUPP AND PIX_DM | Target role supported. |

5.5.1.4.4 Test suite parameter definitions for Ud security

Table 91: Test suite parameter definitions for Ud security

| Test Suite Parameter Declarations | | | |
|---|----------------------|--------------------------|---|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_DM_SEC_SUPP | BOOLEAN | A.4.2.1, table A.72/6 | DM security supported. |
| PIC_DM_OTAR_SUPP | BOOLEAN | A.4.2.5, table A.125/2 | OTAR supported. |
| PIC_DM_SED_SUPP | BOOLEAN | A.4.2.5, table A.125/3 | Secure enable/disable supported. |
| PIC_DM_KS_SUPP | BOOLEAN | A.4.2.5.2, table A.127/1 | Key sealer role supported. |
| PIC_DM_KU_SUPP | BOOLEAN | A.4.2.5.2, table A.127/2 | Key user role supported. |
| PIC_DM_KH_SUPP | BOOLEAN | A.4.2.5.2, table A.127/3 | Key holder role supported. |
| PIC_DM_TARGET_SUPP | BOOLEAN | A.4.2.5.3, table A.130/2 | Target role in Enable/Disable procedures supported. |
| PIX_IMP_SDS_DATA_SCK_Demand | BOOLEAN | B.3.4, table B.34/1 | Sending of the DM SDS DATA PDU containing an OTAR SCK demand implemented. |
| PIX_DM | BOOLEAN | B.3.4, table B.35/1 | Testing the Direct Mode Security protocol |
| PIX_MS_ITSI | TSI_Type | B.3.4, table B.36/1 | ITSI of the IUT. |
| PIX_TEI | TEI_Type | B.3.4, table B.36/2 | TEI. |
| PIX_DM_SDS_TIME_REMAINING | DM_TimeRemainingType | B.3.4, table B.36/3 | Value of the SDS time remaining element used to indicate the current estimate of the SDS channel occupation time. |
| PIX_RAND1 | RandomChallengeType | B.3.4, table B.37/1 | Value of Random challenge (RAND1). |
| PIX_RS | RandomSeedType | B.3.4, table B.37/2 | Value of the Random seed (RS). |
| PIX_RES2 | ResponseValueType | B.3.4, table B.37/3 | Value of the result RES2. |
| PIX_SCKN | SCK_NbrType | B.3.4, table B.38/1 | SCK number. |
| PIX_SCK_VN | SCK_VersionNbrType | B.3.4, table B.38/2 | SCK version number. |
| PIX_SSCK | SealedKeyType | B.3.4, table B.38/3 | Sealed SCK. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.1.5 Managed DMO test specification

5.5.1.5.1 Test suite structure Managed DMO

Table 92: Test suite structure for Managed DMO

| Test Suite Structure | | |
|---|-------------------------|--|
| Suite Name: M-DMO | | |
| Standards Ref.: TS 100 396-10 [26] | | |
| PICS Ref.: annex A of the present document | | |
| PIXIT Ref.: annex B of the present document | | |
| Test Method(s): The embedded variant of the remote single party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| M_DMO_MSMS_MAC/ | Managed_DMO_MS | To test the managed DMO MS-MS. |
| M_DMO_MSMS_MAC/CA/ | Initiate_CM_or_SDS_Call | To test the basic capabilities of the IUT. |

5.5.1.5.2 Test case index for Managed DMO

Table 93: Test case index for Managed DMO

| Test Case Index | | | |
|------------------------|--------------------------|-----------------------------|---|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| M_DMO_MSMS_MA C/CA/ | M_DMO_MSMS_M AC_CA_01 | Initiate_CM_or_SD S_Call | Check that the IUT does not transmit unless authorized. |

5.5.1.5.3 Test case selection expression definitions for Managed DMO

Table 94: Test case selection expression definitions for Managed DMO

| Test Case Selection Expression Definitions | | |
|--|--|--|
| Expression Name | Selection Expression | Comments |
| Managed_DMO_MS | PIC_M_DMO_MS | Managed DMO for Mobile Station |
| Initiate_CM_or_SDS_Call | (PIC_CALL_SETUP_NO_PRESENCE_CHECK AND IMP_SYNC_SETUP) OR (PIC_CALL_SETUP_PRESENCE_CHECK AND IMP_SYNC_SETUP_PRES) OR (PIC_SEND_U_SDS AND IMP_SYNC_SDS_UDATA) OR (PIC_SEND_A_SDS AND IMP_SYNC_SDS_DATA) | IUT supports initiation of a CM or SDS call. |

5.5.1.5.4 Test suite parameter definitions for Managed DMO

Table 95: Test suite parameter definitions for Managed DMO

| Test Suite Parameter Declarations | | | |
|---|---------------------|--------------------------|---|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_M_DMO_MS | BOOLEAN | A.4.1, table A.72/3 | Managed DMO for Mobile Station |
| PIC_CALL_SETUP_NO_PRES SENCE_CHECK | BOOLEAN | A.4.2.4.1, table A.113/1 | IUT supports outgoing call setup without presence check. |
| PIC_CALL_SETUP_PRES SENCE_CHECK | BOOLEAN | A.4.2.4.1, table A.113/2 | IUT supports outgoing call setup with presence check. |
| PIC_SEND_U_SDS | BOOLEAN | A.4.2.4.1, table A.114/1 | IUT supports sending of unacknowledge data service |
| PIC_SEND_A_SDS | BOOLEAN | A.4.2.4.1, table A.114/2 | IUT supports sending of acknowledge data service |
| IMP_SYNC_SETUP | BOOLEAN | B.3.2.1, table B.16/1 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP SDU. |
| IMP_SYNC_SETUP_PRES | BOOLEAN | B.3.2.1, table B.16/2 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP PRES SDU. |
| IMP_SYNC_SDS_DATA | BOOLEAN | B.3.2.1, table B.16/3 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS DATA SDU. |
| IMP_SYNC_SDS_UDATA | BOOLEAN | B.3.2.1, table B.16/4 | It is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS UDATA SDU. |
| PIX_MS_TSI | TSI_Type | B.3.2.1, table B.17/1 | TSI of the IUT. |
| PIX_TESTER_SWMI_MNI | MNI_Type | B.3.2.1, table B.17/2 | MNI of the controlling SwMI of the authorizing unit. |
| PIX_TESTER_DEVICE_ADDRESS | Device_Address_Type | B.3.2.1, table B.17/3 | Address of authorizing unit. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.2 DMO Repeater type 1 test specification

5.5.2.1 Physical layer test specification

5.5.2.1.1 Test case index for physical layer

Table 96: Test case index for physical layer

| Test Case Index | | | |
|---|---|----------------------------|---|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| 7.1.1.2 a) and F.5, table F.2 and EN 300 396-4 [18], subclause 12.3.4 | 8.1, 8.1.1 a), b), b2) and d) | Dual_REP1 | To test that the output power corresponds to the declared single or highest power class. |
| 7.1.1.2 a) and F.5, table F.2 and EN 300 396-4 [18], subclause 12.3.4 | 8.1, 8.1.1 a), b), b2) and d), and F.4, table F.1 | DO-REP1 | To test that the output power corresponds to the declared single or highest power class. |
| 7.1.1.2 a) and F.5, table F.2 and EN 300 396-4 [18], subclause 12.3.4 | 8.1 and 8.1.1 c) | Dual_REP1_Multiple_Classes | To test that the output power corresponds to the declared lower power class(es). |
| 7.1.1.2 a) and F.5, table F.2 and EN 300 396-4 [18], subclause 12.3.4 | 8.1, 8.1.1 c) and F.4, table F.1 | DO-REP1_Multiple Class | To test that the output power corresponds to the declared lower power class(es). |
| 7.1.2.2 | 8.2 | DO-REP1 | To test the output power in the non-active transmit state. |
| 7.1.3.2 | 8.3 and F.4, table F.1 | DO-REP1 | To test the unwanted conducted emission over the useful part of the burst. |
| 7.1.4.2 | 8.4 | DO-REP1 | To test the unwanted conducted emission during switching transients. |
| 7.1.5.2 and F.5, table F.2 and EN 300 396-4 [18], subclause 12.3.4 | 8.5 | Applicable_to_all_REP1 | To test the unwanted conducted discrete spurious and wideband noise emission far from the carrier. |
| 7.1.6.2 | 8.6 | DO-REP1 | To test the unwanted radiated emission in the active transmit state. |
| 7.1.7.2 | 8.7 and 8.7.1 | DO-REP1 | To test the unwanted conducted emission during LCH. |
| 7.1.8.2.1 | 8.8 and 8.8.1 | DO-REP1 | To test the DM-REP1 transmitter intermodulation attenuation. |
| 7.2.2.2 and F.5, table F.2 | 9.2 and 9.2.1 | DO-REP1 | To test the nominal error rate. ETS 300 394-1 [8], table A.2; nominal error and F.5, table F.2: - TCH/7,2, DR50, - 85 dBm, - TCH/7,2, STAT, - 20 dBm. |
| 7.2.3.2 and F.5, table F.2 | 9.3 and 9.3.1 | DO-REP1 | To test the dynamic reference sensitivity performance. ETS 300 394-1 [8], table A.2; sensitivity and F.5, table F.2: - SCH/F, DR50, - 103 (- 97) dBm, - SCH/S, DR50, - 103 dBm. |
| 7.2.3.2 and F.5, table F.2 | 9.3 and 9.3.1 | DO-REP1_Protected_Data | To test the dynamic reference sensitivity performance of a DM-REP1 supporting protected circuit mode data. ETS 300 394-1 [8], table A.2; sensitivity and F.5, table F.2: - TCH/2,4, N=1, DR50, - 103 dBm. |
| 7.2.3.2 and F.5, table F.2 | 9.3 and 9.3.3 | DO-REP1 | To test the dynamic reference sensitivity performance of a DM-REP1. ETS 300 394-1 [8], table A.11 and F.5, table F.2: - SCH/F, DR50, - 103 dBm. |

| Test Case Index | | | |
|--|--------------------------------|------------------------|---|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| 7.2.4.2 and F.5, table F.2 | 9.4 and 9.4.1 | DO-REP1 | To test the reference interference performance ETS 300 394-1 [8], table A.2 and F.5, table F.2: - co-channel interference, - adjacent channel interference. |
| 7.2.5.2 and F.5, table F.2 | 9.5 and 9.5.1 | DO-REP1 | To test the blocking characteristics ETS 300 394-1 [8], table A.2; blocking and F.5, table F.2. |
| 7.2.6.2 and F.5, table F.2 | 9.6 | DO-REP1 | To test the spurious response rejection ETS 300 394-1 [8], table A.2; spurious response and F.5, table F.2. |
| 7.2.7.2 and F.5, table F.2 | 9.7 and 9.7.1 | DO-REP1 | To test the intermodulation response rejection ETS 300 394-1 [8], table A.2; intermodulation and F.5, table F.2. |
| 7.2.8.2 | 9.8 | DO-REP1 | To test the unwanted conducted emission. |
| 7.2.9.2 | 9.9 | DO-REP1 | To test the unwanted radiated emission. |
| 7.3.1.2 | 10.1, 10.1.1 and 10.1.3 | DO-REP1 | To test the modulation accuracy. |
| F.6.2.1 | F.6.2.2 | Applicable_to_all_REP1 | To test the transmitter output power versus time within a burst. |
| F.6.3.1 | F.6.3.2 | Applicable_to_all_REP1 | To test the RF frequency accuracy. |
| F.6.4.2 | F.6.4.3 | Applicable_to_all_REP1 | To test the DM synchronization accuracy. |
| NOTE 1: The test case limit values, as referenced, are specified in ETS 300 394-1 [8], clause 7 and annex F, except when otherwise stated. | | | |
| NOTE 2: The test methods, as referenced, are specified in ETS 300 394-1 [8], clauses 8 to 10 and annex F. | | | |

5.5.2.1.2 Test case selection expression definitions for physical layer

Table 97: Test case selection expression definitions for physical layer

| Test Case Selection Expression Definitions | | |
|--|-----------------------------------|---|
| Expression Name | Selection Expression | Comments |
| Applicable_to_all_REP1 | A.133/3 | TETRA DMO Repeater type 1. |
| Dual_REP1 | A.133/3 AND A.1/1 | DMO Repeater type 1 equipment also supporting trunked (V+D) mode |
| DO-REP1 | A.133/3 AND NOT A.1/1 | DMO-only Repeater type 1 equipment not supporting trunked (V+D) mode |
| DO-REP1_Protected_Data | A.133/3 AND NOT A.1/1 AND A.135/2 | DMO-only Repeater type 1 equipment supporting protected circuit mode data. |
| Dual_REP1_Multiple_Class | A.133/3 AND A.1/1 AND A.135/1 | DMO Repeater type 1 equipment also supporting trunked (V+D) mode and supporting more than one power class |
| DO-REP1_Multiple Class | A.133/3 AND NOT A.1/1 AND A.135/1 | DMO-only Repeater type 1 equipment supporting more than one power class |
| Detailed Comments | | |
| The selection expressions given in the Selection Expression-column are Boolean expressions, referring to the declarations made in requirement tables in annex A in the present document. | | |

5.5.2.2 Layer 2 test specification

5.5.2.2.1 Test suite structure for layer 2 for Repeater type 1

Table 98: Test suite structure for layer 2

| Test Suite Structure | | |
|--|----------------------|---|
| Suite Name: DMO/DMREP1 | | |
| Standards Ref.: EN 300 396-4 [18] | | |
| PICS Ref.: EN 300 396-8-2 [23] | | |
| PIXIT Ref.: EN 300 394-4-6 [32], annex B | | |
| Test Method(s): The embedded variant of the remote multi party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| DMO_DMREP1_MAC/ | DMREP1_MAC_supported | To test the DM-REP1 MAC protocol. |
| DMO_DMREP1_MAC/CA/ | DMREP1_MAC_supported | To test the basic capabilities of the IUT. |
| DMO_DMREP1_MAC/BV/ | DMREP1_MAC_supported | To test the capabilities of the IUT in a valid behaviour. |
| DMO_DMREP1_MAC/BI/ | DMREP1_MAC_supported | To test invalid behaviour capabilities of the IUT. |
| DMO_DMREP1_MAC/TI/ | DMREP1_MAC_supported | To test timer capabilities of the IUT. |

5.5.2.2.2 Test case index for layer 2 for Repeater type 1

Table 99: Test case index for layer 2 for Repeater type 1

| Test Case Index | | | |
|----------------------|----------------------|----------------------|---|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| DMO_DMREP1_MAC/CA/ | DMO_DMREP1_MAC_CA_02 | Sending_DPRES_SY NC | Check sending of presence signal. |
| DMO_DMREP1_MAC/BV/ | DMO_DMREP1_MAC_BV_05 | Support_CM_Call | Circuit mode data retransmission when call setup with presence check is used. |
| DMO_DMREP1_MAC/BV/ | DMO_DMREP1_MAC_BV_07 | Support_CM_Call | Circuit mode callsetup without presence check |
| DMO_DMREP1_MAC/BV/ | DMO_DMREP1_MAC_BV_08 | Support_SDS_Call | Re-transmission procedure for DM_SDS DATA or DM_SDS UDATA call. |
| DMO_DMREP1_MAC/BI/ | DMO_DMREP1_MAC_BI_01 | DMREP1_MAC_supported | Check DM-REP1 behaviour when messages with wrong repeater address are sent. |
| DMO_DMREP1_MAC/BI/ | DMO_DMREP1_MAC_BI_02 | Support_CM_Call | Check DM-REP1 handling of wrongly addressed messages from slave MS. |
| DMO_DMREP1_MAC/TI/ | DMO_DMREP1_MAC_TI_01 | DMREP1_MAC_supported | Check DM-REP1 behaviour when master MS does not send channel occupied signals |
| DMO_DMREP1_MAC/TI/ | DMO_DMREP1_MAC_TI_02 | DMREP1_MAC_supported | Check DM-REP1 behaviour when master channel is reserved but reservation signalling is not sent. |

5.5.2.2.3 Test case selection expression definitions for layer 2 for Repeater type 1

Table 100: Test case selection expression definitions for layer 2 for Repeater type 1

| Test Case Selection Expression Definitions | | |
|--|--------------------------|---|
| Expression Name | Selection Expression | Comments |
| DMREP1_MAC_supported | PIC_DMREP1_MAC_SUPPORTED | IUT supports Repeater type 1 MAC. |
| Sending_DPRES_SYNC | PIC_SEND_DPRES_SYNC | IUT supports repeater functionality for a CM or SDS call. |
| Support_CM_Call | PIC_CIRCUIT_MODE_CALL | IUT supports repeater functionality for CM calls with and without presence check. |
| Support_SDS_Call | PIC_SHORT_DATA_SERVICE | IUT supports repeater functionality for unacknowledged and acknowledged SDS. |

5.5.2.2.4 Test suite parameter definitions for layer 2 for Repeater type 1

Table 101: Test suite parameter definitions for layer 2 for Repeater type 1

| Test Suite Parameter Declarations | | | |
|---|-------------------------|--------------------------|--|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_DMREP1_MAC_SUPPORTED | BOOLEAN | A.4.3.1, table A.133/1 | IUT supports Repeater type 1 MAC. |
| PIC_CIRCUIT_MODE_CALL | BOOLEAN | A.4.3.1, table A.134/1 | IUT supports repeater functionality for CM calls with and without presence check. |
| PIC_SHORT_DATA_SERVICE | BOOLEAN | A.4.3.1, table A.134/2 | IUT supports repeater functionality for unacknowledged and acknowledged SDS. |
| PIC_SEND_DPRES_SYNC | BOOLEAN | A.4.3.3.2, table A.140/3 | IUT supports sending of DPRES SYNC PDU. |
| PIC_DN_232 | INTEGER | A.4.3.3.2, table A.143/1 | Number of frames to transmit DM-SETUP or DM-SETUP PRES PDUs on the slave link. |
| PIC_DN_233 | INTEGER | A.4.3.3.2, table A.143/2 | Number of frames to transmit DM-SDS UDATA or DM-SDS DATA PDUs on the slave link. |
| PIC_DT253 | INTEGER | A.4.3.3.2, table A.144/1 | Number of frames for timer DT253. |
| PIC_DT254 | INTEGER | A.4.3.3.2, table A.144/2 | Number of frames for timer DT254. |
| PIC_DT256 | INTEGER | A.4.3.3.2, table A.144/3 | Number of frames for timer DT256. |
| PIC_DT258 | INTEGER | A.4.3.3.2, table A.144/4 | Number of frames for timer DT258. |
| PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | B.3.2.5, table B.24/1 | Traffic channel type and interleaving depth supported by the IUT. |
| PIX_POWER_CLASS | Power_Class_Type | B.3.2.5, table B.24/2 | The power class of the IUT. |
| PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | B.3.2.5, table B.24/3 | Power control flag, which indicate whether or not power control by slave is permitted. |
| PIX_MNI | MNI_Type | B.3.2.5, table B.24/4 | MNI of the network. |
| PIX_MS_MASTER_SSI | SSI_Type | B.3.2.5, table B.24/5 | SSI of a master MS |
| PIX_MS_SLAVE_SSI | SSI_Type | B.3.2.5, table B.24/6 | SSI of a slave MS |
| PIX_REPEATER_ADDRESS | Repeater_Address_Type | B.3.2.5, table B.24/7 | Repeater address of the IUT. |
| PIX_NON_REPEATER_ADDRESS | Repeater_Address_Type | B.3.2.5, table B.24/8 | An SSI not recognized as the repeater address of the IUT. |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.3 DMO Repeater type 2 test specification

5.5.3.1 Physical layer test specification

5.5.3.1.1 Test case index for physical layer

Table 102: Test case index for physical layer

| Test Case Index | | | |
|--|---|--------------------------|---|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| 7.1.1.2 a) and F.5, table F.2 and EN 300 396-7 [21], subclause 12.3.4.2 | 8.1, 8.1.1 a), b), b2) and d) | Dual_REP2 | To test that the output power corresponds to the declared single or highest power class. |
| 7.1.1.2 a) and F.5, table F.2 and EN 300 396-7 [21], subclause 12.3.4.2 | 8.1, 8.1.1 a), b), b2) and d), and F.4, table F.1 | DO-REP2 | To test that the output power corresponds to the declared single or highest power class. |
| 7.1.1.2 a) and F.5, table F.2 and EN 300 396-7 [21], subclause 12.3.4.2 | 8.1 and 8.1.1 c) | Dual_REP2_Multiple_Class | To test that the output power corresponds to the declared lower power class(es). |
| 7.1.1.2 a) and F.5, table F.2 and EN 300 396-7 [21], subclause 12.3.4.2 | 8.1, 8.1.1 c) and F.4, table F.1 | DO-REP2_Multiple_Class | To test that the output power corresponds to the declared lower power class(es). |
| 7.1.2.2 | 8.2 | DO-REP2 | To test the output power in the non-active transmit state. |
| 7.1.3.2 | 8.3 and F.4, table F.1 | DO-REP2 | To test the unwanted conducted emission over the useful part of the burst. |
| 7.1.4.2 | 8.4 | DO-REP2 | To test the unwanted conducted emission during switching transients. |
| 7.1.5.2 and F.5, table F.2 and EN 300 396-7 [21], subclauses 12.3.4.3.3.1 and 12.3.4.3.3.2 | 8.5 | Applicable_to_all_REP2 | To test the unwanted conducted discrete spurious and wideband noise emission far from the carrier. |
| 7.1.6.2 | 8.6 | DO-REP2 | To test the unwanted radiated emission in the active transmit state. |
| 7.1.7.2 | 8.7 and 8.7.1 | DO-REP2 | To test the unwanted conducted emission during LCH. |
| 7.1.8.2.1 | 8.8 and 8.8.1 | DO-REP2 | To test the DM-REP2 transmitter intermodulation attenuation. |
| 7.2.2.2 and F.5, table F.2 | 9.2 and 9.2.1 | DO-REP2 | To test the nominal error rate. ETS 300 394-1 [8], table A.2; nominal error and F.5, table F.2: - TCH/7,2, DR50, - 85 dBm, - TCH/7,2, STAT, - 20 dBm. |
| 7.2.3.2 and F.5, table F.2 | 9.3 and 9.3.1 | DO-REP2 | To test the dynamic reference sensitivity performance. ETS 300 394-1 [8], table A.2; sensitivity and F.5, table F.2: - SCH/F, DR50, - 103 (- 97) dBm, - SCH/S, DR50, - 103 dBm. |
| 7.2.3.2 and F.5, table F.2 | 9.3 and 9.3.1 | DO-REP2_Protected_Data | To test the dynamic reference sensitivity performance of a DM-REP2 supporting protected circuit mode data. ETS 300 394-1 [8], table A.2; sensitivity and F.5, table F.2: - TCH/2,4, N=1, DR50, - 103 dBm. |

| Test Case Index | | | |
|--|--------------------------------|------------------------|--|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| 7.2.3.2 and F.5, table F.2 | 9.3 and 9.3.3 | DO-REP2 | To test the dynamic reference sensitivity performance of a DM-REP2. ETS 300 394-1 [8], table A.11 and F.5, table F.2: - SCH/F, DR50, - 103 dBm. |
| 7.2.4.2 and F.5, table F.2 | 9.4 and 9.4.1 | DO-REP2 | To test the reference interference performance ETS 300 394-1 [8], table A.2 and F.5, table F.2: - co-channel interference, - adjacent channel interference. |
| 7.2.5.2 and F.5, table F.2 | 9.5 and 9.5.1 | DO-REP2 | To test the blocking characteristics ETS 300 394-1 [8], table A.2; blocking and F.5, table F.2. |
| 7.2.6.2 and F.5, table F.2 | 9.6 | DO-REP2 | To test the spurious response rejection ETS 300 394-1 [8], table A.2; spurious response and F.5, table F.2. |
| 7.2.7.2 and F.5, table F.2 | 9.7 and 9.7.1 | DO-REP2 | To test the intermodulation response rejection ETS 300 394-1 [8], table A.2; intermodulation and F.5, table F.2. |
| 7.2.8.2 | 9.8 | DO-REP2 | To test the unwanted conducted emission. |
| 7.2.9.2 | 9.9 | DO-REP2 | To test the unwanted radiated emission. |
| 7.3.1.2 | 10.1, 10.1.1 and 10.1.3 | DO-REP2 | To test the modulation accuracy. |
| F.6.2.1 | F.6.2.2 | Applicable_to_all_REP2 | To test the transmitter output power versus time within a burst. |
| F.6.3.1 | F.6.3.2 | Applicable_to_all_REP2 | To test the RF frequency accuracy. |
| F.6.4.2 | F.6.4.3 | Applicable_to_all_REP2 | To test the DM synchronization accuracy. |
| NOTE 1: The test case limit values, as referenced, are specified in ETS 300 394-1 [8], clause 7 and annex F, except when otherwise stated. | | | |
| NOTE 2: The test methods, as referenced, are specified in ETS 300 394-1 [8], clauses 8 to 10 and annex F. | | | |

5.5.3.1.2 Test case selection expression definitions for physical layer

Table 103: Test case selection expression definitions for physical layer

| Test Case Selection Expression Definitions | | |
|--|-----------------------------------|---|
| Expression Name | Selection Expression | Comments |
| Applicable_to_all_REP2 | A.145/3 | TETRA DMO Repeater type 2. |
| Dual_REP2 | A.145/3 AND A.1/1 | DMO Repeater type 2 equipment also supporting trunked (V+D) mode |
| DO-REP2 | A.145/3 AND NOT A.1/1 | DMO-only Repeater type 2 equipment not supporting trunked (V+D) mode |
| DO-REP2_Protected_Data | A.145/3 AND NOT A.1/1 AND A.147/2 | DMO-only Repeater type 2 equipment supporting protected circuit mode data. |
| Dual_REP2_Multiple_Class | A.145/3 AND A.1/1 AND A.147/1 | DMO Repeater type 2 equipment also supporting trunked (V+D) mode and supporting more than one power class |
| DO-REP2_Multiple Class | A.145/3 AND NOT A.1/1 AND A.147/1 | DMO-only Repeater type 2 equipment supporting more than one power class |
| Detailed Comments | | |
| The selection expressions given in the Selection Expression-column are Boolean expressions, referring to the declarations made in requirement tables in annex A in the present document. | | |

5.5.3.2 Layer 2 test specification

5.5.3.2.1 Test suite structure for layer 2 for Repeater type 2

Table 104: Test suite structure for layer 2

| Test Suite Structure | | |
|--|----------------------|---|
| Suite Name: DMO/DMREP2 | | |
| Standards Ref.: EN 300 396-7 [21] | | |
| PICS Ref.: ETS 300 396-8-4 [25] | | |
| PIXIT Ref.: EN 300 394-4-14 [40], annex B | | |
| Test Method(s): The embedded variant of the remote multi party test method | | |
| Comments: | | |
| Test Group Reference | Selection Ref. | Test Group Objective |
| DMO_DMREP2_MAC/ | DMREP2_MAC_supported | To test the DM-REP2 MAC protocol. |
| DMO_DMREP2_MAC/CA/ | DMREP2_MAC_supported | To test the basic capabilities of the IUT. |
| DMO_DMREP2_MAC/BV/ | DMREP2_MAC_supported | To test the capabilities of the IUT in a valid behaviour. |
| DMO_DMREP2_MAC/BI/ | DMREP2_MAC_supported | To test invalid behaviour capabilities of the IUT. |
| DMO_DMREP2_MAC/TI/ | DMREP2_MAC_supported | To test timer capabilities of the IUT. |

5.5.3.2.2 Test case index for layer 2 for Repeater type 2

Table 105: Test case index for layer 2 for Repeater type 2

| Test Case Index | | | |
|----------------------|-----------------------|----------------------|---|
| Test Group Reference | Test Case Id | Selection Ref. | Description |
| DMO_DMREP2_MAC/CA/ | DMO_DMREP2_MAC_CA_02 | Sending_DPRES_SY NC | Check sending of presence signal. |
| DMO_DMREP2_MAC/BV/ | DMO_DMREP2_MAC_BV_02b | Support_CM_Call | Check two simultaneous calls via the IUT. |
| DMO_DMREP2_MAC/BV/ | DMO_DMREP2_MAC_BV_05 | Support_CM_Call | Circuit mode data retransmission when call setup with presence check is used. |
| DMO_DMREP2_MAC/BV/ | DMO_DMREP2_MAC_BV_07 | Support_CM_Call | Circuit mode callsetup without presence check |
| DMO_DMREP2_MAC/BV/ | DMO_DMREP2_MAC_BV_08 | Support_SDS_Call | Re-transmission procedure for DM_SDS DATA or DM_SDS UDATA call. |
| DMO_DMREP2_MAC/BI/ | DMO_DMREP2_MAC_BI_01 | DMREP2_MAC_supported | Check DM-REP2 behaviour when messages with wrong repeater address are sent. |
| DMO_DMREP2_MAC/BI/ | DMO_DMREP2_MAC_BI_02 | Support_CM_Call | Check DM-REP2 handling of wrongly addressed messages from slave MS. |
| DMO_DMREP2_MAC/TI/ | DMO_DMREP2_MAC_TI_01 | DMREP2_MAC_supported | Check DM-REP2 behaviour when master MS does not send channel occupied signals |
| DMO_DMREP2_MAC/TI/ | DMO_DMREP2_MAC_TI_02 | DMREP2_MAC_supported | Check DM-REP2 behaviour when master channel is reserved but reservation signalling is not sent. |

5.5.3.2.3 Test case selection expression definitions for layer 2 for Repeater type 2

Table 106: Test case selection expression definitions for layer 2 for Repeater type 2

| Test Case Selection Expression Definitions | | |
|--|--------------------------|---|
| Expression Name | Selection Expression | Comments |
| DMREP2_MAC_supported | PIC_DMREP2_MAC_SUPPORTED | IUT supports Repeater type 2 MAC. |
| Sending_DPRES_SYNC | PIC_SEND_DPRES_SYNC | IUT supports repeater functionality for a CM or SDS call. |
| Support_CM_Call | PIC_CIRCUIT_MODE_CALL | IUT supports repeater functionality for CM calls with and without presence check. |
| Support_SDS_Call | PIC_SHORT_DATA_SERVICE | IUT supports repeater functionality for unacknowledged and acknowledged SDS. |

5.5.3.2.4 Test suite parameter definitions for layer 2 for Repeater type 2

Table 107: Test suite parameter definitions for layer 2 for Repeater type 2

| Test Suite Parameter Declarations | | | |
|-----------------------------------|-------------------------|--------------------------|--|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| PIC_DMREP2_MAC_SUPPORTED | BOOLEAN | A.4.4.1, table A.145/1 | IUT supports Repeater type 2 MAC. |
| PIC_CIRCUIT_MODE_CALL | BOOLEAN | A.4.4.1, table A.146/1 | IUT supports repeater functionality for CM calls with and without presence check. |
| PIC_SHORT_DATA_SERVICE | BOOLEAN | A.4.4.1, table A.146/2 | IUT supports repeater functionality for unacknowledged and acknowledged SDS. |
| PIC_SEND_DPRES_SYNC | BOOLEAN | A.4.4.3.2, table A.152/4 | IUT supports sending of DPRES SYNC PDU. |
| PIC_DN_232 | INTEGER | A.4.4.3.2, table A.155/1 | Number of frames to transmit DM-SETUP or DM-SETUP PRES PDUs on the slave link. |
| PIC_DN_233 | INTEGER | A.4.4.3.2, table A.155/2 | Number of frames to transmit DM-SDS UDATA or DM-SDS DATA PDUs on the slave link. |
| PIC_DT253 | INTEGER | A.4.4.3.2, table A.156/1 | Number of frames for timer DT253. |
| PIC_DT254 | INTEGER | A.4.4.3.2, table A.156/2 | Number of frames for timer DT254. |
| PIC_DT256 | INTEGER | A.4.4.3.2, table A.156/3 | Number of frames for timer DT256. |
| PIC_DT258 | INTEGER | A.4.4.3.2, table A.156/4 | Number of frames for timer DT258. |
| PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | B.3.2.6, table B.25/1 | Traffic channel type and interleaving depth supported by the IUT. |
| PIX_POWER_CLASS | Power_Class_Type | B.3.2.6, table B.25/2 | The power class of the IUT. |
| PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | B.3.2.6, table B.25/3 | Power control flag, which indicate whether or not power control by slave is permitted. |
| PIX_MNI | MNI_Type | B.3.2.6, table B.25/4 | MNI of the network. |
| PIX_MS_MASTER_SSI | SSI_Type | B.3.2.6, table B.25/5 | SSI of a master MS |
| PIX_MS_SLAVE_SSI | SSI_Type | B.3.2.6, table B.25/6 | SSI of a slave MS |
| PIX_REPEATER_ADDRESS | Repeater_Address_Type | B.3.2.6, table B.25/7 | Repeater address of the IUT. |
| PIX_NON_REPEATER_ADDRESS | Repeater_Address_Type | B.3.2.6, table B.25/8 | An SSI not recognized as the repeater address of the IUT. |

| Test Suite Parameter Declarations | | | |
|---|------|-----------------|----------|
| Parameter Name | Type | PICS/PIXIT Ref. | Comments |
| Detailed Comments | | | |
| The references given in the PICS/PIXIT Ref. -column refer to the requirement tables in annex A and declarations in annex B in the present document. | | | |

5.5.4 DMO Gateway test specification

5.5.4.1 Physical layer test specification

5.5.4.1.1 Test case index for physical layer

Table 108: Test case index for physical layer

| Test Case Index | | | |
|--|--------------------------------|----------------------------|--|
| Test case limit value reference (note 1) | Test method reference (note 2) | Selection reference | Description |
| 7.1.1.2 a) and F.5, table F.2 and ETS 300 396-5 [19], subclause 16.3.4.2 | 8.1, 8.1.1 a), b), b2) and d) | Applicable_to_all_DM-GATEs | To test that the output power corresponds to the declared single or highest power class. |
| 7.1.1.2 a) and F.5, table F.2 and ETS 300 396-5 [19], subclause 16.3.4.2 | 8.1 and 8.1.1 c) | Ud_DM-GATE_Multiple_Class | To test that the output power corresponds to the declared lower power class(es). |
| 7.1.5.2 and F.5, table F.2 and ETS 300 396-5 [19], subclauses 16.3.4.3.3.1 and 16.3.4.3.3.2 | 8.5 | Applicable_to_all_DM-GATEs | To test the unwanted conducted discrete spurious and wideband noise emission far from the carrier. |
| F.6.2.1 | F.6.2.2 | Applicable_to_all_DM-GATEs | To test the transmitter output power versus time within a burst. |
| F.6.3.1 | F.6.3.2 | Applicable_to_all_DM-GATEs | To test the RF frequency accuracy. |
| NOTE 1: The test case limit values, as referenced, are specified in ETS 300 394-1 [8], clause 7 and annex F, except when otherwise stated. | | | |
| NOTE 2: The test methods, as referenced, are specified in ETS 300 394-1 [8], clauses 8 to 10 and annex F. | | | |

5.5.4.1.2 Test case selection expression definitions for physical layer

Table 109: Test case selection expression definitions for physical layer

| Test Case Selection Expression Definitions | | |
|--|----------------------|--|
| Expression Name | Selection Expression | Comments |
| Applicable_to_all_DM-GATEs | A.157/4 | TETRA DMO Gateway equipment. |
| Ud_DM-GATE_Multiple_Class | A.157/4 AND A.158/1 | DMO Gateway equipment supporting more than one power class |
| Detailed Comments | | |
| The selection expressions given in the Selection Expression-column are Boolean expressions, referring to the declarations made in requirement tables in annex A in the present document. | | |

Annex A (normative): Requirements Tables (RT)

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 RT proforma in this annex so that it can be used for its intended purposes and may further publish the completed RT.

A.1 Introduction

The RT indicates the status of the features tested according to the requirements in the present document, i.e. which features and procedures are mandatory, optional or conditional.

The test case selection in clause 5 is based on the values declared by the manufacturer in the "Support" column in this RT.

The following table headers are applicable to this RT:

| | |
|-------------------------|---|
| Item | is an entry number in the table to be used for references. Multiple numbering levels may be used to express major functions, and their supporting components. |
| Reference | references to specifications where the requirements and tests are declared. |
| Status | contains the status required for implementation conforming to the present document. |
| Support | is the column for the manufacturer's statement of whether the particular item is supported by the implementation. |
| Allowed values | specifies the allowed (range of) values for a parameter (only used when a declaration of supported values is required for the purposes of testing). |
| Supported values | is the column for the manufacturer's statement of the implemented (range of) values for a parameter (only to be filled in when allowed values are specified). |
| Transmission | specifies whether the support of sending a message, frame or information element is required. |
| Reception | specifies whether the support of receiving a message, frame or information element is required. |

The interpretation of status columns in all tables is as follows:

| | |
|------------|---|
| m | mandatory - the capability is required to be supported. |
| o | optional - the capability may be supported or not. |
| o.i | qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table. |
| ci | conditional - the requirement on the capability ("m", "o", "x", "n" or "n/a") depends on the support of other optional or conditional items. "i" is an integer identifying a unique conditional status expression which is defined immediately following the table. |
| n | Not a requirement. The entry is outside the scope of the present document and it is not a requirement that the feature is supported. |
| n/a | not applicable - in the given context, it is impossible to use the capability. |
| x | prohibited (excluded) - there is a requirement not to use this capability in the given context. |

If a procedure, message, frame, information element, timer, or constant is not explicitly listed in any of the following tables these shall be considered as "n".

A.2 Type of air interface

The supplier of the implementation shall state the support of the implementation for each type of air interface presented in table A.1.

Table A.1: Type of air interface

| Item | Type of air interface | Reference | Status | Support |
|------|---------------------------------|-------------|--------|---------|
| 1 | Voice plus Data (V+D), Um | ETS 300 392 | o.1 | |
| 2 | Direct Mode Operation (DMO), Ud | ETS 300 396 | o.1 | |

o.1 It is mandatory to support at least one of these items.

A.3 Requirements tables for Um air interface

The requirements in this clause apply to TETRA systems implementing the Um interface.

A.3.1 General

The supplier of the implementation shall state the support of the implementation for each of the general capabilities, features, modes of operation and general protocol capabilities presented in tables A.2 to A.5.

Table A.2: General capabilities and features

| Prerequisite: A.1/1 -- Um | | | | |
|---|-----------------------------|------------------|--------|---------|
| Item | Capability or feature name | Reference | Status | Support |
| 1 | Base Station (BS) | EN 300 392-2 [1] | o.2 | |
| 2 | Mobile Station (MS) (note) | EN 300 392-2 [1] | o.2 | |
| 3 | Protected circuit mode data | EN 300 392-2 [1] | o | |
| NOTE: For the description of requirements at the Um air interface, the requirements for Mobile Station (MS) includes also the requirements at the Um air interface of a Gateway, unless otherwise stated. | | | | |

o.2 It is mandatory to support one of these items.

Table A.3: Environmental profile

| Prerequisite: A.1/1 -- Um | | | | |
|---|--|------------------------------------|--------|-----------------|
| Item | Requirement | Reference (note) | Status | Supported value |
| 1 | Lowest intended operational temperature | Error! Reference source not found. | m | |
| 2 | Highest intended operational temperature | Error! Reference source not found. | m | |
| NOTE: The requirements are specified in the present document under the given subclause. | | | | |

Table A.4: Modes of operation

| Prerequisite: A.1/1 -- Um | | | | |
|---------------------------|--|---|--------|---------|
| Item | Capability or feature name | Reference (note) | Status | Support |
| 1 | Downlink Continuous Transmission (D-CT) | 4.11.1.1 | c401 | |
| 2 | Downlink Carrier Timesharing Transmission (D-CTT) | 4.11.1.2, 19.3.4, 19.3.5.1, 23.3.2.1, 23.3.2.3 | c402 | |
| 3 | Downlink Main Control Channel Timesharing Transmission (D-MCCTT) | 4.11.1.3, 19.3.4, 19.3.5.2, 23.3.2.2 | c402 | |
| 4 | Multiple Slot Transmission (U-MST) | 4.11.1.4, 23.3.1.4 | o | |
| 5 | Normal Control Mode (NCM) | 4.11.2.1, 19.3.1 | m | |
| 6 | Minimum Control Mode (MCM) | 4.11.2.2, 19.3.3, 23.3.3 | o | |

NOTE: The capabilities or features are specified in EN 300 392-2 [1] under the given subclause(s).

o.3 It is mandatory to support at least one of these items.

c401: IF A.2/1 -- BS
THEN o.3
ELSE m

c402: IF A.2/1 -- BS
THEN o.3
ELSE n

Table A.5: General protocol capabilities

| Prerequisite: A.2/2 -- MS | | | | |
|---------------------------|--|------------------------|--------|---------|
| Item | Capability name | Reference (note) | Status | Support |
| 1 | Circuit Mode Control Entity (CMCE) for non-Gateway | 11, 12, 13, 14 | c501 | |
| 2 | Mobility Management (MM) for non-Gateway | 15, 16 | c502 | |
| 3 | Mobile Link Entity (MLE) | 17, 18 | m | |
| 4 | Logical Link Control (LLC) | 21, 22 | m | |
| 5 | Upper Medium Access Control (Upper MAC) | 21, 23 | m | |
| 6 | Lower Medium Access Control (Lower MAC) | 8 | m | |
| 7 | Security | EN 300 392-7 [2] | m | |
| 8 | Circuit Mode Control Entity (CMCE) for Gateway | 14, ETS 300 396-5 [19] | c503 | |
| 9 | Mobility Management (MM) for Gateway | 16, ETS 300 396-5 [19] | c503 | |

NOTE: The capabilities are specified in EN 300 392-2 [1] under the given clause(s), unless otherwise stated.

c501: IF NOT A.69/4 -- Not a Gateway
THEN o
ELSE n/a

c502: IF NOT A.69/4 -- Not a Gateway
THEN m
ELSE n/a

c503: IF A.69/4 -- Gateway
THEN m
ELSE n/a

A.3.2 Physical layer

The supplier of the implementation shall state the support of the implementation for each of the physical layer capabilities, features, requirements and parameters presented in tables A.6 to A.9.

Table A.6: Physical layer capabilities and features

| Prerequisite: A.1/1 -- Um | | | | |
|---------------------------|--|------------------|--------|---------|
| Item | Capability or feature name | Reference (note) | Status | Support |
| 1 | BS equipment implementing more than one power class | 6.4.1.1 | c601 | |
| 2 | BS equipment with only one transmitter | 6.4.6.2 | c601 | |
| 3 | BS equipment not intended to be collocated with other radio equipment operating in the same frequency band | 6.4.6.2 | c601 | |
| 4 | Class A equipment | 6.6.2 | o.4 | |
| 5 | Class B equipment | 6.6.2 | o.4 | |
| 6 | Class E equipment | 6.6.2 | c602 | |

NOTE: The capabilities or features are specified in EN 300 392-2 [1] under the given subclause.

o.4 It is mandatory to support one of these items.

c601: IF A.2/1 -- BS
 THEN o
 ELSE n/a

c602: IF A.2/2 -- MS
 THEN o.4
 ELSE n/a

Table A.7: Physical layer requirements

| Prerequisite: A.1/1 -- Um | | | | |
|---------------------------|---|-------------------------------|--------|---------|
| Item | Requirement | Reference (note) | Status | Support |
| 1 | Modulation type | 5.2 | m | |
| 2 | Frequency bands and channel allocation | 6.2 | m | |
| 3 | MS power control level | 6.4.1.2 | c702 | |
| 4 | Unwanted conducted emission over the useful part of the burst | 6.4.2.2.1 | m | |
| 5 | Unwanted conducted emission during the switching transients | 6.4.2.2.2 | c703 | |
| 6 | Unwanted conducted emission far from the carrier | 6.4.2.3 | m | |
| 7 | Unwanted conducted emission during CLCH and BLCH | 6.4.2.4 | m | |
| 8 | Unwanted conducted emission in the non-transmit state | 6.4.2.5 | c704 | |
| 9 | Unwanted radiated emissions | 6.4.3 | m | |
| 10 | BS output power time mask | 6.4.5 | c705 | |
| 11 | MS output power time mask | 6.4.5 | c702 | |
| 12 | BS output power in non-active transmit state | 6.4.5.1 | c705 | |
| 13 | MS output power in non-active transmit state | 6.4.5.2 | c702 | |
| 14 | BS transmitter intermodulation attenuation | 6.4.6.2 | c701 | |
| 15 | MS transmitter intermodulation attenuation | 6.4.6.3 | c702 | |
| 16 | Intra-BS transmitter intermodulation attenuation | 6.4.7 | c706 | |
| 17 | Blocking characteristics | 6.5.1.2 | m | |
| 18 | Spurious response rejection | 6.5.2.2 | m | |
| 19 | Intermodulation response rejection | 6.5.3.2 | m | |
| 20 | Unwanted conducted emission in reception | 6.5.4.2 | c704 | |
| 21 | Unwanted radiated emission | 6.5.5 | c704 | |
| 22 | Modulation accuracy | 6.6.1.2 | m | |
| 23 | Nominal error rate | 6.6.2.1 | m | |
| 24 | Dynamic reference sensitivity performance | 6.6.2.2 | m | |
| 25 | BS dynamic reference sensitivity performance | 6.6.2.2.1 | c701 | |
| 26 | MS dynamic reference sensitivity performance | 6.6.2.2.2 | c702 | |
| 27 | Reference interference performance | 6.6.2.3 | m | |
| 28 | BS reference interference performance | 6.6.2.3.1 | c701 | |
| 29 | MS reference interference performance | 6.6.2.3.2 | c702 | |
| 30 | Static reference sensitivity performance | 6.6.2.4 | m | |
| 31 | BS static reference sensitivity performance | 6.6.2.4.1 | c701 | |
| 32 | MS static reference sensitivity performance | 6.6.2.4.2 | c702 | |
| 33 | MS receiver performance for synchronization burst acquisition | 6.6.2.5 | c702 | |
| 34 | Timing of transmitted signal | 7.4 | c702 | |
| 35 | BS requirement for synchronization | 7.5 | c701 | |
| 36 | MS requirement for synchronization | 7.6 | c702 | |
| 37 | Mapping of BCCH and CLCH | 9.5.2 | c702 | |
| 38 | Mapping of SCH | 9.5.3 | c702 | |
| 39 | Mapping of TCH and STCH | 9.5.4 | c702 | |
| 40 | Mapping of AACH | 9.5.5 | c702 | |
| 41 | RF power control | 10.2 | c707 | |
| 42 | Received signal strength | 10.3.1 | c702 | |
| 43 | MS open loop power control | 23.4.4.2 | c702 | |
| 44 | TETRA frequency bands | TS 100 392-15 [7] clause 5 | m | |
| 45 | Duplex spacing | TS 100 392-15 [7] clause 6 | m | |

NOTE: The requirements are specified in EN 300 392-2 [1] under the given subclause, unless otherwise stated.

c701: IF A.2/1 -- BS
THEN m
ELSE n/a

c702: IF A.2/2 -- MS
THEN m
ELSE n/a

- c703: IF (A.2/1 AND (A.4/2 OR A.4/3)) OR A.2/2
THEN m -- BS operating discontinuous mode or MS
ELSE n/a
- c704: IF (A.2/1 AND NOT A.4/1) OR A.2/2
THEN m -- BS not operating continuous mode or MS
ELSE n/a
- c705: IF A.2/1 AND (A.4/2 OR A.4/3)
THEN m -- BS operating discontinuous mode
ELSE n/a
- c706: IF A.2/1 AND NOT A.6/2
THEN m -- BS with more than one transmitter
ELSE n/a
- c707: IF A.2/2 -- MS
THEN m
ELSE x

Table A.8: Output power and power class requirements and parameters

| Prerequisite: A.1/1 -- Um | | | | | | |
|---------------------------|---------------------------------|------------------|--------|---------|----------------|------------------|
| Item | Requirement and parameter | Reference (note) | Status | Support | Allowed values | Supported values |
| 1 | BS output power and power class | 6.4.1.1 | c801 | | [1..10] | |
| 2 | MS output power and power class | 6.4.1.2 | c802 | | [1..4, 1L..4L] | |

NOTE: The parameters are specified in EN 300 392-2 [1] under the given subclause.

- c801: IF A.2/1 -- BS
THEN m
ELSE n/a
- c802: IF A.2/2 -- MS
THEN m
ELSE n/a

Table A.9: RF carrier frequency bands and duplex spacing

| Prerequisite: A.1/1 -- Um | | | | | | | | | |
|---------------------------|-------------------------|----------------|----------------------|---|--------|---------|-------------------------|---------------------------|----------------|
| Item | Minimum frequency range | | Duplex spacing (MHz) | Reference (note) | Status | Support | Supported values (MHz) | | |
| | Uplink (MHz) | Downlink (MHz) | | | | | Frequency range, Uplink | Frequency range, Downlink | Duplex spacing |
| 1 | 410 to 420 | 420 to 430 | 10 | 6.2, TS 100 392-15 [7] clauses 5 and 6, and ERC/DEC/(96)04 [44] | o.5 | | | | |
| 2 | 870 to 876 | 915 to 921 | 45 | 6.2, TS 100 392-15 [7] clauses 5 and 6, and ERC/DEC/(96)04 [44] | o.5 | | | | |
| 3 | 450 to 460 | 460 to 470 | 10 | 6.2, TS 100 392-15 [7] clauses 5 and 6, and ERC/DEC/(96)04 [44] | o.5 | | | | |
| 4 | 385 to 390 | 395 to 399.99 | 10 | 6.2, TS 100 392-15 [7] clauses 5 and 6, and ERC/DEC/(96)04 [44] | o.5 | | | | |

NOTE: The parameters are specified EN 300 392-2 [1] under the given subclauses, unless otherwise stated.

- o.5 It is mandatory to support at least one of these items.

A.3.3 Layer 2

A.3.3.1 Lower MAC layer

The supplier of the implementation shall state the support of the implementation for each of the error control schemes presented in table A.10.

Table A.10: Error control schemes of Lower MAC

| Prerequisite: A.5/6 -- Lower MAC | | | | |
|----------------------------------|---|------------------|--------|---------|
| Item | Error control scheme | Reference (note) | Status | Support |
| 1 | Error control scheme for Access Assignment CHannel (AACH) | 8.3.1 | m | |
| 2 | Error control scheme for Broadcast Synchronization CHannel (BSCH) | 8.3.2 | m | |
| 3 | Error control scheme for mapping onto H-bursts on the Downlink (SCH/HD), Broadcast Network CHannel (BNCH) and STealing Channel (STCH) | 8.3.4.1 | m | |
| 4 | Error control scheme for Signalling CHannel for mapping onto Half-bursts on the Uplink (SCH/HU) | 8.3.4.2 | m | |
| 5 | Error control scheme for Signalling CHannel for mapping onto Full-bursts (SCH/F) | 8.3.4.3 | m | |

NOTE: The error control schemes are specified in EN 300 392-2 [1] under the given subclause.

A.3.3.2 Upper MAC layer

The supplier of the implementation shall state the support of the implementation for each of the Upper MAC features, procedures, requirements, and PDUs presented in tables A.11 to A.20.

Table A.11: Upper MAC features

| Prerequisite: A.5/5 -- Upper MAC | | | | |
|----------------------------------|---|------------------|--------|---------|
| Item | Upper MAC feature | Reference (note) | Status | Support |
| 1 | Control channel usage procedures | 23.3 | m | |
| 2 | Minimum mode operation | 23.3.3 | o | |
| 3 | General MAC procedures | 23.4 | m | |
| 4 | PDU transfer for signalling messages procedures | 23.5 | m | |
| 5 | PDU transfer for broadcast messages procedures | 23.6 | m | |
| 6 | Layer management communication procedures | 23.7 | m | |
| 7 | PDU transfer for traffic procedures | 23.8 | c1101 | |

NOTE: The requirements are specified in EN 300 392-2 [1] under the given subclause.

c1101: IF A.28/1
THEN m
ELSE n/a

-- CC supported

Table A.12: Upper MAC control channel usage procedures

| Prerequisite: A.11/1 -- Control channel usage procedures | | | | |
|---|---|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Receiving and decoding of messages on the downlink MCCH | 23.3.1.1 | m | |
| 2 | Receiving messages on the ACCH | 23.3.1.3 | c1201 | |
| 3 | Beginning of minimum mode | 23.3.3.1 | m | |
| 4 | MS operation during frames 1-17 in minimum mode | 23.3.3.2 | c1202 | |
| 5 | MS operation during frame 18 in minimum mode | 23.3.3.3 | c1202 | |
| 6 | End of minimum mode | 23.3.3.5 | c1202 | |
| NOTE: The requirements are specified in EN 300 392-2 [1] under the given subclause. | | | | |

c1201: IF A.28/1 -- CC supported
 THEN m
 ELSE n/a

c1202: IF A.11/2 -- Minimum mode supported
 THEN m
 ELSE n/a

Table A.13: General MAC procedures

| Prerequisite: A.11/3 -- General MAC procedures | | | | |
|---|---|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Recognition of destination address in downlink messages | 23.4.1.2.1 | m | |
| 2 | Source address in uplink messages | 23.4.1.2.2 | m | |
| 3 | Transmission of TM-SDU not requiring fragmentation | 23.4.2.1.2 | m | |
| 4 | Fragmentation of uplink TM-SDU, when a transmission starts in a full slot granted by the BS | 23.4.2.1.2 | m | |
| 5 | Fragmentation of uplink TM-SDU, using random access to start the process | 23.4.2.1.2 | m | |
| 6 | Fill bit addition | 23.4.2.2 | m | |
| 7 | Reception of unfragmented TM-SDU | 23.4.3.1.1 | m | |
| 8 | Reception of fragmented TM-SDU | 23.4.3.1.1 | m | |
| 9 | Fill bit deletion | 23.4.3.2 | m | |
| 10 | PDU dissociation | 23.4.3.3 | m | |
| NOTE: The requirements are specified in EN 300 392-2 [1] under the given subclause. | | | | |

Table A.14: Upper MAC PDU transfer for signalling messages procedures

| Prerequisite: A.11/4 -- PDU transfer for signalling messages procedures | | | | |
|---|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Reception of ACCESS-DEFINE PDU | 23.5.1.4.1 | m | |
| 2 | Reception of ACCESS-ASSIGN PDU | 23.5.1.4.2 | m | |
| 3 | Initiating a random access | 23.5.1.4.3 | m | |
| 4 | Checking for appropriate access code | 23.5.1.4.4 | m | |
| 5 | First try procedure | 23.5.1.4.5 | m | |
| 6 | Re-try procedure | 23.5.1.4.8 | m | |
| 7 | Abandoning random access attempt | 23.5.1.4.9 | m | |
| 8 | Reservation requirement | 23.5.2.1 | m | |
| 9 | Slot granting | 23.5.2.2 | m | |
| 10 | Replace current MCCH with specified channel | 23.5.4.2.2 | o | |
| 11 | Additional channel allocation procedure | 23.5.4.2.2 | n | n/a |
| 12 | Quit current MCCH and go to specified channel | 23.5.4.2.2 | o | |
| 13 | Replace current MCCH with specified channel, plus MCCH/SCCH or CSS | 23.5.4.2.2 | o | |
| 14 | Reception of channel allocation on common SCCH | 23.5.4.2.2 | n | n/a |
| 15 | Replace current assigned channel with specified channel | 23.5.4.2.3 | m | |
| 16 | Additional assigned channel allocation procedure | 23.5.4.2.3 | n | n/a |
| 17 | Quit current assigned channel and go to specified channel | 23.5.4.2.3 | m | |
| 18 | Replace assigned current channel with specified channel, plus MCCH/SCCH or CSS | 23.5.4.2.3 | m | |
| NOTE: The requirements are specified in EN 300 392-2 [1] under the given subclause. | | | | |

Table A.15: Upper MAC PDU transfer for broadcast messages procedures

| Prerequisite: A.11/5 -- PDU transfer for broadcast messages procedures | | | | |
|---|---|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Reception and decoding of BNCH and BSCH | 23.6.1 | m | |
| 2 | Acquiring cell synchronization | 23.6.2 | m | |
| 3 | Acquiring network information | 23.6.3 | m | |
| NOTE: The requirements are specified in EN 300 392-2 [1] under the given subclause. | | | | |

Table A.16: Upper MAC layer management communication procedures

| Prerequisite: A.11/6 -- Layer management communication procedures | | | | |
|---|------------------------------------|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Path loss parameter C1 calculation | 23.7.1.1 | m | |
| 2 | Path loss parameter C2 calculation | 23.7.1.2 | m | |
| 3 | Downlink measurements | 23.7.3.1 | m | |
| 4 | Monitoring measurements | 23.7.4.2 | m | |
| 5 | Signal strength measurements | 23.7.4.3 | m | |
| 6 | Scanning measurements | 23.7.5.2 | m | |
| NOTE: The requirements are specified in EN 300 392-2 [1] under the given subclause. | | | | |

Table A.17: Upper MAC PDU transfer for traffic procedures

| Prerequisite: A.11/7 -- PDU transfer for traffic procedures | | | | |
|---|---------------------------------|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Timing of change of mode | 23.8.2.2 | m | |
| 2 | Transmission of uplink stealing | 23.8.4.1.1 | m | |
| 3 | Reception of downlink stealing | 23.8.4.2.2 | m | |

NOTE: The requirements are specified in EN 300 392-2 [1] under the given subclause.

Table A.18: MAC PDUs for uplink and downlink

| Prerequisite: A.5/5 -- Upper MAC | | | | | | | |
|----------------------------------|--------------|------------------|--------|---------|------------------|--------|---------|
| Item | PDU | Reception | | | | | |
| | | Reference (note) | Status | Support | Reference (note) | Status | Support |
| 1 | MAC-ACCESS | - | n/a | n/a | 21.4.2.1 | m | |
| 2 | MAC-END-HU | - | n/a | n/a | 21.4.2.2 | m | |
| 3 | MAC-DATA | - | n/a | n/a | 21.4.2.3 | m | |
| 4 | MAC-FRAG | 21.4.3.2 | m | | 21.4.2.4 | m | |
| 5 | MAC-END | 21.4.3.3 | m | | 21.4.2.5 | m | |
| 6 | MAC-RESOURCE | 21.4.3.1 | m | | - | n/a | n/a |

NOTE: The PDUs are specified in EN 300 392-2 [1] under the given subclause.

Table A.19: MAC PDUs for broadcast

| Prerequisite: A.5/5 -- Upper MAC | | | | | | | |
|----------------------------------|---------------|------------------|--------|---------|------------------|--------|---------|
| Item | PDU | Reception | | | | | |
| | | Reference (note) | Status | Support | Reference (note) | Status | Support |
| 1 | SYSINFO | 21.4.4.1 | m | | - | n/a | n/a |
| 2 | SYNC | 21.4.4.2 | m | | - | n/a | n/a |
| 3 | ACCESS-DEFINE | 21.4.4.3 | m | | - | n/a | n/a |
| 4 | ACCESS-ASSIGN | 21.4.7 | m | | - | n/a | n/a |

NOTE: The PDUs are specified in EN 300 392-2 [1] under the given subclause.

Table A.20: MAC PDUs for the U-plane

| Prerequisite: A.5/5 -- Upper MAC | | | | | | | |
|----------------------------------|-------------|------------------|--------|---------|------------------|--------|---------|
| Item | PDU | Reception | | | Reference (note) | Status | Support |
| | | Reference (note) | Status | Support | | | |
| 1 | MAC-TRAFFIC | 21.4.6 | c2001 | | 21.4.6 | c2001 | |

NOTE: The PDUs are specified in EN 300 392-2 [1] under the given subclause.

c2001: IF A.28/1 -- CC supported
 THEN m
 ELSE n/a

A.3.3.3 LLC layer

The supplier of the implementation shall state the support of the implementation for each of the LLC features, procedures, PDUs, constants and timers presented in tables A.21 to A.27.

Table A.21: LLC features

| Prerequisite: A.5/4 -- LLC | | | | |
|----------------------------|-----------------------------------|------------------|--------|---------|
| Item | LLC feature | Reference (note) | Status | Support |
| 1 | Basic link acknowledged service | 22.2.1, 22.3.2 | m | |
| 2 | Basic link unacknowledged service | 22.2.1, 22.3.2 | m | |

NOTE: The features are specified in EN 300 392-2 [1] under the given subclause(s).

Table A.22: LLC basic link procedures for acknowledged service

| Prerequisite: A.21/1 -- Acknowledged basic link | | | | |
|---|---------------------------------|--------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Data reception | 22.3.2.3 | m | |
| 2 | Data transmission | 22.3.2.1, 22.3.2.3 | m | |
| 3 | FCS checking in reception | 22.3.1.5, 22.3.2.3 | o | |
| 4 | FCS calculation in transmission | 22.3.1.5, 22.3.2.3 | o | |

NOTE: The procedures are specified in EN 300 392-2 [1] under the given subclause.

Table A.23: LLC basic link procedures for unacknowledged service

| Prerequisite: A.21/2 -- Unacknowledged basic link | | | | |
|---|---------------------------|----------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Data reception | 22.3.2.4.2 | m | |
| 2 | FCS checking in reception | 22.3.1.5, 22.3.2.4.2 | o | |

NOTE: The procedures are specified in EN 300 392-2 [1] under the given subclause.

Table A.24: LLC basic link PDUs for acknowledged service

| Prerequisite: A.21/1 -- Acknowledged basic link | | | | | | | |
|---|----------------------|--------------------|---------------|---------|--------------------|--------|---------|
| Item | PDU | Reception | | | Transmission | | |
| | | Reference (note 1) | Status | Support | Reference (note 1) | Status | Support |
| 1 | BL-ACK without FCS | 21.2.2.1 | m | | 21.2.2.1 | m | |
| 2 | BL-ADATA without FCS | 21.2.2.2 | m | | 21.2.2.2 | m | |
| 3 | BL-DATA without FCS | 21.2.2.3 | m | | 21.2.2.3 | m | |
| 4 | BL-ACK with FCS | 21.2.2.1 | m (note 2) | | 21.2.2.1 | c2401 | |
| 5 | BL-ADATA with FCS | 21.2.2.2 | m (note 2) | | 21.2.2.2 | c2401 | |
| 6 | BL-DATA with FCS | 21.2.2.3 | m (note 2) | | 21.2.2.3 | c2401 | |

NOTE 1: The PDUs are specified in EN 300 392-2 [1] under the given subclause.
NOTE 2: It is not mandatory for an implementation to check the FCS of a received PDU, but it shall be capable of receiving and decoding PDUs containing an FCS field.

c2401: IF A.22/4 -- FCS calculation in transmission in acknowledged basic link
THEN m
ELSE n/a

Table A.25: LLC basic link PDUs for unacknowledged service

| Prerequisite: A.21/2 -- Unacknowledged basic link | | | | | | | |
|---|----------------------|--------------------|---------------|---------|--------------------|--------|---------|
| Item | PDU | Reception | | | Transmission | | |
| | | Reference (note 1) | Status | Support | Reference (note 1) | Status | Support |
| 1 | BL-UDATA without FCS | 21.2.2.4 | m | | 21.2.2.4 | n | n/a |
| 2 | BL-UDATA with FCS | 21.2.2.4 | m (note 2) | | 21.2.2.4 | n | n/a |

NOTE 1: The PDUs are specified in EN 300 392-2 [1] under the given subclause.
NOTE 2: It is not mandatory for an implementation to check the FCS of a received PDU, but it shall be capable of receiving and decoding PDUs containing an FCS field.

Table A.26: LLC constants for basic link

| Prerequisite: A.21/1 -- Acknowledged basic link | | | | | | |
|---|----------|--------------------|--------|---------|--------------------------|-----------|
| Item | Constant | Reference (note 1) | Status | Support | Values | |
| | | | | | Allowed | Supported |
| 1 | N.252 | A.2 | m | | 1.. 5, 3.. 5 (note 2) | |

NOTE 1: The constant is specified in EN 300 392-2 [1] under the given subclause.
NOTE 2: The first range applies, when stealing repeats are not used for the PDU being transmitted. The second range applies when stealing repeats are used.

Table A.27: LLC basic link timers

| Prerequisite: A.21/1 -- Acknowledged basic link | | | | | | |
|---|-------|------------------|--------|---------|---------------------|-----------|
| Item | Timer | Reference (note) | Status | Support | Values | |
| | | | | | Default | Supported |
| 1 | T.251 | A.1 | m | | 4 signalling frames | |

NOTE: The timer value is specified in EN 300 392-2 [1] under the given subclause.

A.3.4 Layer 3

A.3.4.1 CMCE requirements

A.3.4.1.1 CMCE requirements for a non-Gateway

The supplier of the implementation shall state the support of the implementation for each of the CMCE services, features, functions, PDUs and timers presented in tables A.28 to A.40.

Table A.28: CMCE services

| Prerequisite: A.5/1 -- CMCE, non-Gateway | | | | |
|---|-------------------|------------------|--------|---------|
| Item | CMCE service | Reference (note) | Status | Support |
| 1 | Call Control (CC) | 11.2 | o | |
| NOTE: The services are specified in EN 300 392-2 [1] under the given subclause. | | | | |

Table A.29: CC features

| Prerequisite: A.28/1 -- CC | | | | |
|---|-----------------|------------------|--------|---------|
| Item | CC feature | Reference (note) | Status | Support |
| 1 | Individual call | 14.5.1 | m | |
| 2 | Group call | 14.5.2 | m | |
| NOTE: The services are specified in EN 300 392-2 [1] under the given subclause. | | | | |

Table A.30: CC Individual call signalling functions

| Prerequisite: A.29/1 -- Individual call | | | | |
|--|--------------------------|------------------|--------|---------|
| Item | Signalling function | Reference (note) | Status | Support |
| 1 | On/off hook signalling | 14.5.1.1 | o.6 | |
| 2 | Direct set-up signalling | 14.5.1.1 | o.6 | |
| NOTE: The features are specified in EN 300 392-2 [1] under the given subclause(s). | | | | |

o.6 It is mandatory to support at least one of these items.

Table A.31: CC individual call set-up functions

| Prerequisite: A.29/1 -- Individual call | | | | |
|---|---------------------------------------|------------------|--------|---------|
| Item | Individual call set-up functions | Reference (note) | Status | Support |
| 1 | Incoming call | 14.5.1.1.1 | m | |
| 2 | Outgoing call | 14.5.1.1.2 | m | |
| 3 | Colliding calls | 14.5.1.1.3 | m | |
| 4 | U-plane switching, End of call set-up | 14.5.1.4.1 | m | |
| NOTE: The functions are specified in EN 300 392-2 [1] under the given subclause(s). | | | | |

Table A.32: CC group call set-up functions

| Prerequisite: A.29/2 -- Group call | | | | |
|------------------------------------|---------------------------------------|------------------|--------|---------|
| Item | Group call set-up functions | Reference (note) | Status | Support |
| 1 | Outgoing call | 14.5.2.1.2 | m | |
| 2 | Colliding calls | 14.5.2.1.3 | m | |
| 3 | U-plane switching, End of call set-up | 14.5.2.4.1 | m | |

NOTE: The functions are specified in EN 300 392-2 [1] under the given subclause(s).

Table A.33: CC individual call maintenance functions

| Prerequisite: A.29/1 -- Individual call | | | | |
|---|---------------------------------------|------------------|--------|---------|
| Item | Individual call maintenance functions | Reference (note) | Status | Support |
| 1 | Call restoration | 14.5.1.2.4 | m | |

NOTE: The functions are specified in EN 300 392-2 [1] under the given subclause(s).

Table A.34: CC group call maintenance functions

| Prerequisite: A.29/2 -- Group call | | | | |
|------------------------------------|--|------------------|--------|---------|
| Item | Group call maintenance functions | Reference (note) | Status | Support |
| 1 | Call restoration | 14.5.2.2.4 | m | |
| 2 | Acceptance of group-addressed channel allocation | 14.5.2.5 | m | |

NOTE: The functions are specified in EN 300 392-2 [1] under the given subclause(s).

Table A.35: CC individual call transmission requests/grants/information functions

| Prerequisite: A.29/1 -- Individual call | | | | |
|---|--|------------------|--------|---------|
| Item | Individual call transmission requests/grants/information functions | Reference (note) | Status | Support |
| 1 | Request to transmit | 14.5.1.2.1 | m | |
| 2 | Transmission granted | 14.5.1.2.1 | m | |
| 3 | Transmission not granted | 14.5.1.2.1 | m | |
| 4 | Transmission request queued | 14.5.1.2.1 | m | |
| 5 | Permission to transmit withdrawn | 14.5.1.2.1 | m | |
| 6 | Permission to continue withdrawn call | 14.5.1.2.1 | n | n/a |
| 7 | End of transmission | 14.5.1.2.1 | m | |
| 8 | Stop-transmission order | 14.5.1.2.1 | m | |
| 9 | U-plane switching, during call maintenance | 14.5.1.4.2 | m | |

NOTE: The functions are specified in EN 300 392-2 [1] under the given subclause(s).

Table A.36: CC group call transmission requests/grants/information functions

| Prerequisite: A.29/2 -- Group call | | | | |
|------------------------------------|---|------------------|--------|---------|
| Item | Group Call transmission requests/grants/information functions | Reference (note) | Status | Support |
| 1 | Request to transmit | 14.5.2.2.1 | m | |
| 2 | Transmission granted | 14.5.2.2.1 | m | |
| 3 | Transmission not granted | 14.5.2.2.1 | m | |
| 4 | Transmission request queued | 14.5.2.2.1 | m | |
| 5 | Permission to transmit withdrawn | 14.5.2.2.1 | m | |
| 6 | Permission to continue withdrawn call | 14.5.2.2.1 | n | n/a |
| 7 | End of transmission | 14.5.2.2.1 | m | |
| 8 | Stop-transmission order | 14.5.2.2.1 | m | |
| 9 | U-plane switching, during call maintenance | 14.5.2.4.2 | m | |

NOTE: The functions are specified in EN 300 392-2 [1] under the given subclause(s).

Table A.37: CC individual call clearance functions

| Prerequisite: A.29/1 -- Individual call | | | | |
|---|-------------------------------------|------------------|--------|---------|
| Item | Individual call clearance functions | Reference (note) | Status | Support |
| 1 | User initiated disconnection | 14.5.1.3.1 | o | |
| 2 | Reception of release request | 14.5.1.3.3 | m | |
| 3 | Reception of disconnection request | 14.5.1.3.3 | m | |
| 4 | Expiry of timers | 14.5.1.3.4 | m | |
| 5 | U-plane switching | 14.5.1.4 | m | |

NOTE: The functions are specified in EN 300 392-2 [1] under the given subclause(s).

Table A.38: CC group call clearance functions

| Prerequisite: A.29/2 -- Group call | | | | |
|------------------------------------|------------------------------------|------------------|--------|---------|
| Item | Group call clearance functions | Reference (note) | Status | Support |
| 1 | User initiated disconnection | 14.5.2.3.1 | n | n/a |
| 2 | Reception of disconnection request | 14.5.2.3.3 | m | |
| 3 | Expiry of timers | 14.5.2.3.5 | m | |
| 4 | U-plane switching | 14.5.2.4 | m | |

NOTE: The functions are specified in EN 300 392-2 [1] under the given subclause(s).

Table A.39: CC PDUs

| Prerequisite: A.28/1 -- CC | | | | |
|---|-----------------------|-----------------------|--------|---------|
| Item | PDU (note 2) | Reference (note 1) | Status | Support |
| 1 | D-ALERT | 14.7.1.1 | c3901 | |
| 2 | D-CALL-PROCEEDING | 14.7.1.2 | m | |
| 3 | D-CALL-RESTORE | 14.7.1.3 | m | |
| 4 | D-CONNECT | 14.7.1.4 | m | |
| 5 | D-CONNECT ACKNOWLEDGE | 14.7.1.5 | m | |
| 6 | D-DISCONNECT | 14.7.1.6 | m | |
| 7 | D-INFO | 14.7.1.8 | m | |
| 8 | D-RELEASE | 14.7.1.9 | m | |
| 9 | D-SETUP | 14.7.1.12 | m | |
| 10 | D-TX-CEASED | 14.7.1.13 | m | |
| 11 | D-TX-GRANTED | 14.7.1.15 | m | |
| 12 | D-TX-INTERRUPT | 14.7.1.16 | m | |
| 13 | D-TX-WAIT | 14.7.1.17 | m | |
| 14 | U-ALERT | 14.7.2.1 | c3901 | |
| 15 | U-CALL-RESTORE | 14.7.2.2 | m | |
| 16 | U-CONNECT | 14.7.2.3 | m | |
| 17 | U-DISCONNECT | 14.7.2.4 | m | |
| 18 | U-RELEASE | 14.7.2.9 | m | |
| 19 | U-SETUP | 14.7.2.10 | m | |
| 20 | U-TX-CEASED | 14.7.2.11 | m | |
| 21 | U-TX-DEMAND | 14.7.2.12 | m | |
| NOTE 1: The PDUs are specified in EN 300 392-2 [1] under the given subclause. | | | | |
| NOTE 2: The D-PDUs are received, and the U-PDUs are transmitted by the MS. | | | | |

c3901: IF A.29/1 -- On/off hook signalling
 THEN m
 ELSE n/a

Table A.40: CC timers

| Prerequisite: A.28/1 -- CC | | | | | | |
|--|-------|---------------------|--------|---------|------------------|---------------------|
| Item | Timer | Reference (note) | Status | Support | Allowed range | Supported values |
| 1 | T301 | 14.6 | m | | 0..30 s | |
| 2 | T302 | 14.6 | m | | 0..60 s | |
| 3 | T303 | 14.6 | m | | 0..60 s | |
| 4 | T306 | 14.6 | m | | 4..6 s | |
| 5 | T307 | 14.6 | m | | 6..8 s | |
| 6 | T308 | 14.6 | m | | 0..10 s | |
| 7 | T310 | 14.6 | m | | ≥ 5 s | |
| 8 | T311 | 14.6 | m | | 0..300 s | |
| NOTE: The timers are specified in EN 300 392-2 [1] under the given subclause(s). | | | | | | |

A.3.4.1.2 CMCE requirements for a Gateway

The supplier of the implementation shall state the support of the implementation for each of the CMCE services, features, functions, PDUs and timers presented in tables A.41 to A.45.

Table A.41: CMCE services for a Gateway

| Prerequisite: A.5/8 -- CMCE, Gateway | | | | |
|--------------------------------------|---------------------------|------------------|--------|---------|
| Item | CMCE service | Reference (note) | Status | Support |
| 1 | Circuit Mode Call Control | 9.3 | o | |
| 2 | Short Data Services | 9.4 | n | n/a |

NOTE: The services are specified in ETS 300 396-5 [19] under the given subclause.

Table A.42: Circuit Mode Call Control features for a Gateway

| Prerequisite: A.41/1 -- Circuit Mode Call Control | | | | |
|---|---------------------------------|------------------|--------|---------|
| Item | CC feature | Reference (note) | Status | Support |
| 1 | Individual circuit mode call | 9 | o.7 | |
| 2 | Group circuit mode call | 9 | o.7 | |
| 3 | Accept incoming call from V+D | 9.3.1 | o.8 | |
| 4 | Accept incoming call from DM-MS | 9.3.2 | o.8 | |

NOTE: The services are specified in ETS 300 396-5 [19] under the given subclause.

o.7 It is mandatory to support at least one of these items

o.8 It is mandatory to support at least one of these items

Table A.43: Gateway circuit mode call control procedures

| Prerequisite: A.41/1 -- Circuit mode call control for a Gateway | | | | |
|---|---|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Outgoing call to V+D | 9.3.2.1 | c4301 | |
| 2 | Colliding call set-up at the V+D | 9.3.2.2 | c4302 | |
| 3 | Transmitting U-TX CEASED by end of DM-MS call | 9.3.3.1.1 | c4301 | |
| 4 | Reception of D-TX CEASED by end of V+D call | 9.3.3.1.2 | c4303 | |
| 5 | Reception of D-TX INTERRUPT from V+D | 9.3.3.2 | c4303 | |
| 6 | Permission to transmit granted to another party | 9.3.3.3 | m | |
| 7 | Transmitting U-TX DEMAND at request for transmission from DM-MS | 9.3.3.4.1 | m | |
| 8 | V+D permission to transmit withdrawn during a call | 9.3.3.5 | m | |
| 9 | Transmission of U-DISCONNECT on receipt of DM-RELEASE from current master | 9.3.3.9.1 | c4301 | |
| 10 | Receipt of D-RELEASE from SwMl | 9.3.3.9.2 | m | |
| 11 | Transmission of U-DISCONNECT at expiry of call length timer | 9.3.3.9.3 | m | |
| 12 | Termination of call on receipt of preemption request from DM-MS | 9.3.4.1.3 | m | |
| 13 | Reception of D-TX INTERRUPT from V+D | 9.3.4.2.1 | c4301 | |

NOTE: The procedures are specified in ETS 300 396-5 [19] under the given subclause.

c4301: IF A.42/4 -- Accept incoming call from DM-MS
 THEN m
 ELSE n/a

c4302: IF A.42/3 AND A.42/4 -- Accept incoming call from V+D and accept incoming call from DM-MS
 THEN m
 ELSE n/a

c4303: IF A.42/3 -- Accept incoming call from V+D
 THEN m
 ELSE n/a

Table A.44: CC PDUs for a Gateway

| Prerequisite: A.41/1 -- Circuit mode call control for a Gateway | | | | |
|---|-----------------------|-----------------------|--------|---------|
| Item | PDU (note 2) | Reference (note 1) | Status | Support |
| 1 | D-CALL-PROCEEDING | 14.7.1.2 | c4401 | |
| 2 | D-CONNECT | 14.7.1.4 | c4401 | |
| 3 | D-CONNECT ACKNOWLEDGE | 14.7.1.5 | c4402 | |
| 4 | D-RELEASE | 14.7.1.9 | m | |
| 5 | D-SETUP | 14.7.1.12 | c4402 | |
| 6 | D-TX-CEASED | 14.7.1.13 | m | |
| 7 | D-TX-GRANTED | 14.7.1.15 | m | |
| 8 | D-TX-INTERRUPT | 14.7.1.16 | m | |
| 9 | U-CONNECT | 14.7.2.3 | c4402 | |
| 10 | U-DISCONNECT | 14.7.2.4 | m | |
| 11 | U-SETUP | 14.7.2.10 | c4401 | |
| 12 | U-TX-CEASED | 14.7.2.11 | m | |
| 13 | U-TX-DEMAND | 14.7.2.12 | m | |

NOTE 1: The PDUs are specified in EN 300 392-2 [1] under the given subclause.
NOTE 2: The D-PDUs are received, and the U-PDUs are transmitted by the Gateway.

c4401: IF A.42/4 -- Accept incoming call from DM-MS
THEN m
ELSE n/a

c4402: IF A.42/3 -- Accept incoming call from V+D
THEN m
ELSE n/a

Table A.45: CC timers for a Gateway

| Prerequisite: A.41/1 -- Circuit mode call control for a Gateway | | | | | | |
|---|-------|---------------------|--------|---------|------------------|---------------------|
| Item | Timer | Reference (note) | Status | Support | Allowed range | Supported values |
| 1 | T302 | 9.3.2.1 | c4501 | | 0..60 s | |
| 2 | T303 | 9.3.2.1 | c4501 | | 0..60 s | |
| 3 | T310 | 9.3.3.9.3 | m | | ≥ 5 s | |

NOTE: The timers are specified in ETS 300 396-5 [19] under the given subclause(s).

c4501: IF A.42/4 -- Accept incoming call from DM-MS
THEN m
ELSE n/a

A.3.4.2 MM requirements

A.3.4.2.1 MM requirements for a non-Gateway

The supplier of the implementation shall state the support of the implementation for each of the MM features, procedures, and PDUs presented in tables A.46 to A.51.

Table A.46: MM features

| Prerequisite: A.5/2 -- MM, non-Gateway | | | | |
|--|--|------------------|--------|---------|
| Item | MM feature | Reference (note) | Status | Support |
| 1 | Registration procedures | 16.4 | m | |
| 2 | Attachment/detachment of group identities procedures | 16.8 | o | |

NOTE: The features are specified in EN 300 392-2 [1] under the given subclause(s).

Table A.47: MM registration procedures

| Prerequisite: A.46/1 | | | | |
|----------------------|---|------------------|--------|---------|
| Item | Registration procedures | Reference (note) | Status | Support |
| 1 | MLE initiated registration | 16.4.1 | m | |
| 2 | User application initiated registration | 16.4.2 | o | |
| 3 | User application initiated registration procedure at power up | 16.4.2 | m | |
| 4 | Infrastructure initiated registration | 16.4.3 | m | |

NOTE: The procedures are specified in EN 300 392-2 [1] under the given subclause.

Table A.48: MLE initiated registration procedures

| Prerequisite: A.47/1 -- MLE initiated registration | | | | |
|--|--------------------------------------|------------------|--------|---------|
| Item | MLE initiated registration procedure | Reference (note) | Status | Support |
| 1 | Normal roaming registration | 16.4.1.1 | m | |
| 2 | Normal migration registration | 16.4.1.1 | n | n/a |

NOTE: The procedures are specified in EN 300 392-2 [1] under the given subclause.

Table A.49: User application initiated registration procedures

| Prerequisite: A.47/2 -- User application initiated registration | | | | |
|---|---|------------------|--------|---------|
| Item | User application initiated registration procedure | Reference (note) | Status | Support |
| 1 | No new ITSI registration | 16.4.2 | o | |
| 2 | New ITSI registration | 16.4.2 | m | |
| 3 | New unexchanged ITSI registration | 16.4.2 | n | |

NOTE: The procedures are specified in EN 300 392-2 [1] under the given subclause.

Table A.50: MM attachment/detachment of group identities procedures

| Prerequisite: A.46/2 -- Attachment/detachment of group identities procedures | | | | |
|--|--|------------------|--------|---------|
| Item | Attachment/detachment of group identities procedures | Reference (note) | Status | Support |
| 1 | Infrastructure initiated attachment/detachment of group identities procedure | 16.8.1 | o | |
| 2 | MS initiated attachment/detachment of group identities procedure | 16.8.2 | o | |
| 3 | Infrastructure initiated group identity report request | 16.8.3 | c5001 | |

NOTE: The procedures are specified in EN 300 392-2 [1] under the given subclause.

c5001: IF A.50/1 -- Infrastructure initiated attachment/detachment
 THEN m
 ELSE n/a

Table A.51: MM PDUs

| Prerequisite: A.5/2 -- MM, non-Gateway | | | | |
|--|---|-----------------------|--------|---------|
| Item | PDU (note 2) | Reference (note 1) | Status | Support |
| 1 | D-ATTACH/DETACH GROUP IDENTITY | 16.9.2.1 | c5101 | |
| 2 | D-ATTACH/DETACH GROUP IDENTITY ACKNOWLEDGEMENT | 16.9.2.2 | c5104 | |
| 3 | D-MM STATUS | 16.9.2.5 | n | |
| 4 | D-LOCATION UPDATE ACCEPT | 16.9.2.7 | m | |
| 5 | D-LOCATION UPDATE COMMAND | 16.9.2.8 | m | |
| 6 | D-LOCATION UPDATE REJECT | 16.9.2.9 | m | |
| 7 | D-LOCATION UPDATE PROCEEDING | 16.9.2.10 | n | |
| 8 | U-ATTACH/DETACH GROUP IDENTITY | 16.9.3.1 | c5104 | |
| 9 | U-ATTACH/DETACH GROUP IDENTITY ACKNOWLEDGEMENT | 16.9.3.2 | c5101 | |
| 10 | U-LOCATION UPDATE DEMAND | 16.9.3.4 | m | |

NOTE 1: The PDUs are specified in EN 300 392-2 [1] under the given subclause.
NOTE 2: The D-PDUs are received, and the U-PDUs are transmitted by the MS.

c5101: IF A.50/1 -- Infrastructure initiated attachment/detachment of group identities
THEN m
ELSE n/a

c5104: IF A.50/2 -- Mobile initiated attachment/detachment of group identities
THEN m
ELSE n/a

A.3.4.2.2 MM requirements for a Gateway

The supplier of the implementation shall state the support of the implementation for each of the MM features, procedures, and PDUs presented in tables A.52 and A.53.

Table A.52: MM registration procedures for a Gateway

| Prerequisite: A.5/9 -- MM, Gateway | | | | | |
|------------------------------------|-----------------------------|-------------------------------|---------------------------------|--------|---------|
| Item | Registration procedures | Reference EN 300 392-2 [1] | Reference ETS 300 396-5 [19] | Status | Support |
| 1 | Normal roaming registration | 16.4.1.1 | 10.3.1 | m | |

Table A.53: MM PDUs for a Gateway

| Prerequisite: A.5/9 -- MM, Gateway | | | | |
|------------------------------------|---------------------------|-----------------------|--------|---------|
| Item | PDU (note 2) | Reference (note 1) | Status | Support |
| 1 | D-MM STATUS | 16.9.2.5 | o | |
| 2 | D-LOCATION UPDATE ACCEPT | 16.9.2.7 | m | |
| 3 | D-LOCATION UPDATE COMMAND | 16.9.2.8 | m | |
| 4 | D-LOCATION UPDATE REJECT | 16.9.2.9 | m | |
| 5 | U-LOCATION UPDATE DEMAND | 16.9.3.4 | m | |
| 6 | U-MM STATUS | 16.9.3.5 | o | |

NOTE 1: The PDUs are specified in EN 300 392-2 [1] under the given subclause.
NOTE 2: The D-PDUs are received, and the U-PDUs are transmitted by the Gateway.

A.3.4.3 MLE requirements

The supplier of the implementation shall state the support of the implementation for each of the MLE features, procedures, and timers presented in tables A.54 to A.57.

Table A.54: MLE features

| Prerequisite: A.5/3 -- MLE | | | | |
|----------------------------|------------------------|------------------|--------|---------|
| Item | MLE Feature | Reference (note) | Status | Support |
| 1 | Initial cell selection | 18.3.4.6 | m | |
| 2 | Cell re-selection | 18.3.4.7 | m | |
| 3 | Neighbour cell enquiry | 18.3.6.5 | o | |

NOTE: The features are specified in EN 300 392-2 [1] under the given subclause.

Table A.55: MLE cell re-selection procedures

| Prerequisite: A.54/2 -- Cell re-selection | | | | |
|---|------------------------------------|------------------|--------|---------|
| Item | MLE procedure | Reference (note) | Status | Support |
| 1 | Undeclared cell re-selection | 18.3.4.7.2 | m | |
| 2 | Unannounced cell re-selection | 18.3.4.7.3 | m | |
| 3 | Announced type 3 cell re-selection | 18.3.4.7.4 | m | |

NOTE: The procedures are specified in EN 300 392-2 [1] under the given subclause.

Table A.56: MLE PDUs

| Prerequisite: A.5/3 -- MLE | | | | | | | |
|----------------------------|----------------------|------------------|--------|---------|------------------|--------|---------|
| Item | PDU | Reception | | | Transmission | | |
| | | Reference (note) | Status | Support | Reference (note) | Status | Support |
| 1 | MLE service user PDU | 18.4.1.3 | m | | 18.4.1.3 | m | |
| 2 | D-NWRK-BROADCAST | 18.4.1.4.1 | m | | n/a | n/a | n/a |
| 3 | D-NEW-CELL | 18.4.1.4.2 | m | | n/a | n/a | n/a |
| 4 | D-PREPARE-FAIL | 18.4.1.4.3 | c5601 | | n/a | n/a | n/a |
| 5 | D-RESTORE-ACK | 18.4.1.4.4 | m | | n/a | n/a | n/a |
| 6 | D-RESTORE-FAIL | 18.4.1.4.5 | m | | n/a | n/a | n/a |
| 7 | U-PREPARE | n/a | n/a | n/a | 18.4.1.4.6 | m | |
| 8 | U-RESTORE | n/a | n/a | n/a | 18.4.1.4.7 | m | |
| 9 | D-MLE-SYNC | 18.4.2.1 | m | | n/a | n/a | n/a |
| 10 | D-MLE-SYSINFO | 18.4.2.2 | m | | n/a | n/a | n/a |

NOTE: The PDUs are specified in EN 300 392-2 [1] under the given subclause.

c5601: IF (A.54/3) -- Neighbour cell enquiry
 THEN m
 ELSE n/a

Table A.57: MLE timers

| Prerequisite: A.5/3 -- MLE | | | | | | |
|----------------------------|-------|------------------|--------|---------|---------|-----------|
| Item | Timer | Reference (note) | Status | Support | Values | |
| | | | | | Allowed | Supported |
| 1 | T.370 | 18.6.2 | m | | 5 s | |

NOTE: The timer value is specified in EN 300 392-2 [1] under the given subclause.

A.3.5 Security

The supplier of the implementation shall state the support of the implementation for each of the security features presented in tables A..58 to A.59.

Table A.58: V+D Security class supported

| Prerequisite: A.5/7 -- Security | | | | |
|---|----------------|------------------|--------|---------|
| Item | Security class | Reference (note) | Status | Support |
| 1 | Class 1 | 6.1.1 | o.9 | |
| 2 | Class 2 | 6.1.1 | o.9 | |
| 3 | Class 3 | 6.1.1 | o.9 | |
| NOTE: The features are specified in EN 300 392-7 [2] under the given subclause. | | | | |

o.9 It is mandatory to support at least one of these items

Table A.59: Security features

| Prerequisite: A.5/7 -- Security | | | | |
|---|--------------------------|--------------------------|--------|---------|
| Item | Security feature | Reference (note) | Status | Support |
| 1 | Authentication | 4.1, 4.4.1, 4.4.2 | c5901 | |
| 2 | OTAR protocol functions | 4.2, 4.4.3, 4.4.4, 4.4.5 | c5901 | |
| 3 | Secure enable/disable | 5 | m | |
| 4 | Air interface encryption | 6 | c5902 | |
| 5 | Encrypted Short Identity | 4.2.5 | c5902 | |
| NOTE: The features are specified in EN 300 392-7 [2] under the given subclause. | | | | |

c5901: IF A..58/3 -- Security class 3
THEN m
ELSE o

c5902: IF (A..58/2 or A..58/3) -- Security class 2 or Security class 3
THEN m
ELSE n/a

A.3.5.1 Authentication

The supplier of the implementation shall state the support of the implementation for each of the authentication types, procedures and PDUs presented in tables A.60 to A.62.

Table A.60: Authentication types

| Prerequisite: A.59/1 -- Authentication | | | | |
|---|---|------------------|--------|---------|
| Item | Authentication procedures | Reference (note) | Status | Support |
| 1 | Infrastructure initiated authentication | 4.1.2 | c6001 | |
| 2 | Terminal initiated authentication | 4.1.3 | c6002 | |
| 3 | Infrastructure initiated authentication made mutual by terminal | 4.1.4 | c6003 | |
| 4 | Terminal initiated authentication made mutual by infrastructure | 4.1.4 | c6004 | |
| NOTE: The procedures are specified in EN 300 392-7 [2] under the given subclause. | | | | |

o.10 It is mandatory to support at least one of these items

- c6001: IF A..58/3 -- Security class 3
THEN m
ELSE o.10
- c6002: IF A..58/3 -- Security class 3
THEN o
ELSE o.10
- c6003: IF A.60/1 -- Infrastructure initiated authentication
THEN m
ELSE n/a
- c6004: IF A.60/2 -- Terminal initiated authentication
THEN m
ELSE n/a

Table A.61: Authentication procedures

| Prerequisite: A.59/1 -- Authentication | | | | |
|--|--|------------------|--------|---------|
| Item | Authentication procedures | Reference (note) | Status | Support |
| 1 | Infrastructure initiated authentication | 4.4.2.1 | c6101 | |
| 2 | Terminal initiated authentication | 4.4.2.2 | c6102 | |
| 3 | Infrastructure initiated authentication made mutual by terminal | 4.4.2.3 | c6101 | |
| 4 | Terminal initiated authentication made mutual by infrastructure | 4.4.2.4 | c6102 | |
| 5 | Infrastructure initiated authentication during registration | 4.4.2.5 | c6101 | |
| 6 | Terminal initiated authentication during registration | 4.4.2.6 | c6102 | |
| 7 | Authentication initiated by terminal during registration and made mutual by the infrastructure | 4.4.2.7 | c6102 | |
| 8 | Authentication initiated by infrastructure during registration and made mutual by the terminal | 4.4.2.8 | c6101 | |

NOTE: The procedures are specified in EN 300 392-7 [2] under the given subclause.

- c6101: IF A.60/1 -- Infrastructure initiated authentication
THEN m
ELSE n/a
- c6102: IF A.60/2 -- Terminal initiated authentication
THEN m
ELSE n/a

Table A.62: PDUs for authentication

| Prerequisite: A.59/1 -- Authentication | | | | |
|--|---------------------------|------------------|--------|---------|
| Item | PDU | Reference (note) | Status | Support |
| 1 | D-AUTHENTICATION DEMAND | 4.4.7.1 | c6201 | |
| 2 | D-AUTHENTICATION REJECT | 4.4.7.2 | c6202 | |
| 3 | D-AUTHENTICATION RESPONSE | 4.4.7.3 | c6202 | |
| 4 | D-AUTHENTICATION RESULT | 4.4.7.4 | m | |
| 5 | U-AUTHENTICATION DEMAND | 4.4.7.9 | c6202 | |
| 6 | U-AUTHENTICATION REJECT | 4.4.7.10 | c6201 | |
| 7 | U-AUTHENTICATION RESPONSE | 4.4.7.11 | c6201 | |
| 8 | U-AUTHENTICATION RESULT | 4.4.7.12 | m | |
| 9 | U-TEI PROVIDE PDU | 4.4.7.20 | m | |

NOTE: The PDUs are specified in EN 300 392-7 [2] under the given subclause.

c6201: IF A.60/1 -- Infrastructure initiated authentication
 THEN m
 ELSE n/a

c6202: IF A.60/2 -- Terminal initiated authentication
 THEN m
 ELSE n/a

A.3.5.2 OTAR protocol functions

The supplier of the implementation shall state the support of the implementation for each of the OTAR procedures and PDUs presented in tables A.63 and A.64.

Table A.63: OTAR procedures

| Prerequisite: A.59/2 -- OTAR | | | | |
|------------------------------|---------------------|-------------------------------|--------|---------|
| Item | OTAR procedure | Reference (note) | Status | Support |
| 1 | CCK delivery | 4.4.3, 4.4.3.1, 4.4.3.2 | c6301 | |
| 2 | OTAR GCK | 4.4.5, 4.4.5.1, 4.4.5.2 | c6302 | |
| 3 | OTAR SCK | 4.4.4, 4.4.4.1, 4.4.4.2 | c6303 | |
| 4 | Key change protocol | 4.4.6 | m | |

NOTE: The procedures are specified in EN 300 392-7 [2] under the given subclause.

c6301: IF A..58/3 -- Security Class 3
 THEN m
 ELSE n/a

c6302: IF A..58/3 -- Security Class 3
 THEN o
 ELSE n/a

c6303: IF A..58/2 -- Security Class 2
 THEN o
 ELSE n/a

Table A.64: OTAR PDUs

| Prerequisite: A.59/2 -- OTAR | | | | |
|------------------------------|--------------------|------------------|--------|---------|
| Item | OTAR PDU | Reference (note) | Status | Support |
| 1 | D-CK-CHANGE DEMAND | 4.4.7.5 | m | |
| 2 | D-OTAR CCK Provide | 4.4.7.6 | c6401 | |
| 3 | D-OTAR GCK Provide | 4.4.7.7 | c6402 | |
| 4 | D-OTAR SCK Provide | 4.4.7.8 | c6403 | |
| 5 | U-CK CHANGE RESULT | 4.4.7.13 | m | |
| 6 | U-OTAR CCK Demand | 4.4.7.14 | c6401 | |
| 7 | U-OTAR CCK Result | 4.4.7.15 | c6401 | |
| 8 | U-OTAR GCK Demand | 4.4.7.16 | c6402 | |
| 9 | U-OTAR GCK Result | 4.4.7.17 | c6402 | |
| 10 | U-OTAR SCK Demand | 4.4.7.18 | c6403 | |
| 11 | U-OTAR SCK Result | 4.4.7.19 | c6403 | |

NOTE: The PDUs are specified in EN 300 392-7 [2] under the given subclause.

c6401: IF A.63/1 -- CCK delivery
THEN m
ELSE n/a

c6402: IF A.63/2 -- OTAR GCK
THEN m
ELSE n/a

c6403: IF A.63/3 -- OTAR SCK
THEN m
ELSE n/a

A.3.5.3 Secure enable/disable

The supplier of the implementation shall state the support of the implementation for each of the secure enable/disable procedures and PDUs presented in tables A.66 and A.67.

Table A.65: Secure enable/disable types

| Prerequisite: A.59/3 -- Secure enable/disable | | | | |
|---|---------------------------------|------------------|--------|---------|
| Item | Secure enable/disable procedure | Reference (note) | Status | Support |
| 1 | Disable ITSI temporarily | 5.3.2 | m | |
| 2 | Disable ITSI permanently | 5.3.2 | c6501 | |
| 3 | Enable ITSI | 5.3.5 | m | |
| 4 | Disable TEI temporarily | 5.3.1 | m | |
| 5 | Disable TEI permanently | 5.3.1 | c6501 | |
| 6 | Enable TEI | 5.3.4 | m | |

NOTE: The procedures are specified in EN 300 392-7 [2] under the given subclause.

c6501: IF A.60/1 -- Infrastructure initiated authentication
THEN m
ELSE o

Table A.66: Secure enable/disable procedures

| Prerequisite: A.59/3 -- Secure enable/disable | | | | |
|---|--|------------------|--------|---------|
| Item | Secure enable/disable procedure | Reference (note) | Status | Support |
| 1 | Permanent disabling of an MS using authentication. | 5.4.3.1 | c6601 | |
| 2 | Temporary disabling of an MS using authentication. | 5.4.3.1 | c6601 | |
| 3 | Temporary disabling of an MS without authentication. | 5.4.5 | c6602 | |
| 4 | Enabling an MS using authentication. | 5.4.3.2 | c6601 | |
| 5 | Enabling an MS without authentication. | 5.4.4 | c6602 | |

NOTE: The procedures are specified in EN 300 392-7 [2] under the given subclause.

c6601: IF A.60/1 -- Infrastructure initiated authentication
 THEN m
 ELSE n/a

c6602: IF A.60/1 -- Infrastructure initiated authentication
 THEN o
 ELSE m

Table A.67: Secure enable/disable PDUs

| Prerequisite: A.59/3 -- Secure enable/disable | | | | |
|---|------------------|------------------|--------|---------|
| Item | PDU | Reference (note) | Status | Support |
| 1 | D-DISABLE | 5.4.8.1 | m | |
| 2 | D-ENABLE | 5.4.8.2 | m | |
| 3 | U-DISABLE STATUS | 5.4.8.3 | m | |

NOTE: The PDUs are specified in EN 300 392-7 [2] under the given subclause.

A.3.5.4 AI encryption procedures

The supplier of the implementation shall state the support of the implementation for each of the AI encryption procedures presented in table A.68.

Table A.68: AI encryption procedures

| Prerequisite: A.59/4 -- AI encryption | | | | |
|---------------------------------------|-------------------------|------------------|--------|---------|
| Item | AI encryption procedure | Reference (note) | Status | Support |
| 1 | DCK AI encryption | 6.4 | c6801 | |
| 2 | SCK AI encryption | 6.4 | c6802 | |
| 3 | CCK AI encryption | 6.4 | c6801 | |
| 4 | MGCK AI encryption | 6.4 | c6803 | |

NOTE: The procedures are specified in EN 300 392-7 [2] under the given subclause.

c6801: IF A..58/3 -- Security class 3
 THEN m
 ELSE n/a

c6802: IF A..58/2 -- Security class 2
 THEN o
 ELSE n/a

c6803: IF A..58/3 -- Security class 3
 THEN o
 ELSE n/a

A.4 Requirements tables for U_d air interface

The requirements in this clause apply to TETRA systems implementing the U_d interface.

A.4.1 General for DMO equipment

The supplier of the implementation shall state the support of the implementation for each of the types of equipment presented in tables A.69 and A.70.

Table A.69: DMO type of equipment

| Prerequisite: A.1/2 -- U _d | | | | |
|---------------------------------------|--------------------------------------|--------------------|--------|---------|
| Item | Type of equipment | Reference | Status | Support |
| 1 | DMO capable Mobile Station (DM-MS) | ETS 300 396-3 [17] | o.11 | |
| 2 | Direct Mode REPeater (DM-REP) Type 1 | EN 300 396-4 [18] | o.11 | |
| 3 | Direct Mode REPeater (DM-REP) Type 2 | EN 300 396-7 [21] | o.11 | |
| 4 | Direct Mode GATEway (DM-GATE) | ETS 300 396-5 [19] | o.11 | |

o.11 It is mandatory to support at least one of these items

Table A.70: Environmental profile

| Prerequisite: A.1/2 -- U _d | | | | |
|---------------------------------------|--|------------------|--------|-----------------|
| Item | Requirement | Reference (note) | Status | Supported value |
| 1 | Lowest intended operational temperature | 4.1 | m | |
| 2 | Highest intended operational temperature | 4.1 | m | |

NOTE: The requirements are specified in the present document under the given subclause.

A.4.2 DMO capable Mobile Station (DM-MS)

A.4.2.1 General for DMO capable Mobile Station

The supplier of the implementation shall state the support of the implementation for each of the DMO Mobile Station modes of operation, capabilities, services, priorities, and data types presented in tables A.71 to A.78.

Table A.71: DMO Mobile Station mode of operation

| Prerequisite: A.69/1 -- DMO capable Mobile Station (DM-MS) | | | | |
|--|--|--------------------|--------|---------|
| Item | Mode of operation | Reference | Status | Support |
| 1 | DMO Mobile Station to Mobile Station (MS-MS) operation | ETS 300 396-3 [17] | m | |
| 2 | Operation with DMO Type 1 Repeater (MS-REP1) | EN 300 396-4 [18] | o | |
| 3 | Operation with DMO Gateway (MS-GW) | ETS 300 396-5 [19] | o | |
| 4 | Operation with DMO Type 2 Repeater (MS-REP2) | EN 300 396-7 [21] | o | |

Table A.72: General MS to MS protocol capabilities

| Prerequisite: A.71/1 -- MS to MS operation | | | | |
|--|---|--------------------|--------|---------|
| Item | Capability name | Reference (note) | Status | Support |
| 1 | Direct Mode Call Control (DMCC) | 6 | m | |
| 2 | Upper Medium Access Control (Upper MAC) | 8 | m | |
| 3 | Managed DMO (M-DMO) | TS 100 396-10 [26] | m | |
| 4 | Lower Medium Access Control (Lower MAC) | 8 | m | |
| 5 | Radio Layer | ETS 300 396-2 [16] | m | |
| 6 | Security | ETS 300 396-6 [20] | m | |

NOTE: The capabilities are specified in ETS 300 396-3 [17] under the given clause(s), unless otherwise stated.

Table A.73: DMO MS to MS services

| Prerequisite: A.71/1 -- MS to MS operation | | | | |
|--|--------------------------|------------------|--------|---------|
| Item | DMCC service | Reference (note) | Status | Support |
| 1 | Circuit mode call | 6.2 | o.12 | |
| 2 | Short Data Service (SDS) | 6.3 | c7301 | |

NOTE: The services are specified in ETS 300 396-3 [17] under the given subclause.

o.12 It is mandatory to support at least one of these items

c7301: IF A.125/2 OR A.125/3 -- OTAR or Secure Enable/Disable feature
THEN m
ELSE o.12

Table A.74: Call priorities

| Prerequisite: A.71/1 -- MS to MS operation | | | | |
|--|-------------------------------------|------------------|--------|---------|
| Item | Call priority | Reference (note) | Status | Support |
| 1 | Normal priority call | 5.4 | m | |
| 2 | High priority call | 5.4 | o | |
| 3 | Pre-emptive priority call | 5.4 | o | |
| 4 | Emergency pre-emptive priority call | 5.4 | o | |
| 5 | Recent user priority service | 5.4 | o | |

NOTE: The call priorities are specified in ETS 300 396-3 [17] under the given subclause.

Table A.75: Circuit mode services

| Prerequisite: A.73/1 -- Circuit mode call | | | | |
|---|------------------------------------|------------------|--------|---------|
| Item | Circuit mode service | Reference (note) | Status | Support |
| 1 | Individual circuit mode call | 6.2 | o.13 | |
| 2 | Group circuit mode call | 6.2 | o.13 | |
| 3 | Outgoing call set-up | 6.2 | o.14 | |
| 4 | Incoming call set-up | 6.2 | o.14 | |
| 5 | Call set-up with presence check | 6.2 | c7501 | |
| 6 | Call set-up without presence check | 6.2 | c7502 | |

NOTE: The services are specified in ETS 300 396-3 [17] under the given subclause.

o.13 It is mandatory to support at least one of these items

o.14 It is mandatory to support at least one of these items

o.15 It is mandatory to support at least one of these items

c7501: IF A.75/1 -- Individual circuit mode call capability
THEN o.15
ELSE n/a

c7502: IF A.75/2 -- Group circuit mode call capability
THEN m
ELSE o.15

Table A.76: DMCC short data service call capabilities

| Prerequisite: A.73/2 -- Short data service | | | | |
|--|---|------------------|--------|---------|
| Item | Call capability | Reference (note) | Status | Support |
| 1 | Group address SDS capability | 6.3 | o.16 | |
| 2 | Individual address SDS capability | 6.3 | c7601 | |
| 3 | Sending short data | 6.3.1 | c7602 | |
| 4 | Receiving short data | 6.3.2 | c7602 | |
| 5 | Unacknowledged short data service | 6.3 | c7603 | |
| 6 | Acknowledged short data service not including data in Acknowledgement | 6.3 | c7604 | |
| 7 | Acknowledged short data service including data in Acknowledgement | 6.3 | c7605 | |
| 8 | Include FCS in transmission | 6.3 | c7606 | |

NOTE: The capabilities are specified in ETS 300 396-3 [17] under the given subclause.

o.16 It is mandatory to support at least one of these items

o.17 It is mandatory to support at least one of these items

o.18 It is mandatory to support at least one of these items

c7601: IF A.125/2 OR A.125/3 -- OTAR or Secure Enable/Disable feature
THEN m
ELSE o.16

c7602: IF A.125/2 OR A.125/3 -- OTAR or Secure Enable/Disable feature
THEN m
ELSE o.17

c7603: IF A.76/1 -- Group address SDS capability
THEN m
ELSE o

c7604: IF A.125/2 -- OTAR feature
THEN m
ELSE o.18

c7605: IF A.125/2 OR A.125/3 -- OTAR or Secure Enable/Disable feature
THEN m
ELSE o.18

c7606: IF A.76/3 -- Sending short data
THEN o
ELSE n/a

Table A.77: Short data message types

| Prerequisite: A.73/2 -- Short Data Service (SDS) | | | | |
|---|----------------------------------|------------------|--------|---------|
| Item | Message types | Reference (note) | Status | Support |
| 1 | Pre-defined short data messages | 6.3 | o | |
| 2 | User-defined short data messages | 6.3 | o | |
| 3 | Over The Air Re-keying (OTAR) | 6.3 | c7701 | |
| 4 | Enable/disable | 6.3 | c7702 | |
| NOTE: The data message types are specified in ETS 300 396-3 [17] under the given subclause. | | | | |

c7701: IF A.125/2 -- OTAR feature
 THEN m
 ELSE n/a

c7702: A.125/3 -- Secure Enable/Disable feature
 THEN m
 ELSE n/a

Table A.78: SDS user defined data

| Prerequisite: A.77/2 -- User defined short data | | | | |
|--|---------------------------------------|------------------|--------|---------|
| Item | SDS user defined data types | Reference (note) | Status | Support |
| 1 | User defined data 1 (16 bits) | 5.4 | o.19 | |
| 2 | User defined data 2 (32 bits) | 5.4 | o.19 | |
| 3 | User defined data 3 (64 bits) | 5.4 | o.19 | |
| 4 | User defined data 4 (up to 2047 bits) | 5.4 | o.19 | |
| NOTE: The user defined data types are specified in ETS 300 396-3 [17] under the given subclause. | | | | |

o.19 It is mandatory to support at least one of these items

A.4.2.1.1 General for Mobile Station operation with DMO Type 1 Repeater (MS-REP1)

The supplier of the implementation shall state the support of the implementation for each of the DMO Mobile Station capabilities and services presented in tables A.79 to A.82.

Table A.79: Protocol capabilities for operation with DMO Type 1 Repeater (MS-REP1)

| Prerequisite: A.71/2 -- Operation with DMO Type 1 Repeater (MS-REP1) | | | | |
|--|---|------------------|--------|---------|
| Item | Capability name | Reference (note) | Status | Support |
| 1 | Direct Mode Call Control (DMCC) | 6.1 | m | |
| 2 | Upper Medium Access Control (Upper MAC) | 8 | m | |
| NOTE: The capabilities are specified in EN 300 396-4 [18] under the given subclause. | | | | |

Table A.80: DMO MS to REP1 services

| Prerequisite: A.71/2 -- Operation with DMO Type 1 Repeater (MS-REP1) | | | | |
|--|--------------------------|------------------|--------|---------|
| Item | DMCC service | Reference (note) | Status | Support |
| 1 | Circuit mode call | 6.2 | o.20 | |
| 2 | Short Data Service (SDS) | 6.3 | o.20 | |
| NOTE: The services are specified in EN 300 396-4 [18] under the given subclause. | | | | |

o.20 It is mandatory to support at least one of these items

Table A.81: DMO MS to REP1 Circuit call capabilities

| Prerequisite: A.80/1 -- Circuit mode call | | | | |
|--|--|------------------|--------|---------|
| Item | Circuit mode call capabilities | Reference (note) | Status | Support |
| 1 | Individual circuit mode call | 6.2 | o.21 | |
| 2 | Group circuit mode call | 6.2 | o.21 | |
| 3 | Outgoing call set-up through Repeater type 1 | 6.2 | o.22 | |
| 4 | Incoming call set-up from Repeater type 1 | 6.2 | o.22 | |
| 5 | Call pre-emption capability | 6.2.4.1 | c8101 | |
| NOTE: The services are specified in EN 300 396-4 [18] under the given subclause. | | | | |

o.21 It is mandatory to support at least one of these items

o.22 It is mandatory to support at least one of these items

c8101: IF A.81/3 AND A.81/4 -- Outgoing call set-up capability and incoming call set-up capability AND (A.74/3 OR A.74/4) and pre-emptive or emergency pre-emptive call capability THEN o
ELSE n/a

Table A.82: DMCC short data service capabilities

| Prerequisite: A.80/2 -- Short Data Service (SDS) | | | | |
|--|-----------------------------------|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Sending unacknowledged short data | 6.3.1.1.1 | o | |
| 2 | Sending acknowledged short data | 6.3.1.1.2 | o | |
| NOTE: The procedures are specified in EN 300 396-4 [18] under the given subclause. | | | | |

A.4.2.1.2 General for Mobile Station operation with DMO Type 2 Repeater (MS-REP2)

The supplier of the implementation shall state the support of the implementation for each of the DMO Mobile Station capabilities and services presented in tables A.83 to A.86.

Table A.83: Protocol capabilities for operation with DMO Type 2 Repeater (MS-REP2)

| Prerequisite: A.71/4 -- Operation with DMO Type 2 Repeater (MS-REP2) | | | | |
|--|---|------------------|--------|---------|
| Item | Capability name | Reference (note) | Status | Support |
| 1 | Direct Mode Call Control (DMCC) | 6.1 | m | |
| 2 | Upper Medium Access Control (Upper MAC) | 8 | m | |
| NOTE: The capabilities are specified in EN 300 396-7 [21] under the given subclause. | | | | |

Table A.84: DMO MS to REP2 services

| Prerequisite: A.71/4 -- Operation with DMO Type 2 Repeater (MS-REP2) | | | | |
|--|--------------------------|------------------|--------|---------|
| Item | DMCC service | Reference (note) | Status | Support |
| 1 | Circuit mode call | 6.2 | o.23 | |
| 2 | Short Data Service (SDS) | 6.3 | o.23 | |
| NOTE: The services are specified in EN 300 396-7 [21] under the given subclause. | | | | |

o.23 It is mandatory to support at least one of these items

Table A.85: DMO MS to REP2 Circuit call capabilities

| Prerequisite: A. 84/1 -- Circuit mode call | | | | |
|--|--|------------------|--------|---------|
| Item | Circuit mode call capabilities | Reference (note) | Status | Support |
| 1 | Individual circuit mode call | 6.2 | o.24 | |
| 2 | Group circuit mode call | 6.2 | o.24 | |
| 3 | Outgoing call set-up through Repeater type 2 | 6.2 | o.25 | |
| 4 | Incoming call set-up from Repeater type 2 | 6.2 | o.25 | |
| 5 | Call pre-emption capability | 6.2.4.1 | c8501 | |
| NOTE: The services are specified in EN 300 396-7 [21] under the given subclause. | | | | |

o.24 It is mandatory to support at least one of these items

o.25 It is mandatory to support at least one of these items

c8501: IF A.85/3 AND A.85/4 -- Outgoing call set-up capability and incoming call set-up capability AND (A.74/3 OR A.74/4) and pre-emptive or emergency pre-emptive call capability THEN o
ELSE n/a

Table A.86: DMCC short data service capabilities

| Prerequisite: A.84/2 -- Short Data Service (SDS) | | | | |
|--|-----------------------------------|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Sending unacknowledged short data | 6.3.1.1.1 | o | |
| 2 | Sending acknowledged short data | 6.3.1.1.2 | o | |
| NOTE: The procedures are specified in EN 300 396-7 [21] under the given subclause. | | | | |

A.4.2.1.3 General for Mobile Station operation with DMO Gateway (MS-GW)

The supplier of the implementation shall state the support of the implementation for each of the DMO Mobile Station capabilities and services presented in tables A.87 to A.89.

Table A.87: Protocol capabilities for operation with DMO Gateway (MS-GW)

| Prerequisite: A.71/3 -- Operation with DMO Gateway (MS-GW) | | | | |
|---|---|------------------|--------|---------|
| Item | Capability name | Reference (note) | Status | Support |
| 1 | Direct Mode Call Control (DMCC) | 6.1 | m | |
| 2 | Direct Mode Mobility Management (DMMM) | 6.1 | c8701 | |
| 3 | Upper Medium Access Control (Upper MAC) | 8 | m | |
| NOTE: The capabilities are specified in ETS 300 396-5 [19] under the given subclause. | | | | |

c8701: IF A.89/3 -- Outgoing call set-up through Gateway
THEN m
ELSE n/a

Table A.88: DMO MS to GW services

| Prerequisite: A.71/3 -- Operation with DMO Gateway (MS-GW) | | | | |
|---|--------------------------|------------------|--------|---------|
| Item | DMCC service | Reference (note) | Status | Support |
| 1 | Circuit mode call | 6.2 | o | |
| 2 | Short Data Service (SDS) | 6.3 | n | n/a |
| NOTE: The services are specified in ETS 300 396-5 [19] under the given subclause. | | | | |

Table A.89: DMO MS to GW Circuit call capabilities

| Prerequisite: A.88/1 -- Circuit mode call | | | | |
|---|--------------------------------------|------------------|--------|---------|
| Item | Circuit mode call capabilities | Reference (note) | Status | Support |
| 1 | Individual circuit mode call | 6.2 | o.26 | |
| 2 | Group circuit mode call | 6.2 | o.26 | |
| 3 | Outgoing call set-up through Gateway | 6.2 | o.27 | |
| 4 | Incoming call set-up from Gateway | 6.2 | o.27 | |
| NOTE: The services are specified in ETS 300 396-5 [19] under the given subclause. | | | | |

o.26: It is mandatory to support at least one of these items

o.27: It is mandatory to support at least one of these items

A.4.2.2 Physical layer

The supplier of the implementation shall state the support of the implementation for each of the physical layer capabilities, requirements and parameters presented in tables A.90 to A.93.

Table A.90: General Layer 1 capabilities

| Prerequisite: A.72/5 -- DMO MS Radio layer | | | | |
|---|------------------------------|-----------|--------|---------|
| Item | Capability or feature name | Reference | Status | Support |
| 1 | Protected circuit mode data | 6.6.2 | o | |
| 2 | Switchable DMO power classes | 6.4.1 | o | |
| NOTE: The requirements are specified in ETS 300 396-2 [16] under the given subclause. | | | | |

Table A.91: Physical layer requirements

| Prerequisite: A.72/5 -- DMO MS Radio layer | | | | |
|--|--|------------------|--------|---------|
| Item | Requirement | Reference (note) | Status | Support |
| 1 | Modulation type | 5.2 | m | |
| 2 | Frequency bands and channel allocation | 6.2 | m | |
| 3 | Unwanted conducted emission over the useful part of the burst | 6.4.3.2.1 | m | |
| 4 | Unwanted conducted emission during the switching transients | 6.4.3.2.2 | m | |
| 5 | Unwanted conducted discrete spurious emission far from the carrier | 6.4.3.3.1 | m | |
| 6 | Unwanted conducted wideband noise emission far from the carrier | 6.4.3.3.2 | m | |
| 7 | Unwanted conducted emission during LCH | 6.4.3.4 | m | |
| 8 | Unwanted conducted emission in the non-transmit state | 6.4.3.5 | m | |
| 9 | Unwanted radiated emissions | 6.4.4 | m | |
| 10 | RF output power time mask | 6.4.6 | m | |
| 11 | RF output power in non-active transmit state | 6.4.6 | m | |
| 12 | Transmitter intermodulation attenuation | 6.4.7.2 | m | |
| 13 | Blocking characteristics | 6.5.1.2 | m | |
| 14 | Spurious response rejection | 6.5.2.2 | m | |
| 15 | Intermodulation response rejection | 6.5.3.2 | m | |
| 16 | Unwanted conducted emission in reception | 6.5.4.2 | m | |
| 17 | Unwanted radiated emission | 6.5.5 | m | |
| 18 | Modulation accuracy | 6.6.1.2 | m | |
| 19 | Nominal error rate | 6.6.2.1 | m | |
| 20 | Dynamic reference sensitivity performance | 6.6.2.2 | m | |
| 21 | Reference interference performance | 6.6.2.3 | m | |
| 22 | Static reference sensitivity performance | 6.6.2.4 | m | |
| 23 | MS receiver performance for synchronization burst acquisition | 6.6.2.5 | m | |
| 24 | DM-MS synchronization requirement | 7.2 | m | |
| 25 | Relationship between counters | 7.3.2 | m | |
| 26 | RF frequency accuracy | 7.4 | m | |
| 27 | Requirement for synchronization of a slave MS | 7.5 | m | |
| 28 | Mapping of logical channels | 9.4.5 | m | |

NOTE: The requirements are specified in ETS 300 396-2 [16] under the given subclause.

Table A.92: Output power and power class requirements and parameters

| Prerequisite: A.72/5 -- DMO MS Radio layer | | | | | | |
|--|------------------------------|------------------|--------|---------|----------------|------------------|
| Item | Requirement and parameter | Reference (note) | Status | Support | Allowed values | Supported values |
| 1 | Output power and power class | 6.4.2 | m | | [2..5, 2L..5L] | |

NOTE: The parameters are specified in ETS 300 396-2 [16] under the given subclause.

Table A.93: RF carrier frequency bands

| Prerequisite: A.72/5 -- DMO MS Radio layer | | | | | |
|--|-------------------------------|---------------------|--------|---------|---------------------------------|
| Item | Allowed frequency range (MHz) | Reference | Status | Support | Supported frequency range (MHz) |
| 1 | 410 to 430 | ERC/DEC/(96)04 [44] | o.28 | | |
| 2 | 870 to 876 | ERC/DEC/(96)04 [44] | o.28 | | |
| 3 | 915 to 921 | ERC/DEC/(96)04 [44] | o.28 | | |
| 4 | 450 to 470 | ERC/DEC/(96)04 [44] | o.28 | | |
| 5 | 385 to 390 | ERC/DEC/(96)04 [44] | o.28 | | |
| 6 | 395 to 399.99 | ERC/DEC/(96)04 [44] | o.28 | | |

o.28 The supported frequency range(s) shall be within one or more of the specified frequency bands.

A.4.2.2.1 Layer 1 for operation with DMO Type 1 Repeater (MS-REP1)

Table A.94: Physical layer requirements for operation with DMO Type 1 Repeater (MS-REP1)

| Prerequisite: A.71/2 -- Operation with DMO Type 1 Repeater (MS-REP1) | | | | |
|--|----------------------------------|------------------|--------|---------|
| Item | Requirement | Reference (note) | Status | Support |
| 1 | Usage of DM channel with DM-REP1 | 8.4 | m | |
| 2 | DM channel arrangements | 8.4.1.1 | m | |

NOTE: The requirements are specified in EN 300 396-4 [18] under the given subclause.

A.4.2.2.2 Layer 1 for operation with DMO Type 2 Repeater (MS-REP2)

Table A.95: Physical layer requirements for operation with DMO Type 2 Repeater (MS-REP2)

| Prerequisite: A.71/4 -- Operation with DMO Type 2 Repeater (MS-REP2) | | | | |
|--|---|------------------|--------|---------|
| Item | Requirement | Reference (note) | Status | Support |
| 1 | Usage of DM channel with DM-REP2 | 8.4 | m | |
| 2 | DM channel arrangements | 8.4.1.1 | m | |
| 3 | Frequency bands and channel arrangements | 11.3.2 | m | |
| 4 | General requirements for synchronization of DM-MSs | 11.4.2 | m | |
| 5 | Synchronization requirements for a master MS operating on channel B | 11.4.6 | m | |

NOTE: The requirements are specified in EN 300 396-7 [21] under the given subclause.

A.4.2.2.3 Layer 1 for operation with DMO Gateway (MS-GW)

Table A.96: Physical layer requirements for operation with DMO Gateway (MS-GW)

| Prerequisite: A.71/3 -- Operation with DMO Gateway (MS-GW) | | | | |
|--|--|------------------|--------|---------|
| Item | Requirement | Reference (note) | Status | Support |
| 1 | Frequency bands and channel arrangements | 15.3.2 | m | |
| 2 | DM-MS synchronization requirement. | 15.4.2 | m | |
| 3 | Requirement for synchronization of a slave DM mobile | 15.4.5 | m | |

NOTE: The requirements are specified in ETS 300 396-5 [19] under the given subclause.

A.4.2.3 Layer 2

A.4.2.3.1 Lower MAC layer

The supplier of the implementation shall state the support of the implementation for each of the error control schemes presented in table A.97.

Table A.97: Error control schemes of Lower DM-MAC

| Prerequisite: A.72/4 -- Lower DM-MAC | | | | |
|--------------------------------------|--|------------------|--------|---------|
| Item | Error control scheme | Reference (note) | Status | Support |
| 1 | Error control scheme for Synchronization Signalling CHannel (SCH/S). | 8.3.1.1 | m | |
| 2 | Error control scheme for Half-slot Signalling CHannel (SCH/H) and Stealing CHannel (STCH). | 8.3.1.2 | m | |
| 3 | Error control scheme for Full-slot Signalling Channel (SCH/F). | 8.3.1.3 | m | |

NOTE: The error control schemes are specified in ETS 300 396-2 [16] under the given subclause.

A.4.2.3.2 Upper MAC layer

The supplier of the implementation shall state the support of the implementation for each of the Upper MAC layer procedures, PDUs and number of frames presented in tables A.98 to A.102.

Table A.98: Managed DMO procedures

| Prerequisite: A.72/3 -- Managed DMO for Mobile Station | | | | |
|---|--------------------------------|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Authorization to transmit | 4.2 | c9801 | |
| 2 | Withdrawal of authorization | 4.4.3 | c9801 | |
| 3 | Authorization presence signal. | 5.1 | c9801 | |
| NOTE: The procedures are specified in TS 100 396-10 [26] under the given subclause. | | | | |

c9801: IF A.75/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a

Table A.99: DM channel usage procedures

| Prerequisite: A.72/2 -- Upper DM-MAC for MS to MS operation | | | | |
|---|--------------------------|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Transmitting DM-OCCUPIED | 8.4.5.1.7 | c9901 | |
| 2 | Transmitting DM-RESERVED | 8.4.6.1 | c9901 | |
| NOTE: The procedures are specified in ETS 300 396-3 [17] under the given subclause. | | | | |

c9901: IF A.75/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a

Table A.100: DM-MAC signalling procedures

| Prerequisite: A.72/2 -- Upper DM-MAC for MS to MS operation | | | | |
|---|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Transmission of messages | 8.5.6.1 | c10001 | |
| 2 | Indicating frames available for requests | 8.5.7.2.1 | c10002 | |
| NOTE: The procedures are specified in ETS 300 396-3 [17] under the given subclause. | | | | |

c10001: IF A.75/3 OR A.76/3 -- Outgoing call set-up capability or sending short data
 THEN m
 ELSE n/a

c10002: IF A.75/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a

Table A.101: DM-MAC PDUs

| Prerequisite: A.72/2 -- Upper DM-MAC for MS to MS operation | | | | | | |
|--|-------------|-------------------------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | DMAC-SYNC | 9.1.1 | m | | c10101 | |
| 2 | DMAC-DATA | 9.2.1 | m | | c10102 | |
| 3 | DM-RESERVED | 9.4.1 | c10103 | | c10104 | |
| 4 | DPRES-SYNC | TS 100 396-10 [26], subclause 5.3.1 | m | | n/a | n/a |
| NOTE: The PDUs are specified in ETS 300 396-3 [17] under the given subclause, unless otherwise stated. | | | | | | |

- c10101: IF A.75/3 OR A.76/3 -- Outgoing call set-up capability or sending short data
 THEN m
 ELSE
 IF (A.75/4 AND A.75/5) -- Incoming call set-up with presence check capability
 OR A.114/3 or receiving acknowledged short data
 THEN o
 ELSE n/a
- c10102: IF A.75/3 OR A.76/3 -- Outgoing call set-up capability or sending short data
 THEN o
 ELSE n/a
- c10103: IF A.75/3 OR A.76/3 -- Outgoing call set-up capability or sending short data
 THEN m
 ELSE o
- c10104: IF A.75/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a

Table A.102: Number of frames transmitted by DM-MAC

| Prerequisite: A.72/2 -- Upper DM-MAC for MS to MS operation | | | | | | |
|---|--------------------------------|---------------------|--------|---------|---------|-----------|
| Item | Message type | Reference (note) | Status | Support | Values | |
| | | | | | Allowed | Supported |
| 1 | DM-SETUP (new call setup) | A.5 | c10201 | | 2...4 | |
| 2 | DM-SETUP PRES (new call setup) | A.5 | c10202 | | 2...4 | |
| 3 | DM-SDS DATA (new call set-up) | A.5 | c10203 | | 2...4 | |
| 4 | DM-SDS UDATA (new call set-up) | A.5 | c10204 | | 2...4 | |

NOTE: The constant is specified in ETS 300 396-3 [17] under the given subclause.

- c10201: IF A.113/1 -- Outgoing call set-up without presence check capability
 THEN m
 ELSE n/a
- c10202: IF A.113/2 -- Outgoing call set-up with presence check capability
 THEN m
 ELSE n/a
- c10203: IF A.114/1 -- Sending acknowledged short data
 THEN m
 ELSE n/a
- c10204: IF A.114/2 -- Sending unacknowledged short data
 THEN m
 ELSE n/a

A.4.2.3.2.1 Upper MAC layer for operation with DMO Type 1 Repeater (MS-REP1)

The supplier of the implementation shall state the support of the implementation for each of the Upper MAC layer procedures and PDUs presented in tables A.103 to A.105.

Table A.103: MS-REP1 channel monitoring procedures

| Prerequisite: A.71/2 -- Operation with DMO Type 1 Repeater (MS-REP1) | | | | |
|--|---|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | DM-channel monitoring during occupation | 8.4.4.3 | c10301 | |
| 2 | DM-channel monitoring during reservation | 8.4.4.4 | c10301 | |
| 3 | DM-channel monitoring during pre-emption signalling | 8.4.4.6 | c10302 | |
| NOTE: The procedures are specified in EN 300 396-4 [18] under the given subclause. | | | | |

c10301: IF A.81/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a

c10302: IF A.81/5 -- Pre-emptive call capability
 THEN m
 ELSE n/a

Table A.104: MS-REP1 signalling procedures

| Prerequisite: A.71/2 -- Operation with DMO Type 1 Repeater (MS-REP1) | | | | |
|--|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Indication of master/slave role in synchronization burst | 8.5.2.1.1 | m | |
| 2 | Indicating frames available for requests | 8.5.7.2.1 | c10401 | |
| NOTE: The procedures are specified in EN 300 396-4 [18] under the given subclause. | | | | |

c10401: IF A.81/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a

Table A.105: MS-REP1 PDUs

| Prerequisite: A.71/2 -- Operation with DMO Type 1 Repeater (MS-REP1) | | | | | | |
|--|------------|------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | DPRES-SYNC | 10.1.2 | m | | n/a | n/a |
| NOTE: The PDUs are specified in EN 300 396-4 [18] under the given subclause. | | | | | | |

A.4.2.3.2.2 Upper MAC layer for operation with DMO Type 2 Repeater (MS-REP2)

The supplier of the implementation shall state the support of the implementation for each of the Upper MAC layer procedures and PDUs presented in tables A.106 to A.108.

Table A.106: MS-REP2 channel monitoring procedures

| Prerequisite: A.71/4 -- Operation with DMO Type 2 Repeater (MS-REP2) | | | | |
|--|---|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | DM-channel monitoring during occupation | 8.4.4.3 | c10601 | |
| 2 | DM-channel monitoring during reservation | 8.4.4.4 | c10601 | |
| 3 | DM-channel monitoring during pre-emption signalling | 8.4.4.6 | c10602 | |
| NOTE: The procedures are specified in EN 300 396-7 [21] under the given subclause. | | | | |

- c10601: IF A.85/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a
- c10602: IF A.85/5 -- Pre-emptive call capability
 THEN m
 ELSE n/a

Table A.107: MS-REP2 signalling procedures

| Prerequisite: A.71/4 -- Operation with DMO Type 2 Repeater (MS-REP2) | | | | |
|--|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Indication of master/slave role in synchronization burst | 8.5.2.1.1 | m | |
| 2 | Indicating frames available for requests | 8.5.7.2.1 | c10701 | |
| NOTE: The procedures are specified in EN 300 396-7 [21] under the given subclause. | | | | |

- c10701: IF A.85/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a

Table A.108: MS-REP2 PDUs

| Prerequisite: A.71/4 -- Operation with DMO Type 2 Repeater (MS-REP2) | | | | | | |
|--|------------|------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | DPRES-SYNC | 10.1.2 | m | | n/a | n/a |
| NOTE: The PDUs are specified in EN 300 396-7 [21] under the given subclause. | | | | | | |

A.4.2.3.2.3 Upper MAC layer for operation with DMO Gateway (MS-GW)

The supplier of the implementation shall state the support of the implementation for each of the Upper MAC layer procedures, PDUs and number of frames presented in tables A.109 to A.112.

Table A.109: MS-GW channel usage procedures

| Prerequisite: A.71/3 -- Operation with DMO Gateway (MS-GW) | | | | |
|---|--------------------------|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Transmitting DM-OCCUPIED | 8.4.5.1.7 | c10901 | |
| NOTE: The procedures are specified in ETS 300 396-5 [19] under the given subclause. | | | | |

- c10901: IF A.89/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a

Table A.110: MS-GW signalling procedures

| Prerequisite: A.71/3 -- Operation with DMO Gateway (MS-GW) | | | | |
|---|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Indicating frames available for requests | 8.5.7.2.1 | c11001 | |
| NOTE: The procedures are specified in ETS 300 396-5 [19] under the given subclause. | | | | |

c11001: IF A.89/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a

Table A.111: MS-GW PDUs

| Prerequisite: A.71/3 -- Operation with DMO Gateway (MS-GW) | | | | | | |
|--|------------|---------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | DPRES-SYNC | 14.1.2 | m | | n/a | n/a |

NOTE: The PDUs are specified in ETS 300 396-5 [19] under the given subclause.

Table A.112: Number of frames transmitted for MS-GW

| Prerequisite: A.71/3 -- Operation with DMO Gateway (MS-GW) | | | | | | |
|--|----------------------|---------------------|--------|---------|---------|-----------|
| Item | Message type | Reference (note) | Status | Support | Values | |
| | | | | | Allowed | Supported |
| 1 | DM-GSETUP | A.5 | c11201 | | 2...4 | |
| 2 | DM-GTX REQUEST | A.5 | c11201 | | 2...4 | |
| 3 | DM-GREGISTER REQUEST | A.5 | c11202 | | 2...4 | |
| 4 | DM-GCANCEL ACK | A.5 | c11202 | | 1...3 | |

NOTE: The constant is specified in ETS 300 396-5 [19] under the given subclause.

c11201: IF A.89/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a

c11202: IF A.87/2 -- Mobility management supported
 THEN m
 ELSE n/a

A.4.2.4 Layer 3

A.4.2.4.1 DMCC

The supplier of the implementation shall state the support of the implementation for each of the DMCC procedures, functions, PDUs, timers and constants presented in tables A.73 to A.118.

Table A.113: Circuit mode procedures

| Prerequisite: A.73/1 -- Circuit mode call | | | | |
|---|--|---------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Outgoing call set-up without presence check | 6.2.1.1 | c11301 | |
| 2 | Outgoing call set-up with presence check | 6.2.2.1 | c11302 | |
| 3 | Accept call pre-emption during occupation | 6.2.4.1 | c11303 | |
| 4 | Release of radio resource at the end of transmission | 6.2.4.1 | c11304 | |
| 5 | Master release of resource by user application | 6.2.4.1 | c11304 | |
| 6 | Release of radio resource at DT311 timeout | 6.2.4.1 | c11303 | |
| 7 | Request for pre-emption during occupation | 6.2.4.2 | c11305 | |
| 8 | Accept call pre-emption during reservation | 6.2.5.1 | c11303 | |
| 9 | Accept call change-over during reservation | 6.2.5.1 | c11303 | |
| 10 | Release of radio resource during reservation | 6.2.5.1 | c11304 | |
| 11 | Request for change-over during reservation | 6.2.5.2 | c11306 | |

NOTE: The procedures are specified in ETS 300 396-3 [17] under the given subclause.

- c11301: IF A.75/3 AND A.75/6 -- Outgoing call set-up without presence check capability
THEN m
ELSE n/a
- c11302: IF A.75/3 AND A.75/5 -- Outgoing call set-up with presence check capability
THEN m
ELSE n/a
- c11303: IF A.75/3 -- Outgoing call set-up capability
THEN m
ELSE n/a
- c11304: IF A.75/3 -- Outgoing call set-up capability
THEN o
ELSE n/a
- c11305: IF A.75/3 AND A.75/4 -- Outgoing call set-up capability and incoming call set-up capability
AND (A.74/3 OR A.74/4) and pre-emptive or emergency pre-emptive call capability
THEN o
ELSE n/a
- c11306: IF A.75/3 AND A.75/4 -- Outgoing call set-up capability and incoming call set-up capability
THEN o
ELSE n/a

Table A.114: DMCC short data service procedures

| Prerequisite: A.73/2 -- Short Data Service (SDS) | | | | |
|---|---|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Sending unacknowledged short data on an available channel | 6.3.1.1.1 | c11401 | |
| 2 | Sending acknowledged short data on an available channel | 6.3.1.1.2 | c11402 | |
| 3 | Receiving acknowledged short data | 6.3.2.2 | c11403 | |
| NOTE: The procedures are specified in ETS 300 396-3 [17] under the given subclause. | | | | |

- c11401: IF A.76/3 AND A.76/5 -- Sending short data and Unacknowledged short data service
THEN o
ELSE n/a
- c11402: IF A.76/3 AND (A.76/6 OR A.76/7) -- Sending short data and Acknowledged short data service
THEN m
ELSE n/a
- c11403: IF A.76/4 AND (A.76/6 OR A.76/7) -- Receiving short data and Acknowledged short data service
THEN m
ELSE n/a

Table A.115: Short data service error protection function

| Prerequisite: A.73/2 -- Short Data Service (SDS) | | | | |
|---|---------------------------------|------------------|--------|---------|
| Item | Function | Reference (note) | Status | Support |
| 1 | FCS checking in reception | 6.3.4 | c11501 | |
| 2 | FCS calculation in transmission | 6.3.4 | c11502 | |
| NOTE: The features are specified in ETS 300 396-3 [17] under the given subclause. | | | | |

- c11501: IF A.76/4 -- Receiving short data
 THEN m
 ELSE n/a
- c11502: IF A.76/8 -- FCS Included in transmission
 THEN m
 ELSE n/a

Table A.116: DMCC PDUs

| Prerequisite: A.72/1 -- DMCC for MS to MS operation | | | | | | |
|---|----------------|---------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | DM-SETUP | 9.5.1 | n | n/a | c11601 | |
| 2 | DM-SETUP PRES | 9.5.2 | n | n/a | c11602 | |
| 3 | DM-CONNECT | 9.5.3 | c11602 | | n | n/a |
| 4 | DM-DISCONNECT | 9.5.4 | c11602 | | n | n/a |
| 5 | DM-CONNECT ACK | 9.5.5 | n | n/a | c11602 | |
| 6 | DM-OCCUPIED | 9.5.6 | c11604 | | c11603 | |
| 7 | DM-RELEASE | 9.5.7 | n | n/a | c11603 | |
| 8 | DM-TX CEASED | 9.5.8 | c11604 | | c11603 | |
| 9 | DM-TX REQUEST | 9.5.9 | c11603 | | c11605 | |
| 10 | DM-TX ACCEPT | 9.5.10 | c11605 | | c11603 | |
| 11 | DM-PREEMPT | 9.5.11 | c11604 | | c11606 | |
| 12 | DM-PRE ACCEPT | 9.5.12 | c11606 | | c11604 | |
| 13 | DM-REJECT | 9.5.13 | c11607 | | c11608 | |
| 14 | DM-SDS UDATA | 9.5.15 | n | n/a | c11609 | |
| 15 | DM-SDS DATA | 9.5.16 | c11610 | | c11611 | |
| 16 | DM-SDS ACK | 9.5.17 | c11611 | | c11610 | |

NOTE: The PDUs are specified in ETS 300 396-3 [17] under the given subclause.

- c11601: IF A.113/1 -- Outgoing call set-up without presence check capability
 THEN m
 ELSE n/a
- c11602: IF A.113/2 -- Outgoing call set-up with presence check capability
 THEN m
 ELSE n/a
- c11603: IF A.75/3 -- Outgoing call set-up capability
 THEN m
 ELSE n/a
- c11604: IF A.75/3 OR A.76/3 -- Outgoing call set-up capability or sending short data
 THEN m
 ELSE n/a
- c11605: IF A.113/7 -- Request for pre-emption during occupation
 THEN m
 ELSE n/a
- c11606: IF A.113/11 -- Request for change-over during reservation
 THEN m
 ELSE n/a
- c11607: IF A.113/7 OR A.113/11 -- Request for pre-emption or request for change-over
 OR A.114/2 -- or sending acknowledge short data
 THEN m
 ELSE n/a

- c11608: IF A.75/3 OR A.114/2 -- Outgoing call set-up capability or sending acknowledge short data
THEN o
ELSE n/a
- c11609: IF A.114/1 -- Sending unacknowledged short data
THEN m
ELSE n/a
- c11610: IF A.114/3 -- Receiving acknowledge short data
THEN m
ELSE n/a
- c11611: IF A.114/2 -- Sending acknowledge short data
THEN m
ELSE n/a

Table A.117: DMCC constants

| Prerequisite: A.72/1 -- DMCC for MS to MS operation | | | | | | |
|---|----------|---------------------|--------|---------|---------|-----------|
| Item | Constant | Reference (note) | Status | Support | Values | |
| | | | | | Allowed | Supported |
| 1 | DN303 | A.2 | c11701 | | 1...3 | |
| 2 | DN314 | A.2 | c11702 | | 1...6 | |
| 3 | DN316 | A.2 | c11703 | | 1...4 | |

NOTE: The constants are specified in ETS 300 396-3 [17] under the given subclause.

- c11701: IF A.113/2 -- Outgoing call set-up with presence check capability
THEN m
ELSE n/a
- c11702: IF A.114/1 -- Sending unacknowledged short data
THEN m
ELSE n/a
- c11703: IF A.114/2 -- Sending acknowledge short data
THEN m
ELSE n/a

Table A.118: DMCC timers

| Prerequisite: A.72/1 -- DMCC for MS to MS operation | | | | | | |
|---|-------|---------------------|--------|---------|---------|-----------|
| Item | Timer | Reference (note) | Status | Support | Values | |
| | | | | | Default | Supported |
| 1 | DT303 | A.1 | c11801 | | 250 ms | |
| 2 | DT311 | A.1 | c11802 | | 300 s | |
| 3 | DT316 | A.1 | c11803 | | 400 ms | |

NOTE: The timer values are specified in ETS 300 396-3 [17] under the given subclause.

- c11801: IF A.113/2 -- Outgoing call set-up with presence check capability
THEN m
ELSE n/a
- c11802: IF A.75/3 -- Outgoing call set-up capability
THEN m
ELSE n/a

c11803: IF A.114/2 -- Sending acknowledge short data
 THEN m
 ELSE n/a

A.4.2.4.1.1 DMCC for operation with DMO Gateway (MS-GW)

The supplier of the implementation shall state the support of the implementation for each of the procedures, PDUs, timers and constants presented in tables A.119 to A.122.

Table A.119: Circuit mode procedures

| Prerequisite: A.88/1 -- Circuit mode call | | | | |
|---|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Outgoing call set-up through a Gateway | 6.2.1.1 | c11901 | |
| 2 | Receipt by master MS of request for pre-emption generated by the Gateway during occupation | 6.2.4.1 | c11901 | |
| 3 | Request for pre-emption during occupation | 6.2.4.2 | c11902 | |
| 4 | Request for change-over during reservation | 6.2.5.2 | c11902 | |

NOTE: The procedures are specified in ETS 300 396-5 [19] under the given subclause.

c11901: IF A.89/3 -- Outgoing call set-up through Gateway capability
 THEN m
 ELSE n/a

c11902: IF A.89/3 AND A.89/4 -- Outgoing call set-up through Gateway capability and incoming call set-up from Gateway capability
 THEN o
 ELSE n/a

Table A.120: DMCC PDUs

| Prerequisite: A.88/1 -- Circuit mode call | | | | | | |
|---|----------------|------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | DM-GSETUP | 14.5.1 | n/a | n/a | c12001 | |
| 2 | DM-GCONNECT | 14.5.2 | c12001 | | n/a | n/a |
| 3 | DM-GACK | 14.5.3 | c12001 | | n/a | n/a |
| 4 | DM-GRELEASE | 14.5.4 | c12001 | | n/a | n/a |
| 5 | DM-GTX REQUEST | 14.5.5 | n/a | | c12002 | |
| 6 | DM-GTX ACCEPT | 14.5.6 | c12002 | | n/a | n/a |
| 7 | DM-GPREEMPT | 14.5.7 | n/a | | c12003 | |
| 8 | DM-GPRE ACCEPT | 14.5.8 | c12003 | | n/a | n/a |
| 9 | DM-GREJECT | 14.5.9 | c12004 | | n/a | n/a |

NOTE: The PDUs are specified in ETS 300 396-5 [19] under the given subclause.

c12001: IF A.89/3 -- Outgoing call set-up through Gateway capability
 THEN m
 ELSE n/a

c12002: IF A.119/4 -- Request for change-over during reservation
 THEN m
 ELSE n/a

c12003: IF A.119/3 -- Request for pre-emption during occupation
 THEN m
 ELSE n/a

c12004: IF A.119/3 OR A.119/4 -- Request for pre-emption or request for change-over
 THEN m
 ELSE n/a

Table A.121: DMCC constants

| Prerequisite: A.87/1 -- DMCC for MS to GW operation | | | | | | |
|---|----------|---------------------|--------|---------|---------|-----------|
| Item | Constant | Reference (note) | Status | Support | Values | |
| | | | | | Allowed | Supported |
| 1 | DN301 | A.2 | c12101 | | 1...3 | |
| 2 | DN302 | A.2 | c12101 | | 1...3 | |

NOTE: The constants are specified in ETS 300 396-5 [19] under the given subclause.

c12101: IF A.89/3 -- Outgoing call set-up through Gateway capability
 THEN m
 ELSE n/a

Table A.122: DMCC timers

| Prerequisite: A.87/1 -- DMCC for MS to GW operation | | | | | | |
|---|-------|---------------------|--------|---------|---------|-----------|
| Item | Timer | Reference (note) | Status | Support | Values | |
| | | | | | Default | Supported |
| 1 | DT301 | A.1 | c12201 | | 1 s | |
| 2 | DT302 | A.1 | c12201 | | 30 s | |

NOTE: The timer values are specified in ETS 300 396-5 [19] under the given subclause.

c12201: IF A.89/3 -- Outgoing call set-up through Gateway capability
 THEN m
 ELSE n/a

A.4.2.4.2 DMMM

A.4.2.4.2.1 DMMM for operation with DMO Gateway (MS-GW)

The supplier of the implementation shall state the support of the implementation for each of the procedures and PDUs presented in tables A.123 and A.124.

Table A.123: Mobility management procedures

| Prerequisite: A.87/2 -- Direct Mode Mobility Management (DMMM) | | | | |
|--|---|---------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Solicited registration | 6.4.1 | c12301 | |
| 2 | Unsolicited registration | 6.4.2 | c12302 | |
| 3 | Cancellation of registration by Gateway | 6.4.3 | c12301 | |

NOTE: The procedures are specified in ETS 300 396-5 [19] under the given subclause.

c12301: IF A.89/3 -- Outgoing call set-up through Gateway capability
 THEN m
 ELSE n/a

c12302: IF A.89/3 -- Outgoing call set-up through Gateway capability
 THEN o
 ELSE n/a

Table A.124: DMMM PDUs

| Prerequisite: A.87/2 -- Direct Mode Mobility Management (DMMM) | | | | | | |
|--|----------------------|---------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | DM-GREGISTER REQUEST | 14.5.10 | n/a | n/a | m | |
| 2 | DM-GREGISTER ACCEPT | 14.5.11 | m | | n/a | n/a |
| 3 | DM-GREGISTER REJECT | 14.5.12 | m | | n/a | n/a |
| 4 | DM-GREGISTER CANCEL | 14.5.13 | m | | n/a | n/a |
| 5 | DM-GCANCEL ACK | 14.5.14 | n/a | n/a | m | |

NOTE: The PDUs are specified in ETS 300 396-5 [19] under the given subclause.

A.4.2.5 Security

The supplier of the implementation shall state the support of the implementation for each of the security features presented in table A.125.

Table A.125: Security features

| Prerequisite: A.72/6 -- Ud security | | | | |
|-------------------------------------|---|---------------------|--------|---------|
| Item | Security feature | Reference (note) | Status | Support |
| 1 | Air interface encryption, including implicit authentication | 5, 6 | o | |
| 2 | Air interface key management (OTAR) | 7 | o | |
| 3 | Secure enable/disable | 8 | m | |

NOTE: The features are specified in ETS 300 396-6 [20] under the given subclause.

A.4.2.5.1 Air interface encryption

The supplier of the implementation shall state the support of the implementation for each of the procedures presented in tables A.126.

Table A.126: Air interface encryption procedures

| Prerequisite: A.125/1 -- Ud Air interface encryption | | | | |
|--|------------------------------------|---------------------|--------|---------|
| Item | Procedures | Reference (note) | Status | Support |
| 1 | Air interface encryption mechanism | 6.3 | c12601 | |

NOTE: The procedures are specified in ETS 300 396-6 [20] under the given subclause.

c12601: IF A.125/2 -- Ud AI key management
 THEN m
 ELSE o

A.4.2.5.2 OTAR in DMO

The supplier of the implementation shall state the support of the implementation for each of the DMO OTAR roles and PDUs presented in tables A.127 to A.129.

Table A.127: DMO OTAR roles

| Prerequisite: A.125/2 -- Ud AI key management | | | | |
|---|---------------|------------------|--------|---------|
| Item | DMO OTAR role | Reference (note) | Status | Support |
| 1 | Key sealer | 7.4 | o.29 | |
| 2 | Key user | 7.4 | o.29 | |
| 3 | Key holder | 7.4 | o.29 | |

NOTE: The features are specified in ETS 300 396-6 [20] under the given subclause.

o.29 It is mandatory to support at least one of these items

Table A.128: DMO OTAR procedures

| Prerequisite: A.125/2 -- Ud AI key management | | | | |
|---|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Key transfer mechanism for transferring the key from key holder to key user | 7.5.1 | c12801 | |
| 2 | Key transfer mechanism for transferring the key from key holder acting as a relay for key sealer to key user | 7.5.2 | c12802 | |
| 3 | Key transfer mechanism for distributing the SCK unsolicited | 7.5.3 | c12803 | |

NOTE: The procedures are specified in ETS 300 396-6 [20] under the given subclause.

c12801: IF A.127/3 -- Key holder
 THEN m
 ELSE IF A.127/2 -- Key user
 THEN o
 ELSE n/a

c12802: IF A.127/1 OR A.127/3 -- Key sealer or key holder
 THEN m
 ELSE o

c12803: IF A.127/2 -- Key user
 THEN m
 ELSE n

Table A.129: DMO OTAR PDUs

| Prerequisite: A.125/2 -- Ud AI key management | | | | | | |
|---|------------------|------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | OTAR SCK Provide | 7.6.1 | c12901 | | c12902 | |
| 2 | OTAR SCK Demand | 7.6.2 | c12902 | | c12901 | |
| 3 | OTAR SCK Result | 7.6.3 | c12902 | | c12901 | |

NOTE: The features are specified in ETS 300 396-6 [20] under the given subclause.

c12901: IF A.127/2 OR A.127/3 -- Key user or key holder
 THEN m
 ELSE o

c12902: IF A.127/1 OR A.127/3 -- Key sealer or key holder
 THEN m
 ELSE o

A.4.2.5.3 Secure enable/disable in DMO

The supplier of the implementation shall state the support of the implementation for each of the DMO secure enable/disable roles and PDUs presented in tables A.130 to A.132.

Table A.130: DMO secure enable/disable roles

| Prerequisite: A.125/3 -- Ud enable/disable | | | | |
|--|--|-----------------------|--------|---------|
| Item | DMO secure enable/disable role (note 2) | Reference (note 1) | Status | Support |
| 1 | Manager | 8.5 | n | n/a |
| 2 | Target | 8.5 | m | |

NOTE 1: The features are specified in ETS 300 396-6 [20] under the given subclause.
NOTE 2: An implementation may support more than one role.

Table A.131: DMO secure enable/disable procedures

| Prerequisite: A.130/2 -- Ud secure enable/disable target role | | | | |
|---|---------------------|---------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Disabling of target | 8.7.3.1 | m | |
| 2 | Enabling of target | 8.7.3.2 | m | |
| 3 | TEI delivery | 8.7.3.3 | m | |

NOTE: The procedures are specified in ETS 300 396-6 [20] under the given subclause.

Table A.132: DMO secure enable/disable PDUs

| Prerequisite: A.130/2 -- Ud secure enable/disable target role | | | | | | |
|---|-----------------------|---------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | ENDIS COMMAND | 8.7.4.1 | m | | n | n/a |
| 2 | ENDIS AUTHENTICATE | 8.7.4.2 | n | n/a | m | |
| 3 | ENDIS COMMAND CONFIRM | 8.7.4.3 | m | | n | n/a |
| 4 | ENDIS RESULT | 8.7.4.4 | n | n/a | m | |
| 5 | ENDIS TEI PROVIDE | 8.7.4.5 | n | n/a | m | |

NOTE: The features are specified in ETS 300 396-6 [20] under the given subclause.

A.4.3 DMO Repeater Type 1 (DM-REP1)

A.4.3.1 General for DMO Repeater Type 1 (DM-REP1)

The supplier of the implementation shall state the support of the implementation for each of the DMO Repeater Type 1 capabilities and services presented in tables A.133 and A.134.

Table A.133: General DMO Repeater Type 1 protocol capabilities

| Prerequisite: A.69/2 -- DMO Repeater Type 1 | | | | |
|---|---|---------------------|--------|---------|
| Item | Capability name | Reference (note) | Status | Support |
| 1 | Upper Medium Access Control (Upper MAC) | 9.1.2 | m | |
| 2 | Lower Medium Access Control (Lower MAC) | 9.1.1 | m | |
| 3 | Radio Layer | 9.4, 12 | m | |

NOTE: The capabilities are specified in EN 300 396-4 [18] under the given clause(s).

Table A.134: DMO Repeater Type 1 services

| Prerequisite: A.69/2 -- DMO Repeater Type 1 | | | | |
|--|--------------------------|------------------|--------|---------|
| Item | DMCC service | Reference (note) | Status | Support |
| 1 | Circuit mode call | 6.2 | o.30 | |
| 2 | Short Data Service (SDS) | 6.3 | o.30 | |
| NOTE: The services are specified in EN 300 396-4 [18] under the given subclause. | | | | |

o.30 It is mandatory to support at least one of these items

A.4.3.2 Physical layer for DMO Repeater Type 1 (DM-REP1)

The supplier of the implementation shall state the support of the implementation for each of the physical layer capabilities, requirements and parameters presented in tables A.135 to A.138.

Table A.135: General Layer 1 capabilities

| Prerequisite: A.133/3 -- DM-REP1 Radio layer | | | | |
|--|------------------------------|-----------|--------|---------|
| Item | Capability or feature name | Reference | Status | Support |
| 1 | Switchable DMO power classes | 12.3.4 | o | |
| 2 | Protected circuit mode data | 12.3.6 | o | |
| NOTE: The capabilities are specified in EN 300 396-4 [18] under the given subclause. | | | | |

Table A.136: Physical layer requirements

| Prerequisite: A.133/3 -- DM-REP1 Radio layer | | | | |
|--|---|------------------|--------|---------|
| Item | Requirement | Reference (note) | Status | Support |
| 1 | Usage of DM channel | 9.4.1 | m | |
| 2 | Modulation type. | 12.2 | m | |
| 3 | Frequency bands and channel arrangements | 12.3.2 | m | |
| 4 | Unwanted conducted emission over the useful part of the burst. | 12.3.4 | m | |
| 5 | Unwanted conducted emission during the switching transients. | 12.3.4 | m | |
| 6 | Unwanted conducted discrete spurious emission far from the carrier. | 12.3.4 | m | |
| 7 | Unwanted conducted wideband noise emission far from the carrier. | 12.3.4 | m | |
| 8 | Unwanted conducted emission during LCH. | 12.3.4 | m | |
| 9 | Unwanted conducted emission in the non-transmit state. | 12.3.4 | m | |
| 10 | Unwanted radiated emissions. | 12.3.4 | m | |
| 11 | RF output power time mask. | 12.3.4 | m | |
| 12 | RF output power in non-active transmit state. | 12.3.4 | m | |
| 13 | Transmitter intermodulation attenuation. | 12.3.4 | m | |
| 14 | Blocking characteristics. | 12.3.5 | m | |
| 15 | Spurious response rejection. | 12.3.5 | m | |
| 16 | Intermodulation response rejection. | 12.3.5 | m | |
| 17 | Unwanted conducted emission in reception. | 12.3.5 | m | |
| 18 | Unwanted radiated emission. | 12.3.5 | m | |
| 19 | Modulation accuracy. | 12.3.6 | m | |
| 20 | Nominal error rate. | 12.3.6 | m | |
| 21 | Dynamic reference sensitivity performance. | 12.3.6 | m | |
| 22 | Reference interference performance. | 12.3.6 | m | |
| 23 | Static reference sensitivity performance. | 12.3.6 | m | |
| 24 | Receiver performance for synchronization burst acquisition. | 12.3.6 | m | |
| 25 | DM-REP1 synchronization requirement. | 12.4.2 | m | |
| 26 | Relationship between counters | 12.4.3 | m | |
| 27 | RF frequency accuracy | 12.4.4 | m | |
| 28 | Requirement for synchronization of a DM-REP1 | 12.4.5 | m | |
| 29 | Channel multiplexing through DM-REP | 12.6 | m | |

NOTE: The requirements are specified in EN 300 396-4 [18] under the given subclause.

Table A.137: Output power and power class requirements and parameters

| Prerequisite: A.133/3 -- DM-REP1 Radio layer | | | | | | |
|--|------------------------------|------------------|--------|---------|----------------|------------------|
| Item | Requirement and parameter | Reference (note) | Status | Support | Allowed values | Supported values |
| 1 | Output power and power class | 12.3.4 | m | | [1..4] | |

NOTE: The parameters are specified in EN 300 396-4 [18] under the given subclause.

Table A.138: RF carrier frequency bands

| Prerequisite: A.133/3 -- DM-REP1 Radio layer | | | | | |
|--|-------------------------------|---------------------|--------|---------|---------------------------------|
| Item | Allowed frequency range (MHz) | Reference | Status | Support | Supported frequency range (MHz) |
| 1 | 410 to 430 | ERC/DEC/(96)04 [44] | o.31 | | |
| 2 | 870 to 876 | ERC/DEC/(96)04 [44] | o.31 | | |
| 3 | 915 to 921 | ERC/DEC/(96)04 [44] | o.31 | | |
| 4 | 450 to 470 | ERC/DEC/(96)04 [44] | o.31 | | |
| 5 | 385 to 390 | ERC/DEC/(96)04 [44] | o.31 | | |
| 6 | 395 to 399.99 | ERC/DEC/(96)04 [44] | o.31 | | |

o.31 The supported frequency range(s) shall be within one or more of the specified frequency bands.

A.4.3.3 Layer 2 for DMO Repeater Type 1 (DM-REP1)

A.4.3.3.1 Lower MAC layer for DMO Repeater Type 1 (DM-REP1)

The supplier of the implementation shall state the support of the implementation for each of the error control schemes presented in table A.139.

Table A.139: Error control schemes of Lower DM-MAC

| Prerequisite: A.133/2 -- DM-REP1 Lower MAC layer | | | | |
|--|--|------------------|--------|---------|
| Item | Error control scheme | Reference (note) | Status | Support |
| 1 | Error control scheme for Synchronization Signalling CHannel (SCH/S). | 12.5 | m | |
| 2 | Error control scheme for Half-slot Signalling CHannel (SCH/H) and Stealing CHannel (STCH). | 12.5 | m | |
| 3 | Error control scheme for Full-slot Signalling Channel (SCH/F). | 12.5 | m | |

NOTE: The error control schemes are specified in EN 300 396-4 [18] under the given subclause.

A.4.3.3.2 Upper MAC layer for DMO Repeater Type 1 (DM-REP1)

The supplier of the implementation shall state the support of the implementation for each of the Upper MAC layer procedures, PDUs, constants and timers presented in tables A.140 to A.144.

Table A.140: DM channel usage procedures

| Prerequisite: A.133/1 -- DM-REP1 Upper MAC layer | | | | |
|--|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | DM-REP channel surveillance at DM-MS call set-up | 9.4.2.2.2 | m | |
| 2 | DM-REP channel surveillance during a call | 9.4.2.3 | m | |
| 3 | Signalling of channel state | 9.4.5.1 | o | |

NOTE: The procedures are specified in EN 300 396-4 [18] under the given subclause.

Table A.141: DM-MAC signalling procedures

| Prerequisite: A.133/1 -- DM-REP1 Upper MAC layer | | | | |
|--|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Re-transmission of master DM-MS messages | 9.5.1.1 | m | |
| 2 | Re-transmission of DM-SETUP or DM-SETUP PRES messages | 9.5.1.1.1 | c14101 | |
| 3 | Re-transmission of DM-SDS DATA or DM-SDS UDATA messages | 9.5.1.1.2 | c14102 | |
| 4 | Re-transmission of signalling messages received from a slave DM-MS | 9.5.2 | m | |
| 5 | Re-transmission of response messages from a slave DM-MS | 9.5.2.1 | m | |

NOTE: The procedures are specified in EN 300 396-4 [18] under the given subclause.

c14101: IF A.134/1 -- Circuit mode service capability
 THEN m
 ELSE n/a

c14102: IF A.134/2 -- SDS capability
 THEN m
 ELSE n/a

Table A.142: DM-REP1 MAC PDUs

| Prerequisite: A.133/1 -- DM-REP1 Upper MAC layer | | | | | | |
|--|-----------------|---------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | DMAC-SYNC | 10.1.1 | m | | m | |
| 2 | DPRES-SYNC | 10.1.2 | n/a | n/a | o | |
| 3 | DMAC-DATA | 10.2 | m | | m | |
| 4 | DM-RESERVED | 10.4 | m | | c14201 | |
| 5 | DM-SDS OCCUPIED | 10.4 | m | | c14202 | |

NOTE: The PDUs are specified in EN 300 396-4 [18] under the given subclause.

c14201: IF A.134/1 -- Circuit mode service capability
 THEN m
 ELSE n/a

c14202: IF A.134/2 -- SDS capability
 THEN m
 ELSE n/a

Table A.143: DM-REP1 MAC constants

| Prerequisite: A.133/1-- DM-REP1 Upper MAC layer | | | | | | |
|---|----------|---------------------|--------|---------|---------|-----------|
| Item | Constant | Reference (note) | Status | Support | Values | |
| | | | | | Default | Supported |
| 1 | DN232 | A.7 | c14301 | | 2 | |
| 2 | DN233 | A.7 | c14302 | | 2 | |

NOTE: The constants are specified in EN 300 396-4 [18] under the given subclause.

c14301: IF A.134/1 -- Circuit mode service capability
 THEN m
 ELSE n/a

c14302: IF A.134/2 -- SDS capability
 THEN m
 ELSE n/a

Table A.144: DM-REP1 MAC timers

| Prerequisite: A.133/1-- DM-REP1 Upper MAC layer | | | | | | |
|---|-------|---------------------|--------|---------|---------------------|-----------|
| Item | Timer | Reference (note) | Status | Support | Values | |
| | | | | | Default | Supported |
| 1 | DT253 | A.6 | n | | | |
| 2 | DT254 | A.6 | n | | | |
| 3 | DT256 | A.6 | c14401 | | 180 frame durations | |
| 4 | DT258 | A.6 | c14402 | | 180 frame durations | |

NOTE: The timer values are specified in EN 300 396-4 [18] under the given subclause.

c14401: IF A.134/1 -- Circuit mode service capability
 THEN m
 ELSE n/a

c14402: IF A.134/2 -- SDS capability
 THEN m
 ELSE n/a

A.4.4 DMO Repeater Type 2 (DM-REP2)

A.4.4.1 General for DMO Repeater Type 2 (DM-REP2)

The supplier of the implementation shall state the support of the implementation for each of the DMO Repeater Type 2 capabilities and services presented in tables A.133 to A.146.

Table A.145: General DMO Repeater Type 2 protocol capabilities

| Prerequisite: A.69/3 -- DMO Repeater Type 2 | | | | |
|---|---|------------------|--------|---------|
| Item | Capability name | Reference (note) | Status | Support |
| 1 | Upper Medium Access Control (Upper MAC) | 9.1.2 | m | |
| 2 | Lower Medium Access Control (Lower MAC) | 9.1.1 | m | |
| 3 | Radio Layer | 9.4, 12 | m | |

NOTE: The capabilities are specified in EN 300 396-7 [21] under the given clause(s).

Table A.146: DMO Repeater Type 2 services

| Prerequisite: A.69/3 -- DMO Repeater Type 2 | | | | |
|---|--------------------------|------------------|--------|---------|
| Item | DMCC service | Reference (note) | Status | Support |
| 1 | Circuit mode call | 6.2 | o.32 | |
| 2 | Short Data Service (SDS) | 6.3 | o.32 | |

NOTE: The services are specified in EN 300 396-7 [21] under the given subclause.

o.32

It is mandatory to support at least one of these items

A.4.4.2 Physical layer for DMO Repeater Type 2 (DM-REP2)

The supplier of the implementation shall state the support of the implementation for each of the physical layer capabilities, requirements and parameters presented in tables A.147 to A.150.

Table A.147: General Layer 1 capabilities

| Prerequisite: A.145/3 -- DM-REP2 Radio layer | | | | |
|--|------------------------------|-----------|--------|---------|
| Item | Capability or feature name | Reference | Status | Support |
| 1 | Switchable DMO power classes | 12.3.4.1 | o | |
| 2 | Protected circuit mode data | 12.3.6 | o | |

NOTE: The capabilities are specified in EN 300 396-7 [21] under the given subclause.

Table A.148: Physical layer requirements

| Prerequisite: A.145/3 -- DM-REP2 Radio layer | | | | |
|--|---|------------------|--------|---------|
| Item | Requirement | Reference (note) | Status | Support |
| 1 | Channel structure | 9.4.1.1 | m | |
| 2 | Channel synchronization | 9.4.1.2 | m | |
| 3 | Modulation type. | 12.2 | m | |
| 4 | Frequency bands and channel arrangements | 12.3.2 | m | |
| 5 | Unwanted emission close to the carrier. | 12.3.4.3.2 | m | |
| 6 | Unwanted emission close to the carrier. | 12.3.4.3.2 | m | |
| 7 | Unwanted conducted discrete spurious emission far from the carrier. | 12.3.4.3.3.1 | m | |
| 8 | Unwanted conducted wideband noise emission far from the carrier. | 12.3.4.3.3.2 | m | |
| 9 | Unwanted conducted emission during LCH. | 12.3.4.3.4 | m | |
| 10 | Unwanted conducted emission in the non-transmit state. | 12.3.4.3.5 | m | |
| 11 | Unwanted radiated emissions. | 12.3.4.4 | m | |
| 12 | RF output power time mask. | 12.3.4.6 | m | |
| 13 | RF output power in non-active transmit state. | 12.3.4.6 | m | |
| 14 | Transmitter intermodulation attenuation. | 12.3.4.7 | m | |
| 15 | Blocking characteristics. | 12.3.5 | m | |
| 16 | Spurious response rejection. | 12.3.5 | m | |
| 17 | Intermodulation response rejection. | 12.3.5 | m | |
| 18 | Unwanted conducted emission in reception. | 12.3.5 | m | |
| 19 | Unwanted radiated emission. | 12.3.5 | m | |
| 20 | Modulation accuracy. | 12.3.6 | m | |
| 21 | Nominal error rate. | 12.3.6 | m | |
| 22 | Dynamic reference sensitivity performance. | 12.3.6 | m | |
| 23 | Reference interference performance. | 12.3.6 | m | |
| 24 | Static reference sensitivity performance. | 12.3.6 | m | |
| 25 | Receiver performance for synchronization burst acquisition. | 12.3.6 | m | |
| 26 | DM-REP2 synchronization requirement. | 12.4.2 | m | |
| 27 | Relationship between counters | 12.4.3 | m | |
| 28 | RF frequency accuracy | 12.4.4 | m | |
| 29 | Requirement for synchronization of a DM-REP2 | 12.4.5 | m | |
| 30 | Channel multiplexing for a type 2 DM-REP | 12.6 | m | |

NOTE: The requirements are specified in EN 300 396-7 [21] under the given subclause.

Table A.149: Output power and power class requirements and parameters

| Prerequisite: A.145/3 -- DM-REP2 Radio layer | | | | | | |
|--|------------------------------|------------------|--------|---------|----------------|------------------|
| Item | Requirement and parameter | Reference (note) | Status | Support | Allowed values | Supported values |
| 1 | Output power and power class | 12.3.4.2 | m | | [1..4] | |

NOTE: The parameters are specified in EN 300 396-7 [21] under the given subclause.

Table A.150: RF carrier frequency bands

| Prerequisite: A.145/3 -- DM-REP2 Radio layer | | | | | |
|--|-------------------------------|---------------------|--------|---------|---------------------------------|
| Item | Allowed frequency range (MHz) | Reference | Status | Support | Supported frequency range (MHz) |
| 1 | 410 to 430 | ERC/DEC/(96)04 [44] | o.33 | | |
| 2 | 870 to 876 | ERC/DEC/(96)04 [44] | o.33 | | |
| 3 | 915 to 921 | ERC/DEC/(96)04 [44] | o.33 | | |
| 4 | 450 to 470 | ERC/DEC/(96)04 [44] | o.33 | | |
| 5 | 385 to 390 | ERC/DEC/(96)04 [44] | o.33 | | |
| 6 | 395 to 399.99 | ERC/DEC/(96)04 [44] | o.33 | | |

o.33 The supported frequency range(s) shall be within one or more of the specified frequency bands.

A.4.4.3 Layer 2 for DMO Repeater Type 2 (DM-REP2)

A.4.4.3.1 Lower MAC layer for DMO Repeater Type 2 (DM-REP2)

The supplier of the implementation shall state the support of the implementation for each of the error control schemes presented in table A.151.

Table A.151: Error control schemes of Lower DM-MAC

| Prerequisite: A.145/2 -- DM-REP2 Lower MAC layer | | | | |
|--|--|------------------|--------|---------|
| Item | Error control scheme | Reference (note) | Status | Support |
| 1 | Error control scheme for Synchronization Signalling CHannel (SCH/S). | 12.5 | m | |
| 2 | Error control scheme for Half-slot Signalling CHannel (SCH/H) and Stealing CHannel (STCH). | 12.5 | m | |
| 3 | Error control scheme for Full-slot Signalling Channel (SCH/F). | 12.5 | m | |

NOTE: The error control schemes are specified in EN 300 396-7 [21] under the given subclause.

A.4.4.3.2 Upper MAC layer for DMO Repeater Type 2 (DM-REP2)

The supplier of the implementation shall state the support of the implementation for each of the Upper MAC layer procedures, PDUs, constants and timers presented in tables A.152 to A.156.

Table A.152: DM channel usage procedures

| Prerequisite: A.145/1 -- DM-REP2 Upper MAC layer | | | | |
|--|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | DM-REP channel surveillance at DM-MS call set-up | 9.4.2.2.3 | m | |
| 2 | DM-REP channel surveillance during a call | 9.4.2.3 | m | |
| 3 | DM-REP channel monitoring | 9.4.4 | m | |
| 4 | Signalling of channel state | 9.4.5.1.1 | o | |

NOTE: The procedures are specified in EN 300 396-7 [21] under the given subclause.

Table A.153: DM-MAC signalling procedures

| Prerequisite: A.145/1 -- DM-REP2 Upper MAC layer | | | | |
|--|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Re-transmission of master DM-MS messages | 9.5.1.1.1 | m | |
| 2 | Re-transmission of DM-SETUP or DM-SETUP PRES messages | 9.5.1.1.2 | c15301 | |
| 3 | Re-transmission of DM-SDS DATA or DM-SDS UDATA messages | 9.5.1.1.3 | c15302 | |
| 4 | Re-transmission of signalling messages received from a slave DM-MS | 9.5.2.1 | m | |
| 5 | Re-transmission of response messages from a slave DM-MS | 9.5.2.2 | m | |

NOTE: The procedures are specified in EN 300 396-7 [21] under the given subclause.

c15301: IF A.146/1 -- Circuit mode service capability
 THEN m
 ELSE n/a

c15302: IF A.146/2 -- SDS capability
 THEN m
 ELSE n/a

Table A.154: DM-REP2 MAC PDUs

| Prerequisite: A.145/1 -- DM-REP2 Upper MAC layer | | | | | | |
|--|-----------------|---------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | DMAC-SYNC | 10.1.1 | m | | m | |
| 2 | DPRES-SYNC | 10.1.2 | n/a | n/a | o | |
| 3 | DMAC-DATA | 10.2 | m | | m | |
| 4 | DM-RESERVED | 10.4 | m | | c15401 | |
| 5 | DM-SDS OCCUPIED | 10.4 | m | | c15402 | |

NOTE: The PDUs are specified in EN 300 396-7 [21] under the given subclause.

c15401: IF A.146/1 -- Circuit mode service capability
 THEN m
 ELSE n/a

c15402: IF A.146/2 -- SDS capability
 THEN m
 ELSE n/a

Table A.155: DM-REP2 MAC constants

| Prerequisite: A.145/1-- DM-REP2 Upper MAC layer | | | | | | |
|---|----------|---------------------|--------|---------|---------|-----------|
| Item | Constant | Reference (note) | Status | Support | Values | |
| | | | | | Default | Supported |
| 1 | DN232 | A | c15501 | | 2 | |
| 2 | DN233 | A | c15502 | | 2 | |

NOTE: The constants are specified in EN 300 396-7 [21] under the given subclause.

c15501: IF A.146/1 -- Circuit mode service capability
 THEN m
 ELSE n/a

c15502: IF A.146/2 -- SDS capability
 THEN m
 ELSE n/a

Table A.156: DM-REP2 MAC timers

| Prerequisite: A.145/1-- DM-REP2 Upper MAC layer | | | | | | |
|---|-------|---------------------|--------|---------|---------------------|-----------|
| Item | Timer | Reference (note) | Status | Support | Values | |
| | | | | | Default | Supported |
| 1 | DT253 | A | n | | | |
| 2 | DT254 | A | n | | | |
| 3 | DT256 | A | c15601 | | 180 frame durations | |
| 4 | DT258 | A | c15602 | | 180 frame durations | |

NOTE: The timer values are specified in EN 300 396-7 [21] under the given subclause.

c15601: IF A.146/1 -- Circuit mode service capability
 THEN m
 ELSE n/a

c15602: IF A.146/2 -- SDS capability
 THEN m
 ELSE n/a

A.4.5 DMO Gateway (DM-GATE)

A.4.5.1 General for DMO Gateway (DM-GATE)

The supplier of the implementation shall state the support of the implementation for each of the DMO Gateway capabilities presented in table A.157.

Table A.157: General Gateway protocol capabilities

| Prerequisite: A.69/4 -- Gateway | | | | |
|---------------------------------|---|------------------|--------|---------|
| Item | Capability name | Reference (note) | Status | Support |
| 1 | Direct Mode Call Control (DMCC) | 9.3 | m | |
| 2 | Upper Medium Access Control (Upper MAC) | 13 | m | |
| 3 | Lower Medium Access Control (Lower MAC) | 16.5 | m | |
| 4 | Radio Layer | 16 | m | |

NOTE: The capabilities are specified in ETS 300 396-5 [19] under the given (sub)clause.

A.4.5.2 Physical layer for DMO Gateway (DM-GATE)

The supplier of the implementation shall state the support of the implementation for each of the physical layer capabilities, requirements and parameters presented in tables A.158 to A.161.

Table A.158: General Layer 1 capabilities

| Prerequisite: A.157/4 -- DM-GATE Radio layer | | | | |
|--|------------------------------|-----------|--------|---------|
| Item | Capability or feature name | Reference | Status | Support |
| 1 | Switchable DMO power classes | 16.3.4.1 | o | |

NOTE: The capabilities are specified in ETS 300 396-5 [19] under the given subclause.

Table A.159: Physical layer requirements

| Prerequisite: A.157/4 -- DM-GATE Radio layer | | | | |
|--|--|------------------|--------|---------|
| Item | Requirement | Reference (note) | Status | Support |
| 1 | Modulation type | 16.2 | m | |
| 2 | Frequency bands and channel allocation | 16.3.2 | m | |
| 3 | Unwanted conducted emission over the useful part of the burst | 16.3.4.3.2 | m | |
| 4 | Unwanted conducted emission during the switching transients | 16.3.4.3.2 | m | |
| 5 | Unwanted conducted discrete spurious emission far from the carrier | 16.3.4.3.3.1 | m | |
| 6 | Unwanted conducted wideband noise emission far from the carrier | 16.3.4.3.3.2 | m | |
| 7 | Unwanted conducted emission during LCH | 16.3.4.3.4 | m | |
| 8 | Unwanted conducted emission in the non-transmit state | 16.3.4.3.5 | m | |
| 9 | Unwanted radiated emissions | 16.3.4.4 | m | |
| 10 | RF output power time mask | 16.3.4.6 | m | |
| 11 | RF output power in non-active transmit state | 16.3.4.6 | m | |
| 12 | Intra-gateway transmitter intermodulation attenuation | 16.3.4.7 | m | |
| 13 | Blocking characteristics | 16.3.5 | m | |
| 14 | Spurious response rejection | 16.3.5 | m | |
| 15 | Intermodulation response rejection | 16.3.5 | m | |
| 16 | Unwanted conducted emission in reception | 16.3.5 | m | |
| 17 | Unwanted radiated emission | 16.3.5 | m | |
| 18 | Modulation accuracy | 16.3.6 | m | |
| 19 | Nominal error rate | 16.3.6 | m | |
| 20 | Dynamic reference sensitivity performance | 16.3.6 | m | |
| 21 | Reference interference performance | 16.3.6 | m | |
| 22 | Static reference sensitivity performance | 16.3.6 | m | |
| 23 | Receiver performance for synchronization burst acquisition. | 16.3.6 | m | |
| 24 | Gateway synchronization requirement. | 16.4.2 | m | |
| 25 | DM timebase counters | 16.4.3 | m | |
| 26 | RF frequency accuracy | 16.4.4 | m | |
| 27 | Requirement for synchronization of a Gateway | 16.4.5 | m | |
| 28 | Mapping of logical channels | 16.6 | m | |

NOTE: The requirements are specified in ETS 300 396-5 [19] under the given subclause.

Table A.160: Output power and power class requirements and parameters

| Prerequisite: A.157/4 -- DM-GATE Radio layer | | | | | | |
|--|------------------------------|------------------|--------|---------|----------------|------------------|
| Item | Requirement and parameter | Reference (note) | Status | Support | Allowed values | Supported values |
| 1 | Output power and power class | 16.3.4.2 | m | | [1..4] | |

NOTE: The parameters are specified in ETS 300 396-5 [19] under the given subclause.

Table A.161: RF carrier frequency bands

| Prerequisite: A.157/4 -- DM-GATE Radio layer | | | | | |
|--|-------------------------------|---------------------|--------|---------|---------------------------------|
| Item | Allowed frequency range (MHz) | Reference | Status | Support | Supported frequency range (MHz) |
| 1 | 410 to 430 | ERC/DEC/(96)04 [44] | o.34 | | |
| 2 | 870 to 876 | ERC/DEC/(96)04 [44] | o.34 | | |
| 3 | 915 to 921 | ERC/DEC/(96)04 [44] | o.34 | | |
| 4 | 450 to 470 | ERC/DEC/(96)04 [44] | o.34 | | |
| 5 | 385 to 390 | ERC/DEC/(96)04 [44] | o.34 | | |
| 6 | 395 to 399.99 | ERC/DEC/(96)04 [44] | o.34 | | |

o.34 The supported frequency range(s) shall be within one or more of the specified frequency bands.

A.4.5.3 Layer 2 for DMO Gateway (DM-GATE)

A.4.5.3.1 Lower MAC layer for DMO Gateway (DM-GATE)

The supplier of the implementation shall state the support of the implementation for each of the error control schemes presented in table A.162.

Table A.162: Error control schemes of Lower DM-MAC

| Prerequisite: A.157/3 -- DM-GATE Lower MAC layer | | | | |
|--|--|------------------|--------|---------|
| Item | Error control scheme | Reference (note) | Status | Support |
| 1 | Error control scheme for Synchronization Signalling CHannel (SCH/S). | 16.5 | m | |
| 2 | Error control scheme for Half-slot Signalling CHannel (SCH/H) and Stealing CHannel (STCH). | 16.5 | m | |
| 3 | Error control scheme for Full-slot Signalling Channel (SCH/F). | 16.5 | m | |
| NOTE: The error control schemes are specified in ETS 300 396-5 [19] under the given subclause. | | | | |

A.4.5.3.2 Upper MAC layer for DMO Gateway (DM-GATE)

The supplier of the implementation shall state the support of the implementation for each of the Upper MAC layer procedures and PDUs presented in tables A.163 to A.165.

Table A.163: DM-GATE channel usage procedures

| Prerequisite: A.157/2 -- DM-GATE Upper MAC layer | | | | |
|---|--------------------------|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Transmitting DM-OCCUPIED | 13.4.5.1.4 | m | |
| 2 | Transmitting DM-RESERVED | 13.4.6.1.1 | c16301 | |
| NOTE: The procedures are specified in ETS 300 396-5 [19] under the given subclause. | | | | |

c16301: IF A.41/1
THEN m
ELSE n/a

Table A.164: DM-GATE MAC signalling procedures

| Prerequisite: A.157/2 -- DM-GATE Upper MAC layer | | | | |
|---|--|------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Transmission of messages | 13.5.6.1 | m | |
| 2 | Indicating frames available for requests | 13.5.7.2.1 | m | |
| NOTE: The procedures are specified in ETS 300 396-5 [19] under the given subclause. | | | | |

Table A.165: DM-GATE MAC PDUs

| Prerequisite: A.157/2 -- DM-GATE Upper MAC layer | | | | | | |
|--|-------------|---------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | DMAC-SYNC | 14.1.1 | m | | m | |
| 2 | DPRES-SYNC | 14.1.2 | n/a | n/a | m | |
| 3 | DMAC-DATA | 14.2.1 | m | | m | |
| 4 | DM-RESERVED | 14.4 | n/a | n/a | c16501 | |

NOTE: The PDUs are specified in ETS 300 396-5 [19] under the given subclause.

c16501: IF A.41/1 -- Circuit mode call control for a Gateway
 THEN m
 ELSE n/a

A.4.5.4 Layer 3 for DMO Gateway (DM-GATE)

The supplier of the implementation shall state the support of the implementation for each of the layer 3 procedures and PDUs presented in tables A.166 and A.167.

Table A.166: Gateway circuit mode call control procedures

| Prerequisite: A.41/1 -- Circuit mode call control for a Gateway | | | | |
|---|---|---------------------|--------|---------|
| Item | Procedure | Reference (note) | Status | Support |
| 1 | Outgoing individual call set-up to DM-MS | 9.3.1.1 | c16601 | |
| 2 | Outgoing group call set-up to DM-MS | 9.3.1.2 | c16602 | |
| 3 | Reception of DM-TX CEASED by end of DM-MS call | 9.3.3.1.1 | c16603 | |
| 4 | Transmitting DM-TX CEASED by end of V+D call | 9.3.3.1.2 | c16604 | |
| 5 | Transmitting DM-TX CEASED at receipt of interrupt from SwMI | 9.3.3.2 | c16604 | |
| 6 | Receipt of request to continue ongoing call from SwMI during DM channel reservation | 9.3.3.3 | m | |
| 7 | Response to request for change-over or pre-emption during DM-channel reservation | 9.3.3.4.1 | m | |
| 8 | Termination of DM call on receipt of transmission interrupt from SwMI | 9.3.3.5 | m | |
| 9 | Receipt of DM-RELEASE from current master DM-MS | 9.3.3.9.1 | c16603 | |
| 10 | Release of DM channel on receipt of D-RELEASE from SwMI | 9.3.3.9.2 | m | |
| 11 | Release of DM channel at expiry of call length timer | 9.3.3.9.3 | m | |
| 12 | New call preemption during DM channel reservation | 9.3.4.1.3 | m | |
| 13 | Preemption of DM channel on receipt of transmission interrupt from SwMI | 9.3.4.2.1 | c16603 | |

NOTE: The procedures are specified in ETS 300 396-5 [19] under the given subclause.

c16601: IF A.42/1 AND A.42/3 -- Individual circuit mode call and accept incoming call from V+D
 THEN m
 ELSE n/a

c16602: IF A.42/2 AND A.42/3 -- Group circuit mode call and accept incoming call from V+D
 THEN m
 ELSE n/a

c16603: IF A.42/4 -- Accept incoming call from DM-MS
 THEN m
 ELSE n/a

c16604: IF A.42/3
THEN m
ELSE n/a -- Accept incoming call from V+D

Table A.167: Gateway circuit mode call PDUs

| Prerequisite: A.41/1 -- Circuit mode call control for a Gateway | | | | | | |
|---|----------------|---------------------|-----------|---------|--------------|---------|
| Item | PDU | Reference (note) | Reception | | Transmission | |
| | | | Status | Support | Status | Support |
| 1 | DM-SETUP | 14.5 | c16701 | | c16702 | |
| 2 | DM-SETUP PRES | 14.5 | n/a | n/a | c16703 | |
| 3 | DM-CONNECT | 14.5 | c16703 | | n/a | n/a |
| 4 | DM-DISCONNECT | 14.5 | c16703 | | n/a | n/a |
| 5 | DM-CONNECT ACK | 14.5 | n/a | n/a | c16703 | |
| 6 | DM-OCCUPIED | 14.5 | c16701 | | c16704 | |
| 7 | DM-RELEASE | 14.5 | c16701 | | m | |
| 8 | DM-TX CEASED | 14.5 | c16701 | | m | |
| 9 | DM-TX REQUEST | 14.5 | m | | n/a | n/a |
| 10 | DM-TX ACCEPT | 14.5 | n/a | n/a | m | |
| 11 | DM-PREEMPT | 14.5 | m | | m | |
| 12 | DM-PRE ACCEPT | 14.5 | m | | m | |
| 13 | DM-REJECT | 14.5 | m | | m | |
| 14 | DM-GSETUP | 14.5.1 | c16701 | | n/a | n/a |
| 15 | DM-GCONNECT | 14.5.2 | n/a | n/a | c16701 | |
| 16 | DM-GACK | 14.5.3 | n/a | n/a | c16701 | |
| 17 | DM-GRELEASE | 14.5.4 | m | | m | |
| 18 | DM-GTX REQUEST | 14.5.5 | m | | n/a | n/a |
| 19 | DM-GTX ACCEPT | 14.5.6 | n/a | n/a | m | |
| 20 | DM-GPREEMPT | 14.5.7 | m | | n/a | n/a |
| 21 | DM-GPRE ACCEPT | 14.5.8 | n/a | n/a | m | |
| 22 | DM-GREJECT | 14.5.9 | n/a | n/a | m | |

NOTE: The PDUs are specified in ETS 300 396-5 [19] under the given subclause.

o.35 It is mandatory to support at least one of these items

c16701: IF A.42/4
THEN m
ELSE n/a -- Accept incoming call from DM-MS

c16702: IF A.42/2 AND A.42/3 -- Group circuit mode call and accept incoming call from V+D
THEN m
ELSE
IF A.42/1 AND A.42/3 -- Individual circuit mode call and accept incoming call from V+D
THEN o.35
ELSE n/a

c16703: IF A.42/1 AND A.42/3 -- Individual circuit mode call and accept incoming call from V+D
THEN o.35
ELSE n/a

c16704: IF A.42/3
THEN m
ELSE n/a -- Accept incoming call from V+D

Annex B (normative): Declarations on parameters supported

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B.1 Introduction

The following tables contain extracts from the PICS document ETS 300 392-14 [6]. These tables supplement the RT giving the required information to parameterize the test suites referred to in the present document.

For the notation used in the tables in this clause, refer to annex A, clause A.1.

B.2 Declarations for Um air interface

The supplier of the implementation shall state the values for the implementation for each of the parameters presented in tables B.1 to B.12 according to the IUT capabilities.

B.2.1 Layer 1

Table B.1: Test mode frequency bands

| Prerequisite: A.1/1 -- Um | | | | | |
|---------------------------|--------------------------|---------------------|---------------|-----------------------|----------|
| Item | Frequency band (note) | Minimum range (MHz) | | Supported range (MHz) | |
| | | Uplink | Downlink | Uplink | Downlink |
| 1 | 410-430 MHz | 410 to 420 | 420 to 430 | | |
| 2 | 870-876/915-921 MHz | 870 to 876 | 915 to 921 | | |
| 3 | 450-470 MHz | 450 to 460 | 460 to 470 | | |
| 4 | 385-390/395-399.99 MHz | 385 to 390 | 395 to 399.99 | | |

NOTE: One or more complete frequency bands shall be supported.

B.2.2 Layer 2

B.2.2.1 MAC layer

Table B.2: MAC parameters

| Prerequisite: A.5/5 -- Upper MAC | | | | |
|----------------------------------|-------------------------|---------------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_GSSI_1 | GSSI_Type | Group identifier. | |
| 2 | PIX_GSSI_2 | GSSI_Type | Group identifier. | |
| 3 | PIX_GSSI_3 | GSSI_Type | Group identifier. | |
| 4 | PIX_SSI | SSI_Type | ITSI value of the MS. | |
| 5 | PIX_HOME_LA | MM_LocationAreaType | Home location area of the MS. | |
| 6 | PIX_HOME_MCC | MM_MCC_Type | Home mobile country code of the MS. | |
| 7 | PIX_HOME_MNC | MM_MCC_Type | Home mobile network code of the MS. | |
| 8 | PIX_NEW_LOCATION_AREA_1 | MM_LocationAreaType | Unique registration area in the home MCC and MNC. | |
| 9 | PIX_NEW_LOCATION_AREA_2 | MM_LocationAreaType | Unique registration area in the home MCC and MNC. | |
| 10 | PIX_NEW_LOCATION_AREA_3 | MM_LocationAreaType | Unique registration area in the home MCC and MNC. | |

B.2.3 Layer 3

B.2.3.1 CMCE

Table B.3: CC parameters for a non-Gateway

| Prerequisite: A.28/1 -- CC | | | | |
|----------------------------|-------------|----------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_T303 | INTEGER | Duration of the T303 in the IUT in seconds. | |
| 2 | PIX_T308 | INTEGER | Duration of the T308 in the IUT in seconds. | |
| 3 | PIX_T311 | INTEGER | Duration of the T311 in the IUT in seconds. | |
| 4 | PIX_MS_ITSI | ITSI_type | ITSI of the IUT. | |

Table B.4: CC parameters and implicit send events for a Gateways

| Prerequisite: A.41/1 -- Circuit Mode Call Control | | | | |
|---|-------------------------|----------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_T303 | INTEGER | Duration of the T303 in the IUT in seconds. | |
| 2 | PIX_MS_ITSI | ITSI_type | ITSI of the IUT. | |
| 3 | PIX_DM_MS_MNI | MNI_Type | Value of the MNI of the DM-MS | |
| 4 | PIX_DM_MS_SSI | SSI_Type | Value of the SSI of the DM-MS | |
| 5 | PIX_IMP_U_SETUP_PDU | BOOLEAN | It is possible to cause the IUT to initiate an outgoing call. | |
| 6 | PIX_IMP_U_TX_DEMAND_PDU | BOOLEAN | It is possible to cause the IUT to send a U-TX DEMAND PDU. | |
| 7 | PIX_IMP_U_TX_CEASED_PDU | BOOLEAN | It is possible to cause the IUT to send a U-TX CEASED PDU. | |

B.2.3.2 MM

Table B.5: MM parameters for a non-Gateway

| Prerequisite: A.5/2 -- MM, non-Gateway | | | | |
|--|-----------------------|------------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_COUNTRY_CODE | MCC_Type | Home country code of the IUT. | |
| 2 | PIX_NETWORK_CODE | MNC_Type | Home network code of the IUT. | |
| 3 | PIX_LOCATION_AREA | LocationAreaType | Home location area of the IUT. | |
| 4 | PIX_NEW_LOCATION_AREA | LocationAreaType | A location area outside the IUT home location area. | |
| 5 | PIX_MS_TEI | TEI_Type | TEI of the IUT, 60 bits. | |
| 6 | PIX_MS_ITSI | ITSI_type | ITSI of the IUT. | |

Table B.6: MM parameters and implicit send events for a Gateway

| Prerequisite: A.5/9 -- MM, Gateway | | | | |
|------------------------------------|-------------------------------|----------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_MS_ITSI | ITSI_type | ITSI of the IUT. | |
| 2 | PIX_IMP_U_LOCATION_UPDATE_PDU | BOOLEAN | It is possible to cause the IUT to send a U-LOCATION UPDATE PDU | |

B.2.3.3 MLE

Table B.7: MLE parameters

| Prerequisite: A.5/3 -- MLE | | | | |
|----------------------------|-----------------------|-------------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_CHANNEL_1 | MainCarrierNoType | A channel that the IUT initially tries to camp on to. | |
| 2 | PIX_CHANNEL_2 | MainCarrierNoType | Another channel that the IUT is capable of selecting. | |
| 3 | PIX_COUNTRY_CODE | MCC_Type | Home country code of the IUT. | |
| 4 | PIX_NETWORK_CODE | MNC_Type | Home network code of the IUT. | |
| 5 | PIX_LOCATION_AREA | LocationAreaType | Home location area of the IUT. | |
| 6 | PIX_NEW_LOCATION_AREA | LocationAreaType | A location area outside the IUT home location area. | |
| 7 | PIX_MS_ITSI | ITSI_type | ITSI of the IUT. | |

B.2.4 Security

Table B.8: Implicit send events

| Prerequisite: A.5/7 -- Security | | | | |
|---------------------------------|--|----------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_IMP_AUTHENTICATION_DEMAND | BOOLEAN | It is possible to cause IUT to send U-AUTHENTICATION DEMAND PDU. | |
| 2 | PIX_IMP_LOCATION_UPDATE_Type | BOOLEAN | It is possible to cause IUT to send U-LOCATION UPDATE DEMAND PDU having given location update type and ITSI. | |
| 3 | PIX_IMP_LOCATION_UPDATE_DEMAND_AuthReq | BOOLEAN | It is possible to cause IUT to send U-LOCATION UPDATE DEMAND PDU having given location update type and ITSI and containing an authentication demand. | |
| 4 | PIX_IMP_OTAR_CCK_DEMAND_Normal | BOOLEAN | It is possible to cause IUT to send U-OTAR CCK DEMAND PDU. | |
| 5 | PIX_IMP_OTAR_GCK_DEMAND_Normal | BOOLEAN | It is possible to cause IUT to send U-OTAR SCK DEMAND PDU. | |
| 6 | PIX_IMP_OTAR_SCK_DEMAND_1 | BOOLEAN | It is possible to cause IUT to send U-OTAR SCK DEMAND PDU containing a request for 1 SCK. | |

Table B.9: Configuration parameter values

| Prerequisite: A.5/7 -- Security | | | | |
|---------------------------------|-----------|----------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_VD_L3 | BOOLEAN | Configuration set to test the Voice+Data layer 3 security protocol | |

Table B.10: General parameter values

| Prerequisite: A.5/7 -- Security | | | | |
|---------------------------------|-------------|----------------|-----------------|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_MS_ITSI | ITSI_Type | ITSI of the IUT | |
| 2 | PIX_TEI | TEI_Type | TEI | |
| 3 | PIX_GSSI | GSSI_Type | GSSI | |

Table B.11: Authentication parameter values

| Prerequisite: A.5/7 -- Security | | | | |
|---------------------------------|-----------|---------------------|-----------------------------------|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_RAND1 | RandomChallengeType | Value of Random challenge (RAND1) | |
| 2 | PIX_RS | RandomSeedType | Value of the Random seed (RS) | |
| 3 | PIX_RES2 | ResponseValueType | Value of the result RES2 | |

Table B.12: OTAR parameter values

| Prerequisite: A.5/7 -- Security | | | | |
|---------------------------------|------------------|--------------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_CURRENT_CCK | CCK_IdType | Value of the CCK of the current Location area | |
| 2 | PIX_OTHER_CCK | CCK_IdType | Value of the CCK of another location area | |
| 3 | PIX_CURRENT_SCCK | SealedKeyType | Value of the sealed CCK of the current location area | |
| 4 | PIX_OTHER_SCCK | SealedKeyType | Value of the sealed CCK of another location area | |
| 5 | PIX_SCKN | SCK_NbrType | SCK number | |
| 6 | PIX_SCK_VN | SCK_VersionNbrType | SCK version number | |
| 7 | PIX_SSCK | SealedKeyType | Sealed SCK | |
| 8 | PIX_GCK_VN | GCK_VersionNbrType | GCK version number | |
| 9 | PIX_SGCK | SealedKeyType | Sealed GCK | |
| 10 | PIX_CURRENT_LA | LocationAreaType | Value of the current location area | |

B.3 Declarations for U_d air interface

The supplier of the implementation shall state the values for the implementation for each of the parameters presented in tables B.13 to B.38 according to the IUT capabilities.

B.3.1 Layer 1

Table B.13: Test mode frequency bands

| Prerequisite: A.1/2 -- U _d | | | |
|---------------------------------------|-----------------------|--|---------------|
| Item | Frequency band (note) | Supported range or specific RF carrier frequencies (MHz) | |
| | | For transmission | For receiving |
| 1 | 410 to 430 MHz | | |
| 2 | 870 to 876 MHz | | |
| 3 | 915 to 921 MHz | | |
| 4 | 450 to 470 MHz | | |
| 5 | 385 to 390 MHz | | |
| 6 | 395 to 399.99 MHz | | |

NOTE: The frequency range to be available in test mode shall as a minimum cover frequencies within one or more of the specified frequency bands.

B.3.2 Layer 2

B.3.2.1 Mobile Station operation

Table B.14: DM-MAC Implicit send events

| Prerequisite: A.72/2 -- DM-MAC for MS to MS operation | | | | |
|---|-------------------------|----------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_IMP_SYNC_SETUP | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP SDU. | |
| 2 | PIX_IMP_SYNC_SETUP_PRES | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP PRES SDU. | |
| 3 | PIX_IMP_SYNC_SDS_DATA | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS DATA SDU. | |
| 4 | PIX_IMP_SYNC_SDS_UDATA | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS UDATA SDU. | |

Table B.15: DM-MAC parameter values

| Prerequisite: A.72/2 -- DM-MAC for MS to MS operation | | | | |
|---|----------------|----------------|-------------------|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_MS_SSI | SSI_Type | SSI of the IUT | |
| 2 | PIX_TESTER_MNI | MNI_Type | MNI of the tester | |
| 3 | PIX_TESTER_SSI | SSI_Type | SSI of the tester | |

Table B.16: M-DMO Implicit send events

| Prerequisite: A.72/3 -- Managed DMO for Mobile Station | | | | |
|--|---------------------|----------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | IMP_SYNC_SETUP | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP SDU. | |
| 2 | IMP_SYNC_SETUP_PRES | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP-PRES SDU. | |
| 3 | IMP_SYNC_SDS_DATA | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS DATA SDU. | |
| 4 | IMP_SYNC_SDS_UDATA | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS UDATA SDU. | |

Table B.17: M-DMO parameter values

| Prerequisite: A.72/3 -- Managed DMO for Mobile Station | | | | |
|--|---------------------------|---------------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_MS_TSI | TSI_Type | TSI of the IUT. | |
| 2 | PIX_TESTER_SWMI_MNI | MNI_Type | MNI of the controlling SwMI of the authorising unit. | |
| 3 | PIX_TESTER_DEVICE_ADDRESS | Device_Address_Type | Address of authorising unit. | |

B.3.2.2 Mobile Station operation with Repeater type 1

Table B.18: MS-REP1 Implicit send events

| Prerequisite: A.71/2 -- Operation with DMO Type 1 Repeater (MS-REP1) | | | | |
|--|------------------------------|----------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_IMP_SYNC_PREEMPT_ONGOING | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-PREEMPT SDU to preempt the ongoing call. | |
| 2 | PIX_IMP_SYNC_SETUP | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP SDU. | |
| 3 | PIX_IMP_SYNC_SETUP_PRES | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP PRES SDU. | |
| 4 | PIX_IMP_SYNC_SDS_DATA | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS DATA SDU. | |
| 5 | PIX_IMP_SYNC_SDS_UDATA | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS UDATA SDU. | |

Table B.19: MS-REP1 parameter values

| Prerequisite: A.71/2 -- Operation with DMO Type 1 Repeater (MS-REP1) | | | | |
|--|-----------------------------|-------------------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type | Traffic channel type and interleaving depth supported by the IUT. | |
| 2 | PIX_POWER_CLASS | Power_Class_Type | The power class of the IUT. | |
| 3 | PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | Power control flag, which indicate whether or not power control by slave is permitted. | |
| 4 | PIX_MS_SSI | SSI_Type | SSI of the IUT. | |
| 5 | PIX_TESTER_MNI | MNI_Type | MNI of the tester. | |
| 6 | PIX_TESTER_SSI | SSI_Type | SSI of the tester. | |
| 7 | PIX_MS_SLAVE_MNI | MNI_Type | MNI of a slave MS | |
| 8 | PIX_MS_SLAVE_SSI | SSI_Type | SSI of a slave MS | |
| 9 | PIX_MS_MASTER_MNI | MNI_Type | MNI of a master MS | |
| 10 | PIX_MS_MASTER_SSI | SSI_Type | SSI of a master MS | |
| 11 | PIX_TESTER_REPEATER_ADDRESS | Repeater_Address_Type | Repeater address of the tester. | |

B.3.2.3 Mobile Station operation with Repeater type 2

Table B.20: MS-REP2 Implicit send events

| Prerequisite: A.71/4 -- Operation with DMO Type 2 Repeater (MS-REP2) | | | | |
|--|------------------------------|----------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_IMP_SYNC_PREEMPT_ONGOING | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-PREEMPT SDU to preempt the ongoing call. | |
| 2 | PIX_IMP_SYNC_SETUP | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP SDU. | |
| 3 | PIX_IMP_SYNC_SETUP_PRES | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP PRES SDU. | |
| 4 | PIX_IMP_SYNC_SDS_DATA | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS DATA SDU. | |
| 5 | PIX_IMP_SYNC_SDS_UDATA | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS UDATA SDU. | |

Table B.21: MS-REP2 parameter values

| Prerequisite: A.71/4 -- Operation with DMO Type 2 Repeater (MS-REP2) | | | | |
|--|-----------------------------|-------------------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type | Traffic channel type and interleaving depth supported by the IUT. | |
| 2 | PIX_POWER_CLASS | Power_Class_Type | The power class of the IUT. | |
| 3 | PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | Power control flag, which indicate whether or not power control by slave is permitted. | |
| 4 | PIX_MS_SSI | SSI_Type | SSI of the IUT. | |
| 5 | PIX_TESTER_MNI | MNI_Type | MNI of the tester. | |
| 6 | PIX_TESTER_SSI | SSI_Type | SSI of the tester. | |
| 7 | PIX_MS_SLAVE_MNI | MNI_Type | MNI of a slave MS | |
| 8 | PIX_MS_SLAVE_SSI | SSI_Type | SSI of a slave MS | |
| 9 | PIX_MS_MASTER_MNI | MNI_Type | MNI of a master MS | |
| 10 | PIX_MS_MASTER_SSI | SSI_Type | SSI of a master MS | |
| 11 | PIX_TESTER_REPEATER_ADDRESS | Repeater_Address_Type | Repeater address of the tester. | |

B.3.2.4 Mobile Station operation with Gateway

Table B.22: MS-GW Implicit send events

| Prerequisite: A.71/3 -- Operation with DMO Gateway (MS-GW) | | | | |
|--|---------------------|----------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_IMP_SYNC_GSETUP | BOOLEAN | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-GSETUP SDU. | |

Table B.23: MS-GW parameter values

| Prerequisite: A.71/3 -- Operation with DMO Gateway (MS-GW) | | | | |
|--|------------------------|-------------------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | Traffic channel type and interleaving depth supported by the IUT. | |
| 2 | PIX_POWER_CLASS | Power_Class_Type | The power class of the IUT. | |
| 3 | PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | Power control flag, which indicate whether or not power control by slave is permitted. | |
| 4 | PIX_GATEWAY_ADDRESS | Gateway_Address_Type | Value of the Gateway (tester) address. | |
| 5 | PIX_TESTER_MNI | MNI_Type | MNI of the tester | |
| 6 | PIX_TESTER_SSI | SSI_Type | SSI of the tester | |
| 7 | PIX_REGISTRATION_LABEL | BITSTRING | Value of the registration label | |

B.3.2.5 Repeater type 1

Table B.24: DM-REP1 parameter values

| Prerequisite: A.133/1 -- DM-REP1 Upper MAC layer | | | | |
|--|--------------------------|-------------------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | Traffic channel type and interleaving depth supported by the IUT. | |
| 2 | PIX_POWER_CLASS | Power_Class_Type | The power class of the IUT. | |
| 3 | PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | Power control flag, which indicate whether or not power control by slave is permitted. | |
| 4 | PIX_MNI | MNI_Type | MNI of the network. | |
| 5 | PIX_MS_MASTER_SSI | SSI_Type | SSI of a master MS | |
| 6 | PIX_MS_SLAVE_SSI | SSI_Type | SSI of a slave MS | |
| 7 | PIX_REPEATER_ADDRESS | Repeater_Address_Type | Repeater address of the IUT. | |
| 8 | PIX_NON_REPEATER_ADDRESS | Repeater_Address_Type | An SSI not recognized as the repeater address of the IUT. | |

B.3.2.6 Repeater type 2

Table B.25: DM-REP2 parameter values

| Prerequisite: A.145/1 -- DM-REP2 Upper MAC layer | | | | |
|--|--------------------------|-------------------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type | Traffic channel type and interleaving depth supported by the IUT. | |
| 2 | PIX_POWER_CLASS | Power_Class_Type | The power class of the IUT. | |
| 3 | PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | Power control flag, which indicate whether or not power control by slave is permitted. | |
| 4 | PIX_MNI | MNI_Type | MNI of the network. | |
| 5 | PIX_MS_MASTER_SSI | SSI_Type | SSI of a master MS | |
| 6 | PIX_MS_SLAVE_SSI | SSI_Type | SSI of a slave MS | |
| 7 | PIX_REPEATER_ADDRESS | Repeater_Address_Type | Repeater address of the IUT. | |
| 8 | PIX_NON_REPEATER_ADDRESS | Repeater_Address_Type | An SSI not recognized as the repeater address of the IUT. | |

B.3.3 Layer 3

B.3.3.1 Mobile Station operation

Table B.26: DMCC Implicit send events

| Prerequisite: A.72/1 -- DMCC for MS to MS operation | | | | |
|---|------------------------|----------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_IMP_DM_SETUP | BOOLEAN | True if it is possible to cause the IUT to send a DM-SETUP PDU | |
| 2 | PIX_IMP_DM_SETUP_Group | BOOLEAN | True if it is possible to cause the IUT to send a DM-SETUP PDU for a group call | |
| 3 | PIX_IMP_DM_SETUP_PRES | BOOLEAN | True if it is possible to cause the IUT to send a DM-SETUP PRES PDU | |
| 4 | PIX_IMP_DM_TX_REQUEST | BOOLEAN | True if it is possible to cause the IUT to send a DM-TX REQUEST PDU. | |
| 5 | PIX_IMP_DM_PREEMPT | BOOLEAN | True if it is possible to cause the IUT to send a DM-PREEMPT PDU. | |
| 6 | PIX_IMP_DM_RELEASE | BOOLEAN | True if it is possible to cause the IUT to send a DM-RELEASE PDU. | |
| 7 | PIX_IMP_DM_TX_CEASED | BOOLEAN | True if it is possible to cause the IUT to send a DM-TX CEASED PDU. | |
| 8 | PIX_IMP_DM_SDS_DATA | BOOLEAN | True if it is possible to cause the IUT to send a DM-SDS DATA PDU. | |
| 9 | PIX_IMP_DM_SDS_UDATA | BOOLEAN | True if it is possible to cause the IUT to send a DM-SDS UDATA PDU. | |

Table B.27: DMCC parameter values

| Prerequisite: A.72/1 -- DMCC for MS to MS operation | | | | |
|---|---------------------------|---------------------------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | Traffic channel type and interleaving depth supported by the IUT. | |
| 2 | PIX_OTHER_TSI | TSI_Type | The TSI not recognized by the IUT and the tester. | |
| 3 | PIX_POWER_CLASS | Power_Class_Type | The power class of the IUT. | |
| 4 | PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | Power control flag, which indicate whether or not power control by slave is permitted. | |
| 5 | PIX_RESERVATION_TIME | Reservation_Time_Remaining_Type | Value of the reservation time remaining used by the master MS. | |
| 6 | PIX_SDS_TIME_REMAINING | SDS_Time_Remaining_Type | Value of the SDS time remaining element used to indicate the current estimate of the SDS channel occupation time. | |
| 7 | PIX_SDS_DATA_1 | User_Defined_Data_1_Type | Value of SDS data type 1. | |
| 8 | PIX_SDS_DATA_1_FCS | FCS_Type | Value of the Frame Check Sequence for the SDS DATA 1 data. | |
| 9 | PIX_SDS_DATA_2 | User_Defined_Data_2_Type | Value of SDS data type 2. | |
| 10 | PIX_SDS_DATA_2_FCS | FCS_Type | Value of the Frame Check Sequence for the SDS DATA 2 data. | |
| 11 | PIX_SDS_DATA_3 | User_Defined_Data_3_Type | Value of SDS data type 3. | |
| 12 | PIX_SDS_DATA_3_FCS | FCS_Type | Value of the Frame Check Sequence for the SDS DATA 3 data. | |
| 13 | PIX_SDS_DATA_4 | User_Defined_Data_4_Type | Value of SDS data type 4. | |
| 14 | PIX_SDS_DATA_4_FCS | FCS_Type | Value of the Frame Check Sequence for the SDS DATA 4 data. | |
| 15 | PIX_SDS_DATA_4_LENGTH | Length_Indicator_Type | Length of the value of the SDS data type 4. | |
| 16 | PIX_SDS_CURRENTLY_TESTING | INTEGER | The type (1 to 4) of SDS data currently testing. | |

B.3.3.2 Mobile Station operation with Repeater type 1

Table B.28: MS-REP1 Implicit send events

| Prerequisite: A.71/2 -- Operation with DMO Type 1 Repeater (MS-REP1) | | | | |
|--|-----------------------|----------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_IMP_DM_SETUP | BOOLEAN | True if it is possible to cause the IUT to send a DM-SETUP PDU | |
| 2 | PIX_IMP_DM_SETUP_PRES | BOOLEAN | True if it is possible to cause the IUT to send a DM-SETUP PRES PDU | |

Table B.29: MS-REP1 layer 3 parameter values

| Prerequisite: A.71/2 -- Operation with DMO Type 1 Repeater (MS-REP1) | | | | |
|--|------------------------|---------------------------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | Traffic channel type and interleaving depth supported by the IUT. | |
| 2 | PIX_POWER_CLASS | Power_Class_Type | The power class of the IUT. | |
| 3 | PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | Power control flag, which indicate whether or not power control by slave is permitted. | |
| 4 | PIX_RESERVATION_TIME | Reservation_Time_Remaining_Type | Value of the reservation time remaining used by the master MS. | |

B.3.3.3 Mobile Station operation with Repeater type 2

Table B.30: MS-REP2 Implicit send events

| Prerequisite: A.71/4 -- Operation with DMO Type 2 Repeater (MS-REP2) | | | | |
|--|-----------------------|----------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_IMP_DM_SETUP | BOOLEAN | True if it is possible to cause the IUT to send a DM-SETUP PDU | |
| 2 | PIX_IMP_DM_SETUP_PRES | BOOLEAN | True if it is possible to cause the IUT to send a DM-SETUP PRES PDU | |

Table B.31: MS-REP2 layer 3 parameter values

| Prerequisite: A.71/4 -- Operation with DMO Type 2 Repeater (MS-REP2) | | | | |
|--|------------------------|---------------------------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | Traffic channel type and interleaving depth supported by the IUT. | |
| 2 | PIX_POWER_CLASS | Power_Class_Type | The power class of the IUT. | |
| 3 | PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | Power control flag, which indicate whether or not power control by slave is permitted. | |
| 4 | PIX_RESERVATION_TIME | Reservation_Time_Remaining_Type | Value of the reservation time remaining used by the master MS. | |

B.3.3.4 Mobile Station operation with Gateway

Table B.32: MS-GW Implicit send events

| Prerequisite: A.71/3 -- Operation with DMO Gateway (MS-GW) | | | | |
|--|----------------------|----------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_IMP_GSETUP | BOOLEAN | True if it is possible to cause the IUT to send a DM-GSETUP PDU. | |
| 2 | PIX_IMP_GPREEMPT | BOOLEAN | True if it is possible to cause the IUT to send a DM-GPREEMPT PDU. | |
| 3 | PIX_IMP_GTX_REQUEST | BOOLEAN | True if it is possible to cause the IUT to send a DM-GTX REQUEST PDU. | |
| 4 | PIX_IMP_DM_TX_CEASED | BOOLEAN | True if it is possible to cause the IUT to send a DM-TX CEASED PDU | |

Table B.33: MS-GW layer 3 parameter values

| Prerequisite: A.71/3 -- Operation with DMO Gateway (MS-GW) | | | | |
|--|---------------------------------|--|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_CIRCUIT_MODE_TYPE | Circuit_Mode_Type_Type | Traffic channel type and interleaving depth supported by the IUT. | |
| 2 | PIX_POWER_CLASS | Power_Class_Type | The power class of the IUT. | |
| 3 | PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | Power control flag, which indicate whether or not power control by slave is permitted. | |
| 4 | PIX_DMMS_WAITING_TIMER | DMMS_Waiting_Timer_Type | Value of the DM-MS waiting timer (that the DM-MS should use for timer DT302, DT308 or DT309) | |
| 5 | PIX_REGISTRATION_LABEL | Registration_Label_Type | Value of the registration label | |
| 6 | PIX_REGISTRATION_TIME_REMAINING | Registration_Transaction_Time_Remaining_Type | Registration transaction time remaining | |
| 7 | PIX_RESERVATION_TIME | Reservation_Time_Remaining_Type | Value of the reservation time remaining used by the master MS. | |

B.3.4 Security

Table B.34: Implicit send events

| Prerequisite: A.72/6 -- Security | | | | |
|----------------------------------|-----------------------------|----------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_IMP_SDS_DATA_SCK_Demand | BOOLEAN | Sending of the DM SDS DATA PDU containing an OTAR SCK demand implemented. | |

Table B.35: Configuration parameter values

| Prerequisite: A.72/6 -- Security | | | | |
|----------------------------------|-----------|----------------|--|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_DM | BOOLEAN | Configuration set to test the Direct Mode security protocol. | |

Table B.36: General parameter values

| Prerequisite: A.72/6 -- Security | | | | |
|----------------------------------|---------------------------|----------------------|---|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_MS_ITSI | ITSI_Type | ITSI of the IUT. | |
| 2 | PIX_TEI | TEI_Type | TEI. | |
| 3 | PIX_DM_SDS_TIME_REMAINING | DM_TimeRemainingType | Value of the SDS time remaining element used to indicate the current estimate of the SDS channel occupation time. | |

Table B.37: Authentication parameter values

| Prerequisite: A.72/6 -- Security | | | | |
|----------------------------------|-----------|---------------------|------------------------------------|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_RAND1 | RandomChallengeType | Value of Random challenge (RAND1). | |
| 2 | PIX_RS | RandomSeedType | Value of the Random seed (RS). | |
| 3 | PIX_RES2 | ResponseValueType | Value of the result RES2. | |

Table B.38: OTAR parameter values

| Prerequisite: A.72/6 -- Security | | | | |
|----------------------------------|------------|--------------------|---------------------|--------------------|
| Item | Parameter | Parameter type | Explanation | Value or reference |
| 1 | PIX_SCKN | SCK_NbrType | SCK number. | |
| 2 | PIX_SCK_VN | SCK_VersionNbrType | SCK version number. | |
| 3 | PIX_SSCK | SealedKeyType | Sealed SCK. | |

Annex C (normative): Test Specification for Managed DMO

C.1 Introduction

As no explicit Test Suite Structure and Test Purposes (TSS&TP) and Abstract Test Suite (ATS) documents are planned for the TETRA Managed Direct Mode base standard, TS 100 396-10 [26], this annex contains the information required for the present document that would normally be placed in such documents.

C.2 Test suite structure and Test Purposes (TSS&TP)

C.2.1 Test Suite Structure (TSS)

The following list defines the Managed DMO test group names and identifiers used for those:

- Managed DMO Mobile Station to Mobile Station MAC (M_DMO_MSMS_MAC):
 - Capability tests (CA).

C.2.2 Test purposes

C.2.2.1 M-DMO MS to MS MAC (M_DMO_MSMS_MAC) tests

Test group objective: To test the managed DMO MS-MS.

Condition: IUT implements the DMO MS-MS.

C.2.2.1.1 M-DMO MS-MS capability tests

To test the basic capabilities of the IUT.

| | |
|-----------------------------|--|
| M_DMO_MSMS_MAC_CA_01 | Requirement ref: TS 100 396-10 [26], 5.1 |
| Purpose: | Check managed DMO IUT transmission by authorization. |
| Selection cond: | IUT supports CM or SDS call initiation |
| Preamble: | |
| Test description | The tester issues authorization signals (DPRES-SYNC) to the IUT and the IUT is activated to initiate transmission. When the tester receives a message from the IUT or the timer T_IUT_Resp expires, the permission to transmit is withdrawn. |
| Pass criteria | Verify that the IUT does not transmit when the DPRES-SYNC is sent indicating no permission to transmit on the channel. |
| Postamble: | |

C.3 Abstract Test Suite (ATS)

C.3.1 Abstract Test Method (ATM) for M-DMO MS-MS

The test method for testing the M-DMO is the single party remote test method.

C.3.2 ATS for TETRA M-DMO MS-MS

The ATSs are written in TTCN according to ISO/IEC 9646-3 [42].

One ATS itself contains a test suite overview part which provides additional information and references.

C.3.2.1 The TTCN Graphical form (TTCN.GR)

The TTCN.GR representation of this ATS is contained in an Adobe Portable Document Format™ file (mdmo.PDF contained in archive en_301435v010204p0.ZIP) which accompanies the present document.

C.3.2.2 The TTCN Machine Processable form (TTCN.MP)

The TTCN.MP representation corresponding to this ATS is contained in an ASCII file (mdmo.MP contained in archive en_301435v010204p0.ZIP) which accompanies the present document.

NOTE: Where an ETSI Abstract Test Suite (in TTCN) is published in both .GR and .MP format these two forms shall be considered equivalent. In the event that there appears to be syntactical or semantic differences between the two then the problem shall be resolved and the erroneous format (whichever it is) shall be corrected.

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

- TRAC: "Guidelines on the Application of CTRs, NETs and National Standards to Products for Approval under Directive 91/263/EEC".
- Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.
- ETSI ETR 238: "ETSI/CENELEC standardization programme for the development of Harmonized Standards related to Electro-Magnetic Compatibility (EMC) in the field of telecommunications".
- ETSI ETS 300 392-1 (1996): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 1: General network design".
- ETSI ETS 300 396-1: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 1: General network design".

History

| Document history | | |
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