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# 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

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# Contents

## Foreword

This draft European Telecommunication Standard (ETS) has been produced by the ETSI Project Terrestrial Trunked Radio (TETRA), and is now submitted for the Public Enquiry phase of the ETSI standards approval procedure.

This ETS consists of 5 parts as follows:

Part 1: "Radio";

Part 2: "Protocol testing specification for Voice plus Data (V+D)";

Part 3: "Protocol testing specification for Packet Data Optimized (PDO)" (DE/TETRA-04009-3);

**Part 4: "Protocol testing specification for Direct Mode Operation (DMO)";**

Part 5: "Security".

| **Proposed transposition dates** | |
|---|---|
| Date of latest announcement of this ETS (doa): | 3 months after ETSI publication |
| Date of latest publication of new National Standard or endorsement of this ETS (dop/e): | 6 months after doa |
| Date of withdrawal of any conflicting National Standard (dow): | 6 months after doa |

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# 1 Scope

ETS 300 394-4 contains the Test Suite Structure (TSS) and Test Purposes (TPs) to test the TETRA Direct Mode Operation (DMO) protocols. This ETS is divided into several parts, each one dealing with a stack of protocols which includes layer 3 and layer 2 protocols. This present part 4-3 deals with TSS&TP for a Direct Mode MS operating with a type 1 Repeater (MS-REP1) Air Interface protocol, while part 4-1 deals with TSS&TP for DM MS to MS protocol and part 4-4 deals with type 1 Repeater (DM-REP1) Air Interface protocol.

Testing of security features is outside the scope of this ETS.

The objective of this test specification is to provide a basis for approval tests for TETRA equipment giving a high probability of air interface inter-operability between different manufacturer's TETRA equipment.

The ISO standard for the methodology of conformance testing, ISO/IEC 9646-1 [3] and ISO/IEC 9646-2 [4], as well as the ETSI methodology for conformance testing, ETS 300 406 [5], are used as the basis for the test methodology.

# 2 References

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ETS 300 396-4: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 4: Repeater type 1".

[2] ETS 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: Direct Mode Repeater (DM-REP) type 1".

[3] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General Concepts".

[4] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract test suite specification".

[5] ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

# 3 Definitions and abbreviations

## 3.1 TETRA definitions

For the purposes of this ETS, the definitions given in ETS 300 396-4 apply.

### 3.2 TETRA abbreviations

For the purposes of this ETS the following TETRA abbreviations apply:

| | |
|---|---|
| CM | Circuit Mode |
| DMCC | Direct Mode Call Control |
| DMO | Direct Mode of Operation |
| FCS | Frame Check Sequence |
| ITSI | Individual TETRA Subscriber Identity |
| MAC | Medium Access Control |
| MNI | Mobile Network Identity |
| MS | Mobile Station |
| NWK | Network. Layer 3 of the TETRA protocol stack |
| RX | Receiver |
| SDS | Short Data Services |
| SDU | Service Data Unit |
| TX | Transmitter |

### 3.3 ISO 9646 definitions

For the purposes of this ETS the following ISO 9646-1 definitions apply:

| | |
|---|---|
| ICS | Implementation Conformance Statement |
| IUT | Implementation Under Test |
| IXIT | Implementation eXtra Information for Testing |
| PICS | Protocol Implementation Conformance Statement |
| PIXIT | Protocol Implementation eXtra Information for Testing |

### 3.4 ISO 9646 abbreviations

For the purposes of this ETS the following ISO 9646-1 abbreviations apply:

| | |
|---|---|
| IUT | Implementation Under Test |
| PDU | Protocol Data Unit |
| PICS | Protocol Implementation Conformance Statement |
| PIXIT | Protocol Implementation eXtra Information for Testing |
| TP | Test Purpose |
| TSS | Test Suite Structure |

## 4 Test Suite Structure (TSS)

### 4.1 DMCC layer test groups

The first level separates the DMCC layer (or layer 3) in different protocols (Circuit mode, Short Data Service). Next level splits protocol testing into functional test groups according to the type of testing:

- Capability test (CA);
- Valid Behaviour (BV);
- Timer tests (TI).

Further level classifies the possible operations in each protocol condition or state.

The following list defines the DMCC layer test group names and identifiers used for those:

MS-REP1 Direct Mode Call Control (DMO_MSREP1_DMCC)
- Circuit mode (CM)
  - Capability tests (CA)
  - Valid Behaviour tests (BV)
    - from Idle state(ID)
    - from Idle state, channel busy (IB)
    - from TX occupation State (TXO)
    - from RX occupation State (RO)
    - from TX Reservation (TR)
    - from RX Reservation State (RR)
  - Timer Tests (TI)

- Short Data Service (SDS)
  - Capability tests (CA)
  - Valid Behaviour tests (BV)
    - from Idle state(ID)
    - from Idle state, channel busy (IB)
    - from RX occupation State (RO)
    - from TX Reservation (TR)
    - from RX Reservation State (RR)
  - Timer Tests (TI)

### 4.2 MAC layer test groups

The first level of the MAC test groups separates the MAC test suite in functional test groups: CA, BV and TI. The second level of the test subgroups is a division of protocol requirements into functional entities.

The following list defines the MAC layer test group names and identifiers:

MS-REP1 MAC layer (DMO_MSREP1_MAC)
- Capability tests (CA)
- Valid behaviour tests (BV)
  - Channel usage (CU)
  - Signalling messages (SM)
  - Traffic mode (TM)
- Timer tests (TI)

### 4.3 Test group description

Capability (CA) tests provide limited testing that the observable capabilities of the IUT are in accordance with the conformance requirements and the additional capabilities claimed in the PICS/PIXIT.

The Valid Behaviour (BV) group tests an IUT in response to valid behaviour of the test system. "Valid" means that a test event is syntactically and contextually correct. All test cases in the valid behaviour group are intended to verify as thoroughly as possible the various functions of the protocol.

Different timers are defined to supervise the various state transitions. The Timer (TI) test group is intended to verify that the IUT is reacting properly to an expiry of one of the timers or to a counter mismatch.

# 5 Introduction to Test Purposes (TPs)

The test purposes for DMCC layer and MAC layer are defined in clause 6 of this document. Each layer leads to a different test suite.

## 5.1 Test purpose definition conventions

### 5.1.1 TPs descriptions

Each TP is described using text presented in a table.

The table contains the following information:

**Table 1**

| | |
|---|---|
| **TP-Name**<br>The TP name is a unique identifier, specified according to the TP naming conventions defined in the subclause below. (it is also the name of the corresponding test case) | **Reference**:<br>reference to the paragraph number of specification ETS 300 396-4 [1] stating this conformance requirement.<br>For example: ETS 300 396-4 [1], 6.2.5.1 |
| **Purpose** | purpose of the test itself, indicating for example the test performed against a requirement of the protocol, described by this test purpose.<br>Example: test of changeover initiated from RX reservation state |
| **Test description** | body of the test |
| **Pass criteria** | visible action to be observed at PCO to declare that the IUT passes the test and conforms to the specifications |
| **Selection** | expression based on ETS 300 396-8-2 [2] PICS statements, used to select or deselect the corresponding test case according to the options of the implementation. |
| **Preamble** | "None" or name of the preamble procedure bringing the IUT from idle state to the state required to run the test.<br>For example: idle_to_RX_reservation |
| **Postamble** | "None" or name of the postamble to bring the IUT back to idle state,<br>for example: RX_occupation_to_idle. |

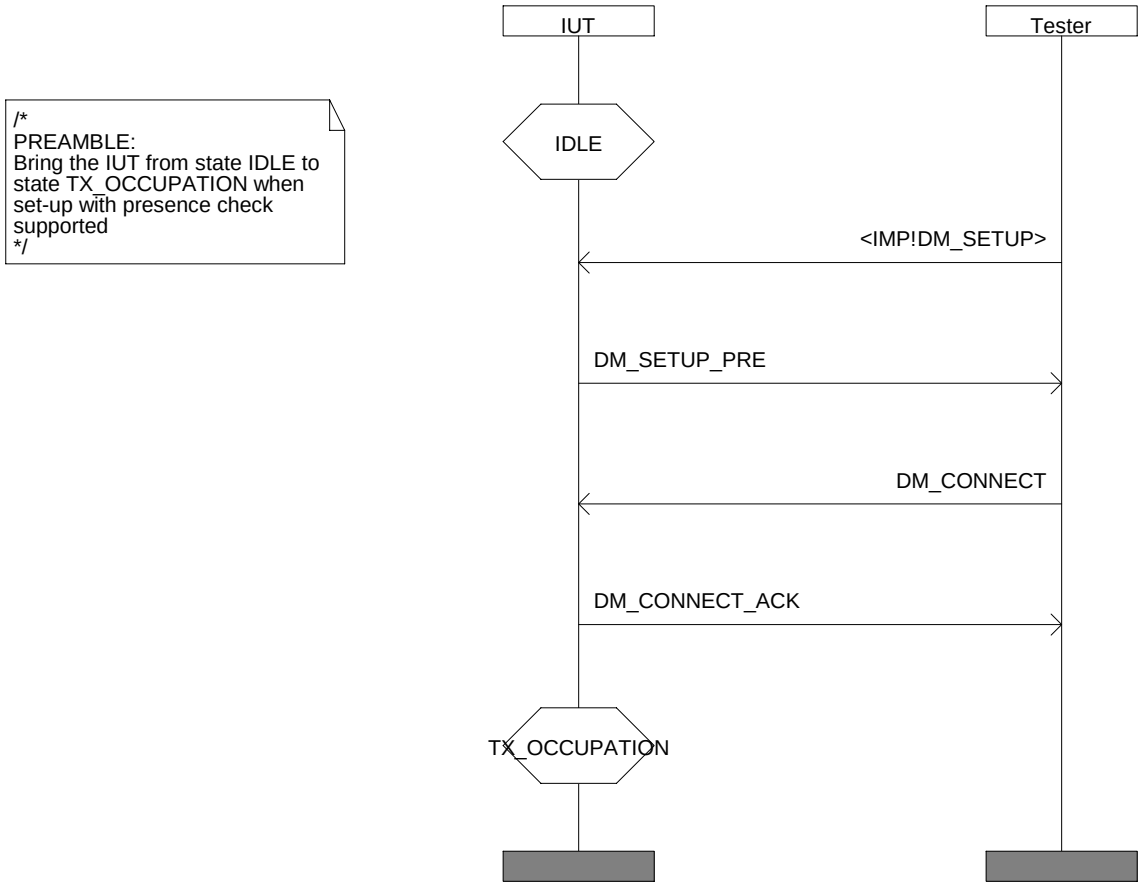
The preambles and postambles are described using MSCs and are shown in the following paragraphs.

### 5.1.2 Preamble descriptions

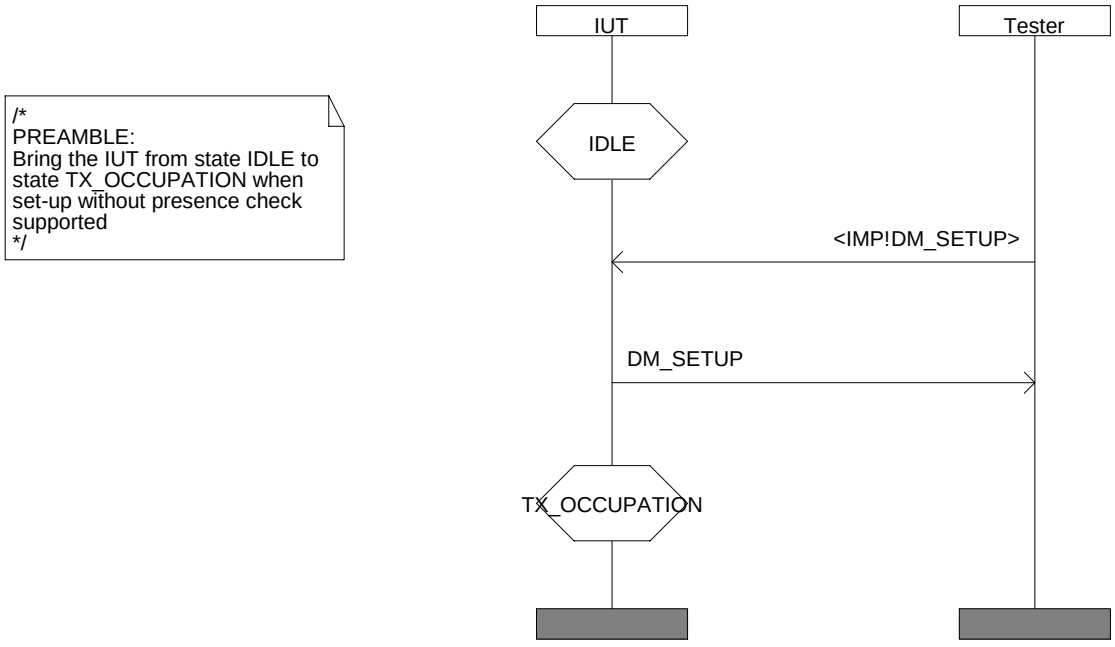
Preambles are used to bring the IUT from the idle state to the state where the test takes place. As the protocol has different options, as for instance the use of presence check or the absence of presence check, there are several ways to reach a given state. The preamble has to be chosen according to the IUT capabilities and the implemented options.

#### 5.1.2.1 Preamble idle_to_TX_occupation: From Idle state to Call Active TX Occupation

With presence check.

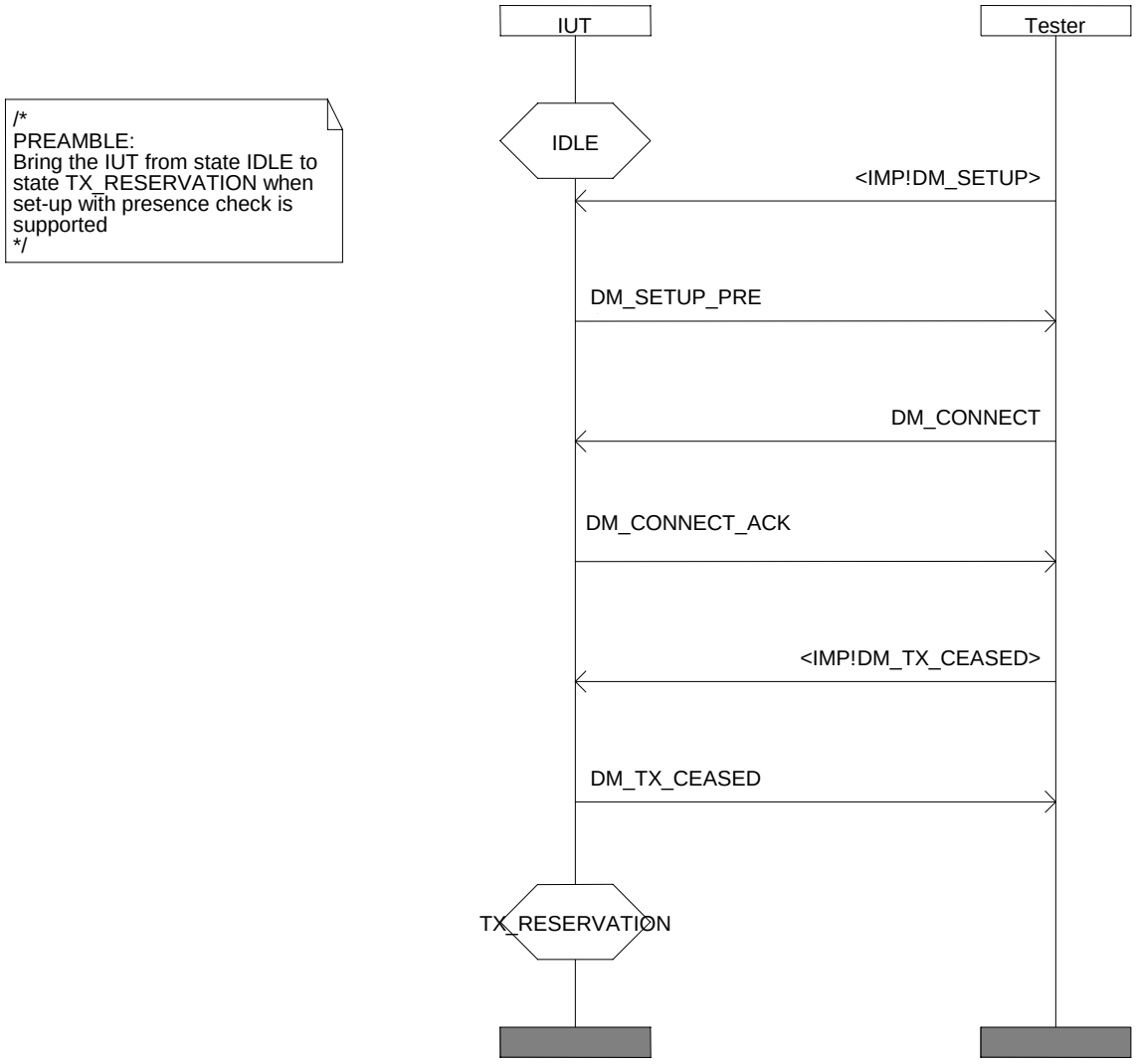



Without presence check.

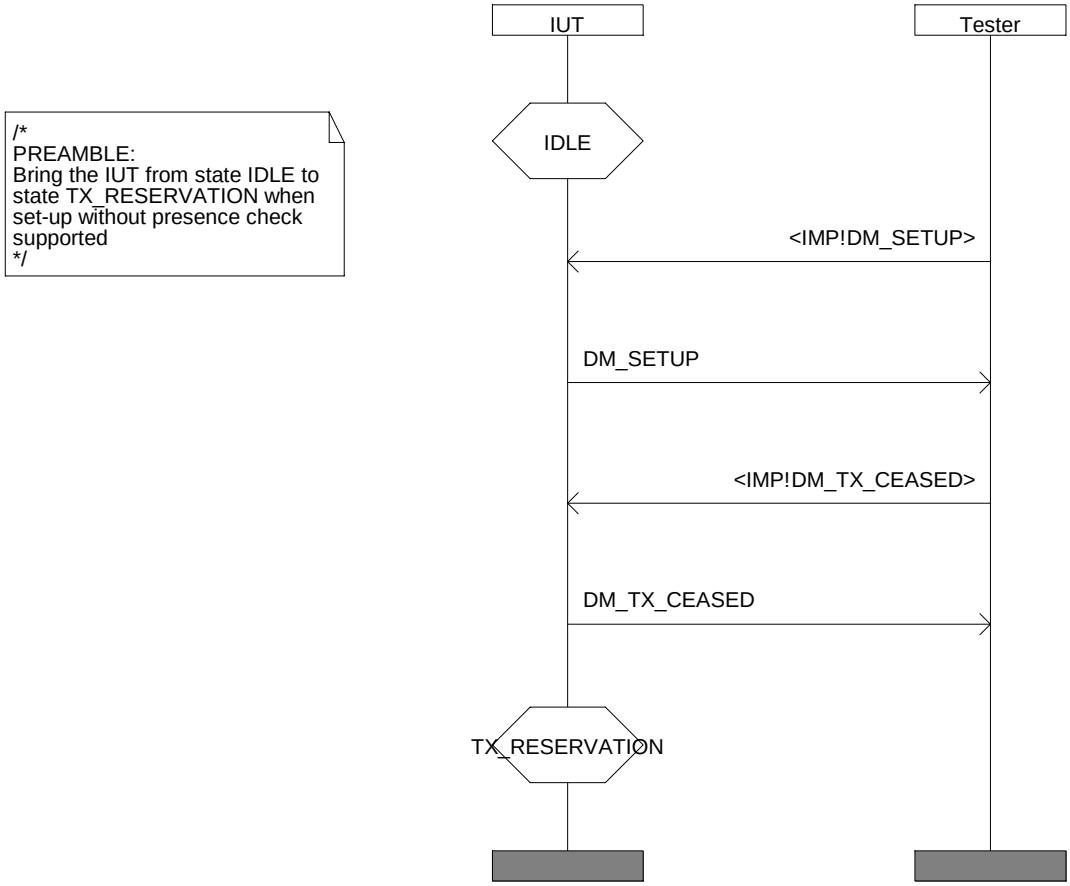


### 5.1.2.2 Preamble idle_to_TX_reservation: From Idle state to Call Active TX Reservation

With presence check.

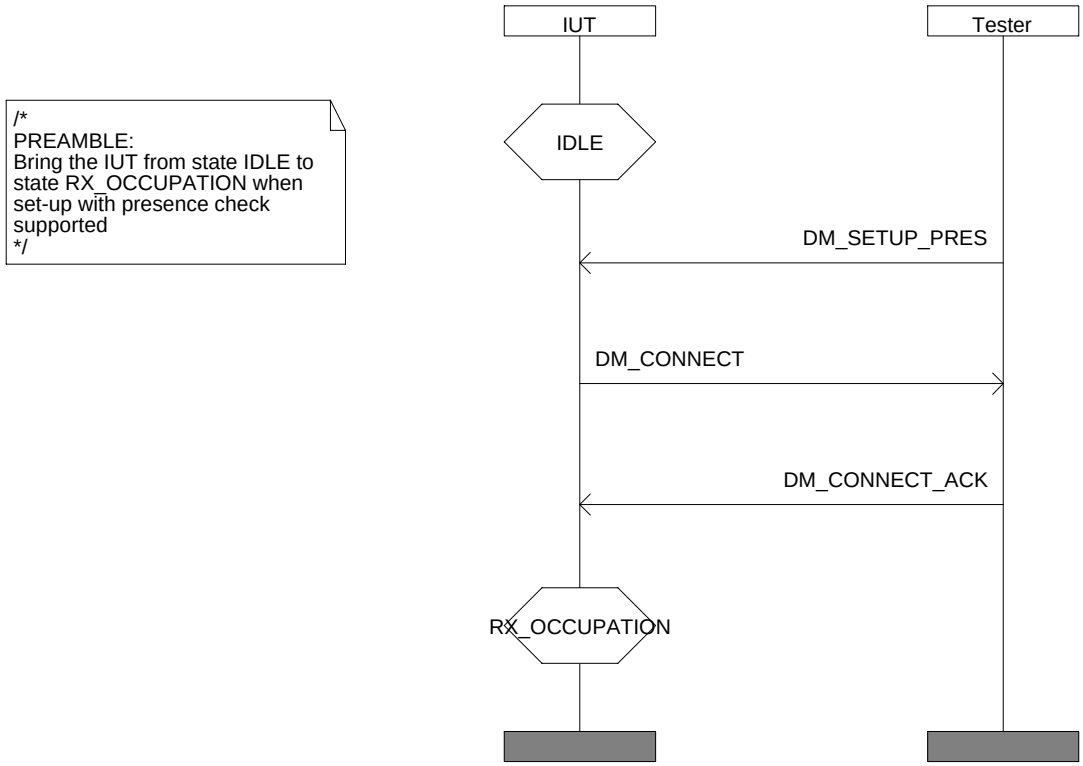


Without presence check.

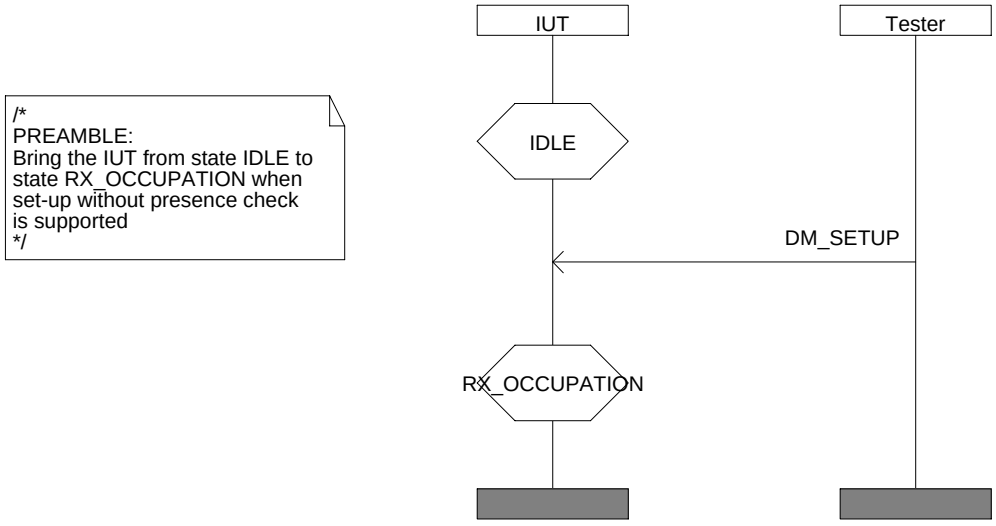


### 5.1.2.3 Preamble idle_to_RX_occupation: From Idle state to Call Active RX Occupation

With presence check.

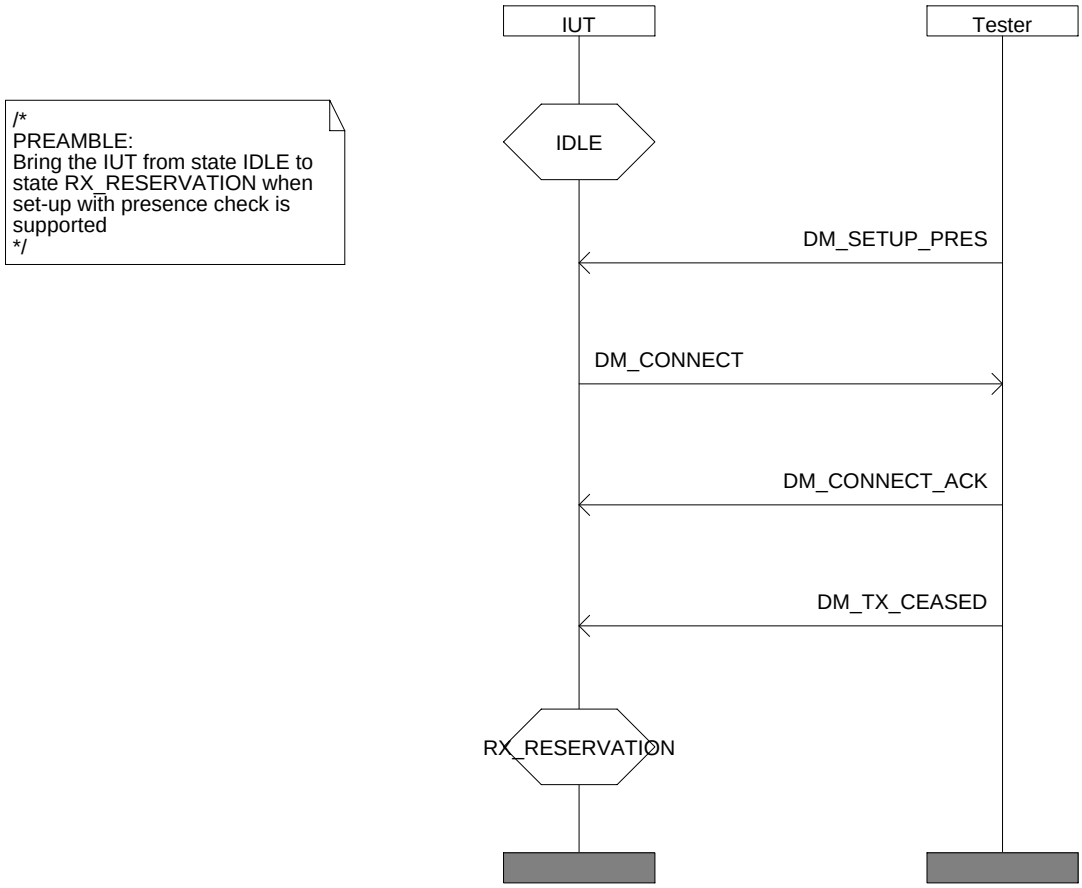



Without presence check.

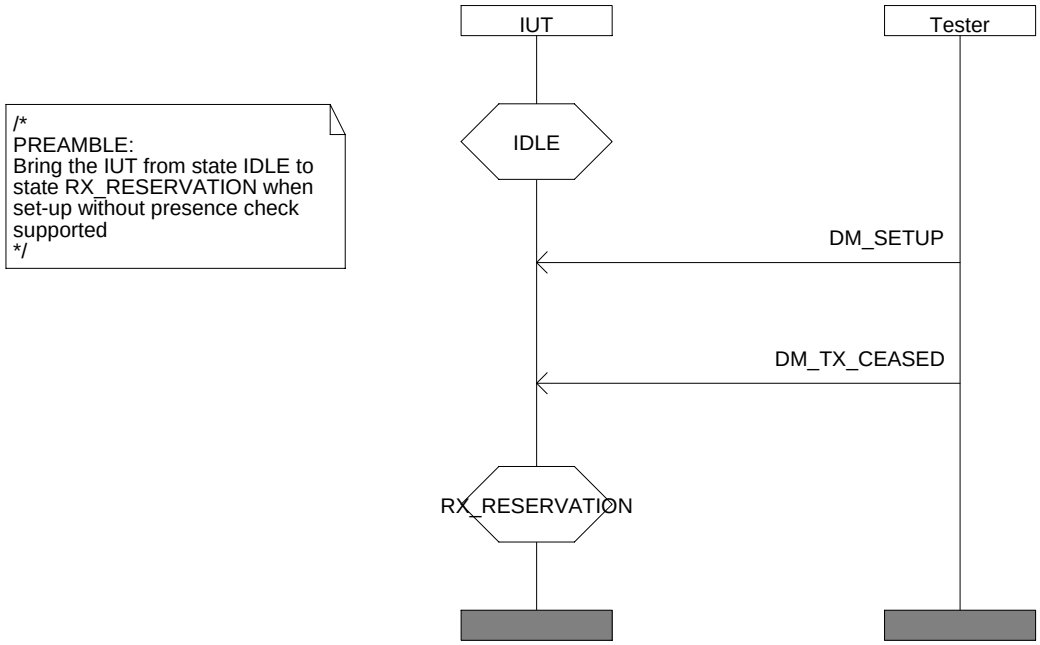


#### 5.1.2.4 Preamble idle_to_RX_reservation

With presence check.

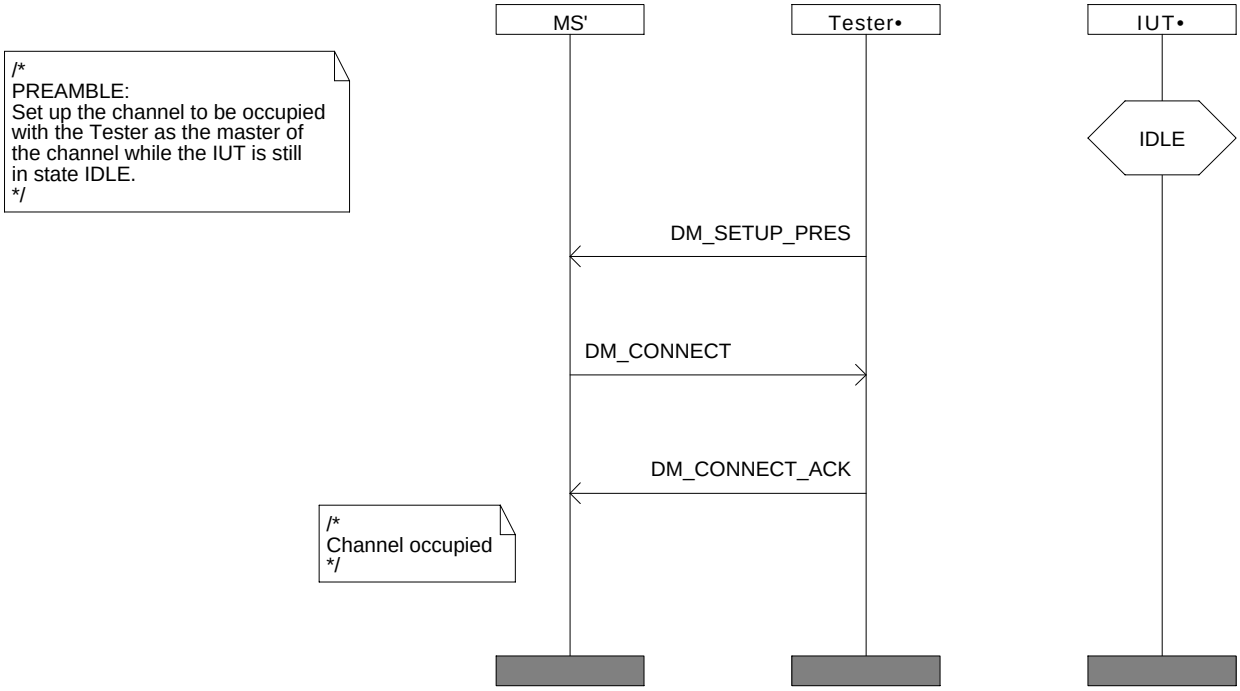



Without presence check.



#### 5.1.2.5 Preamble idle_channel_occupation

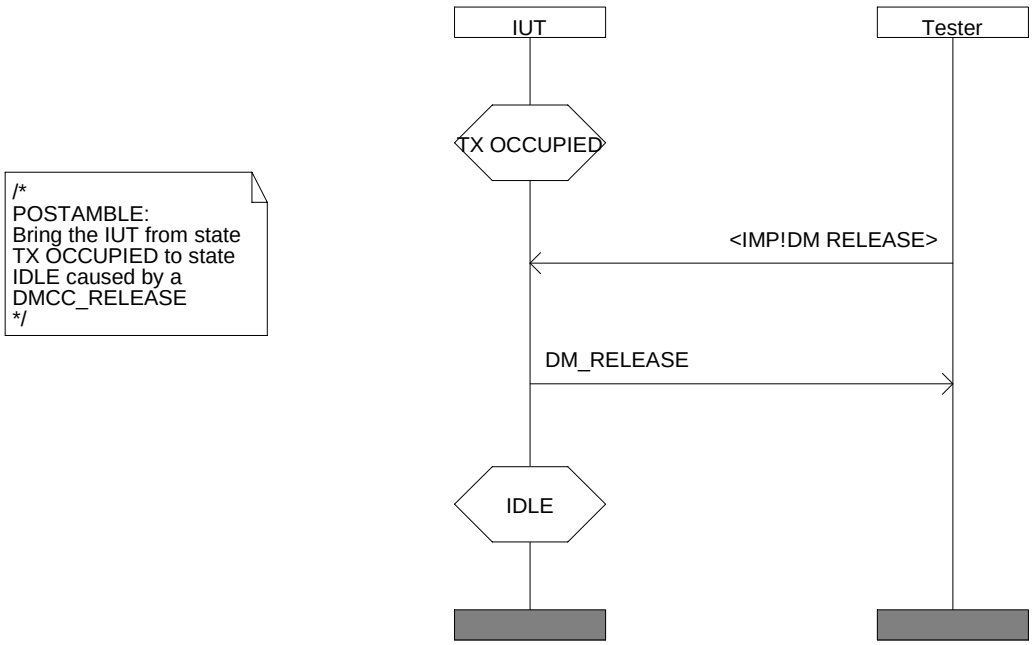
Without presence check.



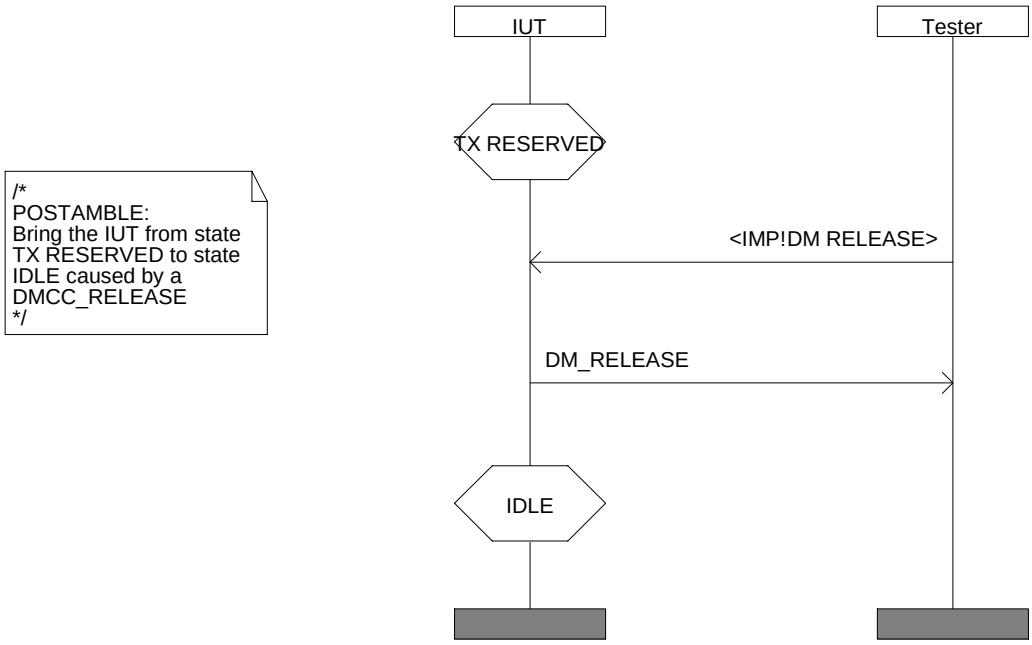

### 5.1.3 Postamble descriptions

Postambles are used to bring the IUT from the state ending the test, to the idle state.

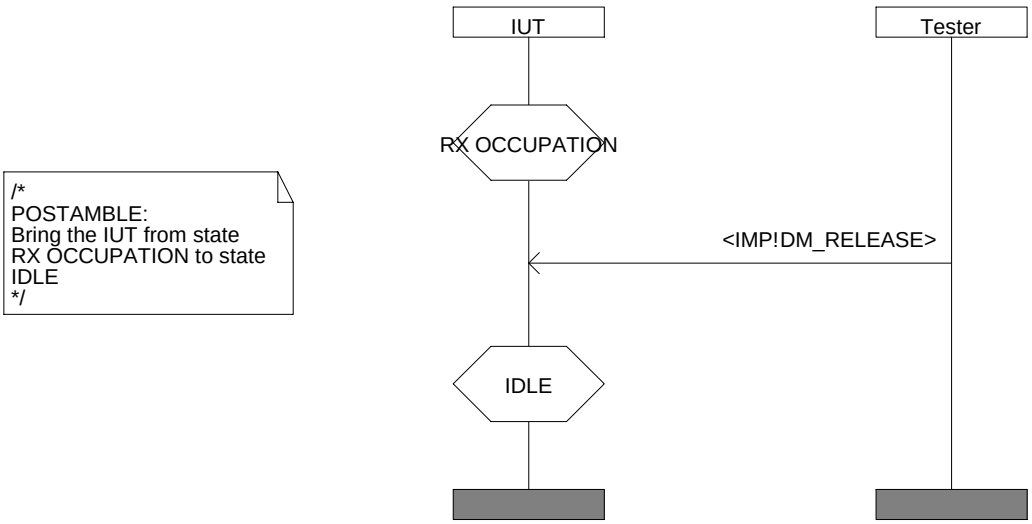
### 5.1.3.1 Postamble TX_occupation_to_idle: From Call Active TX Occupation state to Idle



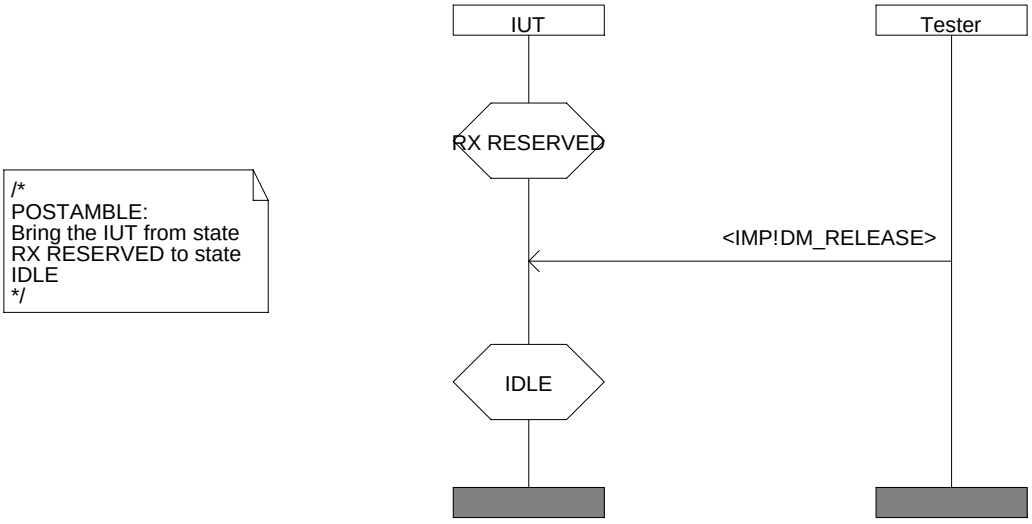

### 5.1.3.2 Postamble TX_reservation_to_idle: From Call Active TX Reserved state to Idle



### 5.1.3.3 Postamble RX_occupation_to_idle: From Call Active RX Occupation state to Idle




### 5.1.3.4 Postamble RX_reservation_to_idle: From Call Active RX Reserved state to Idle



### 5.2 Test purpose naming conventions

The identifier of the test purpose is built according to table 2:

**Table 2: Test purpose naming convention**

| DMO/<ts>/<fm>/<ss>/<tt>/<tsg>/<nn> | | |
|---|---|---|
| <ts> = test suite type | MSREP1 | MS-Repeater type 1 |
| <fm> = functional module or subentity (layer 3 only) | DMCC | Direct Mode Call Control (layer 3) |
| | MAC | Upper MAC (layer 2) |
| <ss> = test group | letters such as: | abbreviation of the group name (optional) |
| | CM | Circuit Mode (layer 3) |
| | SDS | Short Data Service (layer 3) |
| tt = Type of testing | CA | Capability Tests |
| | BV | Valid Behaviour Tests |
| | BI | Invalid Behaviour Tests |
| | TI | Timer expiry and counter mismatch tests |
| <tsg> = test subgroup | two letters | subgroup name ((optional) |
| <nn> = sequential number | 01-99 | Test Purpose Number |

### 5.3 Selection expressions

A test case, based on a test purpose described here, can be selected or deselected from the test suite, according to the evaluation of selection expressions which reflect the capabilities supported or not by the implementation under test.

It appears that some selection expressions are quite complex, mainly the ones used for the MAC layer test suite, as they are based on a rather long combination of PICS statements.

To ease the readability of the test purposes, these complex selection expressions are replaced by generic names which are defined here, and which represent by definition the selection expression themselves.

The following table defines the generic names together with the conditions associated with each one.

**Table 3**

| Selection expression identifier | Selection expression using references to (ETS 300 396-8-2 [2 ] ) | Static capabilities associated with this selection |
|---|---|---|
| Initiate_CM_call | A.4/1<br>OR<br>A.5/1<br>OR<br>A.5/2 | Initiate group CM call<br>or<br>Initiate individual CM call without presence check<br>or<br>Initiate individual CM call with presence check |
| Initiate_SDS_call | A.9/1<br>OR<br>A.10/1<br>OR<br>A.10/2<br>OR<br>A.10/3 | Send group unacknowledged SDS<br>or<br>Send individual unacknowledged SDS<br>or<br>Send acknowledged SDS<br>or<br>Sending acknowledged SDS with data in ACK |
| Initiate_CM_or_SDS_call | A.4/1<br>OR<br>A.5/1<br>OR<br>A.5/2<br>OR<br>A.9/1<br>OR<br>A.10/1<br>OR<br>A.10/2<br>OR<br>A.10/3 | Initiate group CM call<br>or<br>Initiate individual CM call without presence check<br>or<br>Initiate individual CM call with presence check<br>or<br>Send group unacknowledged SDS<br>or<br>Send individual unacknowledged SDS<br>or<br>Send acknowledged SDS<br>or<br>Send acknowledged SDS with data in ACK |
| Receive_Ackd_CM_or_SDS_call | A.3/6<br>OR<br>A.12/2<br>OR<br>A.12/3 | Accept CM call setup with presence check,<br><br>Receive acknowledged SDS,<br><br>Receive acknowledged SDS with data in ACK |

# 6 DMO MS-REP1 test purposes

## 6.1 DMCC Circuit Mode (CM) tests

Test group objective: To test the behaviour of the DMCC CM entity of the IUT.

Condition: IUT implements the CM.

### 6.1.1 MS-REP1 CM capability tests

To test the basic capabilities of the CM module of the IUT, when operating in group address mode (without presence check) or in individual address mode (with or without presence check).

| **DMO_MSREP1_DMCC_CM_CA_01** | **Reference:** ETS 300 396-4 [1], 6.2.1.1, 6.2.4.1 |
|---|---|
| **Purpose** | Setup and terminate a group call without presence check |
| **Test description** | The tester sends an implicit send to the IUT to cause a call setup. |
| **Pass criteria 1** | The IUT sends DM-SETUP to the tester |
| **Test description** | The tester sends an implicit send to the IUT to terminate the call |
| **Pass criteria 2** | The IUT sends DM-TX CEASED to the tester |
| **Selection ETS 300 396-8-2 [2]** | A.4/1 Setup procedure, group call address |
| **Preamble** | None |
| **Postamble** | TX_reservation_to_idle |

MSC035

| **DMO_MSREP1_DMCC_CM_CA_02** | **Reference:** ETS 300 396-4 [1], 6.2.2.1, 6.2.4.1 |
|---|---|
| **Purpose** | Setup and terminate an individual call with presence check |
| **Test description** | The tester sends an implicit send to the IUT to cause a call setup. The IUT sends DM-SETUP PRES to the tester. The tester sends DM-CONNECT to the IUT |
| **Pass criteria 1** | The IUT sends DM-CONNECT ACK to the tester |
| **Test description** | The tester sends an implicit send to the IUT to terminate the call |
| **Pass criteria 2** | The IUT sends DM-TX CEASED to the tester |
| **Selection ETS 300 396-8-2 [2]** | A.5/2 Setup individual call with presence check |
| **Preamble** | None |
| **Postamble** | TX_reservation_to_idle |

MSC037

| **DMO_MSREP1_DMCC_CM_CA_03** | **Reference:** ETS 300 396-4 [1], 6.2.1.1, 6.2.4.1 |
|---|---|
| **Purpose** | Establish and terminate an individual call, when operating without presence check |
| **Test description** | The tester sends an implicit send to the IUT to cause a call setup. |
| **Pass criteria 1** | The IUT sends DM-SETUP to the tester |
| **Test description** | The tester sends an implicit send to the IUT to terminate the call |
| **Pass criteria 2** | The IUT sends DM-TX CEASED to the tester |
| **Selection ETS 300 396-8-2 [2]** | A.5/1 Setup individual call without presence check |
| **Preamble** | None |
| **Postamble** | TX_reservation_to_idle |

MSC036

### 6.1.2 MS-REP1 CM valid behaviour tests

#### 6.1.2.1 The IUT is in idle state, DMO channel is free

| **DMO_MSREP1_DMCC_CM_BV_ID_01** | **Reference:** ETS 300 396-4 [1], 6.2.2.1 |
|---|---|
| **Purpose** | Establish an outgoing call with presence check initiated from idle state and DMO channel free. |
| **Test description** | The tester sends an implicit send to the IUT to cause a call setup. Then the IUT sends DM-SETUP PRES received by the tester, which sends back DM-CONNECT |
| **Pass criteria** | The IUT sends DM-CONNECT ACK PDU to the tester |
| **Selection**<br>**ETS 300 396-8-2 [2]** | A.5/2 Setup individual call with presence check |
| **Preamble** | None |
| **Postamble** | TX_occupation_to_idle |

MSC037

| **DMO_MSREP1_DMCC_CM_BV_ID_02** | **Reference:** ETS 300 396-4 [1], 6.2.1.2 |
|---|---|
| **Purpose** | Receive an incoming call without presence check |
| **Test description** | The tester sends DM-SETUP PDU to the IUT. |
| **Pass criteria** | To check that IUT reaches "call_active_RX_occupation" state, the tester sends DM-TX CEASED which brings the IUT to "call_active_RX_reservation". During the reservation period, when the IUT attempts a call setup, it shall issue a DM-TX REQUEST to initiate a changeover, and this is the pass criteria.<br>Note: This call setup is controlled by the tester using an implicit send containing a "DMCC_SETUP_request". |
| **Selection**<br>**ETS 300 396-8-2 [2]** | A.2/1 Circuit mode call |
| **Preamble** | None |
| **Postamble** | Tester issues a DM-REJECT followed by RX_Reservation_to_idle |

MSC010

| **DMO_MSREP1_DMCC_CM_BV_ID_03** | **Reference:** ETS 300 396-4 [1], 6.2.2.2 |
|---|---|
| **Purpose** | Receive an incoming call with presence check |
| **Test description** | The tester sends DM-SETUP PRES to the IUT which sends back DM-CONNECT. The tester responds with DM-CONNECT ACK |
| **Pass criteria** | To check that IUT reaches state "call_active_RX_occupation" when receiving DM-CONNECT ACK, the tester sends DM-TX CEASED which brings the IUT to "call_active_RX_reservation". During the reservation period, when the IUT attempts a call setup, it shall issue a DM-TX REQUEST to initiate a changeover, and this is the pass criteria.<br>Note: This call setup is controlled by the tester using an implicit send containing a "DMCC_SETUP_request". |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/6 Accept call setup with presence check |
| **Preamble** | None |
| **Postamble** | Tester issues a DM-REJECT followed by RX_Reservation_to_idle |

MSC009

| **DMO_MSREP1_DMCC_CM_BV_ID_04** | **Reference:** ETS 300 396-4 [1], 6.2.2.1 |
|---|---|
| **Purpose** | Release a call setup attempt when receiving a disconnect |
| **Test description** | The tester sends an implicit send to the IUT to cause a call setup. Then the IUT sends DM-SETUP PRES to the tester. The tester sends DM-DISCONNECT to the IUT to reject the call |
| **Pass criteria** | The IUT sends DM-RELEASE to the tester and returns to idle |
| **Selection**<br>ETS 300 396-8-2 [2] | A.5/2 Setup individual call with presence check |
| **Preamble** | None |
| **Postamble** | None |

MSC003

| **DMO_MSREP1_DMCC_CM_BV_ID_05** | **Reference:** ETS 300 396-4 [1], 6.2.2.1 |
|---|---|
| **Purpose** | Release a call setup attempt when the offered Quality of Service is not acceptable to the DMCC |
| **Test description** | The tester sends an implicit send to the IUT to cause a call setup. Then the IUT sends DM-SETUP PRES to the tester. The tester sends DM-CONNECT to the IUT with an unacceptable QOS |
| **Pass criteria** | The QOS being not acceptable, the IUT sends DM-RELEASE to the tester and returns to idle |
| **Selection**<br>ETS 300 396-8-2 [2] | A.5/2 Setup individual call with presence check |
| **Preamble** | None |
| **Postamble** | None |

MSC002

| **DMO_MSREP1_DMCC_CM_BV_ID_06** | **Reference:** ETS 300 396-4 [1], 6.2.1.1, 6.2.4.1, 8.5.7.2.1 |
|---|---|
| **Purpose** | Pre-emption flags in DM-SETUP and DM-TX-CEASED PDU. |
| **Test description** | The tester sends an implicit send to cause a call setup. |
| **Pass criteria 1** | Verify that IUT sends the DM-SETUP PDU with the pre-emption flag set to 1. |
| **Test description** | The tester sends an implicit send to cause the IUT to terminate the call. |
| **Pass criteria 2** | Verify that the IUT sends the DM-TX CEASED PDU with the request and changeover flags set to 1. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.5/2 Setup individual call with presence check or<br>OR<br>A.5/1 Setup individual call without presence check |
| **Preamble** | None |
| **Postamble** | None |

### 6.1.2.2 IUT is in idle state, DMO channel is busy

| **DMO_MSREP1_DMCC_CM_BV_IB_01** | **Reference:** ETS 300 396-4 [1], 6.2.6 |
|---|---|
| **Purpose** | Initiate call pre-emption, to establish a new CM call, from an MS not involved in the current call |
| **Test description** | The tester sends an implicit send to the IUT to cause a call setup. As the channel is busy, the IUT initially sends a DM-PREEMPT to the tester, which responds by sending a DM-PREEMPT_ACCEPT. |
| **Pass criteria** | The IUT sends DM-SETUP or DM-SETUP PRES to the tester according to the IUT capability |
| **Selection**<br>ETS 300 396-8-2 [2] | A3/13 Initiating a new call by pre-emption |
| **Preamble** | idle_channel_occupation |
| **Postamble** | None (after waiting time over T303 and N303 times) |

### 6.1.2.3 IUT is in TX occupation state

| **DMO_MSREP1_DMCC_CM_BV_TXO_01** | **Reference:** ETS 300 396-4 [1], 6.2.4.1 |
|---|---|
| **Purpose** | Initiate the release of a call |
| **Test description** | The tester issues an implicit send containing a "DMCC_RELEASE_request" to the IUT. |
| **Pass criteria** | The IUT sends DM-RELEASE to the tester and returns to idle, state observable by the channel being free. |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_call |
| **Preamble** | idle_to_TX_occupation |
| **Postamble** | None |

| **DMO_MSREP1_DMCC_CM_BV_TXO_02** | **Reference:** ETS 300 396-4 [1], 6.2.4.1 |
|---|---|
| **Purpose** | Initiate end of transmission (TX-ceased) |
| **Test description** | The tester issues an implicit send containing a "DMCC_TX_CEASED_request" to the IUT. |
| **Pass criteria** | The IUT sends TX CEASED to the tester and moves to state TX reservation. |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_Call |
| **Preamble** | idle_to_TX_occupation |
| **Postamble** | TX_reservation_to_idle |

MSC011

| **DMO_MSREP1_DMCC_CM_BV_TXO_03** | **Reference:** ETS 300 396-4 [1], 6.2.4.1 |
|---|---|
| **Purpose** | Receive pre-emption for an ongoing individual call |
| **Test description** | The tester sends a DM-PREEMPT to the IUT, containing the address of master |
| **Pass criteria** | The IUT sends back DM-PRE_ACCEPT and moves to "call_active_RX_reservation". During the reservation period, when the IUT attempts a call setup, it shall issue a DM-TX REQUEST to initiate a changeover, and this is the pass criteria.<br>Note: This call setup is controlled by the tester using an implicit send containing a "DMCC_SETUP_request". |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_Call |
| **Preamble** | idle_to_TX_occupation |
| **Postamble** | RX_Reservation_to_idle |

MSC034

| **DMO_MSREP1_DMCC_CM_BV_TXO_04** | **Reference:** ETS 300 396-4 [1], 6.2.4.1 |
|---|---|
| **Purpose** | Receive pre-emption for a new individual call |
| **Test description** | The tester sends a DM-PREEMPT to the IUT, containing the address of a new pre-empter |
| **Pass criteria** | The IUT sends back DM-PRE_ACCEPT to the pre-empter, followed by a DM-RELEASE to the slave and moves to idle (observable by the channel being free) |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_Call |
| **Preamble** | idle_to_TX_occupation |
| **Postamble** | None |

MSC038

| **DMO_MSREP1_DMCC_CM_BV_TXO_05** | **Reference:** ETS 300 396-4 [1], 6.2.4.1 |
|---|---|
| **Purpose** | Receive and reject pre-emption for a new individual call |
| **Test description** | The tester sends a DM-PREEMPT to the IUT, containing an unacceptable priority |
| **Pass criteria** | The IUT sends back DM-REJECT to the pre-empter |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_Call |
| **Preamble** | idle_to_TX_occupation |
| **Postamble** | TX_occupation_to_idle. |

#### 6.1.2.4 IUT is in RX occupation state

Test the capability to initiate release of a call MSC028: not observable, dropped.

Test the capability to receive release of a call MSC03: not observable, dropped.

| **DMO_MSREP1_DMCC_CM_BV_RO_01** | **Reference:** ETS 300 396-4 [1], 6.2.4.2 |
|---|---|
| **Purpose** | Receive normal end of transmission (TX Cease) |
| **Test description** | The tester sends DM-TX CEASED to the IUT |
| **Pass criteria** | The IUT moves to state "call active RX Reservation". During the reservation period, when the IUT attempts a call setup, it shall issue a DM-TX REQUEST to initiate a changeover, and this is the pass criteria. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.2/1 Circuit mode call |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | RX_Reservation_to_idle |

MSC030

| **DMO_MSREP1_DMCC_CM_BV_RO_02** | **Reference:** ETS 300 396-4 [1], 6.2.4.2 |
|---|---|
| **Purpose** | Initiate pre-emption to establish a call (either ongoing or new call) |
| **Test description** | The tester issues an implicit send containing a "DMCC_SETUP_request" to the IUT. The IUT sends DM-PREEMPT (address = master) to the tester, which accepts it by answering DM-PRE_ACCEPT |
| **Pass criteria** | The IUT sends DM-SETUP or DM-SETUP PRES to the tester according to the IUT capability |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/12 Initiate pre-emption in ongoing call |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | In order to clear the call with presence check, the tester sends a DM-DISCONNECT PDU and waits for the DM-RELEASE PDU. In order to clear the call without presence check, the postamble TX_occupation_to_idle is used. |

MSC029 MSC026

| **DMO_MSREP1_DMCC_CM_BV_RO_03** | **Reference:** ETS 300 396-4 [1], 6.2.4.2 |
|---|---|
| **Purpose** | Handle the reject of a pre-emption |
| **Test description** | The tester issues an implicit send containing a "DMCC_SETUP_request" to the IUT. The IUT sends DM-PREEMPT (address = master) to the tester, which does not accept it and answers DM-REJECT |
| **Pass criteria** | The IUT stays in state "call_active_RX_occupation" when receiving DM-REJECT. To check it, the tester sends DM-TX CEASED which brings the IUT to "call_active_RX_reservation". During the reservation period, when the IUT attempts a call setup, it shall issue a DM-TX REQUEST to initiate a changeover, and this is the pass criteria.<br>Note: This call setup is controlled by the tester using an implicit send containing a "DMCC_SETUP_request". |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/12 Initiate pre-emption in ongoing call |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | Tester issues a DM-REJECT followed by RX_Occupation_to_idle |

MSC027

| **DMO_MSREP1_DMCC_CM_BV_RO_04** | **Reference:** ETS 300 396-4 [1], 6.2.4.2 |
|---|---|
| **Purpose** | Reception of the ongoing call setup |
| **Test description** | The tester sends a DM-SETUP PRES PDU related to the ongoing call. |
| **Pass criteria** | Verify that the IUT sends the DM-CONNECT PDU. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/6 Accept call set-up with presence check |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | Tester sends the DM-CONNECT ACK PDU and then the postamble TX_occupation_to_idle is used to clear the call. |

### 6.1.2.5 IUT is in TX reservation state

| **DMO_MSREP1_DMCC_CM_BV_TR_01** | **Reference:** ETS 300 396-4 [1], 6.2.5.1 |
|---|---|
| **Purpose** | Initiate release of a call |
| **Test description** | The tester issues an implicit send containing a "DMCC_RELEASE_request" to the IUT. |
| **Pass criteria** | The IUT sends DM-RELEASE to the tester |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_Call |
| **Preamble** | idle_to_TX_reservation |
| **Postamble** | None |

MSC017

| **DMO_MSREP1_DMCC_CM_BV_TR_02** | **Reference:** ETS 300 396-4 [1], 6.2.5.1 |
|---|---|
| **Purpose** | Receive and accept pre-emption for a new call |
| **Test description** | The tester sends DM-PREEMPT to the IUT for a new call |
| **Pass criteria** | The IUT sends DM-PRE_ACCEPT to the tester |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_Call |
| **Preamble** | idle_to_TX_reservation |
| **Postamble** | None |

MSC015

| **DMO_MSREP1_DMCC_CM_BV_TR_03** | **Reference:** ETS 300 396-4 [1], 6.2.5.1 |
|---|---|
| **Purpose** | Receive and accept pre-emption for continuation of ongoing call |
| **Test description** | The tester sends DM-PREEMPT to the IUT for a call continuation |
| **Pass criteria** | The IUT sends DM-PRE_ACCEPT to the tester |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_Call |
| **Preamble** | idle_to_TX_reservation |
| **Postamble** | RX_reservation_to_idle |

MSC016

| **DMO_MSREP1_DMCC_CM_BV_TR_04** | **Reference:** ETS 300 396-4 [1], 6.2.5.1 |
|---|---|
| **Purpose** | Receive and accept changeover |
| **Test description** | The tester sends DM-TX REQUEST to the IUT indicating call continuation |
| **Pass criteria** | The IUT sends DM-TX ACCEPT to the tester |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/14 Call changeover |
| **Preamble** | idle_to_TX_reservation |
| **Postamble** | RX_Reservation_to_idle |

MSC012

| **DMO_MSREP1_DMCC_CM_BV_TR_05** | **Reference:** ETS 300 396-4 [1], 6.2.5.1 |
|---|---|
| **Purpose** | Establish CM call |
| **Test description** | The tester issues an implicit send containing a "DMCC_SETUP_request" to the IUT. |
| **Pass criteria** | The IUT sends DM-SETUP or DM-SETUP PRES to the tester according to the IUT capability |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/3 Initiate call setup with or without presence check<br>OR<br>A.3/4 |
| **Preamble** | idle_to_TX_reservation |
| **Postamble** | In order to clear the call with presence check, the tester sends a DM-DISCONNECT PDU and waits for the DM-RELEASE PDU. In order to clear the call without presence check, the postamble TX_occupation_to_idle is used. |

MSC013

| **DMO_MSREP1_DMCC_CM_BV_TR_06** | **Reference:** ETS 300 396-4 [1], 6.2.5.1 |
|---|---|
| **Purpose** | Receive incoming CM call |
| **Test description** | The tester sends DM-SETUP PRES to the IUT |
| **Pass criteria** | The IUT sends DM-CONNECT PDU to the tester, as the setup request was accepted by the IUT |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/6 Accept call setup with presence check |
| **Preamble** | idle_to_TX_reservation |
| **Postamble** | The tester sends the DM-CONNECT ACK PDU and the claa is cleared using the postamble RX_occupation_To_Idle. |

MSC014

| **DMO_MSREP1_DMCC_CM_BV_TR_07** | **Reference:** ETS 300 396-4 [1], 6.2.5.1 |
|---|---|
| **Purpose** | receive and reject pre-emption for a new call |
| **Test description** | The tester sends DM-PREEMPT containing an unacceptable priority level to the IUT indicating new call |
| **Pass criteria** | The IUT sends DM-REJECT PDU to the tester and remains in the same state. |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_Call |
| **Preamble** | idle_to_TX_reservation |
| **Postamble** | TX_reservation_to_idle |

| **DMO_MSREP1_DMCC_CM_BV_TR_08** | **Reference:** ETS 300 396-4 [1], 6.2.5.1 |
|---|---|
| **Purpose** | receive and reject changeover |
| **Test description** | The tester sends DM-TX REQUEST including an unacceptable priority level to the IUT indicating call continuation |
| **Pass criteria** | The IUT sends DM-REJECT PDU to the tester |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/15 Accept call Changeover |
| **Preamble** | idle_to_TX_reservation |
| **Postamble** | TX_Reservation_to_idle |

#### 6.1.2.6 IUT is in RX reservation state

Test the capability to initiate release of a group call MSCA05 : not visible

Test the capability to receive release, MSC046, not visible

| **DMO_MSREP1_DMCC_CM_BV_RR_01** | **Reference:** ETS 300 396-4 [1], 6.2.5.2 |
|---|---|
| **Purpose** | Receive incoming CM call |
| **Test description** | The tester sends DM-SETUP PRES to the IUT |
| **Pass criteria** | The IUT sends DM-CONNECT to the tester, as the setup request was accepted by the IUT |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/6 Accept call setup with presence check |
| **Preamble** | idle_to_RX_reservation |
| **Postamble** | RX_occupation_to_idle |

MSC045

| **DMO_MSREP1_DMCC_CM_BV_RR_02** | **Reference:** ETS 300 396-4 [1], 6.2.6 |
|---|---|
| **Purpose** | Initiate pre-emption to establish new CM call |
| **Test description** | The tester issues an implicit send containing a "DMCC_SETUP_request" to the IUT. |
| **Pass criteria** | The IUT sends DM-PREEMPT to the tester, which is accepted by the tester (DM-PRE ACCEPT sent back by the tester). Then the IUT sends DM-SETUP or DM-SETUP PRES to the tester according to the IUT capability |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/13 Initiate a new call by pre-emption |
| **Preamble** | idle_to_RX_reservation |
| **Postamble** | In order to clear the call with presence check, the tester sends a DM-DISCONNECT PDU and waits for the DM-RELEASE PDU. In order to clear the call without presence check, the postamble TX_occupation_to_idle is used. |

MSCAx5

| **DMO_MSREP1_DMCC_CM_BV_RR_03** | **Reference:** ETS 300 396-4 [1], 6.2.5.2 |
|---|---|
| **Purpose** | Initiate changeover to establish ongoing CM call |
| **Test description** | The tester issues an implicit send containing a "DMCC_SETUP_request" to the IUT. |
| **Pass criteria** | The IUT sends DM-TX REQUEST to the tester, which is accepted by the tester (DM-TX ACCEPT sent back by the tester). Then the IUT sends back DM-SETUP or DM-SETUP PRES to the tester according to the IUT capability |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/14 Initiate Call changeover |
| **Preamble** | idle_to_RX_reservation |
| **Postamble** | In order to clear the call with presence check, the tester sends a DM-DISCONNECT PDU and waits for the DM-RELEASE PDU. In order to clear the call without presence check, the postamble TX_occupation_to_idle is used. |

MSC043 or MSCAx4

| **DMO_MSREP1_DMCC_CM_BV_RR_04** | **Reference:** ETS 300 396-4 [1], 6.2.5.2 |
|---|---|
| **Purpose** | Handle the reject of a changeover request |
| **Test description** | The tester issues an implicit send containing a "DMCC_SETUP_request" to the IUT. The IUT sends DM-TX REQUEST to the tester, which is rejected by the tester (DM-REJECT sent back by the tester). |
| **Pass criteria** | The IUT remains in the same state "call active RX reservation". To test it, the tester issues again an implicit send containing a "DMCC_SETUP_request" to the IUT. The IUT sends DM-TX REQUEST to the tester. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/14 Initiate Call changeover |
| **Preamble** | idle_to_RX_reservation |
| **Postamble** | The tester sends DM-DISCONNECT to return the IUT to idle |

MSC047

### 6.1.3 MS-REP1 CM timer tests

#### 6.1.3.1 DT303 Response to DM-SETUP PRES timer

| **DMO_MSREP1_DMCC_CM_TI_01** | **Reference:** ETS 300 396-4 [1], 6.2.2.1 |
|---|---|
| **Purpose** | Time out DT303 for response to DM SET UP PRES. |
| **Test description** | The tester sends an implicit send (DMCC_SETUP_request) to the IUT to cause a call setup. Then the IUT sends DM-SETUP PRES to the tester, The tester does not answer within DT303 time. |
| **Pass criteria**<br>**(M)** | After DT303 time out, the IUT sends the DM-RELEASE PDU or the DM-SETUP PRES PDU again to the tester until DN303 or DN304 attempts are made |
| **Selection**<br>ETS 300 396-8-2 [2] | A.3/4 Initiate call setup with presence check |
| **Preamble** | None |
| **Postamble** | The tester sends back DM-DISCONNECT to reject the call |

#### 6.1.3.2 DT311 Call transaction timer

| **DMO_MSREP1_DMCC_CM_TI_02** | **Reference:** ETS 300 396-4 [1], 6.2.4.1 |
|---|---|
| **Purpose** | Initiate end of transmission after time out of DT311 call transaction timer |
| **Test description** | after time out on DT311, the IUT sends DM-TX CEASED PDU and enters state Call Active TX Reservation. |
| **Pass criteria** | The DM-TX CEASED PDU is received by the tester. |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_call |
| **Preamble** | idle_to_TX_occupation |
| **Postamble** | TX_reservation_to_idle |

## 6.2 DMCC Short data service (SDS)

Test group objective: To test the behaviour of the DMCC SDS entity of the IUT.

Condition: IUT implements Short Data Service and for some TPs, together with CM calls.

### 6.2.1 MS-REP1 SDS Capability tests

To test the basic capabilities of the SDS module of the IUT, when operating in unacknowledged service.

| **DMO_MSREP1_DMCC_SDS_CA_01** | **Reference:** ETS 300 396-4 [1], 6.3.1.1.1 |
|---|---|
| **Purpose** | Establish a SDS with unacknowledged service |
| **Test description** | The tester issues an implicit send containing a "DMCC_SDS_UNITDATA request" to the IUT which selects the appropriate data types according to the IUT capabilities |
| **Pass criteria (M)** | The IUT sends DM-SDS_UDATA to the tester, up to DN314 or DN317 times |
| **Selection** ETS 300 396-8-2 [2] | A.9/1 Send unacknowledged SDS, group or individual address<br>OR<br>A.10/1 |
| **Preamble** | None |
| **Postamble** | None |

MSC079

### 6.2.2 MS-REP1 SDS Valid behaviour tests

#### 6.2.2.1 IUT is in idle state, channel is free

| **DMO_MSREP1_DMCC_SDS_BV_ID_01** | **Reference:** ETS 300 396-4 [1], 6.3.1.1.2 |
|---|---|
| **Purpose** | Establish an SDS with acknowledged service |
| **Test description** | The tester issues an implicit send containing a "DMCC_SDS_DATA request" to the IUT which selects the appropriate data types according to the IUT capabilities. When the tester receives DM-SDS DATA, it sends back DM-SDS ACK to the IUT |
| **Pass criteria** | The IUT comes back to idle, and no new DM-SDS DATA is sent by the IUT within a given time (greater than DT316) meaning the SDS call was successful |
| **Selection** ETS 300 396-8-2 [2] | A.10/2 Send acknowledged SDS with or without data in ACK<br>OR<br>A.10/3 |
| **Preamble** | None |
| **Postamble** | None |

MSC078

| **DMO_MSREP1_DMCC_SDS_BV_ID_02** | **Reference:** ETS 300 396-4 [1], 6.3.1.1.2 |
|---|---|
| **Purpose** | Handle the reject of an SDS with acknowledged service |
| **Test description** | The tester issues an implicit send containing a "DMCC_SDS_DATA request" to the IUT which selects the appropriate data types according to the IUT capabilities. When the tester receives DM-SDS DATA, it sends back DM-REJECT to the IUT. |
| **Pass criteria** | The IUT comes back to idle, and no new DM-SDS DATA is sent by the IUT within a given time (greater than DT316) meaning the SDS call was properly aborted |
| **Selection** ETS 300 396-8-2 [2] | A.10/2 Send acknowledged SDS without or with data in ACK<br>OR<br>A.10/3 |
| **Preamble** | None |
| **Postamble** | None |

| **DMO_MSREP1_DMCC_SDS_BV_ID_03** | **Reference:** ETS 300 396-4 [1], 6.3.2.2 |
|---|---|
| **Purpose** | Receive an incoming SDS with acknowledged service |
| **Test description** | The tester sends DM-SDS DATA containing the appropriate data for the IUT capabilities, to the IUT |
| **Pass criteria** | The IUT sends back to the tester DM-SDS ACK containing data or not, according to the IUT capabilities |
| **Selection**<br>ETS 300 396-8-2 [2] | A.12/2 Receive acknowledged SDS without or with data in ACK<br>OR<br>A.12/3 |
| **Preamble** | None |
| **Postamble** | None |

MSC072

| **DMO_MSREP1_DMCC_SDS_BV_ID_04** | **Reference:** ETS 300 396-4 [1], 6.3.2.2 |
|---|---|
| **Purpose** | Receive an incoming SDS with acknowledged service and with FCS. |
| **Test description** | The tester sends the DM-SDS DATA PDU containing the appropriate data depending on the IUT capabilities and including FCS. |
| **Pass criteria** | Verify that the IUT sends the DM-SDS ACK PDU containing or not data. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.12/2 Receive acknowledged SDS without or with data in ACK<br>OR A.12/3 |
| **Preamble** | None |
| **Postamble** | None |
| **DMO_MSREP1_DMCC_SDS_BV_ID_05** | **Reference:** ETS 300 396-4 [1], 6.3.1.1.2 |
| **Purpose** | Establish an SDS with acknowledged service using the FCS. |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate a SDS. When the tester receives the DM-SDS DATA PDU with FCS, it sends back the DM-SDS ACK PDU. |
| **Pass criteria** | Verify that the SDS call was successful, i.e. the IUT does not send any DM-SDS DATA PDU again. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.10/2 Send acknowledged SDS without or with data in ACK<br>OR<br>A.10/3 |
| **Preamble** | None |
| **Postamble** | None |

#### 6.2.2.2 IUT is in idle state, channel is busy

| **DMO_MSREP1_DMCC_SDS_BV_IB_01** | **Reference:** ETS 300 396-4 [1], 6.3.1.2 |
|---|---|
| **Purpose** | Initiate pre-emption then establish a new SDS with acknowledged service |
| **Test description** | The tester issues an implicit send containing a "DMCC_SDS_DATA request" to the IUT which selects the appropriate data types according to the IUT capabilities. As the channel is busy, the IUT sends a DM-PREEMPT to the tester which accepts it by answering DM-PRE_ACCEPT. |
| **Pass criteria** | The IUT sends DM-SDS DATA to the tester when Pre-emption is accepted. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/2 Send short data after pre-emption of a CM call (new call)<br>AND and sends acknowledged SDS.<br>(A.10/2 OR A.10/3) |
| **Preamble** | idle_channel_occupation |
| **Postamble** | None |

MSC076

| **DMO_MSREP1_DMCC_SDS_BV_IB_02** | **Reference:** ETS 300 396-4 [1], 6.3.1.2 |
|---|---|
| **Purpose** | Initiate pre-emption the establish a new SDS with unacknowledged service. |
| **Test description** | The tester in the CALL ACTIVE TX OCCUPATION state with an other MS. The tester issues an implicit send to cause the IUT to initiate a SDS transfer. As the channel is busy, the IUT sends the DM-PREEMPT PDU to the tester which accepts it by answering the DM-PRE ACCEPT PDU. |
| **Pass criteria** | Verify that the IUT sends the DM-SDS UDATA PDU. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/2 Send short data after pre-emption of a CM call (new call)<br>AND and sends unacknowledged SDS.<br>(A.9/1 OR A.10/1) |
| **Preamble** | idle_channel_occupation |
| **Postamble** | None |

| **DMO_MSREP1_DMCC_SDS_BV_IB_03** | **Reference:** ETS 300 396-4 [1], 6.3.1.2 |
|---|---|
| **Purpose** | Handle the reject of pre-emption for acknowledged SDS. |
| **Test description** | The tester issues an implicit send containing a "DMCC_SDS_DATA request" to the IUT which selects the appropriate data types according to the IUT capabilities. As the channel is busy, the IUT sends a DM-PREEMPT to the tester which does not accept it and answers DM-REJECT. |
| **Pass criteria** | The IUT comes back to idle, and no new DM-SDS DATA is sent by the IUT within a given time (greater than DT316) meaning the SDS call was properly aborted |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/2 Send short data after pre-emption of a CM call (new call)<br>AND and sends acknowledged SDS.<br>(A.10/2 OR A.10/3) |
| **Preamble** | idle_channel_occupation |
| **Postamble** | None |

MSC075

| **DMO_MSREP1_DMCC_SDS_BV_IB_04** | **Reference:** ETS 300 396-4 [1], 6.3.1.2 |
|---|---|
| **Purpose** | Handle the rejection of pre-emption for SDS with unacknowledged service. |
| **Test description** | The tester in the CALL ACTIVE TX OCCUPATION state with an other MS. The tester issues an implicit send to cause the IUT to initiate a SDS transfer. As the channel is busy, the IUT sends the DM-PREEMPT PDU to the tester which rejects by answering the DM-REJECT PDU. |
| **Pass criteria** | Verify that the IUT does not send the DM-SDS UDATA PDU within a time greater than DT316, meaning that the SDS call was properly aborted. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/2 Send short data after pre-emption of a CM call (new call)<br>AND and sends unacknowledged SDS.<br>(A.9/1 OR A.10/1) |
| **Preamble** | idle_channel_occupation |
| **Postamble** | None |

#### 6.2.2.3 IUT is in state TX occupation

No TP are possible from this state because though it is an optional feature, the wording of the specifications, using many times the word "may" does not oblige all implementations to behave as described here.

#### 6.2.2.4 IUT is in RX occupation state

| **DMO_MSREP1_DMCC_SDS_BV_RO_01** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Initiate pre-empt then establish ongoing SDS |
| **Test description** | The tester issues an implicit send containing a "DMCC_SDS_DATA request" to the IUT which selects the appropriate data types according to the IUT capabilities. As the channel is busy, the IUT sends a DM-PREEMPT to the tester which accepts it by answering DM-PRE_ACCEPT. |
| **Pass criteria** | The IUT sends DM-SDS DATA to the tester when Pre-emption is accepted. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/4 Send short data after pre-emption of a CM call (ongoing call) and sends acknowledged SDS.<br>AND<br>(A.10/2 OR A.10/3) |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | None |

MSCAx1

| **DMO_MSREP1_DMCC_SDS_BV_RO_02** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Initiate pre-emption to establish ongoing unacknowledged SDS. |
| **Test description** | The tester in the CALL ACTIVE TX OCCUPATION state with an other MS. The tester issues an implicit send to cause the IUT to initiate a SDS transfer. As the channel is busy, the IUT sends the DM-PREEMPT PDU to the tester which accepts it by answering the DM-PRE ACCEPT PDU. |
| **Pass criteria** | Verify that the IUT sends the DM-SDS UDATA PDU. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/4 Send short data after pre-emption of a CM call (ongoing call) and sends unacknowledged SDS.<br>AND<br>(A.9/1 OR A.10/1) |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | None |

| **DMO_MSREP1_DMCC_SDS_BV_RO_03** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Initiate pre-empt then establish new SDS |
| **Test description** | The tester issues an implicit send containing a "DMCC_SDS_DATA request" to the IUT which selects the appropriate data types according to the IUT capabilities. As the channel is busy, the IUT sends a DM-PREEMPT to the tester which accepts it by answering DM-PRE_ACCEPT. |
| **Pass criteria** | The IUT sends DM-SDS DATA to the tester when Pre-emption is accepted. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/2 Send short data after pre-emption of a CM call (new call) and sends acknowledged SDS.<br>AND<br>(A.10/2 OR A.10/3) |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | None |

| **DMO_MSREP1_DMCC_SDS_BV_RO_04** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Initiate pre-emption to establish new unacknowledged SDS. |
| **Test description** | The tester in the CALL ACTIVE TX OCCUPATION state with an other MS. The tester issues an implicit send to cause the IUT to initiate a SDS transfer. As the channel is busy, the IUT sends the DM-PREEMPT PDU to the tester which accepts it by answering the DM-PRE ACCEPT PDU. |
| **Pass criteria** | Verify that the IUT sends the DM-SDS UDATA PDU. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/2 Send short data after pre-emption of a CM call (new call) and sends unacknowledged SDS.<br>AND<br>(A.10/1 OR A.9/1) |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | None |

| **DMO_MSREP1_DMCC_SDS_BV_RO_05** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Handle the rejection of pre-emption to establish ongoing acknowledged SDS. |
| **Test description** | The tester in the CALL ACTIVE TX OCCUPATION state with an other MS. The tester issues an implicit send to cause the IUT to initiate a SDS transfer. As the channel is busy, the IUT sends the DM-PREEMPT PDU to the tester which rejects it by answering the DM-PRE REJECT PDU. |
| **Pass criteria** | Verify that the IUT does not send the DM-SDS DATA PDU. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/2 Send short data after pre-emption of a CM call (ongoing call) and sends acknowledged SDS.<br>AND<br>(A.10/2 OR A.10/3) |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | RX_occupation_to_idle |

| **DMO_MSREP1_DMCC_SDS_BV_RO_06** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Handle the rejection of pre-emption to establish ongoing unacknowledged SDS. |
| **Test description** | The tester in the CALL ACTIVE TX OCCUPATION state with an other MS. The tester issues an implicit send to cause the IUT to initiate a SDS transfer. As the channel is busy, the IUT sends the DM-PREEMPT PDU to the tester which rejects it by answering the DM-PRE REJECT PDU. |
| **Pass criteria** | Verify that the IUT does not send the DM-SDS UDATA PDU. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/2 Send short data after pre-emption of a CM call (ongoing call)<br>AND and sends unacknowledged SDS.<br>(A.9/1 OR A.10/1) |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | RX_occupation_to_idle |

| **DMO_MSREP1_DMCC_SDS_BV_RO_08** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Handle the rejection of pre-emption to establish new acknowledged SDS. |
| **Test description** | The tester in the CALL ACTIVE TX OCCUPATION state with an other MS. The tester issues an implicit send to cause the IUT to initiate a SDS transfer. As the channel is busy, the IUT sends the DM-PREEMPT PDU to the tester which rejects it by answering the DM-PRE REJECT PDU. |
| **Pass criteria** | Verify that the IUT does not send the DM-SDS DATA PDU. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/4 Send short data after pre-emption of a CM call (new call) and sends acknowledged SDS.<br>AND<br>(A.10/2 OR A.10/3) |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | RX_occupation_to_idle |

| **DMO_MSREP1_DMCC_SDS_BV_RO_09** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Handle the rejection of pre-emption to establish new unacknowledged SDS. |
| **Test description** | The tester in the CALL ACTIVE TX OCCUPATION state with an other MS. The tester issues an implicit send to cause the IUT to initiate a SDS transfer. As the channel is busy, the IUT sends the DM-PREEMPT PDU to the tester which rejects it by answering the DM-PRE REJECT PDU. |
| **Pass criteria** | Verify that the IUT does not send the DM-SDS UDATA PDU. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/2 Send short data after pre-emption of a CM call (new call) and sends unacknowledged SDS.<br>AND<br>(A.9/1 OR A.10/1) |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | RX_occupation_to_idle |

### 6.2.2.5 IUT is in TX reservation state

| **DMO_MSREP1_DMCC_SDS_BV_TR_01** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Initiate SDS from TX_reservation state |
| **Test description** | The tester issues an implicit send containing a "DMCC_SDS_DATA request" to the IUT which selects the appropriate data types according to the IUT capabilities. DM-SDS DATA PDU tells it is a transaction within a circuit mode call |
| **Pass criteria** | The IUT sends DM-SDS DATA to the tester |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/6 Send SDS as master of a CM call and IUT supports<br>AND acknowledged SDS<br>(A.10/2 OR A.10/3) |
| **Preamble** | idle_to_TX_reservation |
| **Postamble** | The tester issues a DM-REJECT, followed by TX_Reservation_to_idle |

| **DMO_MSREP1_DMCC_SDS_BV_TR_02** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Initiate unacknowledged SDS from TX reservation state. |
| **Test description** | The tester issues an implicit send to cause the IUT to transfer unacknowledged short data. |
| **Pass criteria** | Verify that the IUT sends the DM-SDS UDATA PDU |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/6 Send SDS as master of a CM call and IUT supports<br>AND unacknowledge SDS.<br>(A.9/1 OR A.10/1) |
| **Preamble** | idle_to_TX_reservation |
| **Postamble** | The tester issues a DM-REJECT, followed by TX_Reservation_to_idle |

| **DMO_MSREP1_DMCC_SDS_BV_TR_03** | **Reference:** ETS 300 396-4 [1], 6.2.5.1 |
|---|---|
| **Purpose** | Receive incoming acknowledged SDS |
| **Test description** | The tester sends DM-SDS DATA to the IUT |
| **Pass criteria** | The IUT sends DM-SDS ACK to the tester, meaning the request was accepted by the IUT |
| **Selection**<br>ETS 300 396-8-2 [2] | A.12/2 Receive acknowledged SDS without or with data in ACK<br>OR<br>A.12/3 |
| **Preamble** | idle_to_TX_reservation |
| **Postamble** | None |

### 6.2.2.6 IUT is in RX reservation state

| **DMO_MSREP1_DMCC_SDS_BV_RR_01** | **Reference:** ETS 300 396-4 [1], 6.2.5.2 |
|---|---|
| **Purpose** | Receive incoming acknowledged SDS |
| **Test description** | The tester sends DM-SDS DATA to the IUT |
| **Pass criteria** | The IUT sends DM-SDS ACK to the tester, meaning the request was accepted by the IUT |
| **Selection**<br>ETS 300 396-8-2 [2] | A.12/2 Receive acknowledged SDS without or with data in ACK<br>OR<br>A.12/3 |
| **Preamble** | idle_to_RX_reservation |
| **Postamble** | None |

MSCAx3

| **DMO_MSREP1_DMCC_SDS_BV_RR_02** | **Reference:** ETS 300 396-4 [1], 6.2.5.2 |
|---|---|
| **Purpose** | Receive incoming acknowledged SDS within the CM call.. |
| **Test description** | The tester sends the DM-SDS DATA PDU to the IUT. The SDS are sent as a transaction within the CM call. |
| **Pass criteria** | Verify that the IUT sends back the DM-SDS ACK PDU. Verify that the IUT stay in the RX reservation state. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.12/2 Receive acknowledged SDS without or with data in ACK<br>OR<br>A.12/3 |
| **Preamble** | idle_to_RX_reservation |
| **Postamble** | RX_Reservation_to_idle |

| **DMO_MSREP1_DMCC_SDS_BV_RR_03** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Initiate changeover then establish ongoing SDS |
| **Test description** | The tester issues an implicit send containing a "DMCC_SDS_DATA request" to the IUT which selects the appropriate data types according to the IUT capabilities. As the channel is busy, the IUT sends a DM-TX REQUEST to the tester which accepts it by answering DM-TX ACCEPT. |
| **Pass criteria** | The IUT sends DM-SDS DATA to the tester when changeover is accepted. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/5 Send acknowledged SDS after changeover<br>AND<br>(A.10/2 OR A.10/3) |
| **Preamble** | idle_to_RX_reservation |
| **Postamble** | Tester sends the DM-SDS ACK PDU and TX_Reservation_to_idle |

| **DMO_MSREP1_DMCC_SDS_BV_RR_04** | **Reference:** ETS 300 396-4 [1], 6.3.1.4 |
|---|---|
| **Purpose** | Initiate changeover then establish ongoing unacknowledged SDS |
| **Test description** | The tester issues an implicit send containing a "DMCC_SDS_UDATA request" to the IUT which selects the appropriate data types according to the IUT capabilities. As the channel is busy, the IUT sends a DM-TX REQUEST to the tester which accepts it by answering DM-TX ACCEPT. |
| **Pass criteria** | The IUT sends DM-SDS UDATA to the tester when changeover is accepted. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.13/5 Send unacknowledged SDS after changeover<br>AND<br>(A.9/1 OR A.10/1) |
| **Preamble** | idle_to_RX_reservation |
| **Postamble** | Tester sends the DM-SDS ACK PDU and TX_Reservation_to_idle |

### 6.2.3 MS-REP1 SDS Timer tests

#### 6.2.3.1 DT316 Response to DM-SDS DATA timer

| **DMO_MSREP1_DMCC_SDS_TI_01** | **Reference:** ETS 300 396-4 [1], 6.3.1.1.2 |
|---|---|
| **Purpose** | Time out on DT316 timer and retry an SDS DATA with acknowledged service |
| **Test description** | The tester issues an implicit send containing a "DMCC_SDS_DATA request" to the IUT which selects the appropriate data types according to the IUT capabilities. When the tester receives DM-SDS DATA, it waits and DOES NOT send back DM-SDS ACK to the IUT within DT316 |
| **Pass criteria**<br><br>**(M)** | The IUT sends a new DM-SDS DATA within a given time (greater than DT316) and for a number of times less than DN316 or DN317 attempt number, meaning the time out for SDS response was successful.<br>When DN316 or DN317 expires, the IUT sends a DMCC-SDS-REPORT |
| **Selection**<br>ETS 300 396-8-2 [2] | A.10/2 Send acknowledged SDS without or with data in ACK<br>OR<br>A.10/3 |
| **Preamble** | None |
| **Postamble** | The tester sends back DM-SDS ACK to the IUT |

## 6.3 DMO MS-REP1 layer 2: MAC layer

### 6.3.1 MS-REP1 MAC capability tests

Test group objective: to test DM-MAC basic capability: fill bit mechanism.

| **DMO_MSREP1_MAC_CA_01** | **Reference:** ETS 300 396-4 [1], 8.5.5 |
|---|---|
| **Purpose** | Fill bit addition mechanism in sending mode. |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate a CM or SDS call. The IUT sends a DMAC-SYNC containing DM-SETUP or DM-SETUP PRES or DM-SDS DATA or DM-SDS UDATA SDU. |
| **Pass criteria** | Check that DMAC-SYNC PDU sent by the IUT is correct, meaning that the IUT fill bit addition mechanism works properly |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_or_SDS_call |
| **Preamble** | None |
| **Postamble** | In the case of CM call:<br>1) terminate to establish the call if CM call with presence check<br>2) then TX_occupation_to_idle |

| **DMO_MSREP1_MAC_CA_02** | **Reference:** ETS 300 396-4 [1], 8.5.5 |
|---|---|
| **Purpose** | Fill bit deletion mechanism in sending mode. |
| **Test description** | The tester initiates a CM call by transmitting to the IUT a DMAC-SYNC PDU containing DM-SETUP PRES SDU. |
| **Pass criteria** | Check that the IUT sends back the DMAC-SYNC PDU containing the DM-CONNECT SDU, meaning that the IUT fill bit deletion mechanism works properly. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.2/6 IUT supports the receipt of call setup with presence check |
| **Preamble** | None |
| **Postamble** | RX_occupation_to_idle |

### 6.3.2 MS-REP1 MAC valid behaviour tests

#### 6.3.2.1 DM channel usage procedures

Test group objective: to test DM channel usage procedures of the DM-MAC entity.

| **DMO_MSREP1_MAC_BV_CU_01** | **Reference:** ETS 300 396-4 [1], 8.4.5.1 |
|---|---|
| **Purpose** | Initiation of CM or SDS call in DSB. |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate a CM or SDS call, according to IUT capabilities. |
| **Pass criteria**<br>**(M)** | Verify that the IUT sends the DM-SETUP or DM-SETUP PRES or DM-SDS DATA or DM-SDS UDATA SDU in all four timeslots in each signalling frame, except in the timeslot 4 of the final signalling frame. |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_or_SDS_call |
| **Preamble** | None |
| **Postamble** | In the case of CM call:<br>1) terminate to establish the call if CM call with presence check<br>2) then TX_occupation_to_idle |

| **DMO_MSREP1_MAC_BV_CU_02** | **Reference:** ETS 300 396-4 [1], 8.5.1, 8.4.5.1.7 |
|---|---|
| **Purpose** | Transmission of the DM-OCCUPIED SDU when the channel is busy. |
| **Test description** | The tester sends an implicit send to cause the IUT to initiate a CM call with or without presence check. |
| **Pass criteria** | Verify that once the channel is occupied, the IUT generates the DM-OCCUPIED SDU in time slot 3 of frames 6, 12 and 18. |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_call |
| **Preamble** | Idle_to_TX_occupation |
| **Postamble** | TX_occupation_to_idle |

| **DMO_MSREP1_MAC_BV_CU_03** | **Reference:** ETS 300 396-4 [1], 8.4.6.1 |
|---|---|
| **Purpose** | Generation and transmission of layer 2 DM-RESERVED SDU. |
| **Test description** | The IUT MAC starts transmitting the DM-RESERVED SDUs. |
| **Pass criteria** | Check that DMAC-SYNC containing DM-RESERVED SDUs are sent in timeslots 1 and 3 of frames 6, 12, and 18 using the same priority level as for the DM-TX CEASED SDUs. |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_call |
| **Preamble** | idle_to_TX_occupation |
| **Postamble** | TX occupation to idle |

| **DMO_MSREP1_MAC_BV_CU_04** | **Reference:** ETS 300 396-4 [1], 8.4.6.1 |
|---|---|
| **Purpose** | The sending of the DM-RESERVED SDU stopped when the reservation period expired. |
| **Test description** | The tester issues an implicit send to cause the IUT to send the DM-TX CEASED SDU. |
| **Pass criteria** | Verify that in CALL ACTIVE TX RESERVATION STATE, the IUT sends the DMAC-SYNC PDU containing the DM-RESERVED until the "reservation time remaining" equals 0. |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_call |
| **Preamble** | idle_to_TX_occupation |
| **Postamble** | None |

| **DMO_MSREP1_MAC_BV_CU_05** | **Reference:** ETS 300 396-4 [1], 8.4.6.2 |
|---|---|
| **Purpose** | Transmission of DM-SDS OCCUPIED SDU when transmitting SDS data. |
| **Test description** | The tester issues an implicit to cause the IUT to initiate a SDS call. Then the IUT sends the DMAC-SYNC PDU containing the DM-SDS DATA or DM-SDS UDATA SDU. |
| **Pass criteria** | During the transmission of the SDS data, the IUT issues DMAC-SYNC containing DM-SDS OCCUPIED SDU. It is transmitted in DSB in time slot 3 of frames 6 and 12 and in time slots 1 and 3 of frame 18. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.6/1 Short Data Service send data |
| **Preamble** | None |
| **Postamble** | None |

| **DMO_MSREP1_MAC_BV_CU_06** | **Reference:** ETS 300 396-4 [1], 8.4.7.1, 8.4.7.2, 8.5.6.1 |
|---|---|
| **Purpose** | Specified number of re-transmission is fulfilled with respect to the frame count down element. |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate a CM or SDS call. The IUT is transmitting a DMAC-SYNC PDU containing DM-SETUP or DM-SETUP PRES or DM-SDS DATA or DM-SDS UDATA SDU, repeated in the number of frames indicated by the frame count down element. |
| **Pass criteria** | The number of repeated transmissions in consecutive frames corresponds to the value provided in the frame count down element, and the PDU is not repeated after the one with frame count down element value 0 (absence observed during a period of time). |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_or_SDS_call |
| **Preamble** | None |
| **Postamble** | None |

| **DMO_MSREP1_MAC_BV_CU_07** | **Reference:** ETS 300 396-4 [1], 8.4.7.5, 8.5.4 |
|---|---|
| **Purpose** | Fragmentation. |
| **Test description** | The tester issues an implicit send such that the IUT initiates a SDS by transmitting DM-SDS DATA or DM-SDS UDATA PDU with data type 2, 3 or 4 in order to receive a fragmented message. |
| **Pass criteria** | DMAC-SYNC with Fragmentation flag set to value 1, followed by n times DMAC-FRAG then ending with DMAC-END |
| **Selection**<br>ETS 300 396-8-2 [2] | A.22/5 Fragmentation and user defined data 2, 3 or 4 and one<br>AND of the conditions expressed in: Initiate_SDS_call<br>(A.14/4 OR A.14/3 OR A.14/2)<br>AND Initiate_SDS_call |
| **Preamble** | None |
| **Postamble** | None |

| **DMO_MSREP1_MAC_BV_CU_08 (M)** | **Reference:** ETS 300 396-4 [1], 8.4.7.12 |
|---|---|
| **Purpose** | Channel A usage, normal mode. |
| **Test description** | The tester issues an implicit send such that the IUT initiates a CM or SDS call. The IUT sends a DMAC-SYNC containing a DM-SETUP or DM-SETUP PRES or DM-SDS DATA or DM-SDS UDATA PDU according to the IUT capabilities |
| **Pass criteria** | The A/B channel usage in DMAC-SYNC is set to value 00, meaning A channel usage, normal mode. |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_or_SDS_call |
| **Preamble** | None |
| **Postamble** | None |

### 6.3.2.2 Signalling messages procedures

Test group objective: to test the signalling procedures of the DM-MAC entity.

| **DMO_MSREP1_MAC_BV_SM_01** | **Reference:** ETS 300 396-4 [1], 8.5.2.1.1 | |
|---|---|---|
| **Purpose** | Addressing in synchronization burst for initiation of a group addressed call. | |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate a CM or SDS call. The IUT sends a DMAC-SYNC PDU containing a DM-SETUP or DM-SETUP PRES or DM-SDS DATA or DM-SDS UDATA SDU. | |
| **Pass criteria** | Verify the SSI and MNI destination elements in the DMAC-SYNC header and verify that the destination address type is set to 0. | |
| **Selection**<br>ETS 300 396-8-2 [2] | A.38/1<br>AND<br>Initiate_CM_or_SDS_call | Addressing in synchronization burst and one of the conditions expressed in Initiate_CM_or_SDS_call |
| **Preamble** | None | |
| **Postamble** | None | |

| **DMO_MSREP1_MAC_BV_SM_01b (M)** | **Reference:** ETS 300 396-4 [1], 8.5.2.1.1 | |
|---|---|---|
| **Purpose** | Addressing in synchronization burst. Repeater address | |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate a CM or SDS call. The IUT sends a DMAC-SYNC PDU containing a DM-SETUP or DM-SETUP PRES or DM-SDS DATA or DM-SDS UDATA SDU. | |
| **Pass criteria** | Verify that, in the DMAC-SYNC PDU, the communication type element is set to 01, and that the 10 bit repeater address is in SCH/H. | |
| **Selection**<br>ETS 300 396-8-2 [2] | A.38/1<br>AND<br>Initiate_CM_or_SDS_call | Addressing in synchronization burst and one of the conditions expressed in Initiate_CM_or_SDS_call |
| **Preamble** | None | |
| **Postamble** | None | |

| **DMO_MSREP1_MAC_BV_SM_01C (M)** | **Reference:** ETS 300 396-4 [1], 8.5.2.1.1 | |
|---|---|---|
| **Purpose** | Addressing in synchronization burst. Master/slave link flag | |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate a CM or SDS call. The IUT sends a DMAC-SYNC PDU containing a DM-SETUP or DM-SETUP PRES or DM-SDS DATA or DM-SDS UDATA SDU. | |
| **Pass criteria** | Verify that, in the DMAC-SYNC PDU, the master/slave link flag is set to 1, as the master is transmitting. | |
| **Selection**<br>ETS 300 396-8-2 [2] | A.38/1<br>AND<br>Initiate_CM_or_SDS_call | Addressing in synchronization burst and one of the conditions expressed in Initiate_CM_or_SDS_call |
| **Preamble** | None | |
| **Postamble** | None | |

| **DMO_MSREP1_MAC_BV_SM_02** | **Reference:** ETS 300 396-4 [1], 8.5.2.1.1 |
|---|---|
| **Purpose** | Synchronization burst for a random access message. |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate pre-emption. As the channel is busy, the IUT sends a DM-PREEMPT request (address = master) to the tester. |
| **Pass criteria** | Check that the DM-PREEMPT request is sent using DMAC-SYNC PDU |
| **Selection**<br>ETS 300 396-8-2 [2] | A.2/10 Initiate pre-emption in ongoing call |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | Tester issues a DM-REJECT followed by RX_occupation_to_idle |

| **DMO_MSREP1_MAC_BV_SM_03** | **Reference:** ETS 300 396-4 [1], 8.5.2.1.1 |
|---|---|
| **Purpose** | Addressing in synchronization burst for a random access message. |
| **Test description** | The tester issues an implicit to cause the IUT to initiate a CM call. The IUT sends DM-PREEMPT (address = master) to the tester. |
| **Pass criteria** | The destination address of the DMAC-SYNC containing DM-PREEMPT sent by the IUT is the current master DM-MS layer 2 address. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.38/1 Addressing in synchronization burst and Initiate pre-emption in ongoing call<br>AND and one of the conditions expressed in:<br>A.2/12 Initiate_CM_call<br>AND<br>Initiate_CM_call |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | Tester issues a DM-REJECT followed by RX_occupation_to_idle |

| **DMO_MSREP1_MAC_BV_SM_04** | **Reference:** ETS 300 396-4 [1], 8.5.2.1.1 |
|---|---|
| **Purpose** | Addressing in synchronization burst in the DM-OCCUPIED PDU. |
| **Test description** | The tester sends an implicit send to cause the IUT to initiate a CM call. The IUT sends the DMAC-SYNC PDU containing the DM-SETUP or DM-SETUP PRES SDU. Once the call is established ( the channel is busy), the IUT sends the DMAC-SYNC PDU containing the DM-OCCUPIED SDU. |
| **Pass criteria** | The MNI and source address elements in a DMAC-SYNC containing DM-OCCUPIED SDU are the same as the ones used in the DM-SETUP. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.38/1 Addressing in synchronization burst<br>AND and one of the conditions expressed in:<br>Initiate_CM_call Initiate_CM_call |
| **Preamble** | None |
| **Postamble** | TX_occupation_to_idle |

| **DMO_MSREP1_MAC_BV_SM_05 (M)** | **Reference:** ETS 300 396-4 [1], 8.4.7.5, 8.5.4.1 |
|---|---|
| **Purpose** | Fragmentation PDUs are sent in consecutive frames. |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate a SDS call with fragmentation. |
| **Pass criteria** | Verify that the DMAC-FRAG PDUs and DMAC-END PDU are sent in consecutive slot 1 of frames 1 to 17. |
| **Selection**<br>ETS 300 396-8-2 [2]: | A.38/5 AND Fragmentation and<br>(A.13/2 OR User defined data 4 or 2 or 3 and<br>A.13/3 OR<br>A.13/4)<br>AND<br>(A.9/2 OR A.9/3) Send acknowledged SDS with or without data in ACK |
| **Preamble** | None |
| **Postamble** | None |

| **DMO_MSREP1_MAC_BV_SM_06** | **Reference:** ETS 300 396-4 [1], 8.4.7.5, 8.5.4.1 |
|---|---|
| **Purpose** | For acknowledged data message sent using fragmentation, if the acknowledge is sent to the IUT then no re-transmission takes place. |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate a SDS call with fragmentation. The IUT sends the DMAC-SYNC, DMAC FRAG and DMAC END PDUs. |
| **Pass criteria** | Verify that after receipt of the acknowledge SDU, the IUT does not re-transmit the SDS data.. |
| **Selection**<br>ETS 300 396-8-2 [2]: | A.38/5 AND Fragmentation and<br>(A.13/2 OR User defined data 4 or 2 or 3 and<br>A.13/3 OR<br>A.13/4)<br>AND<br>(A.9/2 OR A.9/3) Send acknowledged SDS with or without data in ACK |
| **Preamble** | None |
| **Postamble** | None |

| **DMO_MSREP1_MAC_BV_SM_07** | **Reference:** ETS 300 396-4 [1], 8.5.4.2 |
|---|---|
| **Purpose** | Reconstruction procedure for acknowledged SDS data messages. |
| **Test description** | The tester sends a fragmented SDS data type 2 3 or 4 message. |
| **Pass criteria** | Check that the IUT sends back a DMAC-SYNC containing SDS-DATA ACK, indicating that the message was received without error. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.38/6 AND Reconstruction and<br>A.13/2 AND User defined data 2 and<br>A.13/3 AND User defined data 3 and<br>A.13/4 AND User defined data 4 and<br>(A.11/2 OR Receive acknowledged SDS with or<br>A.11/3) without data in ACK |
| **Preamble** | None |
| **Postamble** | None |

| **DMO_MSREP1_MAC_BV_SM_08** | **Reference:** ETS 300 396-4 [1], 8.5.7.3.6 |
|---|---|
| **Purpose** | Abandoning random access attempt. (DN213) |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate pre-emption. The IUT sends DM-PREEMPT request (address = master) to the tester. The tester does not answer the request by DM-PRE ACCEPT |
| **Pass criteria** | The IUT stops sending DMAC-SYNC containing DM-PREEMPT after DN213 times for a non emergency message and 2*DN213 for an emergency message. |
| **Selection**<br>ETS 300 396-8-2 [2] | A.2/12 Initiate pre-emption in ongoing call |
| **Preamble** | idle_to_RX_occupation |
| **Postamble** | None |

| **DMO_MSREP1_MAC_BV_SM_09** | **Reference:** ETS 300 396-4 [1], 8.5.7.2.1 |
|---|---|
| **Purpose** | Pre-emption flag in the DM-OCCUPIED SDU. |
| **Test description** | In TX occupation state, the IUT generates and sends the DMAC-SYNC PDU containing the DM-OCCUPIED SDU. |
| **Pass criteria** | Verify that when generating the DM-OCCUPIED SDU, the IUT set the pre-emption request flag to 1. |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_call |
| **Preamble** | idle_to_TX_occupation |
| **Postamble** | TX_occupation_to_idle |

| **DMO_MSREP1_MAC_BV_SM_10** | **Reference:** ETS 300 396-4 [1], 8.5.7.2.1 |
|---|---|
| **Purpose** | Request and change over flags in the DM-RESERVED SDU. |
| **Test description** | In TX reservation state, the IUT generates and sends the DMAC-SYNC PDU containing the DM-RESERVED SDU. |
| **Pass criteria** | Verify that when generating the DM-RESERVED SDU, the IUT set the requests flag and the changeover flag to 1. |
| **Selection**<br>ETS 300 396-8-2 [2] | Initiate_CM_call |
| **Preamble** | idle_to_TX_Reservation |
| **Postamble** | TX_Reservation_to_idle |

| **DMO_MSREP1_MAC_BV_SM_11** | **Reference:** ETS 300 396-4 [1], subclause 8.5.7.3.6 |
|---|---|
| **Purpose** | Cease random access attempt for timing request after receipt of a rejection. |
| **Test description** | The tester issues an implicit send to cause the IUT to initiate a timing change request. The IUT sends the DMAC-SYNC PDU containing the DM-TIMING REQUEST SDU, to the tester that answers the DMAC-SYNC PDU containing the DM-TIMING ACK SDU with a reject. |
| **Pass criteria** | Verify that the IUT accept this rejection and does not send the timing change request any more. |
| **Selection**<br>ETS 300 396-8-2 [2] | IUT accepts CM call. |
| **Preamble** | idle_to_RX_Occupation |
| **Postamble** | RX_Occupation_to_idle |

### 6.3.3 MS-REP1 MAC timer tests

| **DMO_MSREP1_MAC_TI_01 (M)** | **Reference:** ETS 300 396-4 [1], 8.5.7.2.3 |
|---|---|
| **Purpose** | Response to a pre-emption request within time DT211. |
| **Test description** | The tester sends a DM-PREEMPT to the IUT, containing the address of the master. The IUT sends back DM-PRE ACCEPT |
| **Pass criteria** | check that the IUT MAC sends back DMAC-SYNC containing DM-PRE ACCEPT within time DT211minus 3 frames, and that it repeats the same DM-PRE ACCEPT SDU the number of frames specified |
| **Selection**<br>ETS 300 396-8-2 [2] | A.2/11 Accept call pre-emption |
| **Preamble** | idle_to_TX_occupation |
| **Postamble** | RX_Reservation_to_idle |

## Annex A (informative): Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

- ETS 300 396-1: "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 1: General network design".

## History

| Document history | | | |
|---|---|---|---|
| October 1999 | Public Enquiry | PE 200007: | 1999-10-13 to 2000-02-11 |
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