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**Terrestrial Trunked Radio (TETRA);
Conformance testing specification;
Part 4: Protocol testing specification for
Direct Mode Operation (DMO);
Sub-part 2: Abstract Test Suites (ATS) for Mobile Station to
Mobile Station (MS-MS) Air Interface (AI)**

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Foreword

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

This ETS consists of 4 parts as follows:

Part 1: "Radio";

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

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

This ETS contains the Abstract Test Suites (ATS) to test the TETRA Direct Mode Operation (DMO) MS to MS protocol at layer 3, called Direct Mode Call Control (DMCC) and the MS to MS protocol at layer 2, the Medium Access Control (MAC) protocol. The DMCC and MAC protocols are specified in ETS 300 396-1 [1] and in ETS 300 396-3 [2]. The Test Suite Structure (TSS) and Test Purposes (TPs) for these ATSs are defined in ETS 300 394-4-1 [3].

The objective of these test specifications are 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 [5], ISO/IEC 9646-2 [6], ISO/IEC 9646-3 [7] and ISO/IEC 9646-5 [8], as well as the ETSI rules for conformance testing, ETS 300 406 [4] and ETR 141 [9] are used as a basis for the test methodology.

Annex A provides the Tree and Tabular Combined Notation (TTCN) part of these two ATSs.

Annex B provides the Partial Protocol Implementation eXtra Information for Testing (PIXIT) Proforma of this ATS.

Annex C provides the Protocol Conformance Test Report (PCTR) Proforma of this ATS.

2 References

2.1 Normative 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 300 396-1 (1996): "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 1: General network design".
- [2] ETS 300 396-3 (1997): "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 3: Mobile Station to Mobile Station (MS-MS) Air Interface (AI) protocol".
- [3] ETS 300 394-4-1 (1998): "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)".
- [4] ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".
- [5] ISO/IEC 9646-1 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 1: General concepts". (See also CCITT Recommendation X.290 (1991)).
- [6] ISO/IEC 9646-2 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 2: Abstract Test Suite specification". (See also CCITT Recommendation X.291 (1991)).
- [7] ISO/IEC 9646-3 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 3: The Tree and Tabular Combined Notation (TTCN)". (See also CCITT Recommendation X.292 (1992)).

- [8] ISO/IEC 9646-5 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 5: Requirements on test laboratories and clients for the conformance assessment process". (See also CCITT Recommendation X.292 (1992)).

2.2 Other reference

- [9] ETR 141 (1994): "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; The Tree and Tabular Combined Notation (TTCN) style guide".

3 Definitions and abbreviations

3.1 TETRA definitions

For the purposes of this ETS, the definitions given in ETS 300 396-3 [2] apply.

3.2 TETRA abbreviations

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

| | |
|------|--------------------------|
| CC | Call Control |
| DMCC | Direct Mode Call Control |
| MAC | Medium Access Control |
| MS | Mobile Station |
| SDS | Short Data Service |
| SDU | Service Data Unit |

3.3 ISO 9646 definitions

For the purposes of this ETS the following ISO/IEC 9646-1 [5] definitions apply:

Abstract Test Suite (ATS)
Abstract Test Method (ATM)
Implementation Conformance Statement (ICS)
Implementation Under Test (IUT)
Implementation eXtra Information for Testing (IXIT)
Lower Tester (LT)
PICS proforma
PIXIT proforma
Point of Control and Observation (PCO)
Protocol Implementation Conformance Statement (PICS)
Protocol Implementation eXtra Information for Testing (PIXIT)
Service Access Point (SAP)
Single Party Testing (SPyT)
System Under Test (SUT)
Upper Tester (UT)

For the purposes of this ETS the following ISO/IEC 9646-3 [7] definitions apply:

TTCN.GR
TTCN.MP

For the purposes of this ETS the following ISO/IEC 9646-5 [8] definitions apply:

Protocol Conformance Test Report (PCTR)
PCTR proforma

3.4 ISO 9646 abbreviations

For the purposes of this ETS the following ISO/IEC 9646-1 [5] abbreviations apply:

| | |
|-------|---|
| ASP | Abstract Service Primitive |
| ATM | Abstract Test Method |
| ATS | Abstract Test Suite |
| IUT | Implementation Under Test |
| LT | Lower Tester |
| PCO | Point of Control and Observation |
| PDU | Protocol Data Unit |
| PICS | Protocol Implementation Conformance Statements |
| PIXIT | Protocol Implementation eXtra Information for Testing |
| SAP | Service Access Point |
| SPyT | Single Party Testing |
| SUT | System Under Test |
| TC | Test Case |
| TP | Test Purpose |
| TTCN | Tree and Tabular Combined Notation |
| TSS | Test Suite Structure |
| UT | Upper Tester |

For the purposes of this ETS the following ISO/IEC 9646-5 [8] abbreviations apply:

| | |
|------|----------------------------------|
| PCTR | Protocol Conformance Test Report |
|------|----------------------------------|

4 Abstract Test Method (ATM)

4.1 ATM for the DMCC ATS

This clause describes the ATM used for testing the TETRA DMCC protocol. It is the embedded variant of the remote test method used in Single Party Testing (SPyT) context, as defined in ISO/IEC 9646-2 [6], clause 11. This test method has been selected, because:

- this test method implies no specific requirements from the Implementation Under Test (IUT);
- the upper Service Access Point (SAP) of the IUT cannot be directly observed;
- the variety of the possible TETRA implementations is a serious technical obstacle for the adoption of a different ATM;
- this test method places minimum limitations in the realization of conformance testing.

The selected test method is illustrated in figure 1.

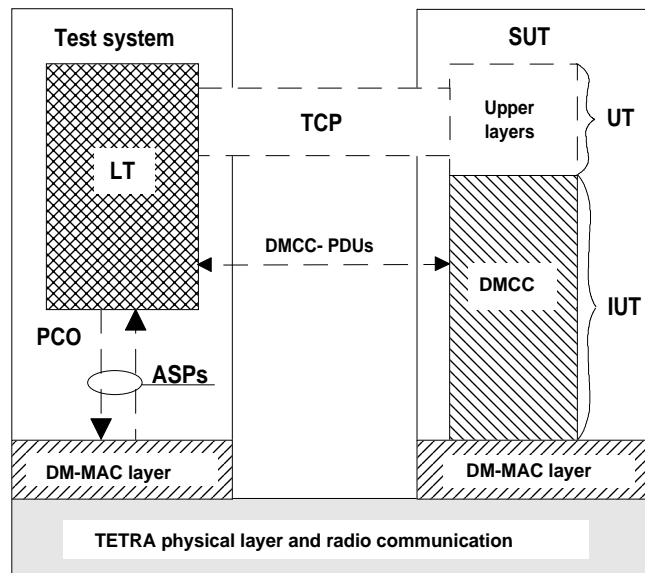


Figure 1: Remote SPyT test method for TETRA DMCC protocol

4.1.1 Lower Tester (LT)

A LT is located in a remote TETRA test system. It controls and observes the behaviour of the IUT.

4.1.2 Upper Tester (UT)

There is no explicit UT in the remote test method, but the layers above inside the System Under Test (SUT) are used implicitly for testing the DMCC layer.

4.1.3 Test Coordination Procedures (TCP)

The implicit send events defined by the provider of an implementation in annex B serve the purpose of the TCP. They are used as an input to the IUT communicating with the UT to initiate test events at the DMCC protocol layer.

4.1.4 Point of Control and Observation (PCO)

The PCOs are located inside the protocol.

All test events at the PCOs carrying service user data are specified in terms of PDUs. The mapping of the PDUs to possible Medium Access Control (MAC) layer service primitives is left to the test implementation. Additionally some Abstract Service Primitives (ASPs) are defined for control and observation purposes.

4.2 ATM for the MAC ATS

This clause describes the ATM used for testing the MAC layer protocol. It is the embedded variant of the remote test method used in Single Party Testing (SPyT) context, as defined in ISO/IEC 9646-2 [6], clause 11. This test method has been selected, because:

- this test method implies no specific requirements from the Implementation Under Test (IUT);
- the upper Service Access Point (SAP) of the IUT cannot be directly observed;
- the variety of the possible TETRA implementations is a serious technical obstacle for the adoption of a different ATM;
- this test method places minimum limitations in the realization of conformance testing.

The selected test method is illustrated in figure 2.

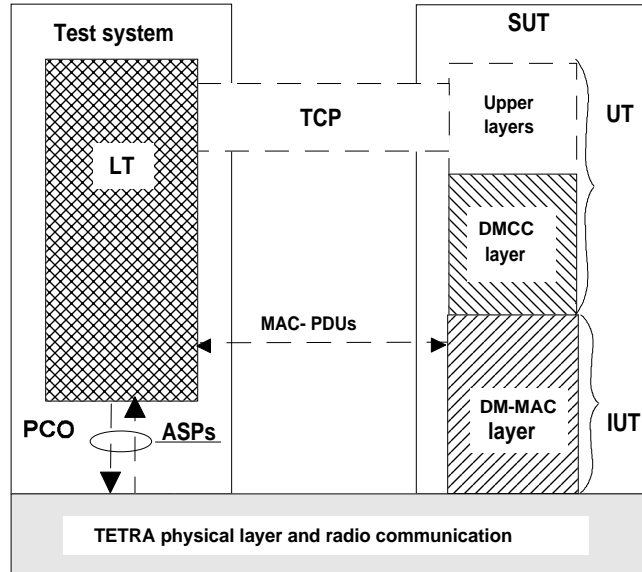


Figure 2: Remote SPyT test method for TETRA DMO MAC layer

4.2.1 Lower Tester (LT)

A LT is located in a remote TETRA test system. It controls and observes the behaviour of the IUT.

4.2.2 Upper Tester (UT)

There is no explicit UT in the remote test method, but the layers above inside the System Under Test (SUT) are used implicitly for testing the MAC layer.

4.2.3 Test Coordination Procedures (TCP)

The implicit send events defined by the provider of an implementation in annex B serve the purpose of the TCP. They are used as an input to the IUT communicating with the UT to initiate test events at the DMO MAC layer.

4.2.4 Point of Control and Observation (PCO)

All test events at the PCO carrying service user data are specified in terms of MAC layer PDUs. Only few Abstract Service Primitives (ASPs) are defined for control or observation purposes. The mapping of the MAC PDUs into the physical layer frame structure is left to the test implementation.

5 ATS conventions

This clause describes the conventions applied to define the two ATSs and gives the naming conventions chosen for the different elements of the ATSs.

The ATS conventions are intended to give a better understanding of the ATS but they describe also the conventions made for the development of the ATS, thus for any later maintenance purposes or further development of the ATS, the conventions described in this clause shall be considered.

5.1 Naming conventions

5.1.1 Declarations part

This subclause describes the naming conventions chosen for the elements of the ATS declarations part.

5.1.1.1 Test suite type and structured type definitions

The test suite type and test suite structured type identifiers describe the information elements, and each whole word included in the name is written in lowercase starting by an uppercase letter:

| | | |
|----------|---------------------|------------------|
| EXAMPLE: | Priority_Level_Type | simple type; |
| | SSI_Type | simple type; |
| | ITSI_Type | structured type. |

In the case an abbreviation is included in the declaration name, there is an underscore ("_") before and/or after it, separating it from the rest of the identifier. This rule with abbreviations apply to all the naming conventions in the whole test suite.

5.1.1.2 Test suite operations definitions

The test suite operation identifiers are composed of strings in uppercase letters starting by the uppercase string "TSO_". The different strings in the definition are separated with underscores.

EXAMPLE: TSO_RADIO_LINK_FAILURE

5.1.1.3 Test suite parameter declarations

The test suite parameter identifiers are composed of strings in uppercase letters starting by the uppercase string "PIC_" or "PIX_" and separated by underscores.

If the test suite parameter references a PICS item, the prefix "PIC_" is used.

EXAMPLE 1: PIC_INDIVIDUAL_CALL.

If the test suite parameter references a PIXIT item, the prefix "PIX_" is used.

EXAMPLE 2: PIX_MS_ITSI.

Complete names as defined in the specifications are used.

5.1.1.4 Test case selection expression definitions

The naming conventions for the test case selection expression definitions use free text starting with an uppercase letter. The name of the expression shall explain clearly the selection rule. The test case selection expressions are generally logical combinations of the PICS element definitions.

5.1.1.5 Test suite constant declarations

The test suite constant identifiers are composed of strings in uppercase letters starting by the uppercase string "TSC_".

EXAMPLE: TSC_RESERVED2.

Complete names as defined in the specifications are used. However, in the parameters including a dot character, the dot is replaced by an underscore.

5.1.1.6 Test suite variable declarations

The test suite variable identifiers are composed of string in lowercase letters starting by the lowercase string "tsv_".

If the test suite variable represents a system parameter or value, the name defined in the specifications is used. However, in the variables including a dot character, the dot is replaced by an underscore.

5.1.1.7 Test case variable declarations

The test case variable identifiers are composed of strings in lowercase letters starting by the lowercase string "tcv_".

EXAMPLE: tcv_counter.

5.1.1.8 PCO declarations

The point of control and observation identifiers are composed of three to six capital letters, beginning with an "L", as there are only LTs.

EXAMPLE: LDMCC Represents a PCO on DMCC for call control PDUs as LT
in the test equipment.

5.1.1.9 Timer declarations

Two kinds of timers can be distinguished:

1) standardized:

Those defined in the standard, e.g. DT303, use the same name as in the standard, beginning with capital "DT".

As there is a tolerance margin accepted for these timers, two values are needed:

- the minimum value allowed, which will use the suffix "_Min";
- the maximum value allowed, which will use the suffix "_Max".

EXAMPLE 1: DT303_Min, DT303_Max.

2) non-standardized:

Those not defined in the standard, i.e. for execution use, e.g. a timer waiting for a response. These timers begin with the prefix "T_", followed by a string in lowercase letters with each word in the following string starting with an uppercase letter.

EXAMPLE 2: T_IUT_Response.
 T_NoResponse.

5.1.1.10 ASP type definitions

ASP definitions follow the specification in the ETS 300 396-3 [2] when a corresponding definition exists. If not, a free name is used.

5.1.1.11 PDU type definitions

The identifier of a PDU is given in a string in uppercase letters, which represents the layer message.

EXAMPLE: DM_U_SETUP_Typeor the SETUP layer 3 PDU;
 DM_DISCONNECT_Type the DISCONNECT layer 3 PDU.

5.1.1.12 Alias definitions

No alias definitions are used in the test suite.

5.1.2 Constraints part

This subclause describes the naming conventions chosen for the elements of the ATS constraints part.

Constraint identifiers commence with uppercase. The remaining part of the name is separated from the beginning with an underscore and is written in lowercase with each word starting with an uppercase letter.

Identifier names of elements concerning the same subject have equivalent names in the declaration and the constraint part. The postfix `_R` or `_S` are added at the end of the name to indicate whether the constraint is sent (`_S`) or received (`_R`) by the tester:

- Declaration part: `DM_CONNECT_Type;`
- Constraint part: `DM_CONNECT_R.`

The name of the modified constraint describes the particularity of the modified constraint:

EXAMPLE 1: Declaration part: `DM_PRE_ACCEPT_Type;`
 Constraint part: `DM_PRE_ACCEPT_OngoingCall_S.`

If formal parameter lists are used, the variable names are written in lowercase. The variable name is the same as the name of the element it is representing starting with prefix `"cpa_"`.

EXAMPLE 2: `cpa_New_Call_Preemption.`

5.1.3 Dynamic part

This subclause describes the naming conventions chosen for the elements of the ATS dynamic part.

5.1.3.1 Test case identifier

The identifier of a TC is built according to the test purpose name, as in table 1:

Table 1: TC naming convention

| DMO/<ts>/<fm>/<ss>/<tt>/<tsg>/<nn> | | |
|--|-------------------------------|---|
| <ts> = test suite type | MSMS REPx GATE | MS to MS Repeater type x (see 300 394-4-4) Gateway (see 300 394-4-7) |
| <fm> = functional module or subentity (layer 3 only) | DMCC MAC | Direct Mode Call Control (layer 3) Upper MAC (layer 2) |
| <ss> = test group | letters such as: CM SDS | abbreviation of the group name (optional) Circuit Mode (layer 3) Short Data Service (layer 3) |
| tt = Type of testing | CA BV BI TI | Capability Tests Valid Behaviour Tests Invalid Behaviour Tests Timer expiry and counter mismatch tests |
| <tsg> = test subgroup | two letters | subgroup name ((optional) |
| <nn> = sequential number | 01-99 | Test Purpose Number |

5.1.3.2 Test step identifier

The test step identifier is built with a string of lowercase letters led by a string of capital letter and joined by an underscore character. The first string indicates the main function of the test step; e.g. PRE for preamble, PST for postamble, CS for check state steps, LTS for local tree name and STP for general step. The second string indicates the meaning of the step.

EXAMPLES: PRE_Idle_To_TX_Occupation;
 PST_TX_Occupation_Reservation_To_Idle;
 CS_RX_Resrvation;
 LTS_Send_SDS_Data.

5.1.3.3 Default identifier

Two default identifiers are used, namely DMCC_OtherwiseFail and PRE_PST_OtherwiseFail.

5.2 Implementation conventions

Fully functional underlying LLC protocol is assumed from the test system.

The DMCC PDUs are assumed to be mapped to LLC layer service primitives in the test system implementation and therefore are not part of the ATS.

5.3 TC and TP naming

There is a single name for both the TC identifiers and the TP identifiers.

Annex A (normative): **ATS for TETRA DMO MS-MS DMCC and MAC protocols**

The ATSs are written in TTCN according to ISO/IEC 9646-3.

One ATS itself contains a test suite overview part which provides additional information and references.

A.1 ATS for TETRA DMO MS-MS DMCC protocol

A.1.1 The TTCN Graphical form (TTCN.GR)

The TTCN.GR representation of this ATS is contained in an Adobe Portable Document Format™ file (msms_dmcc05.PDF contained in archive 39442e1.ZIP) which accompanies the present document.

A.1.2 The TTCN Machine Processable form (TTCN.MP)

The TTCN.MP representation corresponding to this ATS is contained in an ASCII file (msms_dmcc04.MP contained in archive 39442e1.ZIP) which accompanies the present document.

NOTE: According to ISO/IEC 9646-3, in case of a conflict in interpretation of the operational semantics of TTCN.GR and TTCN.MP, the operational semantics of the TTCN.GR representation takes precedence.

A.2 ATS for TETRA DMO MS-MS MAC protocol

A.2.1 The TTCN Graphical form (TTCN.GR)

The TTCN.GR representation of this ATS is contained in an Adobe Portable Document Format™ file (msms_mac04.PDF contained in archive 39442e1.ZIP) which accompanies the present document.

A.2.2 The TTCN Machine Processable form (TTCN.MP)

The TTCN.MP representation corresponding to this ATS is contained in an ASCII file (msms_mac05.MP contained in archive 39442e1.ZIP) which accompanies the present document.

NOTE: According to ISO/IEC 9646-3, in case of a conflict in interpretation of the operational semantics of TTCN.GR and TTCN.MP, the operational semantics of the TTCN.GR representation takes precedence.

Annex B (normative): Partial PIXIT proforma for TETRA DMO MS-MS DMCC and MAC protocol

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

The PIXIT proformas are based on ISO/IEC 9646-5. Any additional information needed can be found in this international standard document.

B.1 Partial PIXIT proforma for TETRA DMO MS-MS DMCC protocol

B.1.1 Identification summary

Table B.1

| | |
|-----------------------|--|
| PIXIT number: | |
| Test laboratory name: | |
| Date of issue: | |
| Issued to: | |

B.1.2 ATS summary

Table B.2

| | |
|-------------------------|--------------------------------------|
| Protocol specification: | ETS 300 396-3 |
| Protocol to be tested: | |
| ATS specification: | ETS 300 394-4-2 |
| Abstract test method: | Remote test method, embedded variant |

B.1.3 Test laboratory

Table B.3

| | |
|---------------------------------|--|
| Test laboratory identification: | |
| Test laboratory manager: | |
| Means of testing: | |
| SAP address: | |

B.1.4 Client identification

Table B.4

| | |
|---------------------------|--|
| Client identification: | |
| Client test manager: | |
| Test facilities required: | |

B.1.5 SUT

Table B.5

| | |
|----------------------------------|--|
| Name: | |
| Version: | |
| SCS number: | |
| Machine configuration: | |
| Operating system identification: | |
| IUT identification: | |
| PICS reference for IUT: | |
| Limitations of the SUT: | |
| Environmental conditions: | |

B.1.6 Protocol layer information

B.1.6.1 Protocol identification

Table B.6

| | |
|------------------|--|
| Name: | TETRA - DMO - MS to MS Air Interface ETS 300 396-3 |
| Version: | |
| PICS references: | ETS 300 396-8-1 |

B.1.6.2 IUT information

B.1.6.2.1 Implicit send events

Table B.7: Implicit send events

| Item | PIXIT (See note) | Related implicit send message (PDU) | Invocation description |
|--|---------------------|--|------------------------|
| 1 | IMP_DM_PREEMPT | True if it is possible to cause the IUT to send a DM-PREEMPT PDU | |
| 2 | IMP_DM_RELEASE | True if it is possible to cause the IUT to send a DM-RELEASE PDU. | |
| 3 | IMP_DM_SDS_DATA | True if it is possible to cause the IUT to send a DM-SDS DATA PDU. | |
| 4 | IMP_DM_SDS_UDATA | True if it is possible to cause the IUT to send a DM-SDS UDATA PDU. | |
| 5 | IMP_DM_SETUP | True if it is possible to cause the IUT to send a DM-SETUP PDU. | |
| 6 | IMP_DM_SETUP_Group | True if it is possible to cause the IUT to send a DM-SETUP PDU to initiate a group call. | |
| 7 | IMP_DM_SETUP_PRES | True if it is possible to cause the IUT to send a DM-SETUP PRES PDU. | |
| 8 | IMP_DM_TX_CEASED | True if it is possible to cause the IUT to send a DM-TX CEASED PDU. | |
| 9 | IMP_DM_TX_REQUEST | True if it is possible to cause the IUT to send a DM-TX REQUEST PDU. | |
| NOTE: The PIXIT names for the implicit send events in this table are the same as those of the test steps in which the implicit send events are used. | | | |

B.1.6.2.2 Parameter values

Table B.8: Parameter values

| 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_DN303 | INTEGER | DN303 value [from 0 to 3] | |
| 3 | PIX_DN314 | INTEGER | DN314 value (1 to 6) | |
| 4 | PIX_DN316 | INTEGER | DN316 value (1 to 4) | |
| 5 | PIX_OTHER_TSI | TSI_Type | The TSI not recognized by the IUT and the tester. | |
| 6 | PIX_POWER_CLASSES | Power_Class_Type | The power class of the IUT. | |
| 7 | PIX_POWER_CONTROL_FLAG | Power_Control_Flag_Type | Power control flag, which indicate whether or not power control by slave is permitted. | |
| 8 | PIX_RESERVATION_TIME | Reservation_Time_Remaining_Type | Value of the reservation time remaining used by the master MS. | |
| 10 | PIX_UNACCEPTABLE_CIRCUIT_MODE_TYPE | Circuit_Mode_Type | Traffic channel type and interleaving depth not acceptable for the IUT. | |

Table B.9: SDS parameter values

| Item | Parameter | Parameter type | Explanation | Value or reference |
|------|---------------------------|--------------------------|---|--------------------|
| 1 | 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. | |
| 2 | PIX_SDS_DATA_1 | User_Defined_Data_1_Type | Value of SDS data type 1. | |
| 3 | PIX_SDS_DATA_1_FCS | FCS_Type | Value of the Frame Check Sequence for the SDS DATA 1 data. | |
| 4 | PIX_SDS_DATA_2 | User_Defined_Data_2_Type | Value of SDS data type 2. | |
| 5 | PIX_SDS_DATA_2_FCS | FCS_Type | Value of the Frame Check Sequence for the SDS DATA 2 data. | |
| 6 | PIX_SDS_DATA_3 | User_Defined_Data_3_Type | Value of SDS data type 3. | |
| 7 | PIX_SDS_DATA_3_FCS | FCS_Type | Value of the Frame Check Sequence for the SDS DATA 3 data. | |
| 8 | PIX_SDS_DATA_4 | User_Defined_Data_4_Type | Value of SDS data type 4. | |
| 9 | PIX_SDS_DATA_4_FCS | FCS_Type | Value of the Frame Check Sequence for the SDS DATA 4 data. | |
| 10 | PIX_SDS_DATA_4_LENGTH | Length_Indicator_Type | Length of the value of the SDS data type 4. | |
| 11 | PIX_SDS_CURRENTLY_TESTING | INTEGER | The type (1 to 4) of SDS data currently testing. | |

B.2 Partial PIXIT proforma for TETRA DMO MS-MS MAC protocol

B.2.1 Identification summary

Table B.10

| | |
|-----------------------|--|
| PIXIT number: | |
| Test laboratory name: | |
| Date of issue: | |
| Issued to: | |

B.2.2 ATS summary

Table B.11

| | |
|-------------------------|--------------------------------------|
| Protocol specification: | ETS 300 396-3 |
| Protocol to be tested: | |
| ATS specification: | ETS 300 394-4-3 |
| Abstract test method: | Remote test method, embedded variant |

B.2.3 Test laboratory

Table B.12

| | |
|---------------------------------|--|
| Test laboratory identification: | |
| Test laboratory manager: | |
| Means of testing: | |
| SAP address: | |

B.2.4 Client identification

Table B.13

| | |
|---------------------------|--|
| Client identification: | |
| Client test manager: | |
| Test facilities required: | |

B.2.5 SUT

Table B.14

| | |
|----------------------------------|--|
| Name: | |
| Version: | |
| SCS number: | |
| Machine configuration: | |
| Operating system identification: | |
| IUT identification: | |
| PICS reference for IUT: | |
| Limitations of the SUT: | |
| Environmental conditions: | |

B.2.6 Protocol layer information**B.2.6.1 Protocol identification****Table B.15**

| | |
|------------------|--|
| Name: | TETRA - DMO - MS to MS Air Interface ETS 300 396-3 |
| Version: | |
| PICS references: | ETS 300 396-8-1 |

B.2.6.2 IUT information**B.2.6.2.1 Implicit send events****Table B.16: Implicit send events**

| Item | PIXIT (See note) | Related implicit send message (PDU) | Invocation description |
|--|--------------------------|---|------------------------|
| 1 | IMP_SYNC_or_DATA_RELEASE | True if it is possible to cause the IUT to send a DM-RELEASE PDU in a DMAC-SYNC or DMAC-DATA PDU. | |
| 2 | IMP_SYNC_PREEMPT_ONGOING | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-PREEMPT SDU to pre-empt the ongoing call. | |
| 3 | IMP_SYNC_SETUP | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP SDU. | |
| 4 | IMP_SYNC_SETUP_PRES | /* True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SETUP PRES SDU. | |
| 5 | IMP_SYNC_SDS_DATA | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS DATA SDU. | |
| 6 | IMP_SYNC_SDS_UDATA | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-SDS UDATA SDU. | |
| 7 | IMP_SYNC_TIMING_REQUEST | True if it is possible to cause the IUT to send a DMAC-SYNC PDU containing a DM-TIMING REQUEST SDU. | |
| NOTE: The PIXIT names for the implicit send events in this table are the same as those of the test steps in which the implicit send events are used. | | | |

B.2.6.2.2 Parameter values

Table B.17: Parameter values

| 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_MS_SSI | SSI_Type | SSI of the IUT | |
| 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_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. | |
| 6 | PIX_SDS_DATA_2 | Oto4294967295_Type | Value of SDS data type 2. | |
| 7 | PIX_SDS_DATA_3 | INTEGER | Value of SDS data type 3. | |
| 8 | PIX_SDS_DATA_4 | User_Defined_Data_4_Type | Value of SDS data type 4. | |
| 9 | PIX_SDS_DATA_4_LENGTH | INTEGER | Length of the value of the SDS data type 4. | |
| 10 | PIX_SDS_CURRENTLY_TESTING | INTEGER | The type (1 to 4) of SDS data currently testing. | |
| 12 | PIX_TESTER_GSSI | SSI_Type | GSSI of the tester | |
| 11 | PIX_TESTER_MNI | MNI_Type | MNI of the tester | |
| 13 | PIX_TESTER_SSI | SSI_Type | SSI of the tester | |

Annex C (normative): Protocol Conformance Test Report (PCTR) proforma for TETRA DMO MS-MS DMCC and MAC protocol

Notwithstanding the provisions of the copyright clause related to the text of this ETS, ETSI grants that users of this ETS may freely reproduce the PCTR proforma in this annex so that it can be used for its intended purposes and may further publish the completed PCTR.

The PCTR Proformas are based on ISO/IEC 9646-5. Any additional information needed can be found in this referenced document.

C.1 PCTR proforma for TETRA DMO MS-MS DMCC protocol

C.1.1 Identification summary

C.1.1.1 Protocol conformance test report

Table C.1

| | |
|---------------------------------|--|
| PCTR number: | |
| PCTR date: | |
| Test laboratory identification: | |
| Accreditation status | |
| Accreditation reference | |
| Technical authority | |
| Signature: | |
| Test laboratory manager: | |
| Signature: | |

C.1.1.2 IUT identification

Table C.2

| | |
|-------------------------|--|
| Name: | |
| Version: | |
| Protocol specification: | |
| PICS: | |
| Previous PCTR if any: | |

C.1.1.3 Testing environment

Table C.3

| | |
|--------------------------------------|--------------------------------------|
| PIXIT number: | |
| ATS specification: | |
| Abstract test method: | Remote test method, embedded variant |
| Means of testing identification: | |
| Period of testing: | |
| Conformance log reference(s): | |
| Retention date for log reference(s): | |

C.1.1.4 Limits and reservation

Additional information relevant to the technical contents or further use of the test report, or the rights and obligations of the test laboratory and the client, may be given here. Such information may include restriction on the publication of the report.

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C.1.1.5 Comments

Additional comments may be given by either the client or the test laboratory on any of the contents of the PCTR, for example, to note disagreement between the two parties.

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C.1.2 IUT conformance status

This IUT has or has not been shown by conformance assessment to be non-conforming to the specified protocol specification.

Strike the appropriate words in this sentence. If the PICS for this IUT is consistent with the static conformance requirements as specified in clause C.3 in this report and there are no "FAIL" verdicts to be recorded in clause C.6 strike the words "has or". otherwise strike the words "or has not".

C.1.3 Static conformance summary

The PICS for this IUT is or is not consistent with the static conformance requirements in the specified protocol.

Strike the appropriate words in this sentence.

C.1.4 Dynamic conformance summary

The test campaign did or did not reveal errors in the IUT.

Strike the appropriate words in this sentence. If there are no "FAIL" verdicts to be recorded in clause C.6 of this report strike the words "did or" otherwise strike the words "or did not".

Summary of the results of groups of test:

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C.1.6 Test campaign report

Table C.4

| ATS reference | Selected | Run | Verdict | Observations (see note) |
|----------------------------|--|--------|---------|----------------------------|
| DMO_MSMS_DMCC_CM_BV_TR_02 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_BV_TR_03 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_BV_TR_04 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_BV_TR_05 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_BV_TR_06 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_BV_TR_07 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_BV_TR_08 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_BV_RR_01 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_BV_RR_02 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_BV_RR_03 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_BV_RR_04 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_TI_01 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_CM_TI_02 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_CA_01 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_ID_01 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_ID_02 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_ID_03 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_ID_04 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_ID_05 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_IB_01 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_IB_02 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_IB_03 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_IB_04 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RO_01 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RO_02 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RO_03 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RO_04 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RO_05 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RO_06 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RO_07 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RO_08 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_TR_01 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_TR_02 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_TR_03 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RR_01 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RR_02 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RR_03 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_BV_RR_04 | Yes/No | Yes/No | | |
| DMO_MSMS_DMCC_SDS_TI_01 | Yes/No | Yes/No | | |
| NOTE: | Reference to any observations made in clause C.7 in this report. | | | |

C.1.7 Observations

Additional information relevant to the technical content of the PCTR are given here.

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C.2 PCTR proforma for TETRA DMO MS-MS MAC protocol

C.2.1 Identification summary

C.2.1.1 Protocol conformance test report

Table C.5

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|---------------------------------|--|
| PCTR number: | |
| PCTR date: | |
| Test laboratory identification: | |
| Accreditation status | |
| Accreditation reference | |
| Technical authority | |
| Signature: | |
| Test laboratory manager: | |
| Signature: | |

C.2.1.2 IUT identification

Table C.6

| | |
|-------------------------|--|
| Name: | |
| Version: | |
| Protocol specification: | |
| PICS: | |
| Previous PCTR if any: | |

C.2.1.3 Testing environment

Table C.7

| | |
|--------------------------------------|--------------------------------------|
| PIXIT number: | |
| ATS specification: | |
| Abstract test method: | Remote test method, embedded variant |
| Means of testing identification: | |
| Period of testing: | |
| Conformance log reference(s): | |
| Retention date for log reference(s): | |

C.2.1.4 Limits and reservation

Additional information relevant to the technical contents or further use of the test report, or the rights and obligations of the test laboratory and the client, may be given here. Such information may include restriction on the publication of the report.

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C.2.1.5 Comments

Additional comments may be given by either the client or the test laboratory on any of the contents of the PCTR, for example, to note disagreement between the two parties.

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C.2.2 IUT conformance status

This IUT has or has not been shown by conformance assessment to be non-conforming to the specified protocol specification.

Strike the appropriate words in this sentence. If the PICS for this IUT is consistent with the static conformance requirements as specified in clause C.3 in this report and there are no "FAIL" verdicts to be recorded in clause C.6 strike the words "has or", otherwise strike the words "or has not".

C.2.3 Static conformance summary

The PICS for this IUT is or is not consistent with the static conformance requirements in the specified protocol.

Strike the appropriate words in this sentence.

C.2.4 Dynamic conformance summary

The test campaign did or did not reveal errors in the IUT.

Strike the appropriate words in this sentence. If there are no "FAIL" verdicts to be recorded in clause C.6 of this report strike the words "did or", otherwise strike the words "or did not".

Summary of the results of groups of test:

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C.2.5 Static conformance review report

If clause C.3 indicates non-conformance, this subclause itemizes the mismatches between the PICS and the static conformance requirements of the specified protocol specification.

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C.2.6 Test campaign report

Table C.8

| ATS reference | Selected | Run | Verdict | Observations (see note) |
|-----------------------|----------|--------|---------|----------------------------|
| DMO_MSMS_MAC_CA_01 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_CA_02 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_CU_01 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_CU_02 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_CU_03 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_CU_04 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_CU_05 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_CU_06 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_CU_07 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_CU_08 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_SM_01 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_SM_02 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_SM_03 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_SM_04 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_SM_05 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_SM_06 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_SM_07 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_SM_08 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_SM_09 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_SM_10 | Yes/No | Yes/No | | |
| DMO_MSMS_MAC_BV_TI_01 | Yes/No | Yes/No | | |

NOTE: Reference to any observations made in clause C.7 in this report.

History

| Document history | |
|------------------|--|
| November 1998 | Public Enquiry PE 9911: 1998-11-13 to 1999-03-12 |
| March 1999 | Vote V 9922: 1999-03-30 to 1999-05-28 |
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