



EUROPEAN
TELECOMMUNICATION
STANDARD

DRAFT
pr **ETS 300 394-4-2**

November 1998

Source: TETRA

Reference: DE/TETRA-02009-4-2

ICS: 33.020

Key words: TETRA, protocol, testing, TTCN, ATS, PIXIT

**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)**

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

Internet: secretariat@etsi.fr - <http://www.etsi.org>

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

Copyright Notification: No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1998. All rights reserved.

Contents

Foreword	5
1 Scope	7
2 References	7
2.1 Normative references	7
2.2 Other reference	8
3 Definitions and abbreviations	8
3.1 TETRA definitions	8
3.2 TETRA abbreviations	8
3.3 ISO 9646 definitions	8
3.4 ISO 9646 abbreviations	9
4 Abstract Test Method (ATM)	9
4.1 ATM for the DMCC ATS	9
4.1.1 Lower Tester (LT)	10
4.1.2 Upper Tester (UT)	10
4.1.3 Test Coordination Procedures (TCP)	10
4.1.4 Point of Control and Observation (PCO)	10
4.2 ATM for the MAC ATS	10
4.2.1 Lower Tester (LT)	11
4.2.2 Upper Tester (UT)	11
4.2.3 Test Coordination Procedures (TCP)	11
4.2.4 Point of Control and Observation (PCO)	11
5 ATS conventions	11
5.1 Naming conventions	11
5.1.1 Declarations part	11
5.1.1.1 Test suite type and structured type definitions	12
5.1.1.2 Test suite operations definitions	12
5.1.1.3 Test suite parameter declarations	12
5.1.1.4 Test case selection expression definitions	12
5.1.1.5 Test suite constant declarations	12
5.1.1.6 Test suite variable declarations	12
5.1.1.7 Test case variable declarations	13
5.1.1.8 PCO declarations	13
5.1.1.9 Timer declarations	13
5.1.1.10 ASP type definitions	13
5.1.1.11 PDU type definitions	13
5.1.1.12 Alias definitions	13
5.1.2 Constraints part	14
5.1.3 Dynamic part	14
5.1.3.1 Test case identifier	14
5.1.3.2 Test step identifier	15
5.1.3.3 Default identifier	15
5.2 Implementation conventions	15
5.3 TC and TP naming	15
Annex A (normative): ATS for TETRA DMO MS-MS DMCC and MAC protocols	16
A.1 ATS for TETRA DMO MS-MS DMCC protocol	16
A.1.1 The TTCN Graphical form (TTCN.GR)	16
A.1.2 The TTCN Machine Processable form (TTCN.MP)	16
A.2 ATS for TETRA DMO MS-MS MAC protocol	16

A.2.1	The TTCN Graphical form (TTCN.GR)	16
A.2.2	The TTCN Machine Processable form (TTCN.MP)	16
Annex B (normative):	Partial PIXIT proforma for TETRA DMO MS-MS DMCC and MAC protocol	17
B.1	Partial PIXIT proforma for TETRA DMO MS-MS DMCC protocol	17
B.1.1	Identification summary	17
B.1.2	ATS summary	17
B.1.3	Test laboratory	17
B.1.4	Client identification	17
B.1.5	SUT	18
B.1.6	Protocol layer information	18
B.1.6.1	Protocol identification	18
B.1.6.2	IUT information	18
B.1.6.2.1	Implicit send events	18
B.1.6.2.2	Parameter values	19
B.2	Partial PIXIT proforma for TETRA DMO MS-MS MAC protocol	20
B.2.1	Identification summary	20
B.2.2	ATS summary	20
B.2.3	Test laboratory	20
B.2.4	Client identification	20
B.2.5	SUT	20
B.2.6	Protocol layer information	21
B.2.6.1	Protocol identification	21
B.2.6.2	IUT information	21
B.2.6.2.1	Implicit send events	21
B.2.6.2.2	Parameter values	22
Annex C (normative):	Protocol Conformance Test Report (PCTR) proforma for TETRA DMO MS-MS DMCC and MAC protocol	23
C.1	PCTR proforma for TETRA DMO MS-MS DMCC protocol	23
C.1.1	Identification summary	23
C.1.1.1	Protocol conformance test report	23
C.1.1.2	IUT identification	23
C.1.1.3	Testing environment	23
C.1.1.4	Limits and reservation	24
C.1.1.5	Comments	24
C.1.2	IUT conformance status	24
C.1.3	Static conformance summary	24
C.1.4	Dynamic conformance summary	24
C.1.5	Static conformance review report	25
C.1.6	Test campaign report	25
C.1.7	Observations	28
C.2	PCTR proforma for TETRA DMO MS-MS MAC protocol	28
C.2.1	Identification summary	28
C.2.1.1	Protocol conformance test report	28
C.2.1.2	IUT identification	28
C.2.1.3	Testing environment	28
C.2.1.4	Limits and reservation	29
C.2.1.5	Comments	29
C.2.2	IUT conformance status	29
C.2.3	Static conformance summary	29
C.2.4	Dynamic conformance summary	29
C.2.5	Static conformance review report	30
C.2.6	Test campaign report	30
C.2.7	Observations	31
History	32

Foreword

This 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 Public Enquiry 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

Blank page

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.

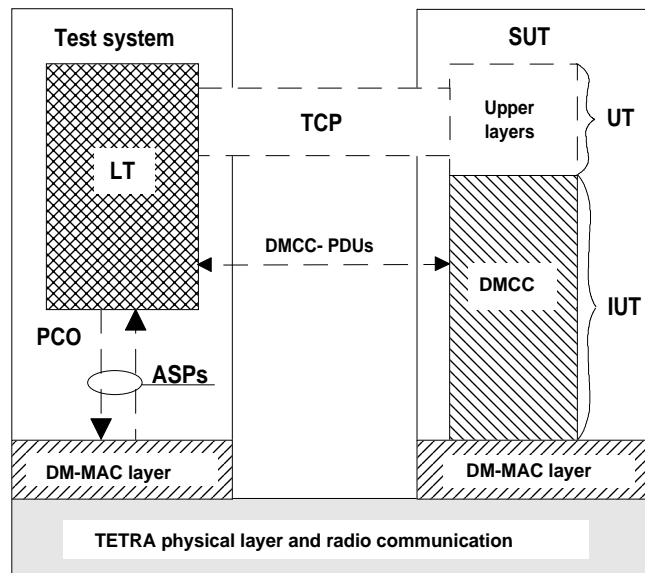


Figure 1: Remote SPyT test method for TETRA DMCC protocol

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.

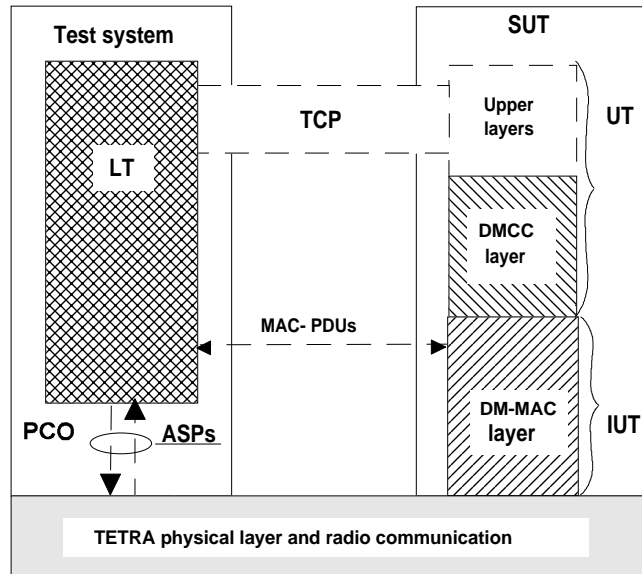


Figure 2: Remote SPyT test method for TETRA DMO MAC layer

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 [7].

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 [7], 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 [7], 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 [8]. 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 [2]
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 [2]
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 [2]
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 [2]
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 [8]. 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.

.....
.....
.....
.....
.....

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.

.....
.....
.....
.....
.....

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:

.....
.....
.....
.....
.....

C.1.5 Static conformance review report

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

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

C.1.6 Test campaign report

Table C.4

ATS reference	Selected	Run	Verdict	Observations (see note)
DMO_MSMS_DMCC_CM_CA_01	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_CA_02	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_CA_03	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_ID_01	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_ID_02	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_ID_03	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_ID_04	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_ID_05	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_ID_06	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_IB_01	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_TXO_01	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_TXO_02	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_TXO_03	Yes/No	Yes/No		
(continued)				

Table C.4 (continued)

ATS reference	Selected	Run	Verdict	Observations (see note)
DMO_MSMS_DMCC_CM_BV_TXO_04	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_TXO_05	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_TXO_06	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_RO_01	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_RO_02	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_RO_03	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_RO_04	Yes/No	Yes/No		
DMO_MSMS_DMCC_CM_BV_TR_01	Yes/No	Yes/No		
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		

(continued)

Table C.4 (concluded)

ATS reference	Selected	Run	Verdict	Observations (see note)
DMO_MSMS_DMCC_SDS_BV_ID_04	Yes/No	Yes/No		
DMO_MSMS_DMCC_SDS_BV_ID_05				
DMO_MSMS_DMCC_SDS_BV_IB_01				
DMO_MSMS_DMCC_SDS_BV_IB_02				
DMO_MSMS_DMCC_SDS_BV_IB_03				
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.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

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

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.

.....
.....
.....
.....
.....

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.

.....
.....
.....
.....
.....

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:

.....
.....
.....
.....
.....

C.2.5 Static conformance review report

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

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

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		

(continued)

History

Document history	
November 1998	Public Enquiry PE 9911: 1998-11-13 to 1999-03-12