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**Terrestrial Trunked Radio (TETRA);
Technical requirements for Direct Mode Operation (DMO);
Part 8: Protocol Implementation Conformance Statement (PICS)
proforma specification;
Sub-part 1: Mobile Station to Mobile Station (MS-MS)
Air Interface (AI)**

ETSI

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Terrestrial Trunked Radio (TETRA) Project of the European Telecommunications Standards Institute (ETSI).

The present document is part 8 of a multi-part ETS covering the Direct Mode Operation (DMO) of TETRA, as identified below:

Part 1: "General network design";

Part 2: "Radio aspects";

Part 3: "Mobile Station to Mobile Station (MS-MS) Air Interface (AI) protocol";

Part 4: "Type 1 repeater air interface";

Part 5: "Gateway air interface";

Part 6: "Security";

Part 7: "Type 2 repeater air interface";

Part 8: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 9: "Service and Description Language (SDL) model";

Part 10: "Managed Direct Mode Operation (DMO)".

Transposition dates	
Date of adoption of this ETS:	31 December 1999
Date of latest announcement of this ETS (doa):	31 March 2000
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 September 2000
Date of withdrawal of any conflicting National Standard (dow):	30 September 2000

Introduction

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented for a telecommunication specification. Such a statement is called an Implementation Conformance Statement (ICS).

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1 Scope

This European Telecommunication Standard (ETS) provides the Protocol Implementation Conformance Statement (PICS) proforma for the TETRA Direct Mode Operation (DMO), Mobile Station to Mobile Station (MS-MS) Air Interface (AI) protocol, defined in ETS 300 396-3 [1] in compliance with the relevant requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-7 [4] and ETS 300 406 [2].

2 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 300 396-3 (1998): "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 3: Mobile Station to Mobile Station (MS-MS) Air Interface (AI) protocol".
- [2] ETS 300 406 (1995): "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".
- [3] ISO/IEC 9646-1 (1994): "Information technology; Open systems interconnection; Conformance testing methodology and framework; Part 1: General concepts".
- [4] ISO/IEC 9646-7 (1995): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 7: Implementation Conformance Statements".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

- terms defined in ETS 300 396-3 [1];
- terms defined in ISO/IEC 9646-1 [3] and in ISO/IEC 9646-7 [4].

In particular, the following terms defined in ISO/IEC 9646-1 [3] apply:

Implementation Conformance Statement (ICS): statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented. The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, information object ICS, etc.

ICS proforma: document, in the form of a questionnaire, which when completed for an implementation or system becomes an ICS

Protocol ICS (PICS): ICS for an implementation or system claimed to conform to a given protocol specification

3.2 Abbreviations

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

AI	Air Interface
DLL	Data Link Layer
DM	Direct Mode
DMCC	Direct Mode Call Control
DMO	Direct Mode Operation
FCS	Frame Check Sequence
ICS	Implementation Conformance Statement
IUT	Implementation Under Test
LCH	Linearization Channel
MAC	Medium Access Control
OTAR	Over The Air Re-keying
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
SCH	Signalling Channel
SCS	System Conformance Statement
SDS	Short Data Service
SDU	Service Data Unit
SUT	System Under Test
TPNI	Transmitting Party Number Identification
TSI	TETRA Subscriber Identity

4 Conformance to this Protocol Implementation Conformance Statement (PICS) proforma specification

If it claims to conform to this ETS, the actual PICS proforma to be filled in by a supplier shall be technically equivalent to the text of the PICS proforma given in annex A, and shall preserve the numbering/naming and ordering of the proforma items.

A PICS which conforms to this ETS shall be a conforming PICS proforma completed in accordance with the guidance for completion given in clause A.1.

Annex A (normative): Protocol ICS proforma (PICS) for ETS 300 396-3

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

A.1 Guidance for completing the PICS proforma

A.1.1 Purposes and structure

The purpose of this PICS proforma is to provide a mechanism whereby a supplier of an implementation of the requirements defined in ETS 300 396-3 may provide information about the implementation in a standardized manner.

The PICS proforma is subdivided into subclauses for the following categories of information:

- guidance for completing the PICS proforma;
- identification of the implementation;
- identification of the protocol;
- global statement of conformance;
- Direct Mode Call Control (DMCC) protocol layer 3 part:
 - circuit mode calls;
 - short data service;
- Data Link Layer (DLL) protocol layer 2 part.

A.1.2 Abbreviations and conventions

The PICS proforma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7.

Item column

The item column contains a number which identifies the item in the table.

Item description column

The item description column describes in free text each respective item (e.g. parameters, timers, etc.). It implicitly means "is <item description> supported by the implementation?".

Status column

The following notations, defined in ISO/IEC 9646-7, are used for the status column:

m	mandatory - the capability is required to be supported;
o	optional - the capability may be supported or not;
n/a	not applicable - in the given context, it is impossible to use the capability;
x	prohibited (excluded) - there is a requirement not to use this capability in the given context;
o.i	qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table;

ci conditional - the requirement on the capability ("m", "o", "x" or "n/a") depends on the support of other optional or conditional items. "i" is an integer identifying a unique conditional status expression which is defined immediately following the table.

Reference column

The reference column makes reference to ETS 300 396-3, except where explicitly stated otherwise.

Support column

The support column shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-7, are used for the support column:

Y or y	supported by the implementation;
N or n	not supported by the implementation;
N/A, n/a or -	no answer required (allowed only if the status is n/a, directly or after evaluation of a conditional status).

If this PICS proforma is completed in order to describe a multiple-profile support in a system, it is necessary to be able to answer that a capability is supported for one profile and not supported for another. In that case, the supplier shall enter the unique reference to a conditional expression, preceded by "?" (e.g. ?3). This expression shall be given in the space for comments provided at the bottom of the table. It uses predicates defined in the System Conformance Statement (SCS), each of which refers to a single profile and which takes the value TRUE if and only if that profile is to be used.

EXAMPLE 1: ?3: IF prof1 THEN Y ELSE N

It is also possible to provide a comment to an answer in the space provided at the bottom of the table.

NOTE: As stated in ISO/IEC 9646-7, support for a received Protocol Data Unit (PDU) requires the ability to parse all valid parameters of that PDU. Supporting a PDU while having no ability to parse a valid parameter is non-conformant. Support for a parameter on a PDU means that the semantics of that parameter is supported.

Values allowed column

The values allowed column contains the type, the list, the range, or the length of values allowed. The following notations are used:

- range of values: <min value> ... <max. value>
example: 5 ... 20
- list of values: <value1>, <value2>,, <valueN>
example: 2, 4, 6, 8, 9
example: '1101'B, '1011'B, '1111'B
example: '0A'H, '34'H, '2F'H
- list of named values: <name1>(<val1>), <name2>(<val2>), ..., <nameN>(<valN>)
example: reject(1), accept(2)
- length: size (<min size> ... <max size>)
example: size (1 ... 8)

Values supported column

The values supported column shall be filled in by the supplier of the implementation. In this column, the values or the ranges of values supported by the implementation shall be indicated.

References to items

For each possible item answer (answer in the support column) within the PICS proforma a unique reference exists, used, for example, in the conditional expressions. It is defined as the table identifier, followed by a solidus character "/", followed by the item number in the table. If there is more than one support column in a table, the columns are discriminated by letters (a, b, etc.), respectively.

EXAMPLE 2: A.5/4 is the reference to the answer of item 4 in table 5 of annex A.

EXAMPLE 3: A.6/3b is the reference to the second answer (i.e. in the second support column) of item 3 in table 6 of annex A.

Prerequisite line

A prerequisite line takes the form: Prerequisite: <predicate>.

A prerequisite line after a clause or table title indicates that the whole clause or the whole table is not required to be completed if the predicate is FALSE.

A.1.3 Instructions for completing the PICS proforma

The supplier of the implementation shall complete the PICS proforma in each of the spaces provided. In particular, an explicit answer shall be entered, in each of the support or supported column boxes provided, using the notation described in subclause A.1.2.

If necessary, the supplier may provide additional comments in space at the bottom of the tables, or separately on sheets of paper.

More detailed instructions are given at the beginning of the different subclauses of the PICS proforma.

A.2 Identification of the implementation

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should be filled in so as to provide as much detail as possible regarding version numbers and configuration options.

The product supplier information and client information should both be filled in if they are different.

A person who can answer queries regarding information supplied in the PICS should be named as the contact person.

A.2.1 Date of the statement

A.2.2 IUT identification

IUT name:

.....

IUT version:

A.2.3 SUT identification

SUT name:

.....

Hardware configuration:

.....

.....

Operating system:

.....

A.2.4 Product supplier

Name:

Address:

.....

.....

Telephone number:

Facsimile number:

E-mail address:

Additional information:

.....

.....

A.2.5 Client (if different from product supplier)

Name:

Address:

.....

.....

Telephone number:

Facsimile number:

E-mail address:

Additional information:

.....

.....

A.2.6 PICS contact person

(A person to contact if there are any queries concerning the content of the PICS)

Name:

Telephone number:

Facsimile number:

E-mail address:

Additional information:

.....
.....

A.3 Identification of the protocol

This PICS proforma applies to the following standard:

ETS 300 396-3 (1998): "Terrestrial Trunked Radio (TETRA); Technical requirements for Direct Mode Operation (DMO); Part 3: Mobile Station to Mobile Station (MS-MS) Air Interface (AI) protocol".

This ETS contains two layers of the protocol stack, DMCC at layer 3 and Data Link Layer (DLL) at layer 2. Each layer is addressed in a different section of the present PICS. When submitting an implementation for test, the implementer is required to answer the questions of the section(s) of the proforma pertaining to the part(s) of the protocol submitted to the test, i.e. the DMCC section or the DLL one or both.

A.4 Global statement of conformance

Are all mandatory capabilities of DMCC implemented? (Yes/No/(n/a)).

Are all mandatory capabilities of DLL implemented? (Yes/No/(n/a)).

NOTE: Answering "No" to any of these questions indicates non-conformance to the protocol specification. Non-supported mandatory capabilities are to be identified in the PICS, with an explanation of why the implementation is non-conforming, on pages attached to the PICS proforma. Answering "n/a" to any of these two questions indicates that the questions related to that protocol does not apply.

A.5 DMCC at layer 3

A.5.1 DMCC major capabilities

The supplier of the implementation shall state the support of the implementation for each of the following protocol services, in table A.1.

Table A.1: DMCC services

Item	Service	Reference	Status	Support
1	Circuit mode call	6.2, 4.4	o.1	
2	Short Data Service (SDS)	6.3, 4.4	o.1	

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

A.5.2 Circuit mode call

The supplier of the implementation shall state the support of the implementation for each of the following circuit mode call protocol features, in table A.2.

Table A.2: Circuit mode protocol features

Prerequisite: A.1/1 -- circuit mode call				
Item	Protocol features	Reference	Status	Support
1	Group address call capability	5.2	o.2	
2	Individual address call capability	5.2	o.2	
3	Initiate call set-up without presence check	6.2.1.1	o	
4	Initiate call set-up with presence check	6.2.2.1	o	
5	Accept call set-up without presence check	6.2.1.2	m	
6	Accept call set-up with presence check	6.2.2.2	o	
7	Master end of call transmission	6.2.4.1	c201	
8	Receive end of call transmission	6.2.4.2	m	
9	Master call termination	6.2.4.1, 6.2.5.1	c201	
10	Receive call termination	6.2.4.2, 6.2.5.2	m	
11	Accept call pre-emption	6.2.4.1, 6.2.5.1	c201	
12	Initiate pre-emption in ongoing call	6.2.4.2, 6.2.5.3	o	
13	Initiate a new call by pre-emption	6.2.6	o	
14	Initiate call change-over	6.2.5.2	o	
15	Accept call change-over	6.2.5.1	c201	
16	Late entry by called party	6.2.3.2	o	
17	Receive Transmitting Party Number Identification (TPNI) in call setup	6.2.4.3	m	
18	Suppress TPNI in call setup	6.2.4.3	o	
19	Receive inter-MNI call	6.2.4.3	m	
20	Initiate inter-MNI call	6.2.4.3	o	

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

c201: IF A.2/3 OR A.2/4 -- If initiation of call set-up with or without presence check supported
THEN m -- then mandatory
ELSE n/a

A.5.3 Circuit mode call set-up

The supplier of the implementation shall state the support of the implementation for each of the following circuit mode call set-up procedures, in tables A.3 to A.4.

Table A.3: Circuit mode call set-up procedures - Group call

Prerequisite: A.2/1 AND A.2/3 -- Initiate group call set-up				
Item	Set-up procedure	Reference	Status	Support
1	Group call address	6.2.1.1	m	
2	Call on temporary group address	6.2.1.3	o	

Table A.4: Circuit mode call set-up procedures - Individual call

Prerequisite: A.2/2 -- Individual address call capability				
Item	Set-up procedure	Reference	Status	Support
1	Initiate Individual call without presence check	6.2.1.1	c401	
2	Initiate Individual call with presence check	6.2.2.1	c402	

c401: IF A.2/3 THEN o ELSE n/a -- If initiate call set-up without presence check then optional
c402: IF A.2/4 THEN m ELSE n/a -- If initiate call set-up with presence check then mandatory

A.5.4 Circuit mode services offered

The supplier of the implementation shall state the support of the implementation for each of the following circuit mode services, in table A.5.

Table A.5: Circuit mode services offered

Prerequisite: A.1/1 -- circuit mode call				
Item	Circuit mode service	Reference	Status	Support
1	Circuit mode speech:	5.4	o.3	
2	Circuit mode data unprotected: 7.2	5.4	o.3	
3	Circuit mode data low protection: 4.8, N=1	5.4	o.3	
4	Circuit mode data low protection: 4.8, N=4	5.4	o.3	
5	Circuit mode data low protection: 4.8, N=8	5.4	o.3	
6	Circuit mode data high protection: 2.4, N=1	5.4	o.3	
7	Circuit mode data high protection: 2.4, N=4	5.4	o.3	
8	Circuit mode data high protection: 2.4, N=8	5.4	o.3	
9	Clear end-to-end transmission	5.4	o.4	
10	End to end encrypted transmission	5.4	o.4	
11	Normal priority call	5.4	m	
12	High priority call	5.4	o	
13	Pre-emptive priority call	5.4	o	
14	Emergency pre-emptive priority call	5.4	o	
15	Recent user priority service	5.4	o	

o.3: It is mandatory to support at least one of these items
o.4: It is mandatory to support at least one of these items

A.5.5 Short data services

The supplier of the implementation shall state the support of the implementation for each of the following short data services, in table A.6.

Table A.6: Short data services

Prerequisite: A.1/2 -- Short Data Services				
Item	Short data service	Reference	Status	Support
1	Send data (note 1)	6.3.1	o.5	
2	Receive data (note 2)	6.3.2	o.5	
3	Extended error protection (Frame Check Sequence (FCS))	6.3.4	m	
NOTE 1: Capability to originate short data transaction as master. NOTE 2: Capability to receive short data transaction as slave.				

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

A.5.6 Type of short data service

The supplier of the implementation shall state the support of the implementation for each of the following types of SDSs, in tables A.7 to A.11.

Table A.7: Type of short data service

Prerequisite: A.1/2 -- Short Data Services				
Item	Type of short data service	Reference	Status	Support
1	Group address SDS capability	6.3	o.6	
2	Individual address SDS capability	6.3	o.6	
3	Pre-defined short data messages (i.e. status messages)	6.3	o.7	
4	User-defined short data messages	6.3	o.7	
5	Over The Air Re-keying (OTAR) (note)	6.3	o.7	
6	Enable/disable (note)	6.3	o.7	
7	Additional addressing (receive)	6.3.3	c701	
8	Additional addressing (send)	6.3.3	c702	
NOTE: The detailed PICS proforma for DMO security is defined in a separate PICS proforma covering security aspects.				

- o.6: It is mandatory to support at least one of these items
- o.7: It is mandatory to support at least one of these items
- c701: IF A.6/2 THEN m ELSE n/a -- If receive SDS supported then mandatory
- c702: IF A.6/1 THEN o ELSE n/a -- If send SDS supported then optional

Table A.8: Send short data service on group address

Prerequisite: A.6/1 AND A.7/1 -- Group address SDS capability				
Item	SDS on group address	Reference	Status	Support
1	Unacknowledged data service	6.3	m	

Table A.9: Send short data service on individual address

Prerequisite: A.6/1 AND A.7/2 -- Individual address SDS capability				
Item	SDS on individual address	Reference	Status	Support
1	Unacknowledged data service	6.3	o.8	
2	Acknowledged data service	6.3	o.8	
3	Extraction of data if included in ACK	6.3	c901	

- o.8: It is mandatory to support at least one of these items
- c901: IF A.9/2 -- If the sending of acknowledged short data supported
THEN m -- then mandatory
ELSE n/a

Table A.10: Receive short data service on group address

Prerequisite: A.6/2 AND A.7/1 -- Group address SDS capability				
Item	SDS on group address	Reference	Status	Support
1	Unacknowledged data service	6.3	m	

Table A.11: Receive short data service on individual address

Prerequisite: A.6/2 AND A.7/2 -- Individual address SDS capability				
Item	SDS on individual address	Reference	Status	Support
1	Unacknowledged data service	6.3	o.9	
2	Acknowledged data service	6.3	o.9	
3	Including data in ACK	6.3	o	

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

A.5.7 Data transmission

The supplier of the implementation shall state the support of the implementation for each of the following services for sending data, in table A.12.

Table A.12: Sending data services

Prerequisite: A.6/1 -- Send data using SDS				
Item	Send data	Reference	Status	Support
1	Send short data on a free channel	6.3.1.1	m	
2	Send short data after pre-emption of a circuit mode call (new call)	6.3.1.2	o	
3	Send short data stealing from circuit mode transmission	6.3.1.3	c1201	
4	Send short data after pre-emption of a circuit mode call (ongoing call)	6.3.1.4.1	c1202	
5	Send short data after changeover of a circuit mode call	6.3.1.4.2	c1202	
6	Send short data as master of a circuit mode call	6.3.1.4.3	c1202	

c1201: IF A.2/3 OR A.2/4 -- If initiate CM call set-up supported
THEN o -- then optional
ELSE n/a

c1202: IF A.1/1 -- If CM call supported then optional
THEN o
ELSE n/a

A.5.8 SDS user defined data

The supplier of the implementation shall state the support of the implementation for each of the following types of SDSs, in table A.13.

Table A.13: SDS user defined data

Prerequisite: A.7/4 -- User defined short data				
Item	Circuit mode service	Reference	Status	Support
1	User defined data 1 (16 bits)	5.4	o.10	
2	User defined data 2 (32 bits)	5.4	o.10	
3	User defined data 3 (64 bits)	5.4	o.10	
4	User defined data 4 (up to 2047 bits)	5.4	o.10	

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

A.5.9 DMCC PDUs

The supplier of the implementation shall state the support of the implementation for each of the following circuit mode and SDS PDUs, in tables A.14 to A.15.

Table A.14: Circuit mode call and pre-emption PDUs

Item	PDU	Reference	Sending		Receiving	
			Status	Support	Status	Support
1	DM-SETUP	9.5.1	c1401		c1402	
2	DM-SETUP PRES	9.5.2	c1403		c1404	
3	DM-CONNECT	9.5.3	c1404		c1403	
4	DM-DISCONNECT	9.5.4	c1404		c1403	
5	DM-CONNECT ACK	9.5.5	c1403		c1404	
6	DM-OCCUPIED	9.5.6	c1405		c1402	
7	DM-RELEASE	9.5.7	c1405		c1402	
8	DM-TX CEASED	9.5.8	c1405		c1402	
9	DM-TX REQUEST	9.5.9	c1406		c1405	
10	DM-TX ACCEPT	9.5.10	c1405		c1412	
11	DM-PREEMPT	9.5.11	c1407		c1411	
12	DM-PRE ACCEPT	9.5.12	c1411		c1413	
13	DM-REJECT	9.5.13	c1409		c1410	
14	DM-INFO	9.5.14	c1408		c1402	

- c1401: IF A.2/3
THEN m -- If initiate call setup without presence check
ELSE n/a -- supported then mandatory
- c1402: IF A.1/1
THEN m -- If circuit mode call supported
ELSE n/a -- then mandatory
- c1403: IF A.4/2
THEN m -- If individual call setup with presence check supported
ELSE n/a -- then mandatory
- c1404: IF A.2/6
THEN m -- If accept of call set-up with presence check supported
ELSE n/a -- then mandatory
- c1405: IF A.2/3 OR A.2/4
THEN m -- If initiate call set-up with or without presence check supported
ELSE n/a -- then mandatory
- c1406: IF A.2/14 OR A.12/5
THEN m -- If CM or SDS call changeover supported
ELSE n/a -- then mandatory
- c1407: IF A.2/12 OR A.2/13
OR A.12/2 OR A.12/4
THEN m -- If initiation of CM or SDS pre-emption is supported
ELSE n/a -- then mandatory
- c1408: IF A.2/18
THEN m -- If sending of TPNI can be suppressed then
ELSE o -- mandatory else
-- optional
- c1409: IF A.2/3 OR A.2/4
THEN m -- If initiate CM call supported
ELSE IF A.11/2 OR A.11/3.
THEN o -- If receive acknowledged SDS supported
ELSE n/a -- then optional
- c1410: IF A.2/12 OR A.2/13 OR A.2/14-- If request changeover or pre-emption
OR A.9/2 OR A.9/3 -- or send acknowledged short data supported
THEN m -- then mandatory
ELSE n/a

- c1411: IF A.2/3 OR A.2/4
OR A.6/1
THEN m
ELSE n/a -- If initiation of CM or SDS call
 -- supported
 -- then mandatory
- c1412: IF A.1/1 OR A.12/5
THEN m
ELSE n/a -- If circuit mode call or send SDS after changeover supported
 -- then mandatory
- c1413: IF A.1/1 OR A.12/2
OR A.12/4
THEN m
ELSE n/a -- If circuit mode call or send SDS after pre-emption supported
 -- then mandatory

Table A.15: Specific SDS PDUs

Prerequisite: A.1/2 -- Short Data Services						
Item	PDU	Reference	Sending		Receiving	
			Status	Support	Status	Support
1	DM-SDS UDATA	9.5.15	c1501		c1503	
2	DM-SDS DATA	9.5.16	c1502		c1504	
3	DM-SDS ACK	9.5.17	c1504		c1502	

- c1501: IF A.8/1 OR A.9/1
THEN m
ELSE n/a -- If sending of unacknowledged SDS with group or individual address
 -- supported then mandatory
- c1502: IF A.9/2 OR A.9/3
THEN m
ELSE n/a -- If sending of acknowledged data service with or without data in ACK
 -- supported then mandatory
- c1503: IF A.10/1 OR A.11/1
THEN m
ELSE n/a -- If receiving of unacknowledged supported
 -- then mandatory
- c1504: IF A.11/2 OR A.11/3
THEN m
ELSE n/a -- If receiving of acknowledged data service supported
 -- then mandatory

A.5.10 DMCC PDU parameters

The supplier of the implementation shall state the support of the implementation for each of the following DMCC PDU elements, in tables A.16 to A.32.

A.5.10.1 DM-SETUP

Table A.16: DM-SETUP PDU contents

Prerequisite: A.1/1 -- Circuit mode call				
Item	Elements	Reference	Status	Support
Message dependent elements				
1	Timing flag	9.6.22	m	
2	Linearization Channel (LCH) in frame 3 flag	9.6.5	m	
3	Pre-emption flag	9.6.10	m	
4	Power class	9.6.8	m	
5	Power control flag	9.6.9	m	
6	Reserved	9.5.1	m	
7	Circuit mode type	9.6.3	m	
8	Reserved	9.5.1	m	
9	Priority level	9.6.11	m	
DM-Service Data Unit (SDU) elements				
10	End-to-end encryption flag	9.7.8	m	
11	Call type flag	9.7.5	m	
12	External source flag	9.7.9	m	
13	Reserved	9.5.1	m	

A.5.10.2 DM-SETUP PRES

Table A.17: DM-SETUP PRES PDU contents

Prerequisite: A.14/2a OR A.14/2b -- DM-SETUP PRES PDU				
Item	Elements	Reference	Status	Support
Message dependent elements				
1	Reserved	9.5.2	m	
2	Power class	9.6.8	m	
3	Power control flag	9.6.9	m	
4	Reserved	9.5.2	m	
5	Circuit mode type	9.6.3	m	
6	Reserved	9.5.2	m	
7	Priority level	9.6.11	m	
DM-SDU elements				
8	End-to-end encryption flag	9.7.8	m	
9	Call type flag	9.7.5	m	
10	External source flag	9.7.9	m	
11	Reserved	9.5.2	m	

A.5.10.3 DM-CONNECT

Table A.18: DM-CONNECT PDU contents

Prerequisite: A.14/3a OR A.14/3b		-- DM-CONNECT PDU		
Item	Elements	Reference	Status	Support
Message dependent elements				
1	Circuit mode type	9.6.3	m	
2	Reserved	9.5.3	m	
DM-SDU elements				
3	Reserved	9.5.3	m	

A.5.10.4 DM-DISCONNECT

Table A.19: DM-DISCONNECT PDU contents

Prerequisite: A.14/4a OR A.14/4b		-- DM-DISCONNECT PDU		
Item	Elements	Reference	Status	Support
DM-SDU elements				
1	Disconnect cause	9.7.7	m	

A.5.10.5 DM-CONNECT ACK

Table A.20: DM-CONNECT ACK PDU contents

Prerequisite: A.14/5a OR A.14/5b		-- DM-CONNECT ACK PDU		
Item	Elements	Reference	Status	Support
Message dependent elements				
1	Timing flag	9.6.22	m	
2	LCH in frame 3 flag	9.6.5	m	
3	Pre-emption flag	9.6.10	m	
4	Power class	9.6.8	m	
5	Power control flag	9.6.9	m	
6	Reserved	9.5.5	m	
7	Circuit mode type	9.6.3	m	
8	Reserved	9.5.5	m	
9	Priority level	9.6.11	m	
DM-SDU elements				
10	End-to-end encryption flag	9.7.8	m	
11	Call type flag	9.7.5	m	
12	External source flag	9.7.9	m	
13	Reserved	9.5.5	m	

A.5.10.6 DM-OCCUPIED

Table A.21: DM-OCCUPIED PDU contents

Prerequisite: A.1/1 -- Circuit mode call				
Item	Elements	Reference	Status	Support
Message dependent elements				
1	Timing flag	9.6.22	m	
2	LCH in frame 3 flag	9.6.5	m	
3	Pre-emption flag	9.6.10	m	
4	Power class	9.6.8	m	
5	Power control flag	9.6.9	m	
6	Reserved	9.5.6	m	
7	Circuit mode type	9.6.3	m	
8	Reserved	9.5.6	m	
9	Priority level	9.6.11	m	
DM-SDU elements				
10	End-to-end encryption flag	9.7.8	m	
11	Call type flag	9.7.5	m	
12	External source flag	9.7.9	m	
13	Reserved	9.5.6	m	

A.5.10.7 DM-RELEASE

Table A.22: DM-RELEASE PDU contents

Prerequisite: A.1/1 -- Circuit mode call				
Item	Elements	Reference	Status	Support
DM-SDU elements				
1	Release cause	9.7.15	m	

A.5.10.8 DM-TX CEASED

Table A.23: DM-TX CEASED contents

Prerequisite: A.1/1 -- Circuit mode call				
Item	Elements	Reference	Status	Support
Message dependent elements				
1	Reservation time remaining	9.6.15	m	
2	Timing flag	9.6.22	m	
3	Requests flag	9.6.14	m	
4	Changeover requests flag	9.6.1	m	
5	Requests bitmap	9.6.13	m	
6	Recent user priority flag	9.6.12	m	
7	Timing change announced	9.6.20	m	
8	Timing adjustment	9.6.19	m	
9	Priority level	9.6.11	m	
DM-SDU elements				
10	Cease cause	9.7.6	m	

A.5.10.9 DM-TX REQUEST

Table A.24: DM- TX REQUEST PDU contents

Prerequisite: A.14/9a OR A.14/9b		-- DM-TX REQUEST PDU		
Item	Elements	Reference	Status	Support
Message dependent elements				
1	Timing change required	9.6.21	m	
2	Timing adjustment	9.6.19	m	
3	Priority level	9.6.11	m	

A.5.10.10 DM-TX ACCEPT

Table A.25: DM- TX ACCEPT PDU contents

Prerequisite: A. 14/10a OR A.14/10b		-- DM-TX ACCEPT PDU		
Item	Elements	Reference	Status	Support
Message dependent elements				
1	Timing change announced	9.6.20	m	
2	Timing adjustment	9.6.19	m	

A.5.10.11 DM-PREEMPT

Table A.26: DM-PREEMPT PDU contents

Prerequisite: A.14/11a OR A.14/11b		-- DM-PREEMPT PDU		
Item	Elements	Reference	Status	Support
Message dependent elements				
1	Perceived channel state	9.6.7	m	
2	Timing change required	9.6.21	m	
3	Timing adjustment	9.6.19	m	
4	New call pre-emption	9.6.6	m	
5	Type of pre-emption	9.6.23	m	
6	Priority level	9.6.11	m	

A.5.10.12 DM-PRE ACCEPT

Table A.27: DM-PRE ACCEPT PDU contents

Prerequisite: A. 14/12a OR A.14/12b		-- DM-PREACCEPT PDU		
Item	Elements	Reference	Status	Support
Message dependent elements				
1	Timing change announced	9.6.20	m	
2	Timing adjustment	9.6.19	m	
3	New call pre-emption	9.6.6	m	
4	Type of pre-emption	9.6.23	m	

A.5.10.13 DM-REJECT

Table A.28: DM-REJECT PDU contents

Prerequisite: A.14/13a OR A.14/13b -- DM-REJECT PDU				
Item	Elements	Reference	Status	Support
DM-SDU elements				
1	Reject cause	9.7.14	m	

A.5.10.14 DM-INFO

Table A.29: DM-INFO PDU contents

Prerequisite: A.1/1 -- Circuit mode call				
Item	Elements	Reference	Status	Support
DM-SDU elements				
1	Information type	9.7.11	m	
2	Calling party TETRA Subscriber Identity (TSI)	9.7.4	m	

A.5.10.15 DM-SDS UDATA

Table A.30: DM-SDS UDATA PDU contents

Prerequisite: A.15/1a OR A.15/1b -- DM-SDS UDATA PDU				
Item	Elements	Reference	Status	Support
Message dependent elements				
1	SDS time remaining	9.6.16	m	
2	SDS transaction type	9.6.17	m	
3	Priority level	9.6.11	m	
4	FCS flag	9.6.4	m	
DM-SDU elements				
5	Additional addressing flag	9.7.2	m	
6	Additional address type(s)	9.7.3	c3001	
7	Calling party TSI	9.7.4	c3001	
8	Short Data Type Identifier	9.7.16	m	
9	User defined data 1	9.7.17	c3002	
10	User defined data 2	9.7.18	c3003	
11	User defined data 3	9.7.19	c3004	
12	Length indicator	9.7.12	c3005	
13	User defined data 4	9.7.20	c3006	
14	Precoded status	9.7.13	c3007	
15	OTAR information	9.5.15	c3008	
16	Enable/disable information	9.5.15	c3009	
17	FCS	9.7.10	m	

- c3001: IF A.15/1b THEN m ELSE o -- If short data reception supported
-- then mandatory else optional
- c3002: IF A.13/1 THEN m ELSE n/a -- If user defined data 1 supported then mandatory
- c3003: IF A.13/2 THEN m ELSE n/a -- If user defined data 2 supported then mandatory
- c3004: IF A.13/3 THEN m ELSE n/a -- If user defined data 3 supported then mandatory
- c3005: IF A.13/4 OR A.7/5 OR A.7/6 THEN m ELSE n/a -- If user defined data 4 or OTAR or Enable/disable supported then mandatory
- c3006: IF A.13/4 THEN m ELSE n/a -- If user defined data 4 supported then mandatory

- c3007: IF A.7/4 THEN m ELSE n/a -- If pre-defined data supported then mandatory
 c3008: IF A.7/5 THEN m ELSE n/a -- If OTAR supported then mandatory
 c3009: IF A.7/6 THEN m ELSE n/a -- If Enable/disable entity supported then mandatory

A.5.10.16 DM-SDS DATA

Table A.31: DM-SDS DATA PDU contents

Prerequisite: A.15/2a OR A.15/2b -- DM-SDS DATA PDU				
Item	Elements	Reference	Status	Support
Message dependent elements				
1	SDS time remaining	9.6.16	m	
2	SDS transaction type	9.6.17	m	
3	Priority level	9.6.11	m	
4	FCS flag	9.6.4	m	
DM-SDU elements				
5	Additional addressing flag	9.7.2	m	
6	Additional address type(s)	9.7.3	c3101	
7	Calling party TSI	9.7.4	c3101	
8	Short Data Type Identifier	9.7.16	m	
9	User defined data 1	9.7.17	c3102	
10	User defined data 2	9.7.18	c3103	
11	User defined data 3	9.7.19	c3104	
12	Length indicator	9.7.12	c3105	
13	User defined data 4	9.7.20	c3106	
14	Precoded status	9.7.13	c3107	
15	OTAR information	9.5.16	c3108	
16	Enable/disable information	9.5.16	c3109	
17	FCS	9.7.10	m	

- c3101: IF A.15/2b THEN m ELSE o -- If short data reception supported
 -- then mandatory else optional
 c3102: IF A.13/1 THEN m ELSE n/a -- If user defined data 1 supported then mandatory
 c3103: IF A.13/2 THEN m ELSE n/a -- If user defined data 2 supported then mandatory
 c3104: IF A.13/3 THEN m ELSE n/a -- If user defined data 3 supported then mandatory
 c3105: IF A.13/4 OR A.7/5 OR A.7/6 THEN m ELSE n/a -- If user defined data 4 or OTAR or Enable/disable supported then mandatory
 c3106: IF A.13/4 THEN m ELSE n/a -- If user defined data 4 supported then mandatory
 c3107: IF A.7/4 THEN m ELSE n/a -- If pre-defined data supported then mandatory
 c3108: IF A.7/5 THEN m ELSE n/a -- If OTAR supported then mandatory
 c3109: IF A.7/6 THEN m ELSE n/a -- If Enable/disable entity supported then mandatory

A.5.10.17 DM-SDS ACK

Table A.32: DM-SDS ACK PDU contents

Prerequisite: A.15/3a OR A. 15/3b -- DM-SDS ACK PDU				
Item	Elements	Reference	Status	Support
Message dependent elements				
1	FCS flag	9.6.4	m	
DM-SDU elements				
2	Acknowledgement type	9.7.1	m	
3	Short Data Type Identifier	9.7.16	m	
4	User defined data 1	9.7.17	c3201	
5	User defined data 2	9.7.18	c3202	
6	User defined data 3	9.7.19	c3203	
7	Length indicator	9.7.12	c3204	
8	User defined data 4	9.7.20	c3205	
d9	Precoded status	9.7.13	c3206	
10	OTAR information	9.5.17	c3207	
11	Enable/disable information	9.5.17	c3208	
12	FCS	9.7.10	m	

- c3201: IF A.13/1 THEN m ELSE n/a -- If user defined data 1 supported then mandatory
- c3202: IF A.13/2 THEN m ELSE n/a -- If user defined data 2 supported then mandatory
- c3203: IF A.13/3 THEN m ELSE n/a -- If user defined data 3 supported then mandatory
- c3204: IF A.13/4 OR A.7/5 OR A.7/6 THEN m ELSE n/a -- If user defined data 4 or OTAR or Enable/disable supported then mandatory
- c3205: IF A.13/4 THEN m ELSE n/a -- If user defined data 4 supported then mandatory
- c3206: IF A.7/4 THEN m ELSE n/a -- If pre-defined data supported then mandatory
- c3207: IF A.7/5 THEN m ELSE n/a -- If OTAR supported then mandatory
- c3208: IF A.7/6 THEN m ELSE n/a -- If Enable/disable entity supported then mandatory

A.5.11 DMCC constants

The supplier of the implementation shall state the support of the implementation for each of the following DMCC constants, in table A.33.

Table A.33: DMCC constants

Item	Constants	Reference	Status	Support	Value ranges	
					Allowed	Supported
1	DN303 -- DM-SETUP PRES -- retries	A.2	c3301		1...3	
2	DN314 -- DM-SDS UDATA -- retries	A.2	c3302		1...6	
3	DN315 -- DM-SDS DATA -- retries on -- negative response	A.2	c3303		2...6	
4	DN316 -- DM-SDS DATA -- retries on no -- response	A.2	c3303		1...4	

- c3301: IF A.4/2 THEN m ELSE n/a -- If call set-up with presence check supported then mandatory
- c3302: IF A.8/1 OR A.9/1 THEN m ELSE n/a -- If unacknowledged SDS supported for group or individual address then mandatory
- c3303: IF A.9/2 OR A.9/3 THEN m ELSE n/a -- If acknowledged SDS supported with or without data in ACK then mandatory

A.5.12 DMCC timers

The supplier of the implementation shall state the support of the implementation for each of the following DMCC timers, in table A.34.

Table A.34: DMCC timers

Item	Timer	Reference	Status	Support	Values	
					Default	Supported
1	DT303 -- Wait DM- -- SETUP -- PRES -- response	A.1	c3401		250 - mSec	
2	DT307 -- Wait DM- -- CONNECT -- ACK	A.1	c3402		350 - mSec	
3	DT311 -- Call -- transaction -- time	A.1	c3403		300 - Sec	
4	DT314 -- SDS failure -- timer	A.1	c3404		500 - mSec	
5	DT316 -- Wait DM- -- SDS DATA -- response	A.1	c3405		400 - mSec	

- c3401: IF A.2/4 -- If initiation of call set-up with presence check supported
THEN m -- then mandatory
ELSE n/a
- c3402: IF A.2/6 -- If accept call set-up with presence check supported
THEN m -- then mandatory
ELSE n/a
- c3403: IF A.2/3 OR A.2/4 -- If initiate CM call set-up supported
THEN m -- then mandatory
ELSE n/a
- c3404: IF A.6/1 -- If SDS send data supported
THEN m -- then mandatory
ELSE n/a
- c3405: IF A.9/2 OR A.9/3 -- If acknowledged SDS supported with or without
THEN m -- data in ACK. then mandatory
ELSE n/a

A.6 DLL at layer 2

A.6.1 DM-Medium Access Control (MAC) features

The supplier of the implementation shall state the support of the implementation for each of the following DM-MAC features, in table A.35.

Table A.35: DM-MAC features

Item	Feature	Reference	Status	Support
1	Scrambling mechanism	8.2.4	m	
2	PDU error detection	8.2.5	m	
3	Stealing mechanism	8.2.6.2.2	c3501	
4	DM channel usage procedures	8.4	m	
5	Signalling messages procedures	8.5	m	
6	Traffic mode procedures	8.6	c3502	

c3501: IF A.2/3 OR A.2/4 -- If initiation of call set-up with or without presence check
 THEN m -- supported then mandatory
 ELSE o -- else optional

c3502: IF A.1/1 -- If circuit mode call supported
 THEN m -- then mandatory
 ELSE n/a

A.6.2 DM-MAC procedures

The supplier of the implementation shall state the support of the implementation for each of the following MAC procedures, in tables A.36 to A.42.

Table A.36: DM channel usage procedures

Prerequisite: A.35/4: -- DM channel usage procedures				
Item	DM channel procedure	Reference	Status	Support
1	Normal mode	8.4.1.2	m	
2	Frequency efficient mode	8.4.1.3	o	
3	Determination of DM channel state	8.4.2.2	m	
4	Slave DM-MS channel surveillance procedure	8.4.2.4	m	
5	Master DM-MS channel surveillance during a call	8.4.2.3	c3601	
6	Master DM-MS channel surveillance in frequency efficient mode	8.4.2.5	c3602	
7	Transmission of appropriate layer 3 messages procedures	8.4.5	c3603	
8	Transmission of appropriate layer 2 messages procedures	8.4.6	c3603	
9	DM dual watch	8.4.7.10, 8.3.1	o	
10	SDS time remaining	8.4.7.14	c3604	
11	Timing change procedure for master MS	8.4.7.15	c3605	
12	Timing change procedure for requesting DM-MS	8.4.7.15	o	
13	Timing change at changeover or pre-emption for requesting DM-MS	8.4.7.16	c3606	

c3601: IF A.2/3 OR A.2/4 OR A.6/1 -- If CM call initiate or SDS send supported
 THEN m -- then mandatory
 ELSE n/a

c3602: IF (A.2/3 OR A.2/4 OR A.6/1) -- If CM call initiate or SDS send and frequency efficient
 AND A.36/2 -- mode supported
 THEN m -- then mandatory
 ELSE n/a

c3603: IF (A.2/3 OR A.2/4) -- If CM call initiate
 OR A.6/1 -- or SDS send supported
 THEN m -- then mandatory
 ELSE o -- else optional

c3604: IF A.6/1 -- If send SDS supported
 THEN m -- then mandatory
 ELSE n/a

c3605: IF A.2/3 OR A.2/4 -- If CM call set-up with or without presence check supported
 THEN o -- then optional
 ELSE n/a

c3606: IF A.2/12 OR A.2/13 OR A.2/14 -- If changeover or pre-emption for CM call or SDS data
 OR A.12/2 OR A.12/4 -- supported then optional
 OR A.12/5
 THEN o
 ELSE n/a

Table A.37: DM-MS monitoring procedures

Item	DM-MS monitoring procedures	Reference	Status	Support
1	DM channel during call set-up monitoring as master	8.4.4.1	c3701	
2	DM channel during call set-up monitoring as slave	8.4.4.1	c3702	
3	DM channel in occupation during circuit mode call monitoring as master	8.4.4.2	c3703	
4	DM channel in occupation during circuit mode call monitoring as slave	8.4.4.2	c3704	
5	DM channel in reservation during circuit mode call monitoring as master	8.4.4.3	c3703	
6	DM channel in reservation during circuit mode call monitoring as slave	8.4.4.3	c3704	
7	DM channel in occupation during SDS call monitoring as master	8.4.4.4	c3705	
8	DM channel usage during pre-emption signalling monitoring	8.4.4.5	c3706	
9	Monitoring DM channel usage during timing change request signalling	8.4.4.6	c3707	

- c3701: IF A.4/2
THEN m -- If call set-up with presence check supported then
ELSE n/a -- mandatory
- c3702: IF A.2/6
THEN m -- If accept call set-up with presence check supported
ELSE n/a -- then mandatory
- c3703: IF A.2/3 OR A.2/4
THEN m -- If initiate circuit mode call set-up supported
ELSE n/a -- then mandatory
- c3704: IF A.1/1
THEN m -- if CM call supported
ELSE n/a -- then mandatory
- c3705: IF A.6/1
THEN m -- If send data using SDS supported
ELSE n/a -- then mandatory
- c3706: IF A.2/12 OR A.2/13
OR A.12/2 OR A.12/4
THEN m -- If Initiate pre-emption in ongoing call or new call
ELSE n/a -- supported then mandatory
- c3707: IF A. 36/12
THEN m -- If timing change request supported
ELSE n/a -- then mandatory

Table A.38: DM-MAC signalling messages

Prerequisite: A.35/5: -- Signalling messages procedures				
Item	Signalling messages procedure	Reference	Status	Support
1	Addressing in synchronization burst	8.5.2.1.1	c3801	
2	Addressing in normal burst	8.5.2.1.2	c3801	
3	AI encryption	8.5.3	o	
4	Reception of message	8.5.2.2	m	
5	Fragmentation started by DMAC—SYNC PDU	8.5.4.1	c3802	
6	Reconstruction started by DMAC—SYNC PDU	8.5.4.2	c3803	
7	Fill bit addition	8.5.5.1	c3801	
8	Fill bit deletion	8.5.5.2	m	
9	Null PDU flag use	8.5.5.3	o	
10	Null PDU flag recognition	8.5.5.3	m	
11	Transmission of message by layer 2 unacknowledged service	8.5.6.1	c3801	

c3801: IF A.2/3 OR A.2/4 OR A.6/1 OR A.11/3 THEN m ELSE n/a -- If CM call initiate -- or SDS send -- supported -- then mandatory

c3802: IF A.6/1 OR A.11/3 THEN o ELSE n/a -- If sending short data or including short data in ACK -- supported then optional

c3803: IF A.6/2 OR A.9/3 THEN m ELSE n/a -- If receiving short data or extraction of data in ACK -- supported then mandatory

Table A.39: DM-MAC reception of messages by layer 2 unacknowledged service

Item	Use of frame countdown element in received message	Reference	Status	Support
1	Suppression of duplicate messages	8.5.6.2	m	
2	Delaying switch into traffic mode	8.5.6.2	c3901	
3	Timing of set-up signalling for pre-emption or changeover	8.5.6.2	c3902	
4	Timing of immediate SDS retransmission	8.5.6.2	c3903	
5	Timing of response to message from master	8.5.6.2	c3904	
6	Timing of response to fragmented message from master	8.5.6.2	c3905	
7	Timing of DM-CONNECT ACK	8.5.6.2	c3906	

c3901: IF A.1/1 THEN m ELSE n/a -- If circuit mode call supported then mandatory

c3902: IF A.2/12 OR A.2/13 OR A.2/14 OR A.12/2 OR A.12/4 OR A.12/5 THEN m ELSE n/a -- If CM or SDS pre-emption in ongoing or new -- call or changeover supported -- then mandatory

c3903: IF A.9/2 OR A.9/3 THEN m ELSE n/a -- If sending acknowledged SDS data service with or -- without data in ACK supported then mandatory

- c3904: IF A.2/6 OR A.11/2 OR A.11/3 -- If accept call set-up with presence check and
THEN m -- receive acknowledge SDS then mandatory
ELSE n/a
- c3905: IF A.38/6 AND (A.11/2 OR A.11/3) -- If reconstruction and SDS acknowledged
THEN m -- data service with or without data in ACK
ELSE n/a -- supported then mandatory
- c3906: IF A.4/2 THEN m ELSE n/a -- If call set-up with presence check supported
-- then mandatory

Table A.40: DM-MAC random access master MS procedures

Item	Procedure	Reference	Status	Support
1	Indication of frames available for request	8.5.7.2.1	c4001	
2	Monitoring frames available for requests	8.5.7.2.2	c4002	
3	Response to pre-emption or changeover request	8.5.7.2.3	c4002	
4	Response to timing change request	8.5.7.2.4	c4001	

- c4001: IF A.2/3 OR A.2/4 -- If CM initiate call set-up supported
THEN m -- then mandatory
ELSE n/a
- c4002: IF (A.2/3 OR A.2/4) OR A.6/1 -- If CM initiate call set-up or SDS data send supported
THEN m -- then mandatory
ELSE n/a

Table A.41: DM-MAC random access requesting MS procedures

Item	Procedure	Reference	Status	Support
1	Preparation for random access	8.5.7.3.1	c4101	
2	First transmission of request	8.5.7.3.2	c4101	
3	Valid access slots	8.5.7.3.3	c4101	
4	Wait for response	8.5.7.3.4	c4101	
5	Subsequent transmission of request	8.5.7.3.5	c4101	
6	Abandon random access attempt	8.5.7.3.6	c4101	

- c4101: IF A.2/12 OR A.2/13 OR A.2/14 -- If CM initiate call set-up or SDS pre-emption or SDS
changeover
A.12/2 OR A.12/4 OR -- or timing change request supported
A.12/5 OR A.36/12
THEN m -- then mandatory
ELSE n/a

Table A.42: DM-MAC traffic mode procedures

Prerequisite: A.1/1		-- Circuit mode call		
Item	Feature	Reference	Status	Support
1	Enter U-plane mode for call set-up without presence check - outgoing call	8.6.3.1.1	c4201	
2	Enter U-plane mode for call set-up without presence check - incoming call	8.6.3.1.2	c4202	
3	Enter U-plane mode for call set-up with presence check - outgoing call	8.6.3.2.1	c4203	
4	Enter U-plane mode for call set-up with presence check - incoming call	8.6.3.2.2	c4204	
5	Leaving U-plane mode - Master MS	8.6.3.4.1	c4205	
6	Leaving U-plane mode - Slave MS	8.6.3.4.2	c4207	
7	Stealing from circuit mode capacity - transmission on STCH	8.6.5.1	c4205	
8	Stealing from circuit mode capacity - reception on STCH	8.6.5.3	c4207	
9	Fragmentation on STCH	8.6.5.1	c4206	
10	Reconstruction on STCH	8.6.5.3	c4207	

- c4201: IF A.2/3 -- If call set-up without presence check supported
THEN m -- then mandatory
ELSE n/a
- c4202: IF A.2/5 -- If accept call set-up without presence check supported
THEN m -- then mandatory
ELSE n/a
- c4203: IF A.4/2 -- If initiate call set-up with presence check supported
THEN m -- then mandatory
ELSE n/a
- c4204: IF A.2/6 -- If accept call set-up with presence check supported
THEN m -- then mandatory
ELSE n/a
- c4205: IF A.2/3 OR A.2/4 -- If initiate CM call set-up supported
THEN m -- then mandatory
ELSE n/a
- c4206: IF A.2/3 OR A.2/4 -- If initiate CM call set-up supported
THEN o -- then optional
ELSE n/a
- c4207: IF A.2/5 OR A.2/6 -- If accept call set-up with or without presence check supported
THEN m -- then mandatory
ELSE n/a

A.6.3 DM-MAC PDUs

The supplier of the implementation shall state the support of the implementation for each of the following MAC PDUs, in table A.43.

Table A.43: DM-MAC PDUs

Item	PDU	Reference	Sending		Receiving	
			Status	Support	Status	Support
1	DMAC-SYNC	9.1.1	c4301		m	
2	DMAC-DATA	9.2.1	c4306		m	
3	DMAC-FRAG	9.2.2	c4307		c4308	
4	DMAC-END	9.2.3	c4302		c4303	
5	DMAC-U SIGNAL	9.2.4	c4304		c4305	
6	DMAC-TRAFFIC	9.2.5	c4304		c4305	

- c4301: IF A.2/3 OR A.2/4 OR A.2/6
OR A.6/1 OR A.11/2
OR A.11/3
THEN m
ELSE n/a -- If CM call initiate or accept call with presence check
-- or SDS send or receive acknowledged short data
-- supported
-- then mandatory
- c4302: IF A.38/5 OR A.42/9
THEN m
ELSE n/a -- If fragmentation supported
-- then mandatory
- c4303: IF A.38/6 OR A.42/10
THEN m
ELSE n/a -- If reconstruction supported
-- then mandatory
- c4304: IF A.2/3 OR A.2/4
THEN m
ELSE n/a -- If initiate CM call set-up supported
-- then mandatory
- c4305: IF A.1/1 THEN m ELSE n/a -- If circuit mode call supported then mandatory
- c4306: IF A.2/3 OR A.2/4
OR A.6/1
THEN m
ELSE n/a -- If CM call initiate
-- or SDS send
-- then mandatory
- c4307: IF A.38/5
THEN o
ELSE n/a -- If fragmentation started by DMAC-SYNC PDU supported
-- then optional
- c4308: IF A.38/6
THEN o
ELSE n/a -- If reconstruction started by DMAC-SYNC PDU supported
-- then optional

A.6.4 DM-MAC PDU parameters

The supplier of the implementation shall state the support of the implementation for each of the following MAC PDU parameters, in tables A.44 to A.49.

A.6.4.1 DMAC-SYNC in Signalling Channel (SCH)/S

Table A.44: Information elements for DMAC-SYNC PDU in SCH/S

Item	Information element	Reference	Status	Support
1	System code	9.3.29	m	
2	SYNC PDU type	9.3.28	m	
3	Communication type	9.3.3	m	
4	Master/slave link flag	9.3.17	n/a	
5	Reserved	9.1.1	m	
6	Gateway master flag	9.3.13	n/a	
7	Reserved	9.1.1	m	
8	A/B channel usage	9.3.1	m	
9	Slot number	9.3.25	m	
10	Frame number	9.3.11	m	
11	AI encryption state	9.3.2	m	
12	Time Variant Parameter	9.3.30	c4401	
13	Timestamp flag	9.3.31	c4401	
14	KSG number	9.3.14	c4401	
15	Encryption key number	9.3.7	c4401	
16	Reserved	9.1.1	m	

c4401: IF A.38/3 THEN m ELSE n/a -- If AI encryption supported then mandatory.

NOTE: The n/a status is used for elements which do not apply to DMO MS-MS applications.

A.6.4.2 DMAC-SYNC in SCH/H

Table A.45: Information elements for DMAC-SYNC PDU in SCH/H

Item	Information element	Reference	Status	Support
1	Repeater address	9.3.23	n/a	
2	Gateway address	9.3.12	n/a	
3	Reserved	9.1.1	m	
4	Fill bit indication	9.3.8	m	
5	Fragmentation flag	9.3.9	m	
6	Number of SCH/F slots	9.3.22	c4501	
7	Frame countdown	9.3.10	m	
8	Destination address type	9.3.5	m	
9	Destination address	9.3.4	m	
10	Source address type	9.3.27	m	
11	Source address	9.3.26	m	
12	Mobile Network Identity	9.3.20	m	
13	Message type	9.3.19	m	
14	Message dependent elements	9.3.18	m	
15	DM SDU	9.3.6	m	

c4501: IF A.38/5 THEN m ELSE n/a -- If fragmentation started by a DMAC SYNC PDU supported then mandatory

NOTE 1: Items 1 and 2 are present only for communication via repeater or gateway.

NOTE 2: The n/a status is used for elements which do not apply to DMO MS-MS applications.

A.6.4.3 DMAC-DATA

Table A.46: Information elements for DMAC--DATA PDU

Pre-requisite sending or receiving of DMAC-DATA:			A.43/2a		A.43/2b	
Item	Information element	Reference	Sending		Receiving	
			Status	Support	Status	Support
1	MAC PDU type	9.3.16	m		m	
2	Fill bit indication	9.3.8	m		m	
3	Second half slot stolen flag	9.3.24	m		m	
4	Fragmentation flag	9.3.9	m		m	
5	Null PDU flag	9.3.21	m		m	
6	Frame countdown	9.3.10	m		m	
7	AI encryption state	9.3.2	m		m	
8	Destination address type	9.3.5	m		m	
9	Destination address	9.3.4	m		m	
10	Source address type	9.3.27	m		m	
11	Source address	9.3.26	o		m	
12	Mobile Network Identity	9.3.20	m		m	
13	Message type	9.3.19	m		m	
14	Message dependent elements	9.3.18	m		m	
15	DM-SDU	9.3.6	m		m	

A.6.4.4 DMAC-FRAG

Table A.47: Information elements for DMAC-FRAG PDU

Pre-requisite: A.43/3a OR A.43/3b -- DMAC-FRAG PDU				
Item	Information element	Reference	Status	Support
1	MAC PDU type	9.3.16	m	
2	MAC PDU subtype	9.3.15	m	
3	Fill bit indication	9.3.8	m	
4	DM-SDU	9.3.6	m	

A.6.4.5 DMAC-END

Table A.48: Information elements for DMAC-END PDU

Pre-requisite: A.43/4a OR A.43/4b -- DMAC-END PDU				
Item	Information element	Reference	Status	Support
1	MAC PDU type	9.3.16	m	
2	MAC PDU subtype	9.3.15	m	
3	Fill bit indication	9.3.8	m	
4	DM-SDU	9.3.6	m	

A.6.4.6 DMAC-U SIGNAL

Table A.49: Information elements for DMAC-U SIGNAL PDU

Pre-requisite: A.43/5a OR A.43/5b -- DMAC-U SIGNAL PDU				
Item	Information element	Reference	Status	Support
1	MAC PDU type	9.3.16	m	
2	Second half slot stolen flag	9.3.24	m	
3	U-plane DM-SDU	9.3.32	m	

A.6.5 DM-MAC generated messages

The supplier of the implementation shall state the support of the implementation for each of the following DM-MAC generated messages, in table A.50.

Table A.50: DM-MAC generated messages

Item	MAC generated message	Reference	Sending		Receiving	
			Status	Support	Status	Support
1	DM-RESERVED	9.4.1	c5001		c5002	
2	DM-SDS OCCUPIED	9.4.2	c5003		c5005	
3	DM-TIMING REQUEST	9.4.3	c5004		c5006	
4	DM-TIMING ACK	9.4.4	c5006		c5002	

- c5001: IF A.2/3 OR A.2/4 -- If initiate CM call set-up supported
THEN m -- then mandatory
ELSE n/a
- c5002: IF A.1/1 -- If circuit mode call supported
THEN m -- then mandatory
ELSE n/a
- c5003: IF A.6/1 -- If send short data supported
THEN m -- then mandatory
ELSE n/a
- c5004: IF A.36/12 -- If timing change procedure by requesting DM-MS supported
THEN m -- then mandatory
ELSE n/a
- c5005: IF A.6/2 -- If receive short data supported
THEN m -- then mandatory
ELSE n/a
- c5006: IF A.36/11 -- If timing change procedure by master DM-MS supported
THEN m -- then mandatory
ELSE n/a

A.6.6 DM-MAC generated message parameters

The supplier of the implementation shall state the support of the implementation for each of the following DM-MAC generated message parameters, in tables A.51 to A.54.

A.6.6.1 DM-RESERVED

Table A.51: Information elements for DM-RESERVED

Pre-requisite: A.50/1a OR A.50/1b -- DM-RESERVED PDU				
Item	Information element	Reference	Status	Support
1	All elements	9.4.1	m	

A.6.6.2 DM-SDS OCCUPIED

Table A.52: Information elements for DM-SDS OCCUPIED

Pre-requisite: A.50/2a OR A.50/2b -- DM-SDS OCCUPIED PDU				
Item	Information element	Reference	Status	Support
1	All elements	9.4.2	m	

A.6.6.3 DM-TIMING REQUEST

Table A.53: Information elements for DM-TIMING REQUEST

Pre-requisite: A.50/3a OR A.50/3b -- DM-TIMING REQUEST PDU				
Item	Information element	Reference	Status	Support
1	All elements	9.4.3	m	

A.6.6.4 DM-TIMING ACK

Table A.54: Information elements for DM-TIMING ACK

Pre-requisite: A.50/4a OR A.50/4b -- DM-TIMING ACK PDU				
Item	Information element	Reference	Status	Support
1	All elements	9.4.4	m	

A.6.7 DM-MAC constants

The supplier of the implementation shall state the support of the implementation for each of the following DM-MAC constants, in tables A.55 and A.56.

Table A.55: DM-MAC constants

Item	Constant	Reference	Status	Support	Values	
					Default /Range	Supported
1	DN.204 (min)	A.4	c5501		1	
2	DN.205 (max)	A.4	c5501		8	
3	DN.206 (min)	A.4	c5502		8	
4	DN.207 (max)	A.4	c5502		12	
5	DN.208	A.4	c5503		2 ... 8	
6	DN.209	A.4	c5504		2 ... 8	
7	DN.210	A.4	c5505		3	
8	DN.212	A.4	c5506		2	
9	DN.213	A.4	c5507		8	

- c5501: IF A.2/3 OR A.2/4 OR A.6/1 -- If initiate CM call set-up or SDS send data supported
THEN m -- then mandatory
ELSE n/a
- c5502: IF A.2/4 OR A.9/2 OR A.9/3 -- If initiate CM call set-up with presence check or send SDS
THEN m -- acknowledged data with or without data in ACK then
ELSE n/a -- mandatory
- c5503: IF A.2/3 OR A.2/4 -- If initiate CM call set-up with or without presence check
THEN m -- supported then mandatory
ELSE n/a
- c5504: IF A.1/1 OR A.6/2 -- If CM call supported or SDS receive data supported
THEN m -- then mandatory
ELSE n/a
- c5505: IF A.2/6 OR A.11/2 OR A.11/3 -- If CM call receive with presence check supported or
THEN m -- receive acknowledged SDS with or without data
ELSE n/a -- in ACK supported then mandatory
- c5506: IF A.9/2 OR A.9/3 -- If send SDS data with or without data in ACK supported
THEN m -- then mandatory
ELSE n/a
- c5507: IF A.41/6 -- If MAC abandon random access procedure supported
THEN m -- then mandatory
ELSE n/a

Table A.56: DM-MAC number of frame transmissions

Item	Message type	Reference	Status	Support	Values	
					Allowed	Supported
1	DM-SETUP (new call setup)	A.5	c5601		2 ... 4	
2	DM-SETUP (continuation of ongoing call)	A.5	c5601		1 ... 4	
3	DM-SETUP PRES (new call setup)	A.5	c5602		2 ... 4	
4	DM-SETUP PRES (continuation of ongoing call)	A.5	c5602		1 ... 4	
5	DM-CONNECT	A.5	c5603		1 ... DN210	
6	DM-DISCONNECT	A.5	c5603		1 ... DN210	
7	DM-CONNECT ACK	A.5	c5602		1 ... 4	
8	DM-TX CEASED	A.5	c5604		2 ... 4	
9	DM-RELEASE	A.5	c5604		2 ... 4	
10	DM-TX ACCEPT	A.5	c5604		2 ... 4	
11	DM-PRE ACCEPT	A.5	c5605		2 ... 4	
12	DM-REJECT	A.5	c5606		1 ... 4	
13	DM-TIMING ACK (during occupation)	A.5	c5607		1 ... 4	
14	DM-TIMING ACK (during reservation for rejection)	A.5	c5607		1 ... 4	
15	DM-TIMING ACK (during reservation for acceptance)	A.5	c5607		2 ... 4	
16	DM-SDS DATA (DSB) (new call set-up)	A.5	c5608		2 ... 4	
17	DM-SDS DATA (DSB) (continuation of ongoing call)	A.5	c5608		1 ... 4	
18	DM-SDS UDATA (DSB) (new call set-up)	A.5	c5609		2 ... 4	
19	DM-SDS UDATA (DSB) (continuation of ongoing call)	A.5	c5609		1 ... 4	
20	DM-SDS ACK (DSB)	A.5	c5610		1 ... DN210	

- c5601: IF A.2/3
THEN m -- If initiate CM call without presence check supported
ELSE n/a -- then mandatory
- c5602: IF A.2/4
THEN m -- If initiate CM call with presence check supported
ELSE n/a -- then mandatory
- c5603: IF A.2/6
THEN m -- If accept call set-up with presence check supported
ELSE n/a -- then mandatory
- c5604: IF A.2/3 OR A.2/4
THEN m -- If initiate CM call with or without presence check supported
ELSE n/a -- then mandatory
- c5605: IF A.2/3 OR A.2/4 OR A.6/1
THEN m -- If initiate CM call or send SDS data supported
ELSE n/a -- then mandatory
- c5606: IF A.2/3 OR A.2/4
THEN m -- If initiate CM call supported
ELSE IF A.11/2 OR A.11/3.
THEN o -- If receive acknowledged SDS supported
ELSE n/a -- then optional
- c5607: IF A.36/11
THEN m -- If timing change procedure for master DM-MS supported
ELSE n/a -- then mandatory

- c5608: IF A.9/2 OR A.9/3
THEN m -- If acknowledged data service with or without data in ACK
ELSE n/a -- supported then mandatory
- c5609: IF A.8/1 OR A.9/1
THEN m -- If unacknowledged SDS with group or individual
ELSE n/a -- address supported then mandatory
- c5610: IF A.11/2 OR A.11/3
THEN m -- If receive acknowledged SDS supported
ELSE n/a -- then mandatory

A.6.8 DM-MAC timers

The supplier of the implementation shall state the support of the implementation for each of the following DM-MAC timers, in table A.57.

Table A.57: DM-MAC timers

Item	Timer	Reference	Status	Support	Values	
					Default	Supported
1	DT.205	A.3	c5701		18 -- frames	
2	DT.207	A.3	m		90 -- frames	
3	DT.210	A.3	c5702		4 -- frames	
4	DT.211	A.3	c5703		3 -- frames	
5	DT.212	A.3	o		7 -- frames	
6	DT.213	A.3	c5704		5 ... 60 -- multiframes	
7	DT.214	A.3	c5705		36 -- frames	
8	DT.221	A.3	c5706		90 --frames	

- c5701: IF A.2/3 OR A.2/4 OR A.6/1
THEN m -- If initiate CM call set-up or SDS send data supported
ELSE n/a -- then mandatory
- c5702: IF A.9/2 OR A.9/3
THEN m -- If acknowledged SDS with or without data in ACK
ELSE n/a -- supported then mandatory
- c5703: IF A.41/4
THEN m -- If random access wait for response supported
ELSE n/a -- then mandatory
- c5704: IF A.41/6
THEN m -- If abandon random access attempt supported
ELSE n/a -- then mandatory
- c5705: IF A.41/3
THEN m -- If valid access slot supported
ELSE n/a -- then mandatory
- c5706: IF A.1/1
THEN m -- If circuit mode call supported
ELSE n/a -- then mandatory

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