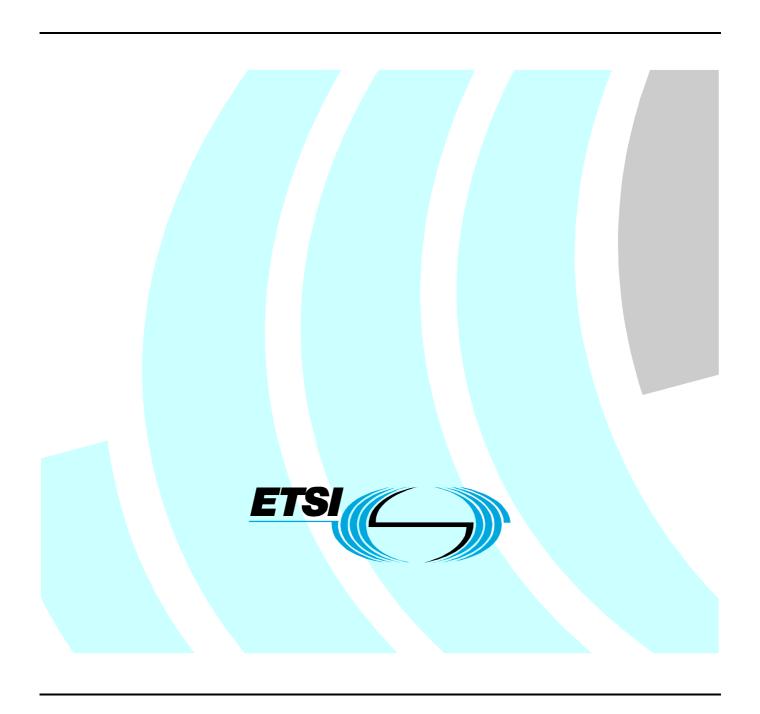# Final draft ETSI ES 202 912-4 V1.1.1 (2002-12)

Access and Terminals (AT);
Short Message Service (SMS) for PSTN/ISDN
Test Suites for SMS User Based Solution;
Part 4: Protocol Implementation Conformance
Statement (PICS) proforma specification
user side for Data Link Layer (DLL) Protocol 2

Reference

DES/AT-030014-04

Keywords

SMS, ISDN, PSTN, PICS

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Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Access and Terminals (AT), and is now submitted for the ETSI standards Membership Approval Procedure.

The present document is part 4 of a multi-part deliverable. Full details of the entire series can be found in part 1 [5].

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 given protocol. Such a statement is called an Implementation Conformance Statement (ICS). An ICS stating what capabilities and options have been implemented for a particular protocol is called a protocol ICS. This is commonly abbreviated to "PICS".

1 Scope

The present document provides the Protocol Implementation Conformance Statement (PICS) proforma for Terminal Equipments implementing the Short Message Service (SMS) for PSTN/ISDN as defined in ES 201 912 [1] for the Data Link Layer, protocol 2, in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [4].

Terminal equipment implementing the Short Message Service (SMS) for PSTN/ISDN perform circuit-switched voice-band connections to the SM-SC, following the basic call procedures of ISDN or PSTN. PICS for these procedures are not within the scope of the present document.

Protocol Implementation Conformance Statements related to the Physical Layer are made to a small extent, mainly by referring to the FSK protocol as defined in EN 300 659-1 [2] and EN 300 659-2 [3]. Detailed conformance statements related to the Physical Layer are not within the scope of the present document.

Terminal Equipment implementing the Short Message Service (SMS) for PSTN/ISDN, according to Protocol 2, are required to implement the Transfer Layer according to ES 201 912 [1], clause 6. Protocol Implementation Conformance Statements related to the Transfer Layer are specified here to some extent, but no detailed PICS for the Transfer Layer parameter formats are provided, as they are not within the scope of the present document.

Protocol Implementation Conformance Statements related to the SM-TE major capabilities and service capabilities are also specified in the present document.

The supplier of a protocol 2 implementation in a terminal equipment that is claimed to conform to ES 201 912 [1], is required to complete a copy of the PICS proforma provided in annex A of the present document and is required to provide the information necessary to identify both the supplier and the implementation.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies.

[1]   ETSI ES 201 912 (V1.1.1): "Access and Terminals (AT); Short Message Service (SMS) for PSTN/ISDN; Short Message Communication between a fixed network Short Message Terminal Equipment and a Short Message Service Centre".

[2]   ETSI EN 300 659-1 (V1.3.1): "Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 1: On-hook data transmission".

[3]   ETSI EN 300 659-2 (V1.3.1): "Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 2: Off-hook data transmission".

[4]   ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".

[5]   ETSI ES 202 912-1(V1.1.1): "Access and Terminals (AT); Short Message Service (SMS) for PSTN/ISDN; Test Suites for SMS User Based Solution; Part 1: Protocol Implementation Conformance Statement (PICS) proforma specification user side for Data Link Layer Protocol 1".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ES 201 912 [1], ISO/IEC 9646-7 [4] and the following terms 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

NOTE: The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, and information object ICS.

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

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

3.3 Abbreviations

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

CLIP	Calling Line Identification Presentation
CM	Connection Manager
DLL	Data Link Layer
DTMF	Dual Tone Multi-Frequency
FSK	Frequency Shift Keying
ICS	Implementation Conformance Statement
ISDN	Integrated Services Digital Network
ISO	International Standard Organization
IUT	Implementation Under Test
PICS	Protocol ICS
PSTN	Public Switched Telephone Network
SM	Short Message(s)
SME	Short Message Entity
SMS	Short Message Service
SM-SC	Short Message Service Centre
SM-TE	Short Message Terminal Equipment
SM-TL	Short Message Transfer Layer
SUB	Sub-addressing
SUT	System Under Test
TL	Transfer (layer)

4 Conformance

A PICS proforma that conforms to this PICS proforma specification shall be technically equivalent to annex A, and shall preserve the numbering and ordering of the items in annex A.

A PICS that conforms to this PICS proforma specification shall:

a) describe an implementation which conforms to ES 201 912 [1] for Protocol 2;

b) be a conforming PICS proforma, which has been completed in accordance with the instructions for completion given in clause A.1;

c) include the information necessary to uniquely identify both the supplier and the implementation.

Annex A (Normative):
PICS proforma for ES 201 912, Data Link Layer, Protocol 2

A.1 Guidance for completing the ICS 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 ES 201 912 [1] for Protocol 2, may provide information about the implementation in a standardized manner.

The PICS proforma is subdivided into clauses as follows:

   A.1: guidance for completing the various parts of the PICS proforma;

   A.2: identification of the implementation;

   A.3: identification of the protocols to which this PICS proforma applies;

   A.4: global statement of conformance;

   A.5: PICS proforma tables;

-   Major capabilities

-   Services-related and terminal capabilities

-   Physical layer PICS

-   Data link layer PICS

-   Transfer layer PICS

A.1.2 Abbreviations and conventions

The PICS proformas contained in this annex are presented in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [4].

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

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

Notations used **inside** PICS tables:

"**Item**" column:

•   The item column contains identifiers related to the items in the table rows. A PICS item is uniquely identified by its identifier throughout all PICS proformas of the present document.

"**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?".

"**Reference**" column:

- The reference column makes reference to clause(s) of one or more standards in the "References" clause. Since ES 201 912 [1] is the main standard on which the PICS relate, all references giving clauses numbers without prefixed document reference number, are understood to refer to clauses of ES 201 912. References to other standards are preceded by the standard's document reference number [n]. In case of mixed references, those of ES 201 912 [1] (if any) appear first.

- When a particular paragraph is referenced inside a clause, the "§" character followed by the number of the paragraph within the clause is indicated. All paragraphs except table headers, figure footers or contents of tables are counted, starting from 1.

"**Status**" column:

The following notations are used for the status column:

M **mandatory** - the capability shall 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.

O.n **qualified optional** - for mutually exclusive or selectable options from a set. "n" is an integer which identifies an unique group of related optional items.

Cm **conditional** - a (possibly nested) <if ... then ... else ...> construction is defined, where the block between <if> and <else> contains a qualifier (Boolean expression) and the blocks before and after <else> contain a more specific status reference, where all forms of status notations defined above and including the <Cm> notation are allowed inside the blocks.

The <O.n> and <Cm> **definitions** follow the PICS table rows containing items, and are **local** to the table.

References to items of the current table inside the **conditions block** of <Cm> **definitions** are made by giving the **item identifier without a prefix**. References to items of **other** PICS tables in the present document are made by giving the **item identifier preceded by the table number** plus a "." character (see examples below).

Examples for status notations:

Table A.nn: Examples for status notations

Item	Item description	Reference	Status	Support
item1			M	
item2			O	
item3			N/A	
item4			O.1	
item5			O.1	
item6			O.2	
item7			O.2	
item8			C1	
item9			C2	
O.1	Support of exactly one of the related items is required			
O.2	Support of at least one of the related items is required			
C1	If item2 then M else N/A			
C2	If A.mm.itemx then O else (If item6 then N/A else M)			
Comments: <Free text>				

"**Allowed values**" column (if present):

- This column shall be filled out with a value or a range of values that are allowed for the item, according to the conditions. If the type of the value item requires a unit, then the unit is indicated, too.

EXAMPLE: 500 ms to 2 000 ms

"**Support**" or "**Supported value**" column:

The support column shall be filled in by the supplier of the implementation and are left blank in the present document. 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).
1 000 ms	the corresponding item is implemented with a value of 1 000 ms.

NOTE: As stated in ISO/IEC 9646-7, support for a received 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 are supported.

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 clause A.1.2.

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

More detailed instructions are given at the beginning of the different subclasses 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   Implementation Under Test (IUT) identification

IUT name:

....

....

IUT version:

....

....

A.2.3   System Under Test (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 reference specification type

This PICS proforma applies to the following standard:

ES 201 912

References to capabilities defined in other standards being identified as normative references for ES 201 912 are made when necessary, e.g. to express options defined in ES 201 912. When such references appear, they are made in a global manner, because conformance statements related to details specified in other standards are outside the scope of the present document.

A.4 Global statement of conformance

Are all mandatory capabilities implemented? (Yes/No) ....

NOTE: Answering "No" to this question indicates non-conformance to the EN 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.

A.5 PICS proforma tables

A.5.1 Major capabilities

Table A.1 lists the conformance statements related to the major capabilities of an SMS-TE:

Table A.1: Major capabilities

Item	Item description	Reference	Status	Support
MC1	The SM-TE contains at least one SME.	6.5.1	M	
MC2	The SM-TE contains more than one SME.	6.5.1	O	
MC3	For each Short Message Service Provider supported by the SM-TE the SM-TE is able to store at least one SM-SC number.	6.5.1	M	
MC4	The SM-TE is able to establish a voice-band communication path between it and the SM-SC using basic control procedures according to an ISDN access (as call initiator and as call receiver). (see note 1)	4	O.1	
MC5	The SM-TE is able to establish a voice-band communication path between it and the SM-SC using basic control procedures according to a PSTN access (as call initiator and as call receiver). (see note 1)	4	O.1	
MC6	Submitting SMs to the SM-SC (outgoing SMs).	6.1	M	
MC7	Delivery of SMs from the SM-SC (incoming SMs).	6.1	M	
MC8	Receiving and recognizing the CLI information (see note 2) for incoming calls.	4	M	
O.1	Support of exactly one of these options is required.			
Comments:				
NOTE 1: Details of these procedures are outside the scope of the present document.				
NOTE 2: CLI can be received by the SM-TE via DSS1 call control signalling (ISDN access), FSK signalling or DTMF signalling (PSTN access). Details of the CLI reception are outside the scope of the present document.				

A.5.2   Services-related and terminal capabilities

Table A.2 lists the conformance statements related to the capabilities and SM services supported by an SM-TE.

Table A.2: Services-related and terminal capabilities

Item	Item description	Reference	Status	Support
SMSER1	The SM-TE provides the possibility to store one SME Subaddress value for each SME contained in the SM-TE.	6.5.1	M	
SMSER2	The SM-TE provides the possibility to define or change the SME Subaddress value.	6.5.6	M	
SMSER3	The SM-TE provides the default SME Subaddress value (i.e. 1) in case of no user indication.	6.5.6	M	
SMSER4	The SM-TE provides the possibility to define and store at least one Public Key for each SME.	6.5.6 §2	O	
SMSER5	The SM-TE provides the possibility to associate a Password for each defined Public Key.	6.5.6 §3	C1	
SMSER6	The SM-TE provides an indication of the "Memory Full" state.	6.5.3 §1	O	
SMSER7	The SM-TE provides the possibility to notify the SM-SC of the end of the "Memory Full" state.	6.5.3 §3	O	
SMSER8	The SM-TE provides the possibility to request the privacy of the sending identity also in case of CLIR not active.	6.5.5	O	
SMSER9	The SM-TE is able to compare the Called Subaddress value contained in the incoming call CLIP information with the SME Subaddress value stored in the SM-TE.	6.2.2	M	
SMSER10	Non-acceptance of the SM call by the SM-TE in case the Called Subaddress value contained in the incoming call CLIP information does not match the SME Subaddress value stored in the SM-TE.	6.5.6 table 9	M	
SMSER11	Acceptance of the SM call by the SM-TE in case the SM-TE is in the idle state and the Called Subaddress value contained in the incoming call CLIP information matches the SME Subaddress value stored in the SM-TE.	6.5.6 table 9	M	
SMSER12	Non-acceptance of the SM call by the SM-TE in case the SM-TE is busy and does not support the Off-hook CLIP service.	6.5.6 table 9	M	
SMSER13	Acceptance of the SM call by the SM-TE in case the SM-TE is busy and it supports the Off-hook CLIP service.	6.5.6 table 9	O	
SMSER14	Ringing suppression in case of SM call.	6.5.2	O	
SMSER15	Rejection of a message if the SM-TE does not have enough memory to store it and entering the "Memory Full" state.	6.5.3	M	
SMSER16	If there is an SM to submit, the SM-TE dials the number of the SM-SC which is stored in the SM-TE.	6.5.7 §1	M	
SMSER17	The SM-TE provides the possibility to choose the destination SME.	6.5.7 §3	M	
SMSER18	In case of no user indication the SM-TE provides a default value for the destination SME to which the SM is addressed.	6.5.7 §3	M	
SMSER19	The SM-TE sends the originating SME Subaddress value to the SM-SC.	6.5.7 §4	M	
SMSER20	The SM-TE provides the possibility to request a status report related to the SM that has to be sent.	6.5.7 §5	O	
SMSER21	The SM-TE provides the possibility to protect the SM that has to be sent with a Public Key.	6.5.7 §6	O	
SMSER22	The SM-TE provides the possibility to define the destination device to which the SM is addressed.	6.5.7 §7	O	
SMSER23	The SM-TE provides the possibility to fill in the parameters associated to the chosen destination device to which the SM is addressed.	6.5.7 §7	C2	
SMSER24	Sending of SMs to be delivered as SM	6.1, B.2.1.1 table B.2.1	O.1	
SMSER25	Sending of SMs to be delivered as FAX	6.1, B.2.1.1 table B.2.4	O.1	

Item	Item description	Reference	Status	Support
SMSER26	Sending of SMs to be delivered as E-Mail	6.1, B.2.1.1 table B.2.5	O.1	
SMSER27	Sending of SMs to be delivered as Conventional MAIL	6.1, B.2.1.1 table B.2.3	O.1	
SMSER28	Sending of SMs to be delivered as TELEGRAM	6.1, B.2.1.1 table B.2.3	O.1	
SMSER29	Sending of SMs to be delivered as vocal message	6.1, B.2.1.1 table B.2.2	O.1	
SMSER30	Sending of SMs containing Data instead of a text message	6.1, B.2.1.1 table B.2.6	O.1	
SMSER31	Sending of SMs containing an SM Replace indication	6.1, B.2.1.1 Tables: B.2.1, B.2.2, B.2.6	O	
SMSER32	Sending of SMs containing a Validity Period indication	6.1, B.2.1.1 Tables: B.2.1, B.2.2, B.2.3, B.2.4, B.2.5, B.2.6	O	
SMSER33	Sending of SMs indicating if memory resources are available to store a new incoming SM	6.1, B.2.1.6	O	
SMSER34	Sending of more than one SM within the same SM call	6.1	O	
SMSER35	Receiving of SMs originated by an SM-TE	6.1, B.2.1.2 table B.2.7	M	
SMSER36	Receiving of SMs containing a Status report indication	6.1, B.2.1.2 table B.2.10	M	
SMSER37	Receiving of SMs originated by an electronic mailbox	6.1, B.2.1.2 table B.2.8	O	
SMSER38	Receiving of SMs containing Data instead of a text message	6.1, B.2.1.2 table B.2.9	O	
SMSER39	Indication for the SM-SC that SM Replace service for incoming SM calls is supported.	6.1, B.2.1.7 table B.2.14, B.2.2.17 table B.2.33	O	
SMSER40	Indication for the SM-SC that More messaging Receiving in one connection service is supported.	6.1, B.2.1.7 table B.2.14, B.2.2.17 table B.2.33	O	
SMSER41	Indication for the SM-SC that the Display Code Set extension is supported.	6.1, B.2.1.7 table B.2.14, B.2.2.17 table B.2.33	O	
SMSER42	Indication for the SM-SC of the maximum number of text characters or data bytes that the SM-TE can receive.	6.1, B.2.1.7 table B.2.14, B.2.2.17 table B.2.33	O	
SMSER43	Indication for the SM-SC of the number of memory blocks available to store incoming SMs in the SM-TE	6.1, B.2.1.7 table B.2.14, B.2.2.17 table B.2.33	O	
SMSER44	Indication for the SM-SC of the SM-TE language	6.1, B.2.1.7 table B.2.14, B.2.2.17 table B.2.33	O	
O.1	Support of at least one of these options is required.			
C1	If SMSER4 then O else N/A			
C2	If SMSER22 then M else N/A			
Comments:				

A.5.3 Physical layer

A.5.3.1 Bit transfer and frame delimitation

Table A.3 lists the conformance statements related to the physical layer functions of an SM-TE.

Table A.3: Bit transfer and frame delimitation

Item	Item description	Reference	Status	Support
PHBIT1	Transmission in the voice-band using a bi-directional, half duplex 1 200 Baud FSK modulation	6.3.1	M	
PHBIT2	Reception in the voice-band using a bi-directional, half duplex 1 200 Baud FSK modulation	6.3.1	M	
PHBIT3	The SM-TE sends the first FSK frame after voice-path establishment if and only if the SM-SC has initiated the voice-path connection (incoming SM), i.e. the SM-TE receives the first FSK frame after voice-path establishment in case of an outgoing SM.	6.3.1, B.1.2.1	M	
PHBIT4	The SM-TE sends and receives FSK frames which always start with the Channel Seizure signal (300 alternating "Space" and "Mark" bits) followed by the Mark signal (80 ± 25 Mark bits).	6.3.2.1	M	
Comments:				

A.5.3.2 Physical layer timers

Table A.4 lists the conformance statements related to the physical layer timers of an SM-TE.

Table A.4: Physical layer timers

Item	Item description	Reference	Status	Support
PHTIM1	Minimum delay time (T10min) between the accepting of the call and the sending of the first FSK-Frame (see note)	6.3.1	M	
PHTIM2	Minimum delay time between two successive FSK frames (T11min = 100 ms)	6.3.1	M	
Comments: NOTE: T10min = n x 100 ms; n = 1..256, determined by the network operator.				

A.5.4   Data link layer

A.5.4.1   Data link layer general message structure and parameters

Table A.5 lists the conformance statements related to the general message structure and the message parameter structures and contents contained in the messages supported by an SM-TE.

Table A.5: Data link layer general message structure and parameters

Item	Item description	Reference	Status	Support
DLPAR1	General message format	6.3.2.1, figure 12	M	
DLPAR2	Message Type (indicates the type of the message and the extension bit)	6.3.2.1	M	
DLPAR3	Message length (binary-encoded message length in octets)	6.3.2.1	M	
DLPAR4	Payload (Octet string of 0 to 255 octets length, typically a TL message, or part of it, when the extension mechanism is used)	6.3.2.1	M	
DLPAR5	Checksum (Two is complement of the modulo 256 sum of all the octets in the message starting from the message type octet up to the end of the message (excluding the checksum itself))	6.3.2.1	M	
Comments:				
NOTE: The "Channel Seizure" signal and the "Mark" signal, which serve for receiver synchronization, are not octet-oriented fields and have been treated in the Physical layer PICS item A3.PHBIT4.				

A.5.4.2   Data link layer messages

Table A.6 lists the conformance statements related to the data link layer messages to be supported by an SM-TE for transmission and reception.

Table A.6: Data link message formats

Item	Item description	Reference	Status	Support
DLMSG1	DLL_SMS_EST	6.3.2.1, table 5	M	
DLMSG2	DLL_SMS_INFO-MO	6.3.2.1, table 5	M	
DLMSG3	DLL_SMS_INFO-MT	6.3.2.1, table 5	M	
DLMSG4	DLL_SMS_INFO-STA	6.3.2.1, table 5	O	
DLMSG5	DLL_SMS_NACK	6.3.2.1, table 5	M	
DLMSG6	DLL_SMS_ACK0	6.3.2.1, table 5	M	
DLMSG7	DLL_SMS_ACK1	6.3.2.1, table 5	M	
DLMSG8	DLL_SMS_ENQ	6.3.2.1, table 5	M	
DLMSG9	DLL_SMS_REL	6.3.2.1, table 5	M	
Comments:				

A.5.4.3   Data link layer procedures and error handling

Table A7 lists the conformance statements related to the data link layer procedures and error handling performed by an SM-TE. The data link layer procedures are not explicitly defined with procedure names in ES 201 912, but by using MSCs in annex B, which are normative for the data link layer behaviour. States are also implicitly defined there.

The "References" column of table A.7 adresses the annex B globally and gives for each procedure an example MSC.

Table A.7: Data link procedures

Item	Item description	Reference	Status	Support
DLPRC1	Data link establishment acceptance (Receiving a DLL_SMS_EST message after having initiated the voice-band connection.)	6.3.2.1, B.1.2.1	M	
DLPRC2	Data link establishment initiation (Sending a DLL_SMS_EST message after having received and completed the voice-band connection.)	6.3.2.1, B.1.2.1	O.1	
DLPRC3	Data link establishment initiation (Sending a DLL_SMS_ACK0 message containing the SM-TE CAPABILITY TL message after having received and completed the voice-band connection.)	6.3.2.1, B.1.2	O.1	
DLPRC4	Data link Info (Sending of a DLL_SMS_INFO-MO message after receiving DLL_SMS_EST message.)	6.3.2.1, B.1.3	M	
DLPRC5	Successful data submission (Sending a DLL_SMS_INFO-MO or a DLL_SMS_INFO-STA message and receiving as response a DLL_SMS_ACKx message containing a confirmation indication, given by the peer TL entity.)	6.3.2.1, B.1.3.1, B.1.3.2, B.1.3.4, B.1.3.5, B.1.3.6, B.1.3.7	M	
DLPRC6	Unsuccessful data submission for TL error (Sending a DLL_SMS_INFO-MO or a DLL_SMS_INFO-STA message and receiving as response a DLL_SMS_ACKx message containing a rejection indication, with cause, given by the peer TL entity.)	6.3.2.1, B.1.3.3	M	
DLPRC7	Receiving negative acknowledgement (Sending a DLL_SMS_INFO-MO or a DLL_SMS_INFO-STA or DLL_SMS_ENQ or DLL_SMS_REL message and receiving a DLL_SMS_NACK message as response, indicating a DLL error like unexpected message type, wrong message length or wrong checksum. The frame is retransmitted max Nretry times before disconnecting.).	6.3.2.1, B.1.3.5, B.1.3.9, B.1.4.2, B.1.4.4	M	
DLPRC8	Receiving no acknowledgement Sending of DLL_SMS_ENQ in case of no answer from the SM-SC to a DLL_SMS_INFO-MO or DLL_INFO-STA (for max Nretry+1 times.)	6.3.2.1, B.1.3.7, B.1.3.8, B.1.3.10, B.1.3.11	M	
DLPRC9	Sending DLL acknowledgement (Sending a DLL_SMS_ACKx message as a response to a previously received data link layer message) DLL_SMS_ACK1 is used to acknowledge the first DLL message and all the following odd messages, DLL_SMS_ACK0 is used to acknowledge all the even messages. The same ACKx is used to acknowledge the DLL_SMS_REL messages following the first DLL_SMS_REL.	6.3.2.1, B.1.3, B.1.4.3, B.1.4.5	M	
DLPRC10	Sending DLL acknowledgement (Sending a DLL_SMS_ACKx message containing a confirmation or rejection indication, given by the TL peer entity, as response to a received DLL_SMS_INFO-MT message or DLL_SMS_STATUS_REP)	6.3.2.1, B.1.3.1, B.1.3.2, B.1.3.3, B.1.3.4, B.1.3.5, B.1.3.6, B.1.3.7	M	
DLPRC11	Sending DLL acknowledgement (Sending of DLL_SMS_ACKx with null payload in case of no TL response available)	6.3.2.1, B.1.3.2	M	
DLPRC12	Sending DLL acknowledgement (Sending of DLL_SMS_ACKx with null payload in response to a DLL message with extension bit="1".)	6.3.2.1, B.1.3.4	M	

Item	Item description	Reference	Status	Support
DLPRC13	Waiting for TL response (Sending of DLL_SMS_ENQ to maintain active the DLL connection in case of no TL response available from the SM-SC (for max Nwait+1 times).)	6.3.2.1, B.1.3.2	M	
DLPRC14	Sending DLL acknowledgement (Sending of DLL_SMS_ACKx containing the TL confirmation or rejection, if available, in response to DLL_SMS_ENQ sent to maintain active the DLL connection.)	6.3.2.1, B.1.3.2	M	
DLPRC15	Sending DLL acknowledgement (Sending of the last DLL_SMS_ACKx sent, in response to DLL_SMS_ENQ.)	6.3.2.1, B.1.3.2, B.1.3.6, B.1.3.8, B.1.3.10	M	
DLPRC16	Sending negative acknowledgement (Sending a DLL_SMS_NACK message as a response to a previously received data link layer message containing a DLL-related error.)	6.3.2.1, B.1.3.5, B.1.3.9, B.1.4.2, B.1.4.4	M	
DLPRC17	Sending DLL release (Sending a DLL_SMS_REL to initiate the disconnection procedure.)	6.3.2.1, B.1.3.4	M	
DLPRC18	Receiving DLL release	6.3.2.1, B.1.4.1	M	
DLPRC19	Sending again of DLL_SMS_REL in case of no answer from the SM-SC (for max Nretry times.)	6.3.2.1, 6.3.2.3 table 6	M	
DLPRC20	Disconnecting if receiving DLL_SMS_ACK out of sequence		M	
DLPRC21	Ignoring the payload content of a DLL_SMS_ACKx received back in response to a DLL_SMS_INFO_MO message with extension bit="1" (or to a following DLL_SMS_ENQ) and to a DLL_SMS_REL		M	
DLPRC22	Extension mechanism (reception) (re-assemble payloads in received messages until the extension bit is "0".)	6.3.2.1, B.1.3.4	M	
DLPRC23	Extension mechanism (transmission) (segment data to be transmitted into payload portions not greater than the maximum length (255 octets), using the extension bit as "not complete/complete" indicator.)	6.3.2.1, B.1.3.4	M	
O.1	Support of exactly one of these options is required.			
Comments:				

A.5.4.4   Data link layer timers

Table A.8 lists the conformance statements related to the timers defined for the data link layer procedures performed by an SM-TE.

Table A.8: Data link layer timers

Item	Item description	Reference	Status	Support
DLTIM1	Maximum waiting time for receiving an acknowledgement message from the SM-SC, in case the SM-TE has originated the SM call (Tm1).	6.3.2.3, table 6, B.1.3.7, B.1.3.8, B.1.3.10, B.1.3.11	M	
DLTIM2	Maximum waiting time for receiving a message from the SM-SC, in case the SM-SC has originated the SM call (Tm2).	6.3.2.3, table 6, B.1.3.10, B.1.3.11, B.1.4.4, B.1.4.6	M	
DLTIM3	Maximum waiting time for receiving the "Link Established Message" from the SM-SC, in case the SM-TE has originated the SM call (Tm3).	6.3.2.3, table 6, B.1.2.3	M	
DLTIM4	Waiting time for hanging on after a release request from the SM-SC, in case the SM-SC has originated the SM call (Tm4).	6.3.2.3, table 6, B.1.4.1, B.1.4.2, B.1.4.3, B.1.4.5	M	
DLTIM5	Waiting time for sending a DLL_SMS_ENQ message to maintain active the Data Link layer, in case the SM-TE has originated the SM call (Tm5).	6.3.2.3, table 6, B.1.3.2	M	
DLTIM6	Waiting time before sending a positive acknowledgement without TL payload, in case the SM-SC has originated the SM call (Tm6) (see note).	6.3.2.3, table 6, B.1.3.2, B.1.3.3, B.1.3.4, B.1.3.5, B.1.3.6, B.1.3.7, B.1.3.8	M	
DLTIM7	Waiting time for forcing the disconnection procedure, in case the SM-TE has originated the SM call (Tm7).	6.3.2.3, table 6, B.1.4.7	M	
Comments:				
NOTE: If the TL response is available before the timer expiry, the timer is stopped and the SM-TE sends a DLL_SMS_ACKx containing it. In case the TL response is available after the timer expiry, it is inserted in the next DLL_SMS_ACKx sent in response to the DLL_SMS_ENQ coming from the SM-SC.				

A.5.4.5   Data link layer response time

Table A.**9** lists the conformance statements related to the response time performed by an SM-TE upon errors recognized at the transfer layer.

Table A.9: Response Time

Item	Item description	Reference	Status	Support
DLRSTI1	Timeout for sending an acknowledgement to a received message (T1), in case the SM-SC has originated the SM call.	6.3.2.3 table 7	M	
DLRSTI2	Timeout for sending a message (T2), in case the SM-TE has originated the SM call.	6.3.2.3 table 7	M	
DLRSTI3	Timeout for sending the "Link Established Message" (T3), in case the SM-SC has originated the SM call (see note).	6.3.2.3 table 7	M	
Comments:				
NOTE: T3 = n x 100 ms where n is an integer value determined by the network operator and so that T3 is greater than T10min and smaller than Tm3.				

A.5.4.6 Data link layer counters

Table A.10 lists the conformance statements related to the counters performed by an SM-TE upon errors recognized at the transfer layer.

Table A.10: Counters

Item	Item description	Reference	Status	Support
DLCNT1	Maximum number of times a DLL_SMS_INFO-MO or a DLL_SMS_INFO-STA or a DLL_SMS_REL which have received back a DLL_SMS_NACK is sent again (Nretry).	6.3.2.4, table 8, B.1.3.9, B.1.4.4, B.1.4.5	M	
	Maximum number of times a DLL_SMS-ENQ or a DLL_SMS_REL which have received back an erroneous DLL_SMS_ACKx (wrong checksum or message type or message length) is sent again (Nretry).	B.1.3.6, B.1.4.5		
	Maximum number of times a DLL_SMS_ENQ or a DLL_SMS_REL with no acknowledgement is sent again (Nretry).	6.3.2.4, table 8, B.1.3.10, B.1.3.11, 6.3.2.1 §15		
DLCNT2	Maximum number of times a DLL_SMS_ENQ message is sent again to maintain the Data Link layer active, in case there are no errors (Nwait).	6.3.2.4, table 8	M	
Comments:				

A.5.5 Transfer layer

A.5.5.1 Transfer layer message formats

Table A.11 lists the TL messages required to be supported by an SM-TE.

NOTE: The TL messages are defined in ES 201 912. Support of these messages means that the structure is supported as defined in ES 201 912 and the transmission or reception is supported as described in clause 6 of ES 201 912.

Table A.11: Transfer layer message formats

Item	Item description	Reference	Status	Support
TFMSG1	SMS_SUBMIT message in case Media Identifier parameter value is SMS	B.2.1.1 table B.2.1	C1	
TFMSG2	SMS_SUBMIT message in case Media Identifier parameter value is VOICE	B.2.1.1 table B.2.2	C2	
TFMSG3	SMS_SUBMIT message in case Media Identifier parameter value is Conventional MAIL or TELEGRAM	B.2.1.1 table B.2.3	C3	
TFMSG4	SMS_SUBMIT message in case Media Identifier parameter value is FAX	B.2.1.1 table B.2.4	C4	
TFMSG5	SMS_SUBMIT message in case Media Identifier parameter value is E-MAIL	B.2.1.1 table B.2.5	C5	
TFMSG6	SMS_SUBMIT message in case Media Identifier parameter value is DATA	B.2.1.1 table B.2.6	C6	
TFMSG7	SMS_DELIVERY message in case Media Identifier parameter value is SMS	B.2.1.2 table B.2.7	M	
TFMSG8	SMS_DELIVERY message in case Media Identifier parameter value is E-MAIL	B.2.1.2 table B.2.8	C7	
TFMSG9	SMS_DELIVERY message in case Media Identifier parameter value is DATA	B.2.1.2 table B.2.9	C8	
TFMSG10	SMS_STATUS_REP message	B.2.1.3 table B.2.10	M	
TFMSG11	SMS_SUBMIT_REP message	B.2.1.4 table B.2.11	M	
TFMSG12	SMS_DELIVERY_REP message	B.2.1.5 table B.2.12	M	
TFMSG13	SM-TE_STATUS message	B.2.1.6 table B.2.13	C9	
TFMSG14	SM-TE_CAPABILITY message	B.2.1.6 table B.2.14	C10	
C1	If A2.SMSER24 then M else N/A			
C2	If A2.SMSER29 then M else N/A			
C3	If (A2.SMSER27 OR A2.SMSER28) then M else N/A			
C4	If A2.SMSER25 then M else N/A			
C5	If A2.SMSER26 then M else N/A			
C6	If A2.SMSER30 then M else N/A			
C7	If A2.SMSER37 then M else N/A			
C8	If A2.SMSER38 then M else N/A			
C9	If A2.SMSER33 then M else N/A			
C10	If (A2.SMSER39 OR A2.SMSER40 OR A2.SMSER41 OR A2.SMSER42 OR A2.SMSER43) then M else N/A			
Comments:				

A.5.5.2 Transfer layer message parameters

Table A.12 lists TL message parameters required to be supported by an SM-TE.

NOTE: The TL message parameters are defined in ES 201 912. Support of these parameters means that the structure is supported as defined in ES 201 912.

Table A.12: Transfer layer message parameters for transmission

Item	Item description	Reference	Status	Support
TFPARS1	Media Identifier	6.3.3.1, B.2.2.1	M	
TFPARS2	Firmware Version	6.3.3.1, B.2.2.2	M	
TFPARS3	SMS Provider Identifier	6.3.3.1, B.2.2.3	M	
TFPARS4	Display Information	6.3.3.1, B.2.2.4	C1	
TFPARS5	Date and Time	6.3.3.1, B.2.2.5	N/A	
TFPARS6	Calling Line Identity	6.3.3.1, B.2.2.6	N/A	
TFPARS7	Reason for Absence of CLI	6.3.3.1, B.2.2.7	N/A	
TFPARS8	Calling Terminal Identity	6.3.3.1, B.2.2.8	M	
TFPARS9	Called Line Identity	6.3.3.1, B.2.2.9	C2	
TFPARS10	Fax Recipient Name	6.3.3.1, B.2.2.10	C3	
TFPARS11	Mail Address	6.3.3.1, B.2.2.11	C4	
TFPARS12	Called Terminal Identity	6.3.3.1, B.2.2.12	C5	
TFPARS13	Notify	6.3.3.1, B.2.2.13	M	
TFPARS14	Public Key	6.3.3.1, B.2.2.14	C6	
TFPARS15	SM-TE Resources	6.3.3.1, B.2.2.15	C7	
TFPARS16	Response Type	6.3.3.1, B.2.2.16	M	
TFPARS17	Bearer Capability	6.3.3.1, B.2.2.17	C8	
TFPARS18	Replace Short Message Type	6.3.3.1, B.2.2.18	C9	
TFPARS19	Validity Period	6.3.3.1, B.2.2.19	C10	
TFPARS20	Data Information	6.3.3.1, B.2.2.20	C11	
C1	If (A11.TFMSG1 OR A11.TFMSG2 OR A11.TFMSG3 OR A11.TFMSG4 OR A11.TFMSG5) M else N/A			
C2	If (A11.TFMSG1 OR A11.TFMSG2 OR TFMSG4 OR A11.TFMSG6) then M else N/A			
C3	If A11.TFMSG4 then M else N/A			
C4	If (A11.TFMSG3 OR A11.TFMSG5) then M else N/A			
C5	If (A11.TFMSG1 OR A11.TFMSG2 OR A11.TFMSG6) then M else N/A			
C6	If A2.SMSER4 AND (A11.TFMSG1 OR A11.TFMSG2 OR A11.TFMSG6) then M else N/A			
C7	If A11.TFMSG13 then M else N/A			
C8	If A11.TFMSG14 then M else N/A			
C9	If A2.SMSER31 AND (A11.TFMSG1 OR A11.TFMSG2 OR A11.TFMSG6) then M else N/A			
C10	If A2.SMSER32 then M else N/A			
C11	If A11.TFMSG6 then M else N/A			
Comments: The order of the parameters in each TL message to be as indicated in the tables of B.2.1 is mandatory.				

Table A.13: Transfer layer message parameters for reception

Item	Item description	Reference	Status	Support
TFPARR1	Media Identifier	6.3.3.1, B.2.2.1	M	
TFPARR2	Firmware Version	6.3.3.1, B.2.2.2	M	
TFPARR3	SMS Provider Identifier	6.3.3.1, B.2.2.3	M	
TFPARR4	Display Information	6.3.3.1, B.2.2.4	M	
TFPARR5	Date and Time	6.3.3.1, B.2.2.5	M	
TFPARR6	Calling Line Identity	6.3.3.1, B.2.2.6	M	
TFPARR7	Reason for Absence of CLI	6.3.3.1, B.2.2.7	M	
TFPARR8	Calling Terminal Identity	6.3.3.1, B.2.2.8	M	
TFPARR9	Called Line Identity	6.3.3.1, B.2.2.9	N/A	
TFPARR10	Fax Recipient Name	6.3.3.1, B.2.2.10	N/A	
TFPARR11	Mail Address	6.3.3.1, B.2.2.11	C1	
TFPARR12	Called Terminal Identity	6.3.3.1, B.2.2.12	N/A	
TFPARR13	Notify	6.3.3.1, B.2.2.13	M	
TFPARR14	Public Key	6.3.3.1, B.2.2.14	M	
TFPARR15	SM-TE Resources	6.3.3.1, B.2.2.15	N/A	
TFPARR16	Response Type	6.3.3.1, B.2.2.16	M	
TFPARR17	Bearer Capability	6.3.3.1, B.2.2.17	N/A	
TFPARR18	Replace Short Message Type	6.3.3.1, B.2.2.18	C2	
TFPARR19	Validity Period	6.3.3.1, B.2.2.19	N/A	
TFPARR20	Data Information	6.3.3.1, B.2.2.20	C3	
C1	If A11.TFMSG8 then M else N/A			
C2	If (A2.SMSER39 AND A11.TFMSG9) then M else N/A			
C3	If A11.TFMSG9 then M else N/A			
Comments: The order of the parameters in each TL message to be as indicated in the tables of B.2.1 is mandatory.				

A.5.5.3   Outgoing calls

Table A.14 lists the conformance statements related to outgoing calls (short message submission) performed by an SM-TE.

Table A.14: Short message submission

Item	Item description	Reference	Status	Support
TFSUB1	When having transmitted an SMS_SUBMIT or an SM-TE_STATUS message, the SM-TE expects to receive an SMS_SUBMIT_REP message expressing a message confirmation or rejection (with failure cause).	6.3.3.2, B.2.1.4 table B.2.11, B.2.2.16 table B.2.32	M	
Comments:				

A.5.5.4   Incoming calls

Table A.15 lists the conformance statements related to the short message delivery and Status Report transmission procedures performed by an SM-TE:

Table A.15: Short message delivery and report transmission

Item	Item description	Reference	Status	Support
TFDLV1	The SM-TE responds to a received SMS_DELIVERY or SMS_STATUS_REP message with an SMS_DELIVERY_REP message, expressing a message confirmation or rejection (with failure cause).	6.3.3.2, B.2.1.5 table B.2.12, B.2.2.16 table B.2.32	M	
Comments:				

Annex B (informative): Bibliography

ETSI EN 300 659-3 (V1.3.1): "Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 3: Data link message and parameter codings".

ETSI ES 200 778-1 (V1.2.2): "Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Protocol over the local loop for display and related services; Terminal equipment requirements; Part 1: On-hook data transmission".

ETSI ES 200 778-2 (V1.2.2): "Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Protocol over the local loop for display and related services; Terminal equipment requirements; Part 2: Off-hook data transmission".

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

History

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