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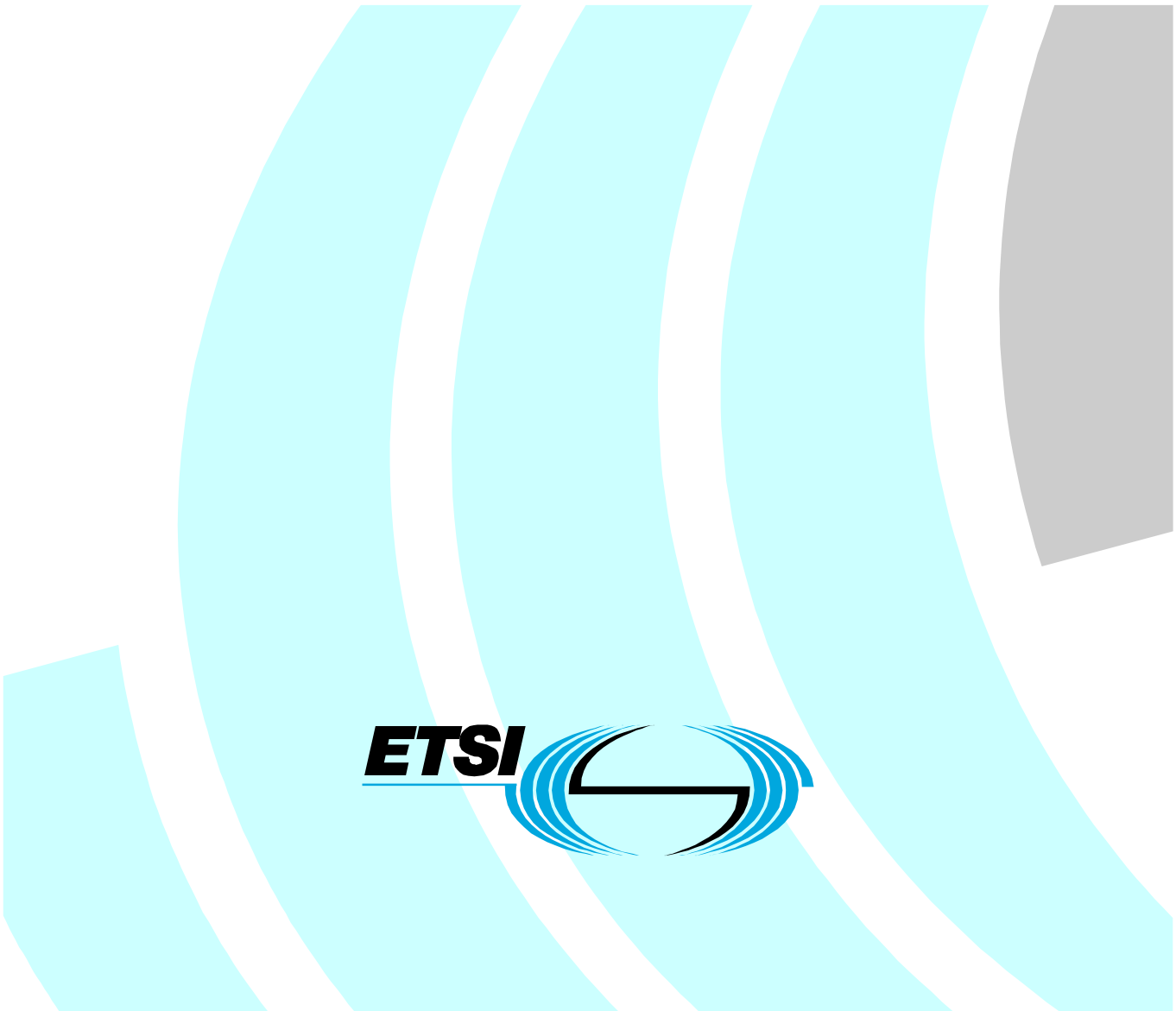
Access and Terminals (AT); Short Message Service (SMS) for PSTN/ISDN; Test Suites for SMS User Based Solution; Part 10: Abstract Test Suite (ATS) user side for functional tests Protocol 2



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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 10 of a multi-part deliverable. Full details of the entire series can be found in part 1 [11].

Introduction

The present document is part 10 of a multi-part conformance test specification for SM-TE. The specification contains a TTCN design frame work and the detailed test specifications in TTCN for SM-TE at the user/network interface.

The reader of the present document should be aware of the fact that much of the ATS information is contained in ES 202 912-9 [6] and is therefore only referred to here, indicating the relevant clauses of the present document.

1 Scope

The present document specifies the functional tests in TTCN for the Transfer Layer in a Terminal Equipment implementing the Short Message Service (SMS) for PSTN/ISDN, UBS Protocol 2, according to ES 201 912 [1] at the user/network interface.

Basic ISDN or PSTN call procedures apply in order to establish a circuit-switched band connection between such Terminal Equipment and an SM-SC. Tests for these procedures are outside the scope of the present document. UBS2 terminals send and receive TL messages in the voice-band connection using the FSK signalling as defined in EN 300 659-2 [2] and ES 200 778-2 [3] and the DLL services defined in clause 6 and annex B of ES 201 912 [1].

Tests for the Physical Layer of the FSK signalling are outside the scope of the present document. Tests for the DLL of UBS2 terminals have been defined in ES 202 912-5 [5].

Terminal Equipment implementing the Short Message Service (SMS) for PSTN/ISDN according to UBS Protocol 2 are required to implement the Transfer Layer according to clause 6 and annex B of ES 201 912 [1]. Transfer Layer messages used in this test specification are structured accordingly.

As the term "functional tests" indicates, the present document is **no conformance test specification**: a comprehensive coverage of functions and TL protocol features is not attempted. Only the main functions and TL procedures related to outgoing SM-calls (from the SM-TE) and incoming SM-calls (to the SM-TE) are tested (see also clause 6.2).

The Abstract Test Suite designed in the document is based on the test cases specified in tabular form combined with prose in ES 202 912-9 [6]. The Remote Single Layer Embedded Test Method (see ISO/IEC 9646-2 [8]) is applied for the UBS Protocol 2 functional tests.

The following information can be found in this part, directly or by reference (mostly to ES 202 912-9 [6]):

- The overall test suite structure.
- The testing architecture.
- The test methods and PCO definitions.
- The test configuration.
- TTCN styles and conventions.
- The design principles, assumptions, and used interfaces to the TTCN tester (e.g. ASPs).
- Information about the services assumed from the Data Link Layer and the Physical Layer.
- Interrelationships and dependencies between timeout values.
- The partial PIXIT proforma.
- The TTCN.MP and TTCN.GR forms for the mentioned protocols tests.

While ISO/IEC 9646-1 [7] and ISO/IEC 9646-2 [8] have been used as the basis for the test specification methodology, the ATS contained in the present document has been specified using TTCN-2++ (TR 101 666 [9]).

Two forms of the ATS are provided (see annex A):

- The TTCN Graphical form (TTCN.GR),
- The TTCN Machine Processable form (TTCN.MP).

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 300 659-2 (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".

[3] 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".

[4] ETSI ES 202 912-4 (V1.1.1): "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 Protocol 2".

[5] ETSI ES 202 912-5 (V1.1.1): "Access and Terminals (AT); Short Message Service (SMS) for PSTN/ISDN Test Suites for SMS User Based Solution; Part 5: Test Suite Structure and Test Purposes (TSS & TP) user side for Data Link Layer (DLL) Protocol 2".

[6] ETSI ES 202 912-9 (V1.1.1): "Access and Terminals (AT); Short Message Service (SMS) for PSTN/ISDN; Test Suites for SMS User Based Solution; Part 9: Test Suite Structure and Test Purposes (TSS&TP) user side for functional tests Protocol 2".

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

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

[9] ETSI TR 101 666 (V1.0.0): "Information technology Open Systems Interconnection Conformance testing methodology and framework; The Tree and Tabular Combined Notation (TTCN) (Ed. 2++)".

[10] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".

[11] 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".

[12] ETSI ES 202 912-8: "Access and Terminals (AT); Short Message Service (SMS) for PSTN/ISDN; Test Suites for SMS User Based Solution; Part 8: Abstract Test Suite (ATS) user side for Functional Tests Protocol 1".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ES 202 912-9 [6] apply.

3.2 Abbreviations

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

ASP	Abstract Service Primitive
ATS	Abstract Test Suite
CLI	Calling Line Identification (information)
DLL	Data Link Layer
FSK	Frequency Shift Keying
GSM	Global System for Mobile Communication
ICS	Implementation Conformance Statement
ISDN	Integrated Services Digital Network
ISO	International Standard Organization
IUT	Implementation Under Test
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
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
SUT	System Under Test
TL	Transfer Layer
TP	Test Purpose
TS	Test Suite
TSS	Test Suite Structure
TSS&TP	Test Suite Structure and Test Purposes
TTCN	Tree and Tabular Combined Notation
UBS	User Based Solution
VB	Voice-band

4 Test method and testing architecture

4.1 Test method

The test method is the **Remote Single Layer Embedded** test method (see ISO/IEC 9646-1 [7] for definitions of test methods).

The protocol layer under test is the Transfer Layer (TL), i.e. Layer 3 using the OSI terminology. Basic information about the physical transfer of TL message units is given in clause 6.5.

4.2 Test configuration

Figure 1 in ES 202 912-9 [6] gives an overview of the reference architecture used for the UBS Protocol 2 operation. Figure 2 in ES 202 912-9 [6] shows the configuration used for testing. Details about the entities being part of the test configuration can be found in clause 4 of ES 202 912-9 [6].

5 Basic considerations on the TTCN development

A number of requirements are identified for the development and production of the TTCN test specifications for ES 201 912 [1]:

1) A unique testing architecture and test method for testing all protocol layers and protocol variants.

2) Uniform TTCN style and naming conventions, to improve TTCN readability.

3) Using TTCN-2++ (TR 101 666 [9]). This TTCN specification is feasible, implementable and compilable.

4) Test cases shall be designed in a way for easily adaptable, upwards compatible with the evolution of the specifications and the future releases.

5) The test declarations, data structures and data values shall be largely reusable.

6) Minimizing the requirements of intelligence on the simulators and transfer capabilities of the lower testers, giving enough design freedom to the test equipment manufacturers.

7) Considering that the TS Structure and Test Purposes in ES 202 912-9 [6] have been designed and formulated in way that supports an easy and direct transition to TTCN: follow the constructions and namings in a tight and direct way.

In order to fulfil these requirements and to ensure the investment of the test equipment manufacturers having a stable testing architecture for a relatively long period, a unique testing architecture and test method are applied to the "SMS over fixed network" protocol tests.

6 ATS information

6.1 Naming conventions

Table 1 gives information about the naming conventions used for the main TTCN objects of the ATS.

Table 1: Naming conventions

TTCN object class	Name prefix in ATS	Comment
Test Case	-	The test case identifiers are the same as the related TP identifiers in ES 202 912-9 [6]. More information about the TP identifier name composites and naming conventions can be found in clause 5.5 of ES 202 912-9 [6].
Test Step	PRE_ (preambles), POST_ (postambles)	The test step identifiers are the same as the related step identifiers in ES 202 912-9 [6].
Local Tree	LTR_	
Test group	-	The test group identifiers of ES 202 912-9 [6] have been used. See the table in clause "Test Suite Structure (TSS)" of ES 202 912-9 [6].
Test Suite Parameter	TSPX_ (PIXIT) TSPC_ (PICS)	The "Test Parameters" in clause 6.6 of ES 202 912-9 [6] have been defined as Test Suite Parameters, using the same name. Test Suite Parameters with prefix "TSPC_" appear in Selection expressions and Qualifiers only.
ASP	ASP_	The ASPs defined in clause 6.3 of ES 202 912-9 [6] are also defined in the ATS. However the prefix "ASP_" has been added to the ASP names in the ATS.

TTCN object class	Name prefix in ATS	Comment
PDU	PDU_	The message type names defined in ES 201 912 [1] have been used with the following modifications: - the prefix "PDU_" has been added; - the existing prefix "SMS_" has been deleted; - hyphens ("-") have been replaced by underscores ("_"). EXAMPLE: "SMS-SUBMIT" is transformed to "PDU_SUBMIT" in the ATS.
Timer	TIMER_	
Test Suite Constant	TSC_	
Test Case Variable	TCV_	
Test Suite Operation	TSO_ or none	For some conversion operations which are near to the pre-defined operations INT_TO_BIT etc. prefix "TSO_" has not been used.
Selection Expression	Sel_	
Constraint	C_	For PDU constraints the prefix "PDU_" in the related PDU type identifier is replaced by "C_". A postfix "_Sn" is added for constraints to be transmitted, where "n" is an appropriate digit (starting with "1"). Similarly a postfix "_Rn" is added for constraints to be received. For ASP constraints the prefix "ASP_" in the ASP type identifier is replaced by "C_". The rest of the name is treated as for PDUs.
Alias		Aliases have been defined for ASPs carrying PDUs. The Alias identifier is derived from the PDU name, with a postfix "r" for PDUs to be received and a postfix "s" for PDUs to be sent (respectively "sa" for sending a positive acknowledgement and "sn" for sending a negative acknowledgement.
Formal Parameters		The names of Formal Parameters end with a "V" (constraints) or "P" (test steps). Formal Parameter names associated with constraints are composed of the name of the Structured Type element, PDU field or ASP parameter to which the Formal Parameter is passed as a value, followed by postfix "V".

6.2 Restrictions and requirements not being tested

See clause 5.3 in ES 202 912-9 [6].

6.3 Grouping of test purposes

See clauses 5.4 and 6.2 in ES 202 912-9 [6].

6.4 Abstract Service Primitives

See clause 6.3 in ES 202 912-9 [6]. Note that the prefix "ASP_" has been added in the ATS.

6.5 Information on physical layer and data link layer information transfer and on TL message encoding

There is no explicit signalling used in the ATS for establishing the VB connection between the SM-TE and the tester. There is also no explicit reference made to whether the VB connection is over PSTN or ISDN, since the SMS transfer capabilities and procedures are independent of the network type, once the VB connection is established. The VB connection is established using appropriate ASPs, and is considered to be a matter of the capabilities of the SM-TE to be tested and the implementation of the test system implementing this ATS, to perform suitable signalling to establish the VB connection.

The Physical Layer is treated according to clause 6.3.1 of ES 201 912 [1], i.e. the signalling between the SM-TE and the tester is carried out in the VB connection, using a bi-directional, half duplex 1 200 Baud FSK modulation as defined in EN 300 659-2 [2] and ES 200 778-2 [3].

The TL messages are transferred via DLL frames as specified in table 5 of clause 6.3.2.1 of ES 201 912 [1] (see also the definition of ASPs at PCO FS in ES 202 912-9 [6] and in the TTCN ATS):

TL message DLL message ASP

SMS_SUBMIT DLL_SMS_INFO-MO ASP_TRANSFER_SUBMIT_ind

SMS_SUBMIT_REP DLL_SMS_ACK0/ ASP_TRANSFER_ACK_req
DLL_SMS_ACK1

SMS_DELIVERY DLL_SMS_INFO-MT ASP_TRANSFER_INFO_MT_req

SMS_DELIVERY_REP DLL_SMS_ACK0/ ASP_TRANSFER_DELIV_REP_ind
DLL_SMS_ACK1

SMS_STATUS_REP DLL_SMS_INFO-MT ASP_TRANSFER_INFO_MT_req

SM-TE_STATUS DLL_SMS_INFO-STA ASP_TRANSFER_SM_TE_STA_ind

The TL message structure is as depicted in clause B.2 in annex B of ES 201 912 [1].

Bit numbering is not explicitly used in annex B of ES 201 912 [1]. In the following bit numbering is from 0 (transmitted first) to 7 (transmitted last), for illustration purposes only.

When transforming bit fields located in the same octet into a sequence of TTCN Structured Type- or PDU-fields, the fields associated to the least significant bits appear first, as shown in the following example:

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved			DMI	EMMI	DCSEX	MMSR	REPLS

Figure 1: Bit field structure of the "Services" field in the "Bearer Capability" parameter

Explanation:

REPLS SM Replace Service implementation

MMSR More Messages Receiving in one connection implementation

DCSEX Display Code Set Extension implementation

EMMI E-Mail media implementation

DMI Data media implementation

Reserved -

When transforming these bit fields into a Structured Type declaration (see TYPE_BCAP_PARAM), they appear in the order as under "Explanation", i.e. the bit fields of the lower bits appear first (low-to-high encoding).

The same is true for bit fields crossing the octet boundary: a field extending from one octet (say octet 1) continues with the lower bits of the next octet (say octet 2). See e.g. the declaration of TYPE_NOTIFY_PARAM ("Notify" parameter, see table B.2.29 in ES 201 912 [1]) and in particular the "Notification Number" field (13 bits).

6.6 Use of timers, restrictions and interdependencies of timeout values

No tests are specified related to timeout values of protocol timers implemented in the SM-TE.

The following operational timers are defined: TIMER_TAC, TIMER_TNOAC, TIMER_TWAIT and TIMER_TDELAY. For these operational timers no lower and/or upper limits are defined.

TIMER_TAC is used to ascertain a response from the SM-TE, which is automatically generated according to the TL protocol, i.e. which is expected to occur without manual intervention. The timeout value of TIMER_TAC, TS Parameter TSPX_TIMEOUT_TAC, must be long enough to respect all delays being allowed by the protocol. Note however, that a too big timeout value may increase the test execution time unnecessarily. A timeout of TIMER_TAC is typically detected in the default and leads to the end of the test with an FAIL verdict.

The same requirements hold for TIMER_TNOAC. TIMER_TNOAC is used to verify that the IUT does not generate a response on some tester stimulus or does not initiate any automatic action for some time. The timeout of this timer is normally expected inside the test behaviour.

TIMER_TWAIT is a timer with units of seconds. It is started when the operator is requested to perform some operation at the SM-TE which is necessary to bring the SM-TE in a testing situation, e.g. to initiate an outgoing call. The time should be long enough such that the operator can perform the requested operations within this time, so that no timeout occurs.

TIMER_TDELAY is used by the tester to delay a second action after having performed a first action (typically: initiate a second call after the first call). The timeout of this timer is expected inside the test behaviour and does not affect a verdict.

6.7 Treatment of the "Memory Full" state in the submission phase

In case the SM-TE does not allow the submission of an SM because the SM-TE has entered the "Memory Full" state and this state is not required/expected in the current test, the test should be run again, after having made the necessary operations to free the memory (if the SM-TE has been implemented so as to establish a call afterwards to the SM-SC in order to send an SM-TE_STATUS message automatically or under a user indication, it must be waited for the end of this operations before running again the test).

Annex A (normative): Abstract Test Suite (ATS)

This ATS has been produced using the Tree and Tabular Combined Notation (TTCN) according to ISO/IEC 9646-3 [10].

The ATS was developed on a separate TTCN software tool and therefore the TTCN tables are not completely referenced in the table of contents. The ATS itself contains a test suite overview part which provides additional information and references.

A.1 Versions of specifications

Table A.1 shows the version of the test specifications which the delivered ATSs are referred to.

Table A.1: Versions of the related specifications

Specification type	Document ID	Version
Protocol specification	ES 201 912	V1.1.1
PICS	ES 202 912-4	V1.1.1
PIXIT	ES 202 912-8	V1.1.1

A.2 ATS

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

The TTCN.GR representation of this ATS is contained in an Adobe Portable Document Format™ file (SMSFT2.PDF contained in archive es_20291210v010101m0.ZIP) which accompanies the present document.

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

The TTCN.MP representation corresponding to this ATS is contained in an ASCII file (SMSFT2.MP contained in archive es_20291210v010101m0.ZIP) which accompanies the present document.

NOTE: Where an ETSI Abstract Test Suite (in TTCN) is published in both .GR and .MP format these two forms shall be considered equivalent. In the event that there appears to be syntactical or semantic differences between the two then the problem shall be resolved and the erroneous format (whichever it is) shall be corrected.

Annex B (normative): Partial PIXIT proforma

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

B.1 Introduction

This partial PIXIT proforma contained in the present document is provided for completion, when the related Abstract Test Suite is to be used against the Implementation Under Test (IUT).

Text in *italics* is comments for guidance for the production of a PIXIT, and is not to be included in the actual PIXIT.

The completed partial PIXIT will normally be used in conjunction with the completed PICS, as it adds precision to the information provided by the PICS.

B.2 PIXIT items

The table B.1 lists the PIXIT items associated with the ATS. Each PIXIT item corresponds to a TS Parameter of the ATS. Default values are not provided.

Table B.1: PIXIT items

Item	Parameter Name	Description	Type	Value
1.1	TSPC_ADD_PUBLIC_KEY	TRUE if the SM-TE supports the adding of a Public Key to protect the SM to be sent. Otherwise FALSE.	Boolean	
1.2	TSPC_BEARER_CAP	TRUE if the SM-TE supports the SM-TE_CAPABILITY TL message. Otherwise FALSE.	Boolean	
1.3	TSPC_BEARER_CAP_DATA	TRUE if the SM-TE is able to receive SMs containing Data instead of a text message. Otherwise FALSE.	Boolean	
1.4	TSPC_BEARER_CAP_DISP_CS_EXT	TRUE if the SM-TE sets bit 2 of the Services Field byte of the "Bearer Capability" parameter in the SM-TE_CAPABILITY TL message to "1" (Display Code Set extension supported). Otherwise FALSE.	Boolean	
1.5	TSPC_BEARER_CAP_EMAIL	TRUE if the SM-TE is able to receive an SM originated by an electronic mailbox. Otherwise FALSE.	Boolean	
1.6	TSPC_BEARER_CAP_MORE_SMS	TRUE if the SM-TE is able to receive at least two SMs within the same SMS call. Otherwise FALSE.	Boolean	
1.7	TSPC_BEARER_CAP_REPLACE	TRUE if the SM-TE is able to replace a previously received SM with a new SM of the same type. Otherwise FALSE.	Boolean	

Item	Parameter Name	Description	Type	Value
1.8	TSPC_CLI_PRIVACY	TRUE if the SM-TE is able to set the bit 4 of the "Calling Terminal Identity" parameter value in the SMS_SUBMIT TL message to "1" (requesting CLI privacy). Otherwise FALSE.	Boolean	
1.9	TSPC_INC_NOTIFICATION_NUMBER	TRUE if the SM-TE, after having received an SMS_STATUS_REP TL message containing the notification number (in the "Notify" parameter), makes this information available to the user when reading the SM. Otherwise FALSE.	Boolean	
1.10	TSPC_OUTG_DATA	TRUE if the SM-TE supports submission of SMs containing DATA. Otherwise FALSE.	Boolean	
1.11	TSPC_OUTG_FAX	TRUE if the SM-TE supports SM submission to be delivered as FAX. Otherwise FALSE.	Boolean	
1.12	TSPC_OUTG_SM_REPLACE	TRUE if the SM-TE sends an SMS_SUBMIT TL message containing the "Replace Short Message Type" parameter, when the SM to be sent is supposed to contain an SM Replace indication. Otherwise FALSE.	Boolean	
1.13	TSPC_OUTG_SM_TE	TRUE if the SM-TE supports SM submission to be delivered as SM. Otherwise FALSE.	Boolean	
1.14	TSPC_OUTG_TELEGRAM	TRUE if the SM-TE supports SM submission to be delivered as TELEGRAM. Otherwise FALSE.	Boolean	
1.15	TSPC_OUTG_TO_CONV_MAIL	TRUE if the SM-TE supports SM submission to be delivered as conventional mail. Otherwise FALSE.	Boolean	
1.16	TSPC_OUTG_TO_EMAIL	TRUE if the SM-TE supports SM submission to be delivered as E-mail. Otherwise FALSE.	Boolean	
1.17	TSPC_OUTG_VOICE	TRUE if the SM-TE supports SM submission to be delivered as vocal message. Otherwise FALSE.	Boolean	
1.18	TSPC_INFORM_USER_POS	TRUE if the SM-TE, after having received an SMS_SUBMIT_REP TL message, with "Response Type" parameter value "Confirm" in response to an SMS_SUBMIT TL message, gives an indication of the positive submission result to the user. Otherwise FALSE.	Boolean	
1.19	TSPC_INFORM_USER_NEG	TRUE if the SM-TE, after having received an SMS_SUBMIT_REP TL message, with "Response Type" parameter with one of the "Reject" values in response to an SMS_SUBMIT TL message, gives an indication of the negative submission result to the user. Otherwise FALSE.	Boolean	

Item	Parameter Name	Description	Type	Value
1.20	TSPC_SM_TE_STATUS	TRUE if the SM-TE, in the "Memory Full" state, after the deletion by the user of one or more SMs stored in the SM-TE, requests the delivery of new SMs stored in the SM-SC (i.e. establishes automatically or after a user indication an SMS call to the SM-SC and sends the SM-TE_STATUS TL message. Otherwise FALSE.	Boolean	
1.21	TSPC_STATUS_REP_REQ	TRUE if the SM-TE is able to send an SMS_SUBMIT TL message containing the Notify parameter with value "Status report via SMS required". Otherwise FALSE.	Boolean	
1.22	TSPC_VALIDITY_PERIOD	TRUE if the SM-TE supports the inclusion of the "Validity Period" parameter and the user-specified setting of the "Validity Period" in the SMS_SUBMIT TL message sent by the SM-TE. Otherwise FALSE.	Boolean	
2.1	TSPX_AUTOMATIC_SM_TE_STATUS_CALL	The parameter is applicable only if the value of the test parameter TSPX_SM_TE_STATUS_CALL is TRUE. The value of the TSPX_AUTOMATIC_SM_TE_STATUS_CALL parameter is TRUE if the SM-TE, when leaving the "Memory Full" state, automatically establish an outgoing call to the SM-SC sending the SM-TE_STATUS message (i.e. without waiting for a user indication before establishing such an outgoing call). Otherwise the value is FALSE.	Boolean	
2.2	TSPX_SM_TE_STATUS_CALL	The value is TRUE if the SM-TE, when leaving the "Memory Full" state following the deletion by the user of one or more SMs stored, is able to establish an outgoing call to the SM-SC, either automatically or under a user indication, sending the SM-TE_STATUS message. Otherwise the value is FALSE.	Boolean	
3.1	TSPX_CLD_TE	Address of the SUT to be called from the SM-SC to establish the VB connection.	IA5String	
3.2	TSPX_CLDI_RX1	Called Line Identity digits the tester receives from the IUT. See table B.2.25 in ES 201 912 [1].	IA5String	
3.3	TSPX_CLGI_TX1	Calling Line Identity (CLI) digits the tester sends to the IUT. See table B.2.22 in ES 201 912 [1].	IA5String	
3.4	TSPX_SC_ADDR_OUTG	Address of the SM-SC to be called by the SUT and stored in the SUT.	IA5String	
3.5	TSPX_SC_ADDR_INC	Address of the SM-SC from which the SUT can receive SMs, stored in the SUT.	IA5String	
3.6	TSPX_SME_ID	Subaddress of an SME defined/set in the SUT (referred to as SME1). This is the default SME subaddress.	OCTETSTRING(1)	
3.7	TSPX_SME_ID_UNDEFINED	Subaddress value which does not correspond to an SME defined/set in the SUT.	OCTETSTRING(1)	

Item	Parameter Name	Description	Type	Value
4.1	TSPX_TEI_RX1	Calling Terminal Equipment Identity the tester receives from the IUT. See table B.2.24 in ES 201 912.	HEXSTRING(1)	
4.2	TSPX_TEI_TX1	Calling Terminal Equipment Identity value the tester sends to the IUT. See table B.2.24 in ES 201 912.	HEXSTRING(1)	
4.3	TSPX_CLD_TEI_RX1	Called Terminal Identity value the tester receives from the IUT. The value must be between 01h and 09h. See table B.2.28 in ES 201 912.	OCTETSTRING(1)	
5.1	TSPX_DAT_INFO_RX1	Data Information bytes the tester receives from the IUT. See table B.2.36 in ES 201 912.	OCTETSTRING	
5.2	TSPX_DAT_INFO_TX1	Data Information bytes the tester sends to the IUT. See table B.2.36 in ES 201 912.	OCTETSTRING	
6	TSPX_DATE_TIME_TX1	Date and Time octets the tester sends to the IUT. Month, day, hour and minute digits (2 for each element) are contained in this order. See table B.2.21 in ES 201 912.	OCTETSTRING(8)	
7.1	TSPX_DISPL_TX1	Standard Display Information characters the tester sends to the IUT in the first SMS_DELIVERY message during a VB connection. Only those characters of tables B.2.19 and B.2.20 in ES 201 912 [1] are allowed. See table B.2.18 in ES 201 912.	IA5String	
7.2	TSPX_DISPL_TX2	Standard Display Information characters the tester sends to the IUT in the second SMS_DELIVERY message during a VB connection. Only those characters of tables B.2.19 and B.2.20 in ES 201 912 are allowed. See table B.2.18 in ES 201 912.	IA5String	
7.3	TSPX_DISPL_TX3	Standard Display Information characters the tester sends to the IUT in the first SMS_STATUS_REP message during a VB connection. Only those characters of tables B.2.19 and B.2.20 in ES 201 912 are allowed, which are also IA5 Characters. See table B.2.18 in ES 201 912.	IA5String	
7.4	TSPX_GREATER_MAX_TEXT	Text of length greater than TSPX_MAX_TEXT_LEN characters to be sent by the tester.	IA5String	
7.5	TSPX_MAX_TEXT_CONTENTS	Text of TSPX_MAX_TEXT_LEN characters to be sent by the tester, if TSPX_MAX_TEXT_LEN has not the default value of 640 characters.	IA5String	
7.6	TSPX_MAX_TEXT_CONTENTS_640	Text of 640 characters (default maximum length) to be sent by the tester.	IA5String	
7.7	TSPX_MAX_TEXT_LEN	Maximum number of text characters contained in an incoming SMS the SM-TE can receive and store. The number is encoded as an octet string of length 2 as shown in table B.2.33 in ES 201 912 for octets 5 and 6.	OCTETSTRING(2)	

Item	Parameter Name	Description	Type	Value
8.1	TSPX_NUM_REATTEMPTS	Number of automatic reattempts the SM-TE makes to submit an SM, when the SM-SC always returns an SMS-SUBMIT-REPORT message indicating a submission failure. The first submission attempt (started by ASP OUTGOING_CALL_req) is not counted as a "reattempt". The value shall consequently be 0, if the SM-TE does not perform an automatic reattempt at all.	INTEGER	
8.2	TSPX_NUM_SMs_MEM_FULL	Minimum number of SMS-DELIVER messages of 160 text characters ("the quick brown fox jumps over the lazy dog 012345678 the quick brown fox jumps over the lazy dog 012345678 the quick brown fox jumps over the lazy dog 01234567") to be sent by the tester in order to make the SM-TE enter the "Memory Full# state.	INTEGER	
9.1	TSPX_FAX_RECIP_RX1	Fax Recipient Name characters the tester receives from the IUT. See table B.2.26 in ES 201 912.	IA5String	
9.2	TSPX_FAX_RECIP_TX1	Fax Recipient Name characters the tester sends to the IUT. See table B.2.26 in ES 201 912.	IA5String	
10.1	TSPX_MAIL_ADDR_RX1	Mail Address characters the tester receives from the IUT. See table B.2.27 in ES 201 912.	IA5String	
10.2	TSPX_MAIL_ADDR_TX1	Mail Address characters the tester sends to the IUT. See table B.2.27 in ES 201 912.	IA5String	
11.1	TSPX_MANUF_CODE_RX1	Firmware Version manufacturer code the tester receives from the IUT. See table B.2.16 in ES 201 912.	OCTETSTRING(1)	
11.2	TSPX_MANUF_CODE_TX1	Firmware Version manufacturer code the tester sends to the IUT. See table B.2.16 in ES 201 912.	OCTETSTRING(1)	
12.1	TSPX_PROD_CODE_RX1	Firmware Version product code the tester receives from the IUT. See table B.2.16 in ES 201 912.	OCTETSTRING(1)	
12.2	TSPX_PROD_CODE_TX1	Firmware Version product code the tester sends to the IUT. See table B.2.16 in ES 201 912.	OCTETSTRING(1)	
13.1	TSPX_PROV_CODE_RX1	SM Service Provider identifier code the tester receives from the IUT. See table B.2.17 in ES 201 912.	OCTETSTRING(3)	
13.2	TSPX_PROV_CODE_TX1	SM Service Provider identifier code the tester sends to the IUT. See table B.2.17 in ES 201 912.	OCTETSTRING(3)	
14.1	TSPX_PUBL_KEY_RX1	Public Key characters the tester receives from the IUT. See table B.2.30 in ES 201 912.	IA5String	
14.2	TSPX_PUBL_KEY_TX1	Public Key characters the tester sends to the IUT, corresponding to one of the Public Keys defined in the receiving SM-TE. See table B.2.30 in ES 201 912.	IA5String	
14.3	TSPX_PUBL_KEY_TX2	Public Key characters the tester sends to the IUT, not corresponding to any of the Public Keys defined in the receiving SM-TE. See table B.2.30 in ES 201 912.	IA5String	
15	TSPX_SM_REPL_RX1	Replace Short Message Type value the tester receives from the IUT. See table B.2.35 in ES 201 912.	OCTETSTRING(1)	

Item	Parameter Name	Description	Type	Value
16.1	TSPX_SOFT_REV_RX1	Firmware version, Firmware/software revision code the tester receives from the IUT. See table B.2.16 in ES 201 912.	OCTETSTRING(4)	
16.2	TSPX_SOFT_REV_TX1	Firmware version, Firmware/software revision code the tester sends to the IUT. See table B.2.16 in ES 201 912.	OCTETSTRING(4)	
17	TSPX_TE_LANGUAGE	Language code according to ISO 3166-1 set by the SM-TE in the TE Language field of the Bearer Capability parameter. See table B.2.33 in ES 201 912.	OCTETSTRING(2)	
18	TSPX_VALID_PERIOD_RX1	Validity Period value the tester receives from the IUT. See table B.2.35 in ES 201 912.	OCTETSTRING(1)	
19.1	TSPX_TIMEOUT_TAC	Timeout value of Timer TAC, in units of milliseconds.	INTEGER	
19.2	TSPX_TIMEOUT_TNOAC	Timeout value of Timer TNOAC, in units of milliseconds.	INTEGER	
19.3	TSPX_TIMEOUT_TWAIT	Timeout value of Timer TWAIT, in units of seconds.	INTEGER	
19.4	TSPX_TIMEOUT_TDELAY	Timeout value of Timer TDELAY, in units of seconds.	INTEGER	

Annex C (informative): Additional information to the PIXIT

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

Additional information may be provided when completing the PIXIT questions listed in annex B.

C.1 Identification Summary

Table C.1 is completed by the test laboratory. The item "Contract References" is optional.

Table C.1: Identification Summary

PIXIT Reference Number:	
Test Laboratory Name:	
Date of Issue:	
Issued to (name of client):	
Contract References:	

C.2 Abstract Test Suite Summary

In the table C.2 the test laboratory provides the version number of the protocol specification and the version number of ATS which are used in the conformance testing:

Table C.2: ATS Summary

Protocol Specification:	ES 201 912
Version of Protocol Specification:	V1.1.1
Test Specification in prose (TSS&TP):	ES 202 912-9
Version of TSS&TP Specification:	V1.1.1
ATS Specification:	ES 202 912-10
Version of ATS Specification:	V1.1.1
Abstract Test Method:	Remote Single Layer Embedded

C.3 Test Laboratory

C.3.1 Test Laboratory Identification

Table C.3 provides information about the test laboratory.

Table C.3: Test Laboratory Identification

Name of Test Laboratory:	
Postal Address:	
Office address:	
E-mail address:	
Telephone Number:	
FAX Number:	

C.3.2 Accreditation status of the test service

Table C.4 provides information about the test laboratory.

Table C.4: Accreditation status of the test service

Accreditation status:	
Accreditation Reference:	

C.3.3 Manager of Test Laboratory

The test laboratory provides information about the manager of test laboratory in table C.5.

Table C.5: Manager of Test Laboratory

Name of Manager of Test Laboratory:	
E-mail address:	
Telephone Number:	
FAX Number:	
E-mail Address:	

C.3.4 Contact person of Test Laboratory

The test laboratory provides information about the contact person of test laboratory in table C.6.

Table C.6: Contact person of Test Laboratory

Name of Contact of Test Laboratory:	
E-mail address:	
Telephone Number:	
FAX Number:	
E-mail Address:	

C.3.5 Means of Testing

In table C.7, the test laboratory provides a statement of conformance of the Means Of Testing (MOT) to the reference standardized ATS, and identifies all restrictions for the test execution required by the MOT beyond those stated in the reference standardized ATS.

Table C.7: Means of Testing

Means of Testing

C.3.6 Instructions for Completion

In table C.8 the test laboratory provides any specific instructions necessary for completion and return of the proforma from the client.

Table C.8: Instruction for Completion

Instructions for Completion

C.4 Client

C.4.1 Client Identification

The client provides the identification in the table C.9.

Table C.9: Client Identification

Name of Client:	
Postal Address:	
Office Address:	
Telephone Number:	
FAX Number:	

C.4.2 Client Test Manager

In table C.10 the client provides information about the test manager.

Table C.10: Client Test Manager

Name of Client Test Manager:	
Telephone Number:	
FAX Number:	
E-mail Address:	

C.4.3 Client Contact person

In table C.11 the client provides information about the test contact person.

Table C.11: Client Contact person

Name of Client contact person:	
Telephone Number:	
FAX Number:	
E-mail Address:	

C.4.4 Test Facilities Required

In table C.12, the client records the particular facilities required for testing, if a range of facilities is provided by the test laboratory.

Table C.12: Test Facilities Required

Test Facilities Required

C.5 System Under Test

C.5.1 SUT Information

The client provides information about the SUT in table C.13.

Table C.13: SUT Information

System Name:	
System Version:	
SCS Reference:	
Machine Configuration:	
Operating System Identification:	
IUT Identification:	
PICS Reference for the IUT:	None

C.5.2 Limitations of the SUT

In table C.14, the client provides information explaining if any of the abstract tests cannot be executed.

Table C.14: Limitation of the SUT

Limitations of the SUT

C.5.3 Environmental Conditions

In table C.15 the client provides information about any tighter environmental conditions for the correct operation of the SUT.

Table C.15: Environmental Conditions

Environmental Conditions

C.6 Ancillary Protocols

This clause is completed by the client in conjunction with the test laboratory.

In the table C.16, the client identifies relevant information concerning each ancillary protocol in the SUT other than the IUT itself.

Based on the MOT the test laboratory should create question proforma for each ancillary protocol in the blank space following each table. The information required is dependent on the MOT and the SUT, and covers all the addressing, parameter values, timer values and facilities (relevant to ENs) as defined by the PICS for the ancillary protocol.

C.6.1 Ancillary Protocols 1 (Data Link Layer)

Table C.16: Ancillary Protocol 1 (Data Link Layer)

Protocol Name:	
Version number:	
PICS Reference (optional):	
PIXIT Reference (optional):	
PCTR Reference (optional):	

Annex D (informative): Bibliography

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".

ETSI ES 300 659-3 (V1.3.1): "Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 3: Data link message and parameter coding".

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 TS 100 942 (V7.0.0): "Digital cellular telecommunications system (Phase 2+) (GSM); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface (GSM 04.11 version 7.0.0 Release 1998)".

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

History

Document history			
V1.1.1	December 2002	Membership Approval Procedure	MV 20030207: 2002-12-10 to 2003-02-07