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European Standard (Telecommunications series)

**Integrated Services Digital Network (ISDN);
Signalling System No.7 (SS7);
Digital cellular telecommunications system (Phase 2+);
Application of ISDN User Part (ISUP) version 3 for the
ISDN-Public Land Mobile Network (PLMN)
signalling interface;
Part 2: Protocol Implementation Conformance
Statement (PICS) proforma specification**



Reference

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Keywords

PLMN, ISDN, ISUP, PICS, SS7

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 2 of a multi-part EN covering the Integrated Services Digital Network (ISDN); Signalling System No.7; Digital cellular telecommunications system (Phase 2+); Application of ISDN User Part (ISUP) version 3 for the ISDN-Public Land Mobile Network (PLMN) signalling interface, as identified below:

- Part 1: "Protocol specification" (GSM 09.14 version 7.0.2 Release 1998);
- Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";**
- Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification";
- Part 4: "Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

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1 Scope

The present document contains the validation (conformance) test specification for the "Application of ISDN User Part (ISUP) version 3 for the ISDN-Public Land Mobile Network (PLMN) signalling interface" defined in EN 302 646-1 [1]. This recommendation applies only to exchanges having implemented the ISUP v3 protocol specification.

The present document presents the protocol implementation conformance statements (PICS) for the ISDN-Public Land Mobile Network (PLMN) signalling interface defined in compliance with the relevant requirements and in accordance with the guidance given in ISO/IEC 9646-7 [20]. This statement indicates which capabilities and options of a telecommunication specification have been implemented. It is necessary for evaluating the conformance of a particular implementation. The supplier of an implementation that is claimed to comply with the reference specification for the ISDN-Public Land Mobile Network (PLMN) signalling interface is required to complete a copy of the PICS proforma provided in the present document.

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, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] ETSI EN 302 646-1: "Integrated Services Digital Network (ISDN); Signalling System No.7; Digital cellular telecommunications system (Phase 2+); Application of ISDN User Part (ISUP) version 3 for the ISDN-Public Land Mobile Network (PLMN) signalling interface; Part 1: Protocol specification (GSM 09.14 version 7.0.2 Release 1998)".
- [2] ETSI EN 300 356-1: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 1: Basic services [ITU-T Recommendations Q.761 to Q.764 (1997), modified]".
- [3] ETSI EN 300 356-2: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 2: ISDN supplementary services [ITU-T Recommendation Q.730 (1997), modified]".
- [4] ETSI EN 300 356-3: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 3: Calling Line Identification Presentation (CLIP) supplementary service [ITU-T Recommendation Q.731, clause 3 (1993), modified]".
- [5] ETSI EN 300 356-4: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 4: Calling Line Identification Restriction (CLIR) supplementary service [ITU-T Recommendation Q.731, clause 4 (1993), modified]".
- [6] ETSI EN 300 356-5: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 5: Connected Line Identification Presentation (COLP) supplementary service [ITU-T Recommendation Q.731, clause 5 (1993), modified]".

- [7] ETSI EN 300 356-6: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 6: Connected Line Identification Restriction (COLR) supplementary service [ITU-T Recommendation Q.731, clause 6 (1993), modified]".
- [8] ETSI EN 300 356-8: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 8: User-to-User Signalling (UUS) supplementary service [ITU-T Recommendation Q.737, clause 1 (1997), modified]".
- [9] ETSI EN 300 356-11: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 11: Malicious Call Identification (MCID) supplementary service [ITU-T Recommendation Q.731, clause 7 (1997), modified]".
- [10] ETSI EN 300 356-12: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 12: Conference call, add-on (CONF) supplementary service [ITU-T Recommendation Q.734, clause 1 (1993), modified]".
- [11] ETSI EN 300 356-14: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 14: Explicit Call Transfer (ECT) supplementary service [ITU-T Recommendation Q.732, clause 7 (1997), modified]".
- [12] ETSI EN 300 356-17: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 17: Call Waiting (CW) supplementary service [ITU-T Recommendation Q.733, section 1 (1992), modified]".
- [13] ETSI EN 300 356-18: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 18: Completion of Calls to Busy Subscriber (CCBS) supplementary service [ITU-T Recommendation Q.733, clause 3 (1997), modified]".
- [14] ETSI EN 300 356-19: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 19: Three party (3PTY) supplementary service [ITU-T Recommendation Q.734, clause 2 (1997), modified]".
- [15] ETSI TS 101 283: "Digital cellular telecommunications system (Phase 2+); Technical realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2 (GSM 03.93)".
- [16] ETSI ETS 300 599: "Digital cellular telecommunications system (Phase 2); Mobile Application Part (MAP) specification (GSM 09.02)".
- [17] ETSI ETS 300 008: "Integrated Services Digital Network (ISDN); Signalling System No.7; Message Transfer Part (MTP) to support international interconnection".
- [18] ISO/IEC 9646-1 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 1: General concepts".
- [19] ISO/IEC 9646-3 (1996): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [20] ISO/IEC 9646-7 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 7: Implementation Conformance Statements".
- [21] ITU-T Recommendation Q.763 (1997): "Signalling System No. 7; ISDN user part formats and codes".
- [22] ITU-T Recommendation Q.764 (1997): "Signalling System No. 7; ISDN user part signalling procedures".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

- terms defined in ISDN User Part (ISUP) reference specification (EN 300 356-1 [2] to EN 300 356-19 [14]);
- terms defined in ISO/IEC 9646-1 [18], ISO/IEC 9646-3 [19] and in ISO/IEC 9646-7 [20].

In particular, the following terms apply:

Abstract Test Case (ATC): complete and independent specification of the actions required to achieve a specific test purpose, defined at the level of abstraction of a particular Abstract Test Method, starting in a stable testing state and ending in a stable testing state (see ISO/IEC 9646-1 [18], subclause 3.3.3)

Abstract Test Method (ATM): description of how an IUT is to be tested, given at an appropriate level of abstraction to make the description independent of any particular realization of a Means of Testing, but with enough detail to enable abstract test cases to be specified for this method (see ISO/IEC 9646-1 [18], subclause 3.3.5)

Abstract Test Suite (ATS): test suite composed of abstract test cases (see ISO/IEC 9646-1 [18], subclause 3.3.6)

Implementation Under Test (IUT): implementation of one or more OSI protocols in an adjacent user/provider relationship, being part of a real open system which is to be studied by testing (see ISO/IEC 9646-1 [18], subclause 3.3.43)

Means of Testing (MOT): combination of equipment and procedures that can perform the derivation, selection, parameterization and execution of test cases, in conformance with a reference standardized ATS, and can produce a conformance log (see ISO/IEC 9646-1 [18], subclause 3.3.54)

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

PIXIT proforma: document, in the form of a questionnaire, which when completed for the IUT becomes the PIXIT

Point of Control and Observation: point within a testing environment where the occurrence of test events is to be controlled and observed, as defined in an Abstract Test Method (see ISO/IEC 9646-1 [18], subclause 3.3.64)

Pre-test condition: setting or state in the IUT which cannot be achieved by providing stimulus from the test environment

Protocol Implementation Conformance Statement (PICS): statement made by the supplier of a protocol claimed to conform to a given specification, stating which capabilities have been implemented (see ISO/IEC 9646-1 [18], subclauses 3.3.39 and 3.3.80)

Protocol Implementation eXtra Information for Testing (PIXIT): statement made by a supplier or implementor of an IUT (protocol) which contains or references all of the information related to the IUT and its testing environment, which will enable the test laboratory to run an appropriate test suite against the IUT (see ISO/IEC 9646-1 [18], subclause 3.3.41 and 3.3.81)

System Under Test (SUT): real open system in which the IUT resides (see ISO/IEC 9646-1 [18], subclause 3.3.103)

3.2 Abbreviations

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

3PTY	Three-Party
ATM	Abstract Test Method
ATS	Abstract Test Suite
CCBS	Completion of Calls to Busy Subscriber
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
COLP	Connected Line Identification Presentation
CONF	Conference calling
ECT	Explicit Call Transfer
GMSC	Gateway MSC
GSM	Global System for Mobile communications
HLR	Home Location Register
ICS	Implementation Conformance Statement
INN	Internal network number
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
IUT	Implementation Under Test
MAP	Mobile Application Part
MCID	Malicious Call Identification
MOT	Means Of Testing
MPTY	MultiParty
MSC	Mobile-service Switching Centre
MTP	Message Transfer Part
NI	Network Indicator
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PLMN	Public Land Mobile Network
TP	Test Purpose (context dependent)
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation
UUS1	User-to-user signalling service 1

4 Conformance to the PICS proforma specification

A PICS proforma that conforms to this PICS proforma specification shall be technically equivalent to the present document.

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 is claimed to conform to ISDN User part (ISUP) v3 reference specification (EN 300 356-1 [2] to EN 300 356-19 [14]);
- b) be a conforming PICS proforma which has been completed in accordance with the instructions for completion given in clause the present document;
- c) include the information necessary to uniquely identify both the supplier and the implementation.

Annex A (normative): PICS 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 PICS proforma in this annex so that it can be used for its intended purposes and may further publish the completed PICS.
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A.1 Instructions for completing the PICS proforma

The supplier of the implementation shall complete the PICS proforma in each of the spaces provided. If necessary, the supplier may provide additional comments separately.

More detailed instructions are given at the beginning of the different subclauses of 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 ISDN User Part (ISUP) v3 reference specification (EN 300 356-1 to EN 300 356-19) may provide information about the implementation in a standardized manner.

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

- instructions for completing the PICS proforma;
- identification of the implementation;
- identification of the reference protocol specification;
- PICS proforma tables (containing the global statement of conformance).

A.1.2 Abbreviations and conventions

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

Item column

It contains a number that identifies the item in the table.

Item description column

It describes each respective item (e.g. parameters, timers, etc.).

Reference column

It gives reference to the ISUP v3 specification for the supplementary services (EN 300 356-1 to EN 300 356-19), except where explicitly stated otherwise.

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;
- n/a not applicable - in the given context, it is impossible to use the capability. No answer in the support column is required;
- o optional - the capability may be supported or not;

- o.i qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies a 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" or "n/a") depends on the support of other optional or conditional items. "i" is an integer identifying a unique conditional status expression that is defined immediately following the table. For nested conditional expressions, the syntax "IF ... THEN (IF ... THEN ... ELSE...) ELSE ..." shall be used to avoid ambiguities. If an ELSE clause is omitted, "ELSE n/a" shall be implied.

NOTE: Support of a capability means that the capability is implemented in conformance to the ISUP v3 specification (EN 300 356-1 to EN 300 356-19).

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 or no answer required (allowed only if the status is N/A, directly or after evaluation of a conditional status).

Values allowed column

This column contains the values or the ranges of values allowed.

Values supported column

The support 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. It is defined as the table identifier, followed by a slash character "/", followed by the item number in the table. If there is more than one support column in a table, the columns shall be discriminated by letters (a, b, etc.) respectively.

EXAMPLE 1: 1/4 is the reference to the answer of item 4 in table A.1 of the present document.

EXAMPLE 2: 2/3b is the reference to the second answer (i.e. in the second support column) of item 3 in table A.2 of the present document.

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 ICS should be named as the contact person.

A.2.1 Date of the statement

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:	
Additional information:	

A.2.5 Client

Name:	
Address:	
Telephone number:	
Facsimile number:	
Additional information:	

A.2.6 ICS contact person

Name:	
Telephone number:	
Facsimile number:	
Additional information:	

A.3 Identification of the reference specification

This PICS proforma applies to the following standard EN 302 646-1 [1].

A.4 PICS proforma tables

A.4.1 Global statement of conformance

	(Yes/No)
Are all mandatory capabilities implemented?	

NOTE: Answering "No" to this question indicates non-conformance to the reference protocol specification. Non-supported mandatory capabilities are to be identified in the PICS, with an explanation of why the implementation is non-conforming.

A.4.2 Roles

Table A.1: Role of implementation

Item	Is the implementation an ...	Reference	Status	Support
1	GMSC - Gateway MSC	ETS 300 599		
2	G - Gateway fixed exchange with HLR connection			
3	Nat/Int GMSC - National/International Gateway MSC			

A.4.3 Capabilities

Table A.2: ISDN signalling interface capabilities

Item	Is the exchange able to ...	Reference	Status	Support
1	Use of INN in called party number parameter of IAM message	EN 302 646-1, Q.763	@	
2	Support of UUS1	EN 300 356-8		
3	Support of MCID request	EN 300 356-11		
4	Support of ECT	EN 300 356-14		
5	Support of CCBS	EN 300 356-18		
6	Support of 3PTY	EN 300 356-19		
7	Support of CONF	EN 300 356-12		
8	Support of COLP	EN 300 356-5		
9	Support of CLIP	EN 300 356-3		
10	Support of CFU	EN 300 356-14		
11	Support of NI value 10 (national network)	ETS 300 008	m	
12	Support of cause value #20 (subscriber absent)	EN 302 646-1 annex D2, Q.763	m	

@: national option.

Table A.3: PLMN signalling interface capabilities

Item	Is the exchange able to ...	Reference	Status	Support
1	Use of INN in called party number parameter of IAM message	EN 302 646-1, Q.763.	@	
2	Support of UUS1	EN 300 356-8		
3	Support of MCID request	EN 300 356-11		
4	Support of ECT	EN 300 356-14		
5	Support of CCBS	EN 300 356-18, TS 101 283		
6	Support of COLP	EN 300 356-5		
7	Support of CLIP	EN 300 356-3		
8	Support of CFU	EN 300 356-14		
9	Support of NI value 10 (national network)	ETS 300 008	m	
10	Support of cause value #20 (subscriber absent)	EN 302 646-1 annex D2, Q.763	m	
@: national option.				

Table A.4: TIMERS

Item	Use of ...	Reference	Status	Support	Values in seconds	
					Allowed	supported
1	T7	EN 302 646-1 and Q.764 annex A	m		20 s to 30 s	
2	Early ACM timer	EN 302 646-1	m		5 s to 20 s	

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

- ETSI ETS 300 121: "Integrated Services Digital Network (ISDN); Application of the ISDN User Part (ISUP) of CCITT Signalling System No.7 for international ISDN interconnections (ISUP version 1)".
- ETSI ETS 300 540: " Digital cellular telecommunications system (Phase 2); Transmission planning aspects of the speech service in the GSM Public Land Mobile Network (PLMN) system (GSM 03.50)".
- ETSI TS 100 542: "Digital cellular telecommunications system (Phase 2+); Line identification supplementary services; Stage 2 (GSM 03.81)".
- ETSI TS 100 543: "Digital cellular telecommunications system (Phase 2+); Call Forwarding (CF) supplementary services; Stage 2 (GSM 03.82)".
- ETSI TS 100 545: "Digital cellular telecommunications system (Phase 2+); Multi Party (MPTY) supplementary services; Stage 2 (GSM 03.84)".
- ETSI ETS 300 603: "European digital cellular telecommunications system (Phase 2); Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of packet switched data transmission services (GSM 09.06)".
- ETSI ETS 300 604: "Digital cellular telecommunications system (Phase 2); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) (GSM 09.07)".
- ISO/IEC 9646-2 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 2: Abstract Test Suite specification".
- ISO/IEC 9646-5 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 5: Requirements on test laboratories and clients for the conformance assessment process".

History

Document history			
V7.1.1	November 1999	Public Enquiry	PE 200009: 1999-11-03 to 2000-03-03
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