



EMTEL;
Testing - Conformance test specifications for core elements
for network independent access to emergency services
(NG112);
Part 1: Protocol Implementation
Conformance Statement (PICS),
Test Suite Structure and Test Purposes (TSS & TP)

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Foreword

This Technical Specification (TS) has been produced by ETSI Special Committee Emergency Communications (EMTEL).

The present document is part 1 of a multi-part deliverable covering Conformance test specifications for Geonetworking ITS-G5 as identified below:

Part 1: "Protocol Implementation Conformance Statement (PICS), Test Suite Structure and Test Purposes (TSS & TP)";

Part 2: "Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT)".

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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1 Scope

The present document provides the Protocol Implementation Conformance Statement (PICS) and Test Suite Structure and Test Purposes (TSS & TP) for core elements for network independent access to emergency services (NG112) as defined in standards listed in clause 2.1 of the present document.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference/>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] ETSI TS 103 479 (V1.1.1): "Emergency Communications (EMTEL); Core elements for network independent access to emergency services".

[2] IETF RFC 5985: "HTTP-Enabled Location Delivery (HELD)".

NOTE: Available at <https://tools.ietf.org/html/rfc5985>.

[3] IETF RFC 6753: "A Location Dereference Protocol Using HTTP-Enabled Location Delivery (HELD)".

NOTE: Available at <https://tools.ietf.org/html/rfc6753>.

[4] IETF RFC 5222: "LoST: A Location-to-Service Translation Protocol".

NOTE: Available at <https://tools.ietf.org/html/rfc5222>.

[5] IETF RFC 3261: "SIP: Session Initiation Protocol".

NOTE: Available at <https://tools.ietf.org/html/rfc3261>.

[6] IETF RFC 5301: "A Uniform Resource Name (URN) for Emergency and Other Well-Known Services".

NOTE: Available at <https://tools.ietf.org/html/rfc5301>.

[7] IETF RFC 5491: "GEOPRIV Presence Information Data Format Location Object (PIDF-LO) Usage Clarification, Considerations, and Recommendations".

NOTE: Available at <https://tools.ietf.org/html/rfc5491>.

[8] IETF RFC 5808: "Requirements for a Location-by-Reference Mechanism".

NOTE: Available at <https://tools.ietf.org/html/rfc5808>.

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ISO/IEC 9646-1 (1994): "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 1: General concepts".
- [i.2] ISO/IEC 9646-7 (1995): "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 7: Implementation Conformance Statements".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ISO/IEC 9646-1 [i.1] and ISO/IEC 9646-7 [i.2] apply.

3.2 Symbols

Void.

3.3 Abbreviations

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

ATS	Abstract Test Suite
BV	Valid Behaviour
ECRF	Emergency Call. Routing Function
IUT	Implementation Under Test
LIS	Location Information Server
LTD	Long Term Definition
PICS	Protocol Implementation Conformance Statement
PIDF	Presence Information Data Format
PSAP	Public Safety Answer Point
SDP	Session Description Protocol
SIP	Session Initiation Protocol
TCP	Transmission Control Protocol
TP	Test Purposes
TS	Test Suite
TSS	Test Suite Structure
UDP	User Datagram Protocol
URI	Uniform Resource Identifier
URN	Universal Resource Name

4 Protocol Implementation Conformance Statement (PICS)

4.1 Introduction

The purpose of a PICS is to identify those standardized functions which an IUT shall support, those which are optional and those which are conditional on the presence of other functions. It helps to identify which functions an IUT will support when performing conformance testing. It is possible that with different choices in an ICS proforma, several different sets of TPs will be necessary.

In the following clauses assessments are made on whether requirements, features, components and other capabilities are required according to a referenced standard and in order to achieve compliance. This assessment provides the following options:

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

4.2 Entities

Table 1: Entities

Item	Name of field	Reference	Status	Support
1	LIS	ETSI TS 103 479 [1], clause 5.5	o.1	
2	ESRP	ETSI TS 103 479 [1], clause 5.2	o.1	
3	ECRF	ETSI TS 103 479 [1], clause 5.3	o.1	
4	PSAP	ETSI TS 103 479 [1], clause 5.4	o.1	

o.1: At least one of the items shall be supported

4.3 LIS features

Table 2: LIS features

Prerequisite: Table 1/1				
Item	Name of field	Reference	Status	Support
1	HTTP Post request handling	IETF RFC 5985 [2], clause 8	m	
2	HTTP Get request handling	IETF RFC 5985 [2], clause 8	m	
3	Location retrieval via HELD	ETSI TS 103 479 [1], clause 6.5	m	
4	Does the IUT support POINT	IETF RFC 5985 [2], clause 6.2 IETF RFC 5491 [7], clause 5.2.1	m	
5	Does the IUT support Circle	IETF RFC 5985 [2], clause 6.2 IETF RFC 5491 [7], clause 5.2.3	m	
6	Does the IUT support Civic Address	IETF RFC 5985 [2], clause 6.2 IETF RFC 5491 [7], clause 3.2	m	

4.4 ESRP features

Table 3: ESRP features

Prerequisite: Table 1/2				
Item	Name of field	Reference	Status	Support
1	ESRP service	ETSI TS 103 479 [1], clause 5.2	m	

4.5 ECRF features

Table 4: ECRF features

Prerequisite: Table 1/3				
Item	Name of field	Reference	Status	Support
1	HTTP Post request handling	IETF RFC 5222 [4], clause 14	m	
2	LOST service	ETSI TS 103 479 [1], clause 6.4	m	
3	Does the IUT support POINT	IETF RFC 5222 [4], clause 12.2 IETF RFC 5491 [7], clause 5.2.1	m	
4	Does the IUT support Circle	IETF RFC 5222 [4], clause 12.2 IETF RFC 5491 [7], clause 5.2.3	m	
5	Does the IUT support Civic Address	IETF RFC 5222 [4], clause 8.2 IETF RFC 5491 [7], clause 3.2	m	

4.6 PSAP features

Table 5: PSAP features

Prerequisite: Table 1/4				
Item	Name of field	Reference	Status	Support
1	PSAP service	ETSI TS 103 479 [1], clause 5.4	m	
2	UDP handling	ETSI TS 103 479 [1], clause 6.1.1	o.1	
3	TCP handling	ETSI TS 103 479 [1], clause 6.1.1	o.1	
o.1: At least one of the items shall be supported				

4.7 Mnemonics for PICS reference

To avoid an update of all related documents when the PICS document is changed, the table below introduces mnemonic names and the correspondence with the PICS item number.

Table 6: Mnemonics for PICS reference

Mnemonic	PICS item
PICS_HTTP_POST_REQUEST	Table 2/1
PICS_HTTP_GET_REQUEST	Table 2/2
PICS_LOCATION_HELD	Table 2/3
PICS_SERVICE_ESRP	Table 3/1
PICS_HTTP_POST_REQUEST	Table 4/1
PICS_SERVICE_LOST	Table 4/2
PICS_LIS_URI	Table 2/1
PICS_ECRF_URI	Table 2/1
PICS_ECRF_REQUEST_URIs	Table 2/1
PICS_H_QRY_GEO1	Table 2/4
PICS_H_QRY_GEO2	Table 2/5
PICS_H_QRY_GEO3	Table 2/6
PICS_H_QRY_GEO4	Table 2/6
PICS_H_QRY_CIV1	Table 2/6
PICS_H_QRY_CIV3	Table 2/6
PICS_H_QRY_STR1	Table 2/3
PICS_H_QRY_ERR1	Table 2/3
PICS_H_QRY_ERR2	Table 2/3
PICS_H_DER_TOK1	Table 2/3
PICS_H_GET_ERR1	Table 2/1
PICS_L_FIS_GEO1	Table 4/3
PICS_L_FIS_GEO2	Table 4/4
PICS_L_FIS_SBV1	Table 4/1
PICS_L_LST_GEO1	Table 4/3
PICS_L_LST_ALL1	Table 4/1
PICS_L_FIS_ERR1	Table 4/1
PICS_L_FIS_ERR1	Table 4/1
PICS_E_SIP_URN1	Table 4/1, Table 4/1
PICS_E_SIP_URN2	Table 4/1, Table 4/1
PICS_E_SIP_URN3	Table 4/1, Table 4/1
PICS_M_SIP_URN1	Table 4/1, Table 4/1
PICS_E_SIP_HDR1	Table 4/1, Table 4/1
PICS_E_SIP_OPT1	Table 4/1, Table 4/1
PICS_E_SIP_BUS1	Table 4/1, Table 4/1

5 Test Configurations

5.1 LIS Test Configurations

5.1.1 CFG_LIS_01



Figure 1: CFG_LIS_01

5.2 ESRP Test Configurations

5.2.1 CFG_ESRP_01

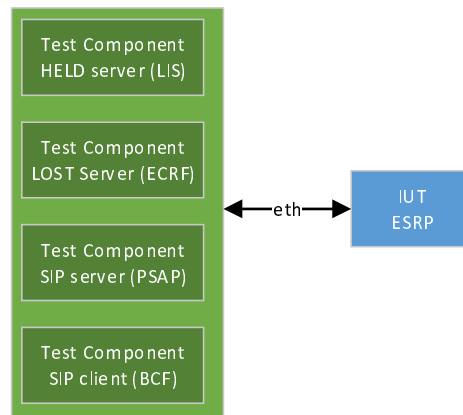


Figure 2: CFG_ESRP_01

5.3 ECRF Test Configurations

5.3.1 CFG_ECRF_01



Figure 3: CFG_ECRF_01

5.4 PSAP Test Configurations

5.4.1 CFG_PSAP_01



Figure 4: CFG_PSAP_01

6 Test Suite Structure (TSS)

6.1 Structure for NG112 tests

Table 1 shows the NG112 Test Suite Structure (TSS) including its subgroups defined for conformance testing.

Table 7: TSS for NG112

Root	Group	Sub-group	Category
LIS, ESRP, ECRF, PSAP	Protocol	HTTP	Valid
		SIP	Valid
	Protocol operation	GET	Valid
		PUT	Valid
		POST	Valid
		INVITE	Valid

The test suite is structured as a tree with the root defined as LIS, ESRP, ECRF or PSAP. The tree is of rank 3 with the first rank a Group, the second a sub-group and the third a category.

6.2 Test groups

6.2.1 Root

The root identifies the entities to be tested.

6.2.2 Test group

This level contains the protocols and protocol operations.

6.2.3 Test sub-group

This level identifies the sub categories of each Group.

6.2.4 Categories

This level contains the standard conformance test categories: behaviour for valid, invalid, inopportune events and timers.

7 Test Purposes (TP)

7.1 Introduction

7.1.1 TP definition conventions

The TPs are defined by the rules shown in table 8.

Table 8: TP definition rules

TP Header	
TP ID	The TP ID is a unique identifier. It shall be specified according to the TP naming conventions defined in the above clause.
Test objective	Short description of test purpose objective according to the requirements from the base standard.
Reference	The reference indicates the clauses of the reference standard specifications in which the conformance requirement is expressed.
Config Id	The Config Id references the GeoNetworking configuration selected for this TP.
PICS Selection	Reference to the PICS statement involved for selection of the TP. Contains a Boolean expression.
TP Behaviour	
Initial conditions	The initial conditions define in which initial state the IUT has to be to apply the actual TP. In the corresponding Test Case, when the execution of the initial condition does not succeed, it leads to the assignment of an Inconclusive verdict.
Expected behaviour (TP body)	Definition of the events, which are parts of the TP objective, and the IUT are expected to perform in order to conform to the base specification. In the corresponding Test Case, Pass or Fail verdicts can be assigned there.

7.1.2 TP Identifier naming conventions

The identifier of the TP is built according to table 9.

Table 9: TP naming convention

Identifier:	TP <root> <gr> <sgr> <x> <nn>	
	<root> = root	LIS
		ESRP
		ECRF
		PSAP
	<gr> = group	HTTP
		SIP
	<sgr> =sub-group	GET
		PUT
		POST
		INVITE
	<x> = type of testing	BV
	<nn> = sequential number	

7.1.3 Rules for the behaviour description

In the TP the following wordings are used:

- "receives": for packets coming from the network to the IUT
- "sends": for packets sent by the IUT to the network
- "forwards": forwards the previously received message to the next hop
- "generates": for internal event generation
- "isRequestedToSend": an upper layer requests the IUT to send a packet
- "havingLocationMappingFor": IUT is provisioned with the relevant location data
- "havingReturnedLocationUriFor": IUT returned a locationURI for the relevant location data after a HELD request
- "isConfiguredWith": IUT is configured to use a specific service/parameter set
- "isReachableWith": the IUT is reachable via the specified URI