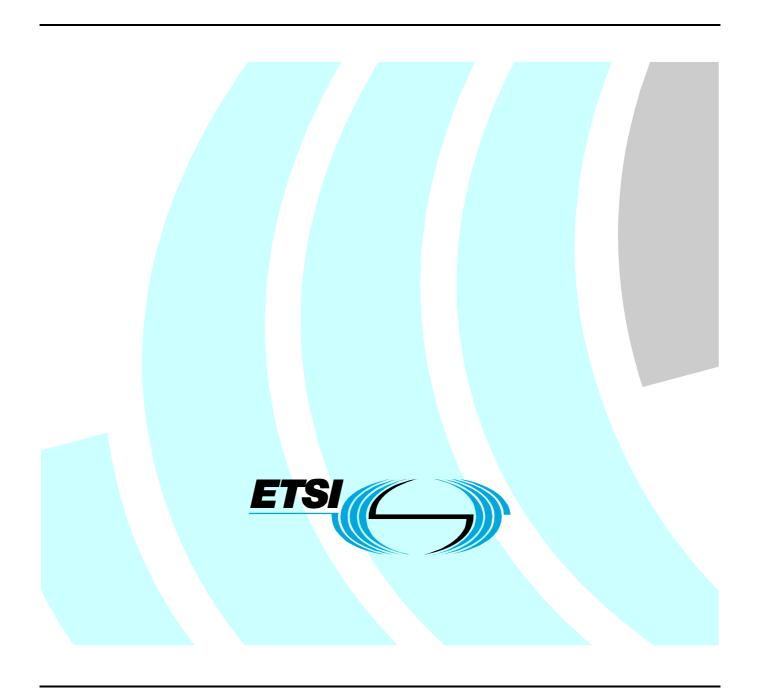# ETSI TS 102 871-1 V1.1.1 (2011-06)

Technical Specification

**Intelligent Transport Systems (ITS);
Testing;
Conformance test specifications for GeoNetworking ITS-G5;
Part 1: Test requirements and Protocol Implementation
Conformance Statement (PICS) proforma**

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Intelligent Transport System (ITS).

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

> **Part 1:** **"Test requirements and Protocol Implementation Conformance Statement (PICS) proforma";**
>
> Part 2: " Test Suite Structure and Test Purposes (TSS&TP)";
>
> Part 3: "Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT)".

1 Scope

The present document provides the Protocol Implementation Conformance Statement (PICS) proforma for Conformance test specifications for Geonetworking ITS-G5 as defined in TS 102 636-4-1 [1] and TS 102 636-4-2 [i.2] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [3].

The supplier of an implementation which is claimed to conform to TS 102 636-4-1 [1] and TS 102 636-4-2 [i.2] is required to complete a copy of the PICS proforma provided in the annex A of the present document.

2 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 http://docbox.etsi.org/Reference.

2.1 Normative references

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

[1] ETSI TS 102 636-4-1(V1.1.1): "Intelligent Transport System (ITS); Vehicular communications; GeoNetworking; Part 4: Geographical addressing and forwarding for point-to-point and point-to-multipoint communications; Sub-part 1: Media independent functionalities".

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

[3] ISO/IEC 9646-7 (1995): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".

2.2 Informative references

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] "GeoNet STREP N 216269 - D2.2 Final GeoNet Specification".

[i.2] ETSI TS 102 636-4-2: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 4: Geographical addressing and forwarding for point-to-point and point-to-multipoint communications; Sub-part 2: Media dependent functionalities for ITS-G5A media".

3   Definitions and abbreviations

3.1   Definitions

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

-        terms given in TS 102 636-4-1 [1] and TS 102 636-4-2 [i.2].

-        terms given in ISO/IEC 9646-1 [3] and in ISO/IEC 9646-7 [3].

In particular, the following terms given in ISO/IEC 9646-1 [2] apply:

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

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

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

3.2   Abbreviations

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

HL	Hop Limit
HST	Header Subtype
HT	Header Type
ICS	Implementation Conformance Statement
ITS	Intelligent Transportation Systems
ITS-G5	5 GHz wireless communication
IUT	Implementation Under Test
LT	LifeTime
NH	Next Header
PICS	Protocol Implementation Conformance Statement
PL	Payload Length
SN	Sequence Number
SUT	System Under Test
TST	Timestamp

4   Conformance requirement concerning PICS

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

An ICS which conforms to the present document shall be a conforming PICS proforma completed in accordance with the instructions for completion given in clause A.1.

Annex A (normative):
GEONETW PICS Proforma (Media independent)

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

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 TS 102 636-4-1 [1] may provide information about the implementation in a standardized manner.

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

- guidance for completing the ICS proforma;

- identification of the implementation;

- identification of the TS 102 636-4-1 [1] and TS 102 636-4-2 [i.2];

- global statement of conformance;

- PICS proforma tables.

A.1.2 Abbreviations and conventions

The ICS proforma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [3].

Item column

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

Item description column

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

Status column

The following notations, defined in ISO/IEC 9646-7 [3], are used for the status column:

m   mandatory - the capability is required to be supported.

o   optional - the capability may be supported or not.

n/a   not applicable - in the given context, it is impossible to use the capability.

x   prohibited (excluded) - there is a requirement not to use this capability in the given context.

o.i   qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table.

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

i   irrelevant (out-of-scope) - capability outside the scope of the reference specification. No answer is requested from the supplier.

NOTE 1: This use of "i" status is not to be confused with the suffix "i" to the "o" and "c" statuses above.

Reference column

The reference column makes reference to TS 102 636-4-1 [1], except where explicitly stated otherwise.

Support column

The support column shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-7 [3], 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).

NOTE 2: As stated in ISO/IEC 9646-7 [3], 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.

Values allowed column

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

-   range of values: <min value> .. <max value>
    example: 5 .. 20

-   list of values: <value1>, <value2>, ..., <valueN>
    example: 2 ,4 ,6 ,8, 9
    example: '1101'B, '1011'B, '1111'B
    example: '0A'H, '34'H, '2F'H

-   list of named values: <name1>(<val1>), <name2>(<val2>), ..., <nameN>(<valN>)
    example: reject(1), accept(2)

- length: size (<min size> .. <max size>)
  example: size (1 .. 8)

Values supported column

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

References to items

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

EXAMPLE 1: A.5/4 is the reference to the answer of item 4 in table 5 of annex A.

EXAMPLE 2: A.6/3b is the reference to the second answer (i.e. in the second support column) of item 3 in table 6 of annex A.

Prerequisite line

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

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

A.1.3 Instructions for completing the ICS proforma

The supplier of the implementation shall complete the ICS 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 clauses of the ICS 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 ICS 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   ICS contact person

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

Name:

....

Telephone number:

....

Facsimile number:

....

E-mail address:

....

Additional information:

....

....

....

A.3 Identification of the protocol

This ICS proforma applies to the following standard:

ETSI TS 102 636-4-1 [1]: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 4: Geographical addressing and forwarding for point-to-point and point-to-multipoint communications; Sub-part 1: Media independent functionalities".

A.4 Global statement of conformance

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

NOTE: Answering "No" to this question indicates non-conformance to the GEONET standard specification. Non-supported mandatory capabilities are to be identified in the ICS, with an explanation of why the implementation is non-conforming, on pages attached to the ICS proforma.

A.5 Tables

A.5.1 Media independent

This clause of the ICS proforma applies to the following standard:

ETSI TS 102 636-4-1 [1]: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 4: Geographical addressing and forwarding for point-to-point and point-to-multipoint communications; Sub-part 1: Media independent functionalities".

A.5.1.1 GeoNetworking packet structure

The supplier of the implementation shall state the support of the implementation for each of the following GeoNetworking packet structure items, in table A.1.

Table A.1: GeoNetworking packet structure

Item	Name of field	Reference	Status	Support
1	GeoNetworking Header	8.2.2 [1]	m	
2	Payload	8.2.2 [1]	o	

A.5.1.2 GeoNetworking Header

The supplier of the implementation shall state the support of the implementation for each of the following GeoNetworking Header items, in table A.2.

Table A.2: GeoNetworking Header

Prerequisite: A.1/2				
Item	**Name of field**	**Reference**	**Status**	**Support**
1	ANY_Header	8.5, 4 [1]	m	
2	BEACON_Header	8.5, 4 [1]	m	
3	UNICAST_Header	8.5, 4 [1]	m	
4	GEOANYCAST_Header	8.5, 4 [1]	m	
5	GEOBCAST_Header	8.5, 4 [1]	m	
6	TSB_Header	8.5, 4 [1]	m	
7	LS_Header	8.5, 4 [1]	m	

A.5.1.2.1   ANY_Header

The supplier of the implementation shall state the support of the implementation for each of the following ANY_Header items, in table A.3.

Table A.3: ANY_Header

Item	Name of field	Reference	Status	Support
Prerequisite: A.2/1				
1	Common Header	8.5 [1]	m	

A.5.1.2.2   BEACON_Header

The supplier of the implementation shall state the support of the implementation for each of the following BEACON_Header items, in table A.4.

Table A.4: BEACON_Header

Item	Name of field	Reference	Status	Support
Prerequisite: A.2/2				
1	Common Header	8.6.6 [1]	m	

A.5.1.2.3   UNICAST_Header

The supplier of the implementation shall state the support of the implementation for each of the following UNICAST_Header items, in table A.5.

Table A.5: UNICAST_Header

Item	Name of field	Reference	Status	Support
Prerequisite: A.2/3				
1	Common Header	8.5 [1]	m	
2	GeoUnicast header	8.6.2 [1]	m	

A.5.1.2.4   GEOANYCAST_Header

The supplier of the implementation shall state the support of the implementation for each of the following GEOANYCAST_Header items, in table A.6.

Table A.6: GEOANYCAST_Header

Item	Name of field	Reference	Status	Support
Prerequisite: A.2/4				
1	Common Header	8.5 [1]	m	
2	GeoAnycast header	8.6.5 [1]	m	

A.5.1.2.5   GEOBCAST_Header

The supplier of the implementation shall state the support of the implementation for each of the following GEOBCAST_Header items, in table A.7.

Table A.7: GEOBCAST_Header

Item	Name of field	Reference	Status	Support
Prerequisite: A.2/5				
1	Common Header	8.5 [1]	m	
2	GeoBroadcast header	8.6.5 [1]	m	

A.5.1.2.6   TSB_Header

The supplier of the implementation shall state the support of the implementation for each of the following TSB_Header items, in table A.8.

Table A.8: TSB_Header

Prerequisite: A.2/6				
Item	**Name of field**	**Reference**	**Status**	**Support**
1	Common Header	8.5 [1]	m	
2	Topologically-Scoped Broadcast header	8.6.3 [1]	m	

A.5.1.2.7   LS_Header

The supplier of the implementation shall state the support of the implementation for each of the following LS_Header items, in table A.9.

Table A.9: LS_Header

Prerequisite: A.2/7				
Item	**Name of field**	**Reference**	**Status**	**Support**
1	Common Header	8.5 [1]	m	
2	Location Service header	8.6.7 [1], 8.6.8 [1]	m	

A.5.1.3   Common Header

The supplier of the implementation shall state the support of the implementation for each of the following Common Header items, in table A.10.

Table A.10: Common Header

Prerequisite: A.2/1						
It.	**Name of field**	**Ref.**	**Status**	**Sp.**	**Value allowed**	**Value sp.**
1	version	8.5.2 [1]	m		0..255	
2	next Header (NH)	8.5.2 [1]	m		0..255, Any (0), BTP (1), IPV6 (2)	
3	header Type (HT)	8.5.2 [1]	m		HeaderType	
4	header Subtype (HST)	8.5.2 [1]	m		HeaderSubtype	
5	reserved	8.5.2 [1]	m		Bitstring size (8)	
6	flags	8.5.2 [1]	m		Bitstring size (8)	
7	payload Length (PL)	8.5.2 [1]	m		16-bit unsigned integer	
8	traffic Class (TC)	8.5.2 [1]	m		TrafficClass	
9	hop Limit (HL)	8.5.2 [1]	m		8-bit unsigned integer	
10	sender Position Vector	8.5.2 [1]	m		LongPositionVector	

A.5.1.3.1   HeaderType

The supplier of the implementation shall state the support of the implementation for each of the following HeaderType item, in table A.11.

Table A.11: HeaderType

Prerequisite: A.10/3						
It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
1	type	8.5.4 [1]	m		Bitstring size (4) values: ANY (0), BEACON (1), UNICAST (2), GEOANYCAST (3), GEOBCAST (4), TSB (5), LS (6)	

A.5.1.3.2   HeaderSubtype

The supplier of the implementation shall state the support of the implementation for each of the following HeaderSubtype item, in table A.12.

Table A.12: HeaderSubtype

Prerequisite: A.10/4						
It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
1	type	8.5.4 [1]	m		Bitstring size (4) values: c.1201	
c.1201: IF A.10/3 == GEOANYCAST (3) THEN value == CIRCLE (0), RECT (1), ELIP (2) ELSE IF A.10/3 == GEOBCAST (4) THEN value == CIRCLE (0), RECT (1), ELIP (2) ELSE IF A.10/3 == TSB (5) THEN value == SINGLE_HOP (0), MULTI_HOP (1) ELSE IF A.10/3 == LS (6) THEN value == REQUEST (0), REPLY (1) ELSE value == Unspecified (0)						

A.5.1.3.3   TrafficClass

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

Table A.13: TrafficClass

Prerequisite: A.10/8						
It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
1	reserved	8.5.5 [1]	m		Bitstring size (1) == 0	
2	relevance	8.5.6.1 [1]	m		Bitstring size (3)	
3	reliability	8.5.6.2 [1]	m		Bitstring size (2) value Veryhigh (00b), High (01b), Medium (10b), Low (11b)	
4	latency	8.5.6.3 [1]	m		Bitstring size (2) value Verylow (00b), Low (01b), Medium (10b), High (11b)	

A.5.1.4   Extended Header

A.5.1.4.1   Generic Extended Header

The supplier of the implementation shall state the support of the implementation for each of the following Generic Extended Header items, in table A.14.

Table A.14: Generic Extended Header

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: A.15/1 or A.16/1 or A.17/1 or A.18/1 or A.19/1						
1	Sequence Number (SN)	8.6.2.2; 8.6.3.2; 8.6.5.2; 8.6.7.2; 8.6.8.2	m		16-bit unsigned integer.	
2	Lifetime (LT)	8.6.2.2; 8.6.3.2; 8.6.5.2; 8.6.7.2; 8.6.8.2	m		Lifetime	
3	Reserved	8.6.2.2; 8.6.3.2; 8.6.5.2; 8.6.7.2; 8.6.8.2	m		Bitstring size (8)	
4	Source Position Vector (SO_PV)	8.6.2.2; 8.6.3.2; 8.6.5.2; 8.6.7.2; 8.6.8.2	m		LongPositionVector	

A.5.1.4.2   GeoUnicast Header

The supplier of the implementation shall state the support of the implementation for each of the following GeoUnicast Header items, in table A.15.

Table A.15: GeoUnicast Header

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: A.5/2						
1	Generic Extended Header	8.6.2.2 [1]	m		GenericExtendedHeader	
2	Destination Position Vector	8.6.2.2 [1]	m		ShortPositionVector	

A.5.1.4.3   GeoAnycast Header

The supplier of the implementation shall state the support of the implementation for each of the following GeoAnycast Header items, in table A.16.

Table A.16: GeoAnycast Header

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: A.6/2						
1	Generic Extended Header	8.6.5.2 [1]	m		GenericExtendedHeader	
2	GeoAreaPos	8.6.5.2 [1]	m		AreaPosition	
3	Distance a	8.6.5.2 [1]	m		16-bit unsigned integer	
4	Distance b	8.6.5.2 [1]	m		16-bit unsigned integer	
5	Angle	8.6.5.2 [1]	m		8-bit unsigned integer	
6	Reserved	8.6.5.2 [1]	m		24-bit unsigned integer	

A.5.1.4.4   GeoBroadcast Header

The supplier of the implementation shall state the support of the implementation for each of the following GeoBroadcast Header items, in the table below.

Table A.17: GeoBroadcast Header

Prerequisite: A.7/2						
It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
1	Generic Extended Header	8.6.5.2 [1]	m		GenericExtendedHeader	
2	GeoAreaPos	8.6.5.2 [1]	m		AreaPosition	
3	Distance a	8.6.5.2 [1]	m		16-bit unsigned integer	
4	Distance b	8.6.5.2 [1]	m		16-bit unsigned integer	
5	Angle	8.6.5.2 [1]	m		8-bit unsigned integer	
6	Reserved	8.6.5.2 [1]	m		24-bit unsigned integer	

A.5.1.4.5   Topologically-Scoped Broadcast Header

The supplier of the implementation shall state the support of the implementation for each of the following Topologically-Scoped Broadcast Header items, in table A.18.

Table A.18: Topologically-Scoped Broadcast Header

Prerequisite: A.8/2						
It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
1	Generic Extended Header	8.6.3.2 [1]	m		GenericExtendedHeader	

A.5.1.4.6   Location Service header

The supplier of the implementation shall state the support of the implementation for each of the following Location Service header items, in table A.19.

Table A.19: Location Service header

Prerequisite: A.9/2						
It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
1	Generic Extended Header	8.6.7; 8.6.8	m		GenericExtendedHeader	
2	Request	8.6.7; 8.6.8	c.1901		GN_Addr	
c.1901: IF A.10/3 == LS(6) AND A.10/4 == REQUEST(0) THEN m ELSE x.						

A.5.1.5   Common elements

A.5.1.5.1   Lifetime

The supplier of the implementation shall state the support of the implementation for each of the following Lifetime items, in table A.20.

Table A.20: Lifetime

Prerequisite: A.14/2						
It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
1	multiplier	8.5.7 [1]	m		Bitstring size (6) == (1..64)	
2	base	8.5.7 [1]	m		Bitstring size (2) value 50 ms (0), 1 s (1), 10 s (2), 100 s (3)	

A.5.1.5.2   AreaPosition

The supplier of the implementation shall state the support of the implementation for each of the following AreaPosition items, in table A.21.

Table A.21: AreaPosition

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: A.16/2 or A.17/2 or A.22/3 or A.23/3						
1	Latitude (Lat)	8.4.2.2 8.4.3.2	m		32-bit signed integer	
2	Longitude (Long)	8.4.2.2 8.4.3.2	m		32-bit signed integer.	

A.5.1.5.3   LongPositionVector

The supplier of the implementation shall state the support of the implementation for each of the following LongPositionVector items, in table A.22.

Table A.22: LongPositionVector

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: A.10/10 or A.15/4 or A.16/4 or A.17/4 or A.18/4						
1	GeoNetworking address (GN_Addr)	8.4.2.2 [1]	m		64-bit address	
2	Time Stamp (TST)	8.4.2.2 [1]	m		32-bit unsigned integer	
3	AreaPos	8.4.2.2 [1]	m		AreaPosition	
4	Speed (S)	8.4.2.2 [1]	m		16-bit signed integer	
5	Heading (H)	8.4.2.2 [1]	m		16-bit unsigned integer	
6	Altitude (Alt)	8.4.2.2 [1]	m		16-bit signed integer	
7	Time Accuracy (TAcc)	8.4.2.2 [1]	m		4-bit unsigned integer	
8	Position Accuracy (PosAcc)	8.4.2.2 [1]	m		4-bit unsigned integer	
9	Speed Accuracy (SAcc)	8.4.2.2 [1]	m		3-bit unsigned integer	
10	Heading Accuracy (HAcc)	8.4.2.2 [1]	m		3-bit unsigned integer	
11	Altitude Accuracy (AltAcc)	8.4.2.2 [1]	m		2-bit unsigned integer	

A.5.1.5.4   ShortPositionVector

The supplier of the implementation shall state the support of the implementation for each of the following ShortPositionVector items, in table A.23.

Table A.23: ShortPositionVector

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: A.15/**5**						
1	GeoNetworking address (GN_Addr)	8.4.3.2 [1]	m		64-bit address	
2	Time Stamp (TST)	8.4.3.2 [1]	m		32-bit unsigned integer	
3	AreaPos	8.4.3.2 [1]	m		AreaPosition	

A.5.1.5.5   GN_Addr

The supplier of the implementation shall state the support of the implementation for each of the following GN_Addr items, in table A.24.

Table A.24: GN_Addr

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: A.22/1 or A.23/1						
1	Configuration (M)	6.3	m		1 bit unsigned integer 1= the address is manually configured 0 = otherwise	
2	ITS Station Type (ST)	6.3	m		4 bits unsigned integer Bit # 1: 0 - Vehicle ITS station 1 - Roadside ITS station Bit # 2 - Bit # 4: For Roaside ITS station: 0 - Traffic light 1 - Ordinary Roadside ITS station For Vehicle ITS station 0 - Bike 1 - Motorbike 2 - Car 3 - Truck 4 - Bus	
3	ITS Station sub-type (SST)	6.3	m		1 bit unsigned integer 0 - Public 1 - Private	
4	ITS Station Country Code (SCC)	6.3	m		10 bits unsigned integer	
5	LL_ADDR (M_ID)	6.3	m		48 bits unsigned integer	

A.5.1.6   Protocol operation

The supplier of the implementation shall state the support of the implementation for each of the following Protocol operation items, in table A.25.

Table A.25: Protocol operation

Item	Name of field	Reference	Status	Support
1	Network management	9.2 [1]	m	
2	Packet handling	9.3 [1]	m	

A.5.1.6.1   Network management

The supplier of the implementation shall state the support of the implementation for each of the following Network management items, in table A.26.

Table A.26: Network management

Item	Name of field	Reference	Status	Support
Prerequisite: A.25/1				
1	Address configuration	9.2.1 [1]	m	
2	Local position vector and time update	9.2.2 [1]	m	
3	Beaconing	9.2.3 [1]	m	
4	Location service	9.2.4 [1]	m	

A.5.1.6.1.1   Address configuration

The supplier of the implementation shall state the support of the implementation for each of the following Address configuration items, in table A.27.

Table A.27: Address configuration

Item	Name of field	Reference	Status	Support
Prerequisite: A.26/1				
1	Auto-address configuration	9.2.1.2 [1]	m	
2	Managed address configuration	9.2.1.3 [1]	m	
3	Duplicate address detection	9.2.1.4 [1]	m	

A.5.1.6.1.1.1   Managed address configuration

The supplier of the implementation shall state the support of the implementation for each of the following Managed address configuration configuration items, in table A.28.

Table A.28: Managed address configuration

Item	Name of field	Reference	Status	Support
Prerequisite: A.27/2				
1	Initial address configuration	9.2.1.3.1 [1]	m	
2	Address update	9.2.1.3.2 [1]	m	

A.5.1.6.1.2   Local position vector and time update

The supplier of the implementation shall state the support of the implementation for each of the following Local position and time update items, in table A.29.

Table A.29: Local position and time update

Item	Name of field	Reference	Status	Support
Prerequisite: A.26/2				
1	Local position vector update	9.2.2.2 [1]	m	
2	Time update	9.2.2.3 [1]	m	

A.5.1.6.1.3   Beaconing

The supplier of the implementation shall state the support of the implementation for each of the following Beaconing items, in table A.30.

Table A.30: Beaconing

Item	Name of field	Reference	Status	Support
Prerequisite: A.26/3				
1	Source operations	9.2.3.2 [1]	m	
2	Receiver operations	9.2.3.3 [1]	m	

A.5.1.6.1.4   Location service

The supplier of the implementation shall state the support of the implementation for each of the following Location service items, in table A.31.

Table A.31: Location service

Prerequisite: A.26/4				
Item	**Name of field**	**Reference**	**Status**	**Support**
1	Source operations	9.2.4.2 [1]	m	
2	Forwarder operations	9.2.4.3 [1]	m	
3	Destination operations	9.2.4.4 [1]	m	

A.5.1.6.1.4.1   Source operations

The supplier of the implementation shall state the support of the implementation for each of the following Source operations items, in table A.32.

Table A.32: Source operations

Prerequisite: A.31/1				
Item	**Name of field**	**Reference**	**Status**	**Support**
1	Initial LS_REQUEST	9.2.4.2.2 [1]	m	
2	LS_REQUEST re-transmission	9.2.4.2.3 [1]	m	
3	LS_REPLY	9.2.4.2.4 [1]	m	

A.5.1.6.2   Packet handling

The supplier of the implementation shall state the support of the implementation for each of the following Packet handling items, in table A.33.

Table A.33: Packet handling

Prerequisite: A.25/2				
Item	**Name of field**	**Reference**	**Status**	**Support**
1	Common Header field settings	9.3.2 [1]	m	
2	Common Header processing	9.3.3 [1]	m	
3	GEOUNICAST	9.3.4 [1]	m	
4	TSB	9.3.5 [1]	m	
5	SHB	9.3.6 [1]	m	
6	GEOBROADCAST	9.3.7 [1]	m	
7	GEOANYCAST	9.3.8 [1]	m	

A.5.1.6.2.1   GEOUNICAST Packet handling

The supplier of the implementation shall state the support of the implementation for each of the following GEOUNICAST Packet handling items, in table A.34.

Table A.34: GEOUNICAST Packet handling

Prerequisite: A.33/3				
Item	**Name of field**	**Reference**	**Status**	**Support**
1	Source operations	9.3.4.2 [1]	m	
2	Forwarder operations	9.3.4.3 [1]	m	
3	Destination operations	9.3.4.4 [1]	m	

A.5.1.6.2.2   TSB Packet handling

The supplier of the implementation shall state the support of the implementation for each of the following TSB Packet handling items, in table A.35.

Table A.35: TSB Packet handling

Item	Name of field	Reference	Status	Support
Prerequisite: A.33/4				
1	Source operations	9.3.5.2 [1]	m	
2	Forwarder and receiver operations	9.3.5.3 [1]	m	

A.5.1.6.2.3   SHB Packet handling

The supplier of the implementation shall state the support of the implementation for each of the following SHB Packet handling items, in table A.36.

Table A.36: SHB Packet handling

Item	Name of field	Reference	Status	Support
Prerequisite: A.33/5				
1	Source operations	9.3.6.2 [1]	m	
2	Receiver operations	9.3.6.3 [1]	m	

A.5.1.6.2.4   GEOBROADCAST Packet handling

The supplier of the implementation shall state the support of the implementation for each of the following GEOBROADCAST Packet handling items, in table A.37.

Table A.37: GEOBROADCAST Packet handling

Item	Name of field	Reference	Status	Support
Prerequisite: A.33/6				
1	Source operations	9.3.7.2 [1]	m	
2	Forwarder and receiver operations	9.3.7.3 [1]	m	

A.5.1.6.2.5   GEOANYCAST Packet handling

The supplier of the implementation shall state the support of the implementation for each of the following GEOANYCAST Packet handling items, in table A.38.

Table A.38: GEOANYCAST Packet handling

Item	Name of field	Reference	Status	Support
Prerequisite: A.33/7				
1	Source operations	9.3.8.2 [1]	m	
2	Forwarder and receiver operations	9.3.8.3 [1]	m	

A.5.1.7 Protocol constants

The supplier of the implementation shall state the support of the implementation for each of the following Protocol constants items, in table A.39.

Table A.39: Protocol constants

Item	Constants	Ref.	Stat.	Sup.	Value allowed	Value supported
1	itsGnLocalGnAddr	Annex E	m		1	
2	itsGnLocalAddrConfMethod	Annex E	m		Auto (0) Managed (1)	
3	itsGnProtocolVersion	Annex E	m		TS 102 636-4-1 [1] V 1.1.1 (0)	
4	itsGnStationType	Annex E	m		Vehicle ITS Station (0) Roadside ITS Station (1)	
5	itsGnMinimumUpdateFrequencyLPV	Annex E	m		Vehicle ITS Station (1000) Roadside ITS Station (0)	
6	itsGnMaxSduSize	Annex E	m		1416	
7	itsGnMaxGeoNetworkingHeaderSize	Annex E	m		83	
8	itsGnLifetimeLocTE	Annex E	m		20	
9	itsGnLifetimeServTE	Annex E	m		600	
10	itsGnLocationServiceMaxRetrans	Annex E	m		10	
11	itsGnLocationServiceRetransmitTimer	Annex E	m		1000	
12	itsGnLocationServicePacketBufferSize	Annex E	m		1024	
13	itsGnBeaconServiceRetransmitTimer	Annex E	m		3000	
14	itsGnBeaconServiceMaxJitter	Annex E	m		itsGnMaxPacketLifetime /4	
15	itsGnDefaultHopLimit	Annex E	m		10	
16	itsGnMaxPacketLifetime	Annex E	m		600	
17	itsGnMinPacketRepetitionInterval	Annex E	m		100	
18	itsGnGeoUnicastForwardingAlgorithm	Annex E	m		UNSPECIFIED (0) GREEDY (1) CBF (2)	
19	itsGnGeoBroadcastForwardingAlgorithm	Annex E	m		UNSPECIFIED (0) SIMPLE (1) ADVANCED (2)	
20	itsGnGeoUnicastCbfMinTime	Annex E	m		1	
21	itsGnGeoUnicastCbfMaxTime	Annex E	m		100	
22	itsGnDefaultMaxCommunicationRange	Annex E	m		1000	
23	itsGnGeoAreaLineForwarding	Annex E	m		DISABLED (0) ENABLED (1)	
24	itsGnUcForwardingPacketBufferSize	Annex E	m		256	
25	itsGnBcForwardingPacketBufferSize	Annex E	m		1024	
26	itsGnCbfPacketBufferSize	Annex E	m		256	
27	itsGnTrafficClassRelevance	Annex E	m		3	
28	itsGnTrafficClassReliability	Annex E	m		Medium (10)	
29	itsGnTrafficClassLatency	Annex E	m		Medium (10)	

Annex B (informative):
GEONETW PICS Proforma (Media dependent)

B.1 Media dependent

This clause of the ICS proforma applies to the following standard:

TS 102 636-4-2 [i.2]: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking;
Part 4: Geographical addressing and forwarding for point-to-point and point-to-multipoint communications; Sub-part 2:
Media dependent functionalities for ITS-G5A media".

B.1.1 Decentralized Congestion Control

The supplier of the implementation shall state the support of the implementation for each of the following Congestion
Status values, in table B.1.

Table B.1: Congestion Status

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
1	Not congesting	5.2.1 [i.2]	m		1	
2	About congesting	5.2.1 [i.2]	m		2	
3	Congesting	5.2.1 [i.2]	m		3	

The supplier of the implementation shall state the support of the implementation for each of the following Congestion
Status determination procedures, in table B.2.

Table B.2: Congestion Status determination procedures

It.	Name of field	Ref.	Status	Sp.
1	Network Congestion status based on channels load	5.2.1 [i.2]	m	
2	Network congestion detection based on number of neighbours	5.2.1 [i.2]	m	

B.1.2 Transmission Interval Control

The supplier of the implementation shall state the support of the implementation for each of the following Not
congesting Transmission Interval values, in table B.3.

Table B.3: Not congesting Transmission Interval

Prerequisite: B.1/1						
It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
1	Network beacon time interval	5.2.1 [i.2]	m		default	
2	Application repeated messages	5.2.1 [i.2]	m		default	
3	Network repeated messages	5.2.1 [i.2]	m		default	

The supplier of the implementation shall state the support of the implementation for each of the following About congesting Transmission Interval values, in table B.4.

Table B.4: About congesting Transmission Interval

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: B.1/2						
1	Network beacon time interval	5.2.1 [i.2]	m		medium	
2	Application repeated messages	5.2.1 [i.2]	m		medium	
3	Network repeated messages	5.2.1 [i.2]	m		medium	

The supplier of the implementation shall state the support of the implementation for each of the following Congesting Transmission Interval values, in table B.5.

Table B.5: Congesting Transmission Interval

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: B.1/3						
1	Network beacon time interval	5.2.1 [i.2]	m		maximun	
2	Application repeated messages	5.2.1 [i.2]	m		maximun	
3	Network repeated messages	5.2.1 [i.2]	m		maximun	

B.1.3   Transmission range control

The supplier of the implementation shall state the support of the implementation for each of the following Tx range values, in table B.6.

Table B.6: Tx range

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
1	*MaxTxRange*	5.2 [i.2]	m			
2	*MediumTxRange*	5.2 [i.2]	m			
3	*MinTxRange*	5.2 [i.2]	m			

The supplier of the implementation shall state the support of the implementation for each of the following Not congesting Tx range values, in table B.7.

Table B.7: Not congesting Tx

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: B.1/1						
1	Critical safety applications	5.2 [i.2]	m		*MaxTxRange*	
2	Other applications	5.2 [i.2]	m		*MaxTxRange*	

The supplier of the implementation shall state the support of the implementation for each of the following About congesting Tx range values, in table B.8.

Table B.8: About congesting Tx

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: B.1/2						
1	Critical safety applications	5.2 [i.2]	m		*MaxTxRange*	
2	Other applications	5.2 [i.2]	m		*MediumTxRange*	

The supplier of the implementation shall state the support of the implementation for each of the following Congesting Tx range values, in table B.9.

Table B.9: Congesting Tx

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
Prerequisite: B.1/3						
1	Critical safety applications	5.2 [i.2]	m		*MaxTxRange*	
2	Other applications	5.2 [i.2]	m		*MinTxRange*	

B.1.4   Multi-channel control

The supplier of the implementation shall state the support of the implementation for each of the following Channels, in table B.10.

Table B.10: Channel

It.	Name of field	Ref.	Status	Sp.
1	control channel ITS-G5CC	5.3 [i.2]	m	
2	services channel 1 ITS-G5SC1	5.3 [i.2]	m	
2	services channel 2 ITS-G5SC2	5.3 [i.2]	m	

B.1.5   Multi-transceiver control

The supplier of the implementation shall state the support of the implementation for each of the Transceiver/Channel mapping, in table B.11.

Table B.11: Transceiver/Channel mapping

It.	Name of field	Ref.	Status	Sp.	Value allowed	Value sp.
1	Transceiver 1 (ITSG5TR1)	5.4 [i.2]	m		ITS-G5CC	
2	Transceiver 2 (ITSG5TR2)	5.4 [i.2]	m		ITS-G5SC1 or ITS-G5SC1	

Annex C (informative):
Bibliography

ETSI TS 102 636-1: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 1: Requirements".

ETSI TS 102 636-2: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 2: Scenarios".

ETSI TS 102 636-3: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 3: Network architecture".

ETSI ETS 300 406 (1995): "Methods for testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

History

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