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Intelligent Transport Systems (ITS); Testing; Conformance test specifications for GeoNetworking ITS-G5; Part 2: Test Suite Structure and Test Purposes (TSS & TP) Reference RTS/ITS-00353

Keywords

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# Foreword

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

The present document is part 2 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) pro forma";
- Part 2: "Test Suite Structure and Test Purposes (TSS & TP)";
- Part 3: "Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT)".

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### 1 Scope

The present document provides the Test Suite Structure and Test Purposes (TSS & TP) for GeoNetworking ITS-G5 as defined in ETSI EN 302 636-4-1 [1] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [i.4].

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The ISO standard for the methodology of conformance testing (ISO/IEC 9646-1 [i.2] and ISO/IEC 9646-2 [i.3]) as well as the ETSI rules for conformance testing (ETSI ETS 300 406 [i.5]) are used as a basis for the test methodology.

### 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.

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

- [1] ETSI EN 302 636-4-1 (V1.2.1): "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 4: Geographical addressing and forwarding for point-to-point and point-tomultipoint communications; Sub-part 1: Media-Independent Functionality".
- [2] ETSI TS 102 871-1 (V1.4.1): "Intelligent Transport Systems (ITS); Testing; Conformance test specifications for GeoNetworking ITS-G5; Part 1: Test requirements and Protocol Implementation Conformance Statement (PICS) pro forma".

### 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.

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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] ETSI EG 202 798 (V1.1.1): "Intelligent Transport Systems (ITS); Testing; Framework for conformance and interoperability testing".
- [i.2] ISO/IEC 9646-1 (1994): "Information technology -- Open Systems Interconnection --Conformance testing methodology and framework - Part 1: General concepts".
- [i.3] ISO/IEC 9646-2 (1994): "Information technology -- Open Systems Interconnection --Conformance testing methodology and framework -- Part 2: Abstract Test Suite specification".
- [i.4] ISO/IEC 9646-7 (1995): "Information technology -- Open Systems Interconnection --Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [i.5] ETSI ETS 300 406 (1995): "Methods for testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

# 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI EN 302 636-4-1 [1], ISO/IEC 9646-1 [i.2], ISO/IEC 9646-7 [i.4] and the following apply:

ItsNode: node that implements GeoAdhoc router functionality by ETSI EN 302 636-4-1 [1]

neighbour: ItsNode is in direct (single-hop) communication range

"to be in direction of X": to be a valid candidate for a forwarding algorithm to forward the packet to the destination X

NOTE: This means that the candidate ItsNode is geographically closer to X than the IUT.

to broadcast a packet: to send a packet as a link-layer broadcast frame to all surrounding neighbours

to forward a packet: to send a packet as a link-layer unicast frame to the selected node

to retransmit a packet: to forward or broadcast a received packet

### 3.2 Abbreviations

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

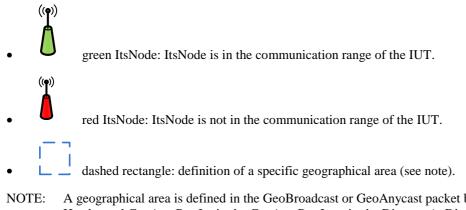
ATS	Abstract Test Suite
BAA	GeoBroadcast Advanced Algorithm
BAH	Basic Header
BC	BroadCast
BCA	GeoBroadcast CBF Algorithm
BEA	BEAcon
BI	Invalid test events for Behaviour tests
BO	Inopportune test events for Behaviour tests
BV	Valid test events for Behaviour tests
CAP	Buffer Capacities
CBF	Contention Based Forwarding
СОН	Common Header
DEPV	Destination Position Vector
EN	European Norm
FDV	Formatting and Data Validity
FPB	Forwarding Packet Buffer
FSR	Forwarder, Sender, local geoadhoc Router
GAC	Geographically-scoped AnyCast
GBC	Geographically-scoped BroadCast
GEONW	GEONetWorking
GNA	GeoNetworking Address
GUC	Geographically-scoped UniCast
HST	Header SubType
HT	Header Type
ISO	International Organization for Standardization
ITS	Intelligent Transportation Systems
ITS-G5	Intelligent Transportation Systems - 5 GHz wireless communication
IUT	Implementation Under Test
LOS	LOcation Service
LOT	LOcation Table
LPV	Local Position Vector
LS	Location Service
LT	LifeTime
MAC	Medium Access Control
MHL	Maximum Hop Limit

MIB	Management Information Base
NH	Next Header
PAI	Position Accuracy Indicator
PICS	Protocol Implementation Conformance Statement
PL	Payload Length
PON	Protocol Operation
PV	Position Vector
RHL	Remaining Hop Limit
SAP	Service Access Point
SCC	Station Country Code
SCF	Store Carry & Forward
SHB	Single Hop Broadcast
SN	Sequence Number
SOPV	Source Position Vector
SQN	Sequence Number
ST	Station Type
TH	Threshold
TI	Timer tests
TIC	Transmission Interval Control
TP	Test Purposes
TS	Test Suite
TSB	Topologically-Scoped Broadcast
TSS	Test Suite Structure
TST	TimeSTamp
UC	UniCast

# 4 Test Configuration

### 4.1 Test Configuration Overview

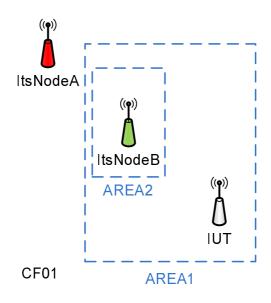
This clause introduces the test configurations that have been used for the definition of test purposes. The test configurations cover the various scenarios of the GeoNetworking tests. The test configurations show:



OTE: A geographical area is defined in the GeoBroadcast or GeoAnycast packet by HST field of Common Header and GeoAreaPos Latitude, GeoAreaPos Longitude, DistanceA, DistanceB and Angle fields of the Extended Header.

Seven test configurations are defined below.

# 4.2 Configuration 1: CF01



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ItsNodeA	is not in IUT's communication range
ItsNodeB	is in IUT's communication range
	is in direction of ItsNodeA
	is in AREA1
	is in AREA2
IUT	is in AREA1

# 4.3 Configuration 2: CF02

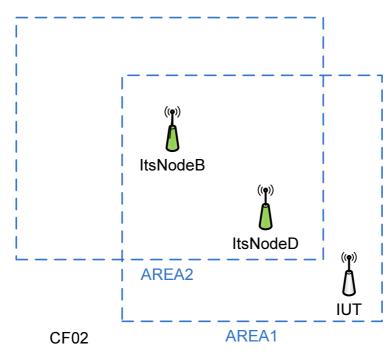


Figure 2

ItsNodeB	is in IUT's communication range
	is close to the centre of AREA2
	is in AREA1
	is in AREA2
ItsNodeD	is in IUT's communication range
	is in direction of ItsNodeB
	is in AREA1
	is in AREA2
IUT	is in AREA1

# 4.4 Configuration 3: CF03

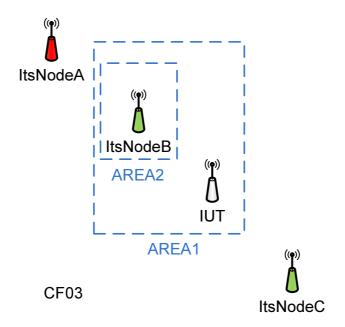
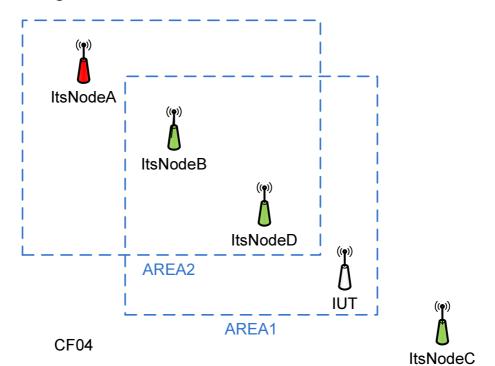


Figure 3	Fig	ure	3
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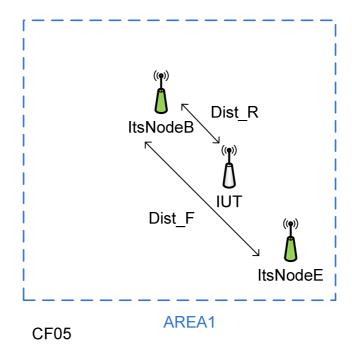
ItsNodeA	is not in IUT's communication range
ItsNodeB	is in IUT's communication range
	is in direction of ItsNodeA
	is in AREA1
	is in AREA2
ItsNodeC	is in IUT's communication range
	is not in direction of ItsNodeA
IUT	is in AREA1



# 4.5 Configuration 4: CF04

ItsNodeA	is not in IUT's communication range	
ItsNodeB	is in IUT's communication range	
	is in direction of ItsNodeA	
	is closer to ItsNodeA than ItsNodeD	
	is in AREA1	
	is in AREA2.	
	is close to the centre of AREA2	
ItsNodeC	is in IUT's communication range	
	is not in direction of ItsNodeA	
ItsNodeD	is in IUT's communication range	
	is in direction of ItsNodeA	
	is in AREA1	
	is in AREA2	
IUT	is in AREA1	

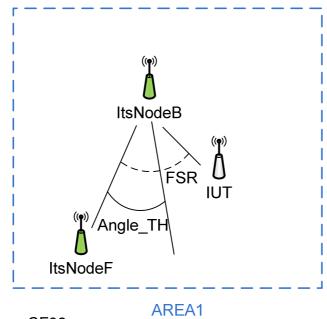
# 4.6 Configuration 5: CF05



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ItsNodeB	is in IUT's communication range is in AREA1 is close to the centre of AREA1
ItsNodeE	is in IUT's communication range is in AREA1
IUT	is in AREA1 is closer to ItsNodeB than ItsNodeE (Dist_R < Dist_F) Angle_FSR formed by ItsNodeE, ItsNodeB and IUT is less than Angle_TH

# 4.7 Configuration 6: CF06

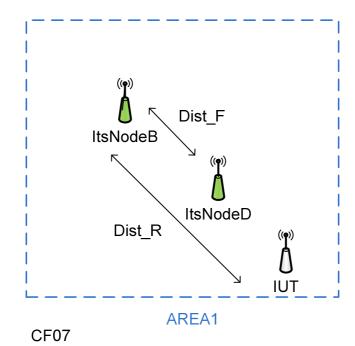


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CF06

	is in IUT's communication range is in AREA1 is close to the centre of AREA1
ItsNodeF	is in IUT's communication range is in AREA1
IUT	is in AREA1 is closer to ItsNodeB than ItsNodeE (Dist_R < Dist_F) Angle_FSR formed by ItsNodeF, ItsNodeB and IUT is greater than Angle_TH

# 4.8 Configuration 7: CF07



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ItsNodeB	is in IUT's communication range
	is in AREA1
	is close to the centre of AREA1
ItsNodeD	is in IUT's communication range
	is in AREA1
	is closer to ItsNodeB than IUT (Dist_R > Dist_F)
	Angle_FSR formed by ItsNodeD, ItsNodeB and IUT is less
	than Angle_TH
IUT	is in AREA1

# 5 Test Suite Structure (TSS)

### 5.1 Structure for GEONW tests

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

Root	Group	Sub-group	Category
GEONW	Formatting and data validity	Basic Header	Valid and Invalid
		Common Header	Valid and Inopportune
		Beacon	Valid
		GeoUnicast	Valid
		GeoBroadcast	Valid
		GeoAnycast	Valid
		Single-Hop Broadcast	Valid
		Topologically Scoped Broadcast	Valid
	Protocol operation	Location Table	Valid
	·	Local Position Vector	Valid
		Sequence Number	Valid
		Location Service	Valid, Inopportune and Timer
		Forwarding Packet Buffer	Valid
		GeoNetworking Address	Valid
		Beacon	Valid and Timer
		GeoUnicast	Valid and Inopportune
		GeoBroadcast	Valid and Inopportune
		GeoAnycast	Valid behaviour
		Single-Hop Broadcast	Valid
		Topologically Scoped Broadcast	Valid and Inopportune
		GeoBroadcast CBF algorithm	Valid and Inopportune
		GeoBroadcast Advanced Algorithm	Valid and Inopportune
	Buffer Capacities	Location Service	Valid
	· ·	Forwarding Packet Buffer	Valid

#### Table 1: TSS for GEONW

The test suite is structured as a tree with the root defined as GEONW. The tree is of rank 3 with the first rank a Group, the second a sub-group and the third a category. The third rank is the standard ISO conformance test categories.

### 5.2 Test groups

#### 5.2.1 Root

The root identifies the GeoNetworking protocol given in ETSI EN 302 636-4-1 [1].

#### 5.2.2 Test group

This level contains three major areas identified as: tests of formatting and data validity, tests of protocol operation, tests of buffer capacities.

#### 5.2.3 Test sub-group

This level identifies the sub categories of each Group.

#### 5.2.4 Categories

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

# 6 Test Purposes (TP)

# 6.1 Introduction

### 6.1.1 TP definition conventions

The TPs are defined by the rules shown in table 2.

#### Table 2: TP definition rules

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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 sub-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.	
Final conditions	Definition of the events that the IUT is expected to perform or shall not perform, according to the base standard and following the correct execution of the actions in the expected behaviour above. In the corresponding Test Case, the execution of the final conditions is evaluated for the assignment of the final verdict.	

### 6.1.2 TP Identifier naming conventions

The identifier of the TP is built according to table 3.

Identifier:	TP/ <root>/<gr>/<sgr>/<x>/<nn></nn></x></sgr></gr></root>		
	<root> = root</root>	GEONW	
	<gr> = group</gr>	FDV	Formatting and Data Validity
		PON	Protocol Operation
		CAP	Buffer Capacities
	<sgr> =sub-group</sgr>	BAH	Basic Header
		СОН	Common Header
		BEA	Beacon
		GUC	GeoUnicast
		GBC	GeoBroadcast
		GAC	GeoAnycast
		SHB	Single-Hop Broadcast
		TSB	Topologically Scoped Broadcast
		LOT	Location Table
		LPV	Local Position Vector
		SQN	Sequence Number
		LOS	Location Service
		FPB	Forwarding Packet Buffer
		GNA	GeoNetworking Address
		LT/TIC	Transmission Interval Control
		BCA	GeoBroadcast CBF Algorithm
		BAA	GeoBroadcast Advanced Algorithm
	<x> = type of testing</x>	BV	Behaviour tests to valid test events
		BI	Behaviour tests to invalid test events
		BO	Behaviour tests to inopportune test events
		TI	Timer tests
	<nn> = sequential number</nn>		01 to 99

Table	3: TP	naming	convention
-------	-------	--------	------------

### 6.1.3 Rules for the behaviour description

The description of the TP is built according to ETSI EG 202 798 [i.1].

In the TP the following wordings are used:

- "The IUT is **requested to send**": an upper layer requests the geonetworking layer to send a packet.
- "The IUT generates": for internal events generation, i.e. Beacon packets.
- "The IUT **receives**": for packets coming from the network and given by the lower layer.
- "The packet is **originated by** ItsNodeX": the source of the packet is ItsNodeX.
- "The packet is received **from** ItsNodeX": the sender of the packet is ItsNodeX.
- "The packet is **addressed to** ItsNodeX": the destination of the packet is ItsNodeX.

#### 6.1.4 Sources of TP definitions

All TPs have been specified according to ETSI EN 302 636-4-1 [1].

#### 6.1.5 Mnemonics for PICS reference

The present document makes use of PICS mnemonics defined in ETSI TS 102 871-1 [2], table 1.

# 6.2 Test purposes for GEONW

## 6.2.1 Formatting and Data Validity

#### 6.2.1.1 Basic Header

TP ld	TP/GEONW/FDV/BAH/BV-01
Test objective	Check defined values of default Gn parameters in the basic header
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.2, 9.6.2 and annex H
Config Id	CF01
PICS Selection	
	Initial conditions
with {	
the IUT being in the	e "initial state"
}	
-	Expected behaviour
ensure that {	
when {	
the IUT is reque	ested to send a GBC packet
}	
then {	
the IUT sends a	a GBC packet
containing a	a correctly formatted Basic Header
containi	ng version field
set te	o itsGnProtocolVersion MIB parameter
containi	ng RHL field
set to	o itsGnDefaultHopLimit MIB parameter
}	
}	

TP ld	TP/GEONW/FDV/BAH/BI-02		
Test objective	Check discard of packet having incorrect version		
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.3		
Config Id	CF01		
PICS Selection			
	Initial conditions		
with {			
the IUT being in the	e "initial state"		
and the IUT having	received a SHB packet from ItsNodeB		
5	rrectly formatted Basic Header		
containing v			
	Ilue equal to itsGnProtocolVersion MIB parameter		
and the IUT having	passed the received SHB packet to the Upper Layer}		
	Expected behaviour		
ensure that {			
when {			
	the IUT receives the SHB packet from ItsNodeB		
	containing a correctly formatted Basic Header		
containing version field			
set to value not equal to itsGnProtocolVersion MIB parameter			
}			
then {			
the IUT discards the received SHB packet			
}			
}	}		

#### 6.2.1.2 Common Header

TP ld	TP/GEONW/FDV/COH/BV-01		
Test objective	Common GeoNetworking header validity test (PL field) - Beacon		
Reference	ETSI EN 302 636-4-1 [1], clauses 9.7.2, 9.7.4, 9.8.6 and 10.3.6		
Config Id	CF01		
PICS Selection			
	Initial conditions		
with {			
the IUT being in the	e "initial state"		
}			
	Expected behaviour		
ensure that {			
when {			
the IUT generates a Beacon packet			
}			
then {			
	a GeoNetworking packet		
	a correctly formatted Common Header		
	ng HT field		
	o '1' (BEACON)		
containii	ng HST field		
set to	set to '0' (UNSPECIFIED)		
containing PL field			
set to '0'			
}			
}			
TP Id	TP/GEONW/FDV/COH/BV-02		
Test shisetiye	Common CooNetworking headen validity test (DL field) CLID		

Test objective	Common GeoNetworking header validity test (PL field) - SHB		
Reference	ETSI EN 302 636-4-1 [1], clauses 9.7.2, 9.7.4, 9.8.4, 10.3.4 and 10.3.10		
Config Id	CF01		
PICS Selection			
	Initial conditions		
with {			
the IUT being in the	e "initial state"		
}			
	Expected behaviour		
ensure that {			
when {			
the IUT is reque	ested to send a SHB packet		
}			
then {			
	a GeoNetworking packet		
	correctly formatted Common Header		
	ng HT field		
	set to '5' (TSB)		
	containing HST field		
set to	set to <sup>7</sup> 0' (SINGLE_HOP)		
containing MHL field			
set to '1'			
containing PL field			
set to the length of the included payload			
containing a	containing a payload		
}			
}			

TP Id	TP/GEONW/FDV/COH/BV-03		
Test objective	Check defined values of default Gn parameters in the common header		
Reference	ETSI EN 302 636-4-1 [1], clauses 9.7.2, 9.8.5, 10.3.4 and annex H		
Config Id	CF01		
PICS Selection			
	Initial conditions		
with {			
the IUT being in the	e "initial state"		
}			
	Expected behaviour		
ensure that {			
when {			
the IUT is reque	the IUT is requested to send a GBC packet		
}			
then {			
the IUT sends a			
•	containing a correctly formatted Common Header		
containing Flags field			
indicating value equalling the itsGnIsMobile MIB parameter			
containing MHL field			
set to itsGnDefaultHopLimit MIB parameter			
}			
}			

TP Id	TP/GEONW/FDV/COH/BO-04	
Test objective	Check that a received TSB packet is discarded if received with RHL > MHL	
	Reference ETSI EN 302 636-4-1 [1], clause 10.3.5	
Config Id	CF02	
PICS Selection		
	Initial conditions	
with {		
the IUT being in th	e "initial state" and	
	eived Beacon information from ItsNodeD and	
	eived Beacon information from ItsNodeB	
}		
,	Expected behaviour	
ensure that {	•	
when {		
•	s a TSB packet	
	Basic Header	
	ng RHL field	
	ating HL1 higher than MHL1	
	Common Header	
containing MHL field indicating MHL1		
indic		
} then (		
then {		
the IUT discard	the IUT discards the TSB packet	
}		
}		

#### 6.2.1.3 Beacon

TP Id	TP/GEONW/FDV/BEA/BV-01		
Test objective	Beacon header validity test		
Reference	ETSI EN 302 636-4-1 [1], clauses 9.7.2, 9.8.6 and 10.3.6		
Config Id	CF01		
PICS Selection	PICS_GN_BEACON_SRC		
FICS Selection	Initial conditions		
with (			
with { the IUT being in the			
]	Expected behaviour		
ensure that {			
when {			
	tes a Beacon packet		
}			
, then {			
	a GeoNetworking packet		
	a correctly formatted Common Header		
	ng HT field		
set t	o '1' (BEACON)		
	ng HST field		
set t	o <sup>°</sup> 0' (UNSPECIFIED)		
containi	containing NH field		
set to 0' (UNSPECIFIED)			
containing Extended Header			
containing SOPV			
indicating LPV of the IUT			
}			
}			

TP Id	TP/GEONW/FDV/BEA/BV-02		
Test objective	GeoNetworking address validity test		
Reference	ETSI EN 302 636-4-1 [1], clauses 6.3 and 9.8.6.2		
Config Id	CF01		
PICS Selection	PICS_GN_BEACON_SRC		
	Initial conditions		
with {			
the IUT being in the	e "initial state"		
}			
-	Expected behaviour		
ensure that {			
when {			
the IUT generat	tes a Beacon packet		
}			
then {			
the IUT sends a	a GeoNetworking packet		
containing S	containing SOPV field		
containir	ng GN_ADDR field		
conta	containing ST field		
	indicating the ITS Station type		
containing SCC field			
indicating the ITS Station country code			
}	}		
}			
NOTE: Correct Sou	rce GeoNetworking address value:== itsGnLocalGnAddr MIB parameter value.		

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TP ld	TP/GEONW/FDV/BEA/BV-03
Test objective	Local Position Vector validity test, involving position comparison against sensor input data
Reference	ETSI EN 302 636-4-1 [1], clauses 9.5.2.2 and 9.8.6.2
Config Id	CF01
PICS Selection	PICS_GN_BEACON_SRC
	Initial conditions
with {	
the IUT being in th	e "initial state"
}	
	Expected behaviour
ensure that {	
when {	
the IUT genera	tes a Beacon packet
}	
then {	
the IUT sends	a GeoNetworking packet
containing a correct SOPV field	
indicating the latest position of the IUT	
}	
}	

TP ld	TP/GEONW/FDV/BEA/BV-04
Test objective	Local Position Vector validity test, involving timestamp comparison against sensor input data
Reference	ETSI EN 302 636-4-1 [1], clauses 9.5.2.2 and 9.8.6.2
Config Id	CF01
PICS Selection	PICS_GN_BEACON_SRC
	Initial conditions
with {	
the IUT being in the	ne "initial state"
}	
·	Expected behaviour
ensure that {	
when {	
the IUT genera	ates a Beacon packet
}	
, then {	
	a GeoNetworking packet
	a correct SOPV field
indicating the timestamp value corresponding to the sensor acquisition time of position data	
nucau	
}	
}	

#### 6.2.1.4 GeoUnicast

TP ld	TP/GEONW/FDV/GUC/BV-01	
Test objective	GUC header validity	
Reference	ETSI EN 302 636-4-1 [1], clauses 9.7.2, 9.7.4, 9.8.2.2 and 10.3.8	
Config Id	CF01	
PICS Selection	PICS_GN_GUC_SRC	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
	eived Beacon information from ItsNodeB	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT is requ	ested to send a GUC packet to ItsNodeB	
}		
then {		
the IUT sends a	a GeoNetworking packet	
containing a	a correctly formatted Common Header	
containi	ng HT field	
	set to 2' (GEOUNICAST)	
	ng HST field	
	o '0' (UNSPECIFIED)	
	containing GUC Extended Header	
containing DEPV field		
indicating position of the ItsNodeB		
	containing SOPV field	
indic	ating position of the IUT	
}		
}		

#### 6.2.1.5 GeoBroadcast

TP ld	TP/GEONW/FDV/GBC/BV-01	
Test objective	GBC header validity	
Reference	ETSI EN 302 636-4-1 [1], clauses 9.7.2, 9.7.4, 9.8.5.2 and 10.3.11	
Config Id	CF01	
PICS Selection	PICS GN_GBC_SRC	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
•	eived Beacon information from the ItsNodeB	
}		
-	Expected behaviour	
ensure that {	·	
when {		
the IUT is requested to send a GBC packet		
}		
then {		
the IUT sends a	a GeoNetworking packet	
containing a	correctly formatted Common Header	
containir	containing HT field	
set to '4' (GEOBROADCAST)		
containing GBC Extended Header		
containing SOPV field		
indicating position of the IUT		
}		
}		

### 6.2.1.6 GeoAnycast

TP Id	TP/GEONW/FDV/GAC/BV-01	
Test objective	GAC header validity	
Reference	ETSI EN 302 636-4-1 [1], clauses 9.7.2, 9.7.4, 9.8.5.2 and 10.3.12	
Config Id	CF01	
PICS Selection	PICS_GN_GAC_SRC	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having rece	eived Beacon information from the ItsNodeB	
}	}	
	Expected behaviour	
ensure that {		
when {		
the IUT is requested to send a GeoAnycast packet		
}		
then {		
	a GeoNetworking packet	
	a correctly formatted Common Header	
	containing HT field	
set to '3' (GEOANYCAST)		
containing GeoAnycast Extended Header		
containing SOPV field		
indic	ating position of IUT	
}		
}		

### 6.2.1.7 Single-Hop Broadcast

TP ld	TP/GEONW/FDV/SHB/BV-01	
Test objective	SHB header validity	
Reference	ETSI EN 302 636-4-1 [1], clauses 9.7.2, 9.7.4, 10.3.4, 9.8.4.2 and 10.3.10	
Config Id	CF01	
PICS Selection	PICS_GN_SHB_SRC	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having rece	eived Beacon information from the ItsNodeB	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT is reque	ested to send a SHB packet	
}		
then {		
	a GeoNetworking packet	
	a correctly formatted Common Header	
	ng HT field	
	o '5' (TSB)	
	ng HST field	
	set to '0' (SINGLE_HOP)	
containing MHL field		
set to '1'		
containing Extended Header		
containing SOPV		
indic	ating LPV of the IUT	
}		
}		

TP Id	TP/GEONW/FDV/TSB/BV-01
Test objective	TSB header validity
Reference	ETSI EN 302 636-4-1 [1], clauses 9.7.2, 9.7.4, 9.8.3.2 and 10.3.9
Config Id	CF01
PICS Selection	PICS_GN_TSB_SRC
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having rece	eived Beacon information from the ItsNodeB
}	
	Expected behaviour
ensure that {	
when {	
the IUT is reque	ested to send a TSB packet
}	
then {	
	a GeoNetworking packet
containing a	a correctly formatted Common Header
	ng HT field
	o <sup>°</sup> 5' (TSB)
containing HST field	
set to '1' (MULTI_HOP)	
containing TSB Extended Header	
containing SOPV field	
	ating position of the IUT
1 Indie	
J	

### 6.2.1.8 Topologically Scoped Broadcast

# 6.2.2 Protocol Operation

### 6.2.2.1 Location table

TP ld	TP/GEONW/PON/LOT/BV-01
Test objective	Check insertion of new entries into location table from Beacon header
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.10.3, 10.3.6.2 and 10.3.8.2
Config Id	CF01
PICS Selection	PICS_GN_GUC_SRC AND PICS_GN_BEACON_DST
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having rece	vived Beacon information from the ItsNodeB and
the lifetime of the It	sNodeB Location Table entry not being expired
}	
	Expected behaviour
ensure that {	
when {	
the IUT is reque	ested to send a GUC packet to ItsNodeB
}	
then {	
	t send a GeoNetworking packet
	LS_REQUEST
	ng Request field
C	ontaining M_ID
the ULT conde o	indicating ItsNodeB
	GeoNetworking packet
	correctly formatted Common Header g HT field
	o '2' (GEOUNICAST) GUC Extended Header
	ig DEPV field
	ating same position as the SOPV value of the Beacon information received from ItsNodeB
3	any same position as the OOF V value of the Deacon information received from its NodeD
}	
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TP ld	TP/GEONW/PON/LOT/BV-02		
Test objective	Check insertion of new entries into location table from LS Reply data		
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.7.1.4, 10.3.7.1.2 and 10.3.8.2		
Config Id	CF01		
PICS Selection	PICS_GN_LS_REQ_SRC AND PICS_GN_LS_REP_DST		
	Initial conditions		
with {			
the IUT being in th			
	en requested to send a first GUC packet to ItsNodeA and		
	nt a LS_REQUEST packet		
containing Req			
containing			
	cating ItsNodeA		
	ing the other bits		
	cating value 0		
	eived a LS_REPLY packet from ItsNodeA		
containing SOF			
	ht the GUC packet to ItsNodeA and		
	ItsNodeA Location Table entry not being expired		
5	Expected behaviour		
ensure that {			
when {			
	ested to send a second GUC packet to ItsNodeA		
}			
then {			
the IUT does not send a GeoNetworking packet			
	containing a LS_REQUEST		
containing Request field			
containing GN_ADDR			
containing M_ID			
indicating ItsNodeA			
the IUT sends a GeoNetworking packet			
containing a correctly formatted Common Header			
containing HT field			
set to '2' (GEOUNICAST)			
	containing GUC Extended Header		
containing DEPV field			
	cating same position as the SOPV value of the LS_REPLY packet received from ItsNodeA		
	cating same position as the SOPV value of the LS_REPLY packet received from ItsNodeA		

TP ld	TP/GEONW/PON/LOT/BV-03-X
Test objective	Check insertion of new entries into location table from extended header processing (e.g. GUC header)
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.4, 10.3.12.3, 10.3.11.3, 10.3.9.3, 10.3.10.3, 10.3.7.3
	and 10.3.8.2
Config Id	CF01
PICS Selection	SELECTION
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT not having	received any beacon from <b>NODE</b>
the IUT having rec	eived a MESSAGE originated by NODE
}	
	Expected behaviour
ensure that {	
when {	
the IUT is reque	ested to send a GUC packet to <b>NODE</b>
}	
then {	
	ot send a GeoNetworking packet
	a LS_REQUEST Extended Header
	ng Request field
	aining GN_ADDR
C	containing M_ID
	indicating NODE
	a GeoNetworking packet
containing a	a correctly formatted Common Header
containi	ng HT field
	o '2' (GEOUNICAST)
	GUC Extended Header
	ng DEPV field
indic	cating same position as the SOPV of the <b>MESSAGE</b> received from <b>NODE</b>
}	
}	

	Variants			
#	MESSAGE	NODE	SELECTION	
01	Beacon packet	ItsNodeB	PICS_GN_BEACON_DST	
02	GUC packet	ItsNodeA	PICS_GN_GUC_DST	
03	GAC packet	ItsNodeA	PICS_GN_GAC_DST	
04	GBC packet	ItsNodeA	PICS_GN_GBC_DST	
05	TSB packet	ItsNodeA	PICS_GN_TSB_DST	
06	SHB packet	ItsNodeB	PICS_GN_SHB_DST	
07	LS Request packet	ItsNodeA	PICS_GN_LS_REQ_DST	
08	LS Reply packet	ItsNodeA	PICS_GN_LS_REP_DST	

TP ld	TP/GEONW/PON/LOT/BV-04		
Test objective	Check location table entry expiration		
Reference	ETSI EN 302 636-4-1 [1], clauses 8.1.3, 10.3.8.2, 10.3.7.1.2 and annex H		
Config Id	CF01		
PICS Selection	PICS_GN_LS_REQ_SRC		
	Initial conditions		
with {			
the IUT being in the	e "initial state" and		
the IUT having rece	eived Beacon information from ItsNodeB and		
the IUT not having	received beacons from ItsNodeB for the duration of itsGnLifetimeLocTE parameter		
}			
	Expected behaviour		
ensure that {			
when {			
the IUT is reque	ested to send a GUC packet to ItsNodeB		
}			
then {			
the IUT sends a	a GeoNetworking packet		
containing a	LS_REQUEST		
	containing Request field		
containing GN_ADDR			
containing M_ID			
	indicating ItsNodeB		
containing the other bits			
	indicating value 0		
}			
}			
,			

TP ld	TP/GEONW/PON/LOT/BV-05-X
Test objective	Check update of entries in location table with most up-to-date position data extracted from
-	common header processing (including timestamp comparison before updating)
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.4, 10.3.12.3, 10.3.11.3, 10.3.9.3, 10.3.10.3, 10.3.7.3,
	10.3.8.2 and C.2
Config Id	CF01
PICS Selection	SELECTION
	Initial conditions
with {	
the IUT being in th	ne "initial state" and
the IUT having rec	ceived Beacon information from ItsNodeB and
the IUT having red	ceived a <b>MESSAGE</b> from ItsNodeB
containing Exte	
	SOPV field
	ng an older timestamp than the last Beacon packet and
indicati	ng a different position than the position of the last Beacon packet
}	
	Expected behaviour
ensure that {	
when {	
	lested to send a GUC packet to ItsNodeB
}	
then {	
	not send a GeoNetworking packet
	a LS_REQUEST Extended Header
	ing Request field
	taining GN_ADDR
	containing M_ID
	indicating ItsNodeB
	a GeoNetworking packet
	a correctly formatted Common Header
	ing HT field
	to '2' (GEOUNICAST)
	GUC Extended Header
	ing DEPV field
indi	cating same position as the SOPV value of the Beacon information received
}	
}	

Variants		
#	MESSAGE	SELECTION
01	GUC packet	PICS_GN_GUC_DST
02	GAC packet	PICS_GN_GAC_DST
03	GBC packet	PICS_GN_GBC_DST
04	TSB packet	PICS_GN_TSB_DST
05	SHB packet	PICS_GN_SHB_DST
06	LS Request packet	PICS_GN_LS_REQ_DST
07	LS Reply packet	PICS_GN_LS_REP_DST

containing HST field set to '0' (UNSPECIFIED)		
containing extended header		

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#### 6.2.2.2 Local Position Vector

#### 6.2.2.3 Sequence Number

TP ld	TP/GEONW/PON/SQN/BV-01	
Test objective	Check initial sequence number assignment	
Reference	ETSI EN 302 636-4-1 [1], clauses 8.3.2 and 10.3.8.2	
Config Id	CF01	
PICS Selection	PICS_GN_GBC_SRC	
	Initial conditions	
with { the IUT being in the		
the IUT not having the IUT having record	sent any GBC and eived Beacon information from ItsNodeB	
<u></u>	Expected behaviour	
ensure that { when { the IUT is requested to send a GBC packet to AREA1 } then { containing a correctly formatted Common Header containing HT field set to '4' (GEOBROADCAST) containing GBC Extended Header containing SN field indicating value '0' }		

TP ld	TP/GEONW/PON/SQN/BV-02		
Test objective	Check the local sequence number incrementation		
Reference	ETSI EN 302 636-4-1 [1], clauses 8.3.2 and 10.3.8.2		
Config Id	CF01		
PICS Selection	PICS_GN_GBC_SRC		
	Initial conditions		
with {			
the IUT being in the			
	eived Beacon information from ItsNodeB and		
	t a GBC packet to AREA1		
	Sequence Number field		
indicating va	alue SN1		
}			
	Expected behaviour		
ensure that {			
when {			
the IUT is reque	ested to send a GBC packet to AREA1		
}			
then {			
	a GeoNetworking packet		
	containing a correctly formatted Common Header		
containing HT field set to '4' (GEOBROADCAST)			
	containing GBC Extended Header		
	containing SN field		
	indicating value SN1 + 1		
}			
}			
U			

#### 6.2.2.4 Location Service

TP ld	TP/GEONW/PON/LOS/BV-01	
Test objective	Check first LS invocation for unknown Destination nodes	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.2, 10.2.4, 6.3 and 10.3.7.1.2	
Config Id	CF01	
PICS Selection	PICS_GN_LS_REQ_SRC	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having no I	Location Table Entry for ItsNodeA	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT is reque	ested to send a GUC packet to ItsNodeA	
}		
then {		
	a GeoNetworking packet	
	a correctly formatted Common Header	
	ng HT field	
	o '6' (LS)	
set to '0' (LS_REQUEST)		
	o '0' (UNSPECIFIED)	
	S_REQUEST Extended Header	
containing Request field		
containing GN_ADDR		
containing M_ID		
indicating ItsNodeA		
containing the other bits indicating value 0		
1	indicating value o	
3		
1		

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TP Id	TP/GEONW/PON/LOS/BV-02
Test objective	Check absence of LS invocation for unknown Destination nodes when LS procedure is already
	active
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.2, 10.2.4 and 10.3.7.1.2
Config Id	CF01
PICS Selection	PICS_GN_LS_REQ_SRC
	Initial conditions
the IUT having bee the IUT having sen containing a LS containing F containin containin containin containin	∟ocation Table Entry for ItsNodeA and n requested to send a first GUC packet to ItsNodeA and t a GeoNetworking packet
	Expected behaviour
} then {	ested to send a new GUC packet to ItsNodeA ot send a second LS_REQUEST packet (see note)
NOTE: At least not	before the LS_REQUEST retransmission timer expires.

TP ld	TP/GEONW/PON/LOS/BV-03
Test objective	Check packet buffering into LS buffer during Location service procedure, including handling of
-	LT fields in the LT packet buffer
Reference	ETSI EN 302 636-4-1 [1], clauses 8.4.3, 10.3.7.1.4, 10.3.7.1.2,9.3.8.2 and 10.2.4
Config Id	CF01
PICS Selection	PICS_GN_LS_REQ_SRC AND PICS_GN_LS_REP_DST
	Initial conditions
vith {	
the IUT being in the	e "initial state" and
the IUT having no L	ocation Table Entry for ItsNodeA and
	n requested to send a GUC packet to ItsNodeA
containing Traffi	icClass.SCF set to 1 and
	t a LS_REQUEST packet
	Expected behaviour
ensure that {	
when {	
the IUT receives	s the LS_REPLY packet from ItsNodeA
}	
then {	
	he GUC packet addressed to ItsNodeA
	GUC Extended Header
containin	ng LT field
indica	ating value (default LT value - WaitingTime (see note))
}	
•	
NOTE: WaitingTime	e == time difference between LS_REQUEST sending and LS_REPLY reception.

TP ld	TP/GEONW/PON/LOS/BV-04	
Test objective	Check LS buffer characteristics: FIFO type	
Reference	ETSI EN 302 636-4-1 [1], clauses 8.4.3, 10.2.4, 10.3.7.1.2 and 10.3.8.2	
Config Id	CF01	
PICS Selection	PICS_GN_LS_REQ_SRC AND PICS_GN_LS_REP_DST	
	Initial conditions	
with {		
the IUT being in the		
	Location Table Entry for ItsNodeA and	
	en requested to send a GUC packet to ItsNodeA	
	ficClass.SCF set to 1	
containing LT f		
indicating v		
containing payl		
	alue PL1 and	
	t a LS_REQUEST packet and	
	en requested to send a second GUC packet to ItsNodeA	
	ficClass.SCF set to 1	
containing LT f		
containing payl		
indicating v		
li luicating v	alde i Lz	
3	Expected behaviour	
ensure that {		
when {		
	s the LS_REPLY packet from ItsNodeA and	
before expiry o		
}		
then {		
the IUT sends GUC packet addressed to ItsNodeA		
containing payload field		
indicating value PL1 and		
the IUT sends GUC packet addressed to ItsNodeA		
containing payload field		
indicatin	ng value PL2	
}		
}		

TP Id	TP/GEONW/PON/LOS/BV-05		
Test objective	Check LS buffer characteristics: discarding upon LT expiration		
Reference	ETSI EN 302 636-4-1 [1], clauses 8.4.3, 10.2.4, 10.3.7.1.2 and 10.3.8.2		
Config Id	CF01		
PICS Selection	PICS_GN_LS_REQ_SRC		
	Initial conditions		
with {			
the IUT being in the	e "initial state" and		
9	ocation Table Entry for ItsNodeA and		
	n requested to send multiple GUC packets to ItsNodeA		
	icClass.SCF set to 1		
containing LT fi			
	indicating values LTx and		
n ne io i naving sen	the IUT having sent a LS_REQUEST packet		
1	Expected behaviour		
an avera that (			
ensure that {			
when {			
the IUT receives the LS_REPLY packet from ItsNodeA after expiry of LTs			
}			
then {			
the IUT does not send any packet to ItsNodeA			
}			
}			

TP ld	TP/GEONW/PON/LOS/TI-06		
Test objective	Check LS Request retransmission if no answer is received		
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.7.1.2, 10.3.7.1.3 and 10.3.8.2		
Config Id	CF01		
PICS Selection	PICS_GN_LS_REQ_RETRANSMISSION		
Initial conditions			
with {			
the IUT being in the "initial state" and			
the IUT having no Location Table Entry for ItsNodeA and			
the IUT having been requested to send a GUC packet to ItsNodeA			
	containing TrafficClass.SCF set to 1		
containing LT field			
indicating value LT1 higher than itsGnLocationServiceRetransmitTimer and			
the IUT having sent a LS_REQUEST packet			
}			
	Expected behaviour		
ensure that {			
when {			
	ot receive LS_REPLY packet from ItsNodeA and		
before expiratio	n of LT1		
}			
then {			
the IUT retransmits the LS_REQUEST packet			
upon expiry	of itsGnLocationServiceRetransmitTimer		
1 1			

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}

TP ld	TP/GEONW/PON/LOS/BV-07		
Test objective	Check LS Request retransmission if no answer is received		
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.7.1.2, 10.3.7.1.3, 10.3.8.2 and annex H		
Config Id	CF01		
PICS Selection	PICS_GN_LS_REQ_RETRANSMISSION		
	Initial conditions		
with {			
the IUT being in the "initial state" and			
the IUT having no Location Table Entry for ItsNodeA and			
the IUT having been requested to send a GUC packet to ItsNodeA			
containing TrafficClass.SCF set to 1			
	containing LT field		
•	alue LT1 higher than (itsGnLocationServiceTimer * itsGnLocationServiceMaxRetrans) and		
the IUT having sent a LS_REQUEST packet			
}	· · · - · - · · · · · · · · · · · · · ·		
,	Expected behaviour		
ensure that {			
when {			
the IUT does not receive LS_REPLY packet from ItsNodeA			
before expiration of LT1			
}			
then {			
the IUT retransmits the LS_REQUEST packet itsGnLocationServiceMaxRetrans times			
}			
<u>v</u>			

TP Id	TP/GEONW/PON/LOS/BV-08	
Test objective	Check LS Reply generation by destination node	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.7.3 and 10.3.5	
Config Id	CF01	
PICS Selection	PICS_GN_LS_REQ_DST	
Initial conditions		
with { the IUT being in the "initial state" }		
Expected behaviour		
ensure that {     when {         the IUT receives a LS_REQUEST packet         containing Request field         indicating the IUT's GN_ADDR     }     then {         the IUT replies with a LS_REPLY packet         containing Common Header         containing NH field         set to '0' (UNSPECIFIED)         containing LS_REPLY Extended Header         containing DEPV field         indicating same position as the SOPV value of the received LS_REQUEST     } }		

TP ld	TP/GEONW/PON/LOS/BO-09		
Test objective	Check absence of LS Reply generation for already answered LS Request packets		
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.7.3 and 10.3.5		
Config Id	CF02		
PICS Selection	PICS_GN_LS_REQ_DST		
Initial conditions			
with {			
the IUT being in the "initial state" and			
the IUT having received a LS_REQUEST packet generated by ItsNodeB from ItsNodeB			
the IUT having sent a LS_REPLY packet to ItsNodeB			
}			
Expected behaviour			
ensure that {			
when {			
the IUT receives the same LS_REQUEST packet from ItsNodeD			
}			
then {			
the IUT does not reply with a LS_REPLY packet			
}			
,			

TP Id	TP/GEONW/PON/LOS/BV-10	
Test objective	Check LS Request forwarding	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.7.2 and 10.3.8.3	
Config Id	CF03	
PICS Selection	PICS_GN_LS_FWD	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having rece	eived Beacon information from ItsNodeB and	
	eived Beacon information from ItsNodeC	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT receive	s a LS_REQUEST packet from ItsNodeC	
	Basic Header	
	ng RHL field	
indicating value greater than 1		
	S_REQUEST Extended Header	
	ng Request field	
containing GN_ADDR		
containing M_ID		
	indicating value differing from the M_ID part of the GN_ADDR of the IUT	
3	indicating value anothing normane M_IP part of the Ort_ABBIT of the for	
then {		
the IUT re-broadcasts the received LS_REQUEST packet		
containing Basic Header		
	containing RHL field	
indic	ating value decreased by 1	
3		
}		

TP ld	TP/GEONW/PON/LOS/BV-11	
Test objective	Check LS Reply forwarding	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.7.2 and 10.3.8.3	
Config Id	CF03	
PICS Selection	PICS_GN_LS_FWD	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having rece	eived Beacon information from ItsNodeB and	
the IUT having rece	eived Beacon information from ItsNodeC	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT receives	s a LS_REPLY packet from ItsNodeC addressed to ItsNodeB	
containing B	Basic Header	
containir	containing RHL field	
indica	indicating value greater than 1	
}		
then {	then {	
the IUT forwards the received LS_REPLY packet to ItsNodeB		
containing Basic Header		
containing RHL field		
indica	indicating value decreased by 1	
}		
}		

TP ld	TP/GEONW/PON/LOS/BV-12
Test objective	Check flushing of the LS buffer, initiated by the processing of a common header from the target
· · · · · · · · · · · · · · · · · · ·	destination
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.4, 10.3.7.1.2 and 8.4.3
Config Id	CF01
PICS Selection	PICS_GN_LS_REQ_SRC
	Initial conditions
with {	
the IUT being in th	ne "initial state" and
the IUT having no	Location Table Entry for ItsNodeA and
the IUT having be	en requested to send a GUC packet ItsNodeA
containing LT f	field
indicating LT1 and	
the IUT having sent a LS_REQUEST packet	
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	es a GUC packet addressed to it from ItsNodeA before expiry of LT1
}	
then {	
the IUT sends	the waiting GUC packet to ItsNodeA
}	

TP ld	TP Id TP/GEONW/PON/LOS/BV-13	
Test objective	Check LS buffer characteristics: FIFO type and Lifetime	
Reference	ETSI EN 302 636-4-1 [1], clauses 8.4.3 and 10.3.7.1.2	
Config Id	CF01	
PICS Selection	PICS_GN_LS_REQ_SRC	
	Initial conditions	
with {		
the IUT being in the		
	Location Table Entry for ItsNodeA and	
	n requested to send a GUC packet to ItsNodeA	
5	icClass.SCF set to 1	
containing LT fi		
indicating va containing paylo		
	alue PL1 and	
	t a LS_REQUEST packet and	
	n requested to send a second GUC packet to ItsNodeA	
	icClass.SCF set to 1	
containing LT fi		
indicating LT2 lower than LT1		
containing payload field		
indicating value PL2		
}		
Expected behaviour		
ensure that {		
when {		
the IUT receives the LS_REPLY packet from ItsNodeA		
after expiry of LT2		
before expiry of LT1		
} then {		
the IUT sends GUC packet addressed to ItsNodeA		
containing payload field		
indicating value PL1		
}	<b>~</b>	
}		
12		

TP ld	TP/GEONW/PON/LOS/BV-14
Test objective	Check that GeoNetworking packets in LS buffer are discarded when LS does not complete
Reference	ETSI EN 302 636-4-1 [1], clause 8.4.3
Config Id	CF01
PICS Selection	PICS_GN_LS_REQ_SRC
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having no I	Location Table Entry for ItsNodeA and
the IUT having been requested to send a GUC packet to ItsNodeA	
containing Traff	ficClass.SCF set to 1
containing LT fi	eld
indicating value LT1 higher than (itsGnLocationServiceTimer * itsGnLocationServiceMaxRetrans) and	
the IUT having sent a LS_REQUEST packet itsGnLocationServiceMaxRetrans times	
}	
	Expected behaviour
ensure that {	
when {	
the IUT receives a GUC packet from ItsNodeA	
before expir	
}	-
then {	
the IUT does not send any packet to ItsNodeA (see note)	
}	
}	
NOTE: Stored GUC packets have been discarded upon LS failure.	

TP ld	TP/GEONW/PON/LOS/BV-15
Test objective	Check flushing of the LS buffer, initiated by the processing of a common header from the target
	destination
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.3, 10.3.7.1.2 and 8.4.2
Config Id	CF01
PICS Selection	PICS_GN_LS_REQ_SRC
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having no I	Location Table Entry for ItsNodeA and
the IUT having bee	en requested to send a GUC packet ItsNodeA
containing LT fi	eld
indicating LT1 and	
the IUT having sent a LS_REQUEST packet	
}	
	Expected behaviour
ensure that {	
when {	
the IUT receives a GUC packet addressed to ItsNodeB from ItsNodeA before expiry of LT1	
}	
then {	
the IUT sends the waiting GUC packet to ItsNodeA	
}	

TP ld	TP/GEONW/PON/LOS/BV-16	
Test objective	Check LS Request retransmission termination when indirect response is received	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.4, 10.3.7.1.2, 10.3.7.1.3 and 10.3.8.2	
Config Id	CF01	
PICS Selection	PICS_GN_LS_REQ_SRC	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having no I	_ocation Table Entry for ItsNodeA and	
the IUT having bee	the IUT having been requested to send a GUC packet to ItsNodeA	
containing Traff	containing TrafficClass.SCF set to 1	
containing LT fi	containing LT field	
indicating value LT1 higher than (itsGnLocationServiceTimer * itsGnLocationServiceMaxRetrans) and		
the IUT having sen	the IUT having sent a LS_REQUEST packet	
the IUT having retransmitted the LS_REQUEST packet less than itsGnLocationServiceMaxRetrans		
}		
Expected behaviour		
ensure that {		
when {		
the IUT receives a GUC packet addressed to it from ItsNodeA before expiry of LT1		
· · · · · · · · · · · · · · · · · · ·		
then {		
the IUT does not retransmits the LS_REQUEST packet		
}		
}		

NOTE: IUT instead transmits the buffered GUC.

TP ld	TP/GEONW/PON/LOS/BV-17	
Test objective	Check LS Request retransmission termination when indirect response is received	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.3, 10.3.7.1.2, 10.3.7.1.3 and 10.3.8.2	
Config Id	CF01	
PICS Selection	PICS_GN_LS_REQ_SRC	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having no L	ocation Table Entry for ItsNodeA and	
the IUT having bee	n requested to send a GUC packet to ItsNodeA	
containing Traff	icClass.SCF set to 1	
containing LT fie		
indicating va	alue LT1 higher than (itsGnLocationServiceTimer * itsGnLocationServiceMaxRetrans) and	
the IUT having sent a LS_REQUEST packet		
the IUT having retra	the IUT having retransmitted the LS_REQUEST packet less than itsGnLocationServiceMaxRetrans	
)		
	Expected behaviour	
ensure that {		
when {		
the IUT receives a GUC packet addressed to ItsNodeB from ItsNodeA before expiry of LT1		
}		
then {		
the IUT does not retransmits the LS_REQUEST packet		
}		
}		
NOTE: IUT instead	transmits the buffered GUC.	

6.2.2.5	Forwarding Packet Buffer
---------	--------------------------

TP ld	TP/GEONW/PON/FPB/BV-01	
Test objective	Check Source packet buffering into UC forwarding buffer for unreachable Unicast destinations	
-	(absence of a suitable next hop candidate)	
Reference	ETSI EN 302 636-4-1 [1], clauses 8.5.3, 10.3.6.3, 10.3.8.2 and 10.3.8.3	
Config Id	CF03	
PICS Selection	PICS_GN_GUC_SRC	
	Initial conditions	
with {		
the IUT being in th	e "initial state" and	
	received any Beacon information from ItsNodeB and	
	the IUT having a Location Table Entry for ItsNodeA (see note) and	
the IUT having been requested to send a GUC packet addressed to ItsNodeA		
containing Traf	ficClass.SCF set to 1	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT receive	es a Beacon packet from ItsNodeB	
}		
then {		
the IUT selects the ItsNodeB as the next hop and		
the IUT sends	the buffered GUC packet	
}		
	able Entry is created by sending any GeoNetworking packet, originated by ItsNodeA, from	
ItsNodeC to	וויסוט.	

TP ld	TP/GEONW/PON/FPB/BV-02	
Test objective	Check Forwarder packet buffering into UC forwarding buffer for unreachable Unicast	
	destinations (absence of a suitable next hop candidate)	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.3, 8.5.3 and 10.3.6.3	
Config Id	CF03	
PICS Selection	PICS_GN_GUC_SRC	
	Initial conditions	
with {		
the IUT being in th	e "initial state" and	
the IUT not having	received any Beacon information from ItsNodeB and	
	eived GUC packets addressed to ItsNodeA from ItsNodeC	
	ficClass.SCF set to 1	
containing Bas		
containing l	LT field	
	indicating LT1	
	containing RHL field	
	indicating value greater than 1	
	C Extended Header	
containing		
indicatir	ng value SN1	
}		
	Expected behaviour	
ensure that {		
when {		
	es a Beacon packet from ItsNodeB	
}		
then {		
	the ItsNodeB as the next hop and	
	ds the buffered GUC packet	
	Basic Header	
	ng RHL field	
	cating value decreased by 1	
	GUC extended header	
	ng SN field	
indic	cating value SN1	
}		
}		

TP ld	TP/GEONW/PON/FPB/BV-03		
Test objective         Check UC forwarding buffer characteristics: FIFO type			
	Reference         ETSI EN 302 636-4-1 [1], clauses 8.5.3, 10.3.6.3 and 10.3.8.3		
Config Id         CF03			
PICS Selection PICS_GN_GUC_SRC			
with f	Initial conditions		
with {			
the IUT being in th			
	received any Beacon information from ItsNodeB and		
	eived a GUC (GEOUNI1) packet addressed to ItsNodeA from ItsNodeC		
	ficClass.SCF set to 1		
containing Bas			
containing l			
	ng value LT1 and		
containing I			
	ng value greater than 1 C Extended Header		
	containing SN field		
	indicating value SN1 the ULT having reasting a second CLIC (CEOUNIC) peaket addressed to IteNadeA from IteNadeC		
the IUT having received a second GUC (GEOUNI2) packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1			
	containing Basic Header containing LT field		
	indicating LT2		
	containing RHL field		
indicating value greater than 1			
containing GUC Extended Header			
containing SN field			
indicating value SN2			
}			
Expected behaviour			
ensure that {			
when {			
	the IUT receives a Beacon packet from ItsNodeB		
before expiry o	before expiry of LT1 and LT2		
}			
then {			
the IUT selects ItsNodeB as the next hop and			
the IUT forwards the GEOUNI1 buffered packet			
containing GUC Extended Header			
containing SN field			
indicating value SN1			
the IUT forwards the GEOUNI2 buffered packet			
	containing GUC Extended Header		
	ng SN field		
	cating value SN2		
}			
}			

TP Id	TP Id TP/GEONW/PON/FPB/BV-04			
Test objective				
Reference				
Config Id				
PICS Selection	PICS Selection PICS_GN_GUC_SRC			
	Initial conditions			
with {				
the IUT being in the	e "initial state" and			
the IUT not having	received any Beacon information from ItsNodeB and			
the IUT having received a GUC packet addressed to ItsNodeA from ItsNodeC				
containing TrafficClass.SCF set to 1				
containing Basic Header				
containing LT field				
indicating LT1				
containing RHL field				
indicatin	indicating value greater than 1			
}	}			
Expected behaviour				
ensure that {				
when {	•			
the IUT receives a Beacon packet from ItsNodeB				
after expiry of LT1				
}				
then {				
the IUT does no	the IUT does not forward the buffered GUC packet addressed to ItsNodeA			
}				
}				

TP ld	TP/GEONW/PON/FPB/BV-06		
Test objective	t objective Check Source packet buffering into BC forwarding buffer for no GBC recipients		
Reference			
Config Id	Config Id CF02		
PICS Selection	PICS Selection PICS_GN_GBC_SRC		
	Initial conditions		
with {			
the IUT being in the	e "initial state" and		
the IUT not having received Beacon information from ItsNodeD and			
the IUT not having received Beacon information from ItsNodeB and			
the IUT having been requested to send a GBC packet to AREA1			
containing TrafficClass.SCF set to 1			
	Expected behaviour		
ensure that {			
when {			
the IUT receives a Beacon packet from either ItsNodeB or ItsNodeD			
}			
then {			
the IUT broadca	the IUT broadcasts the buffered GBC packet		
}			
}			

	TP Id TP/GEONW/PON/FPB/BV-07		
Test objective			
Reference			
Config Id			
PICS Selection	PICS Selection PICS_GN_GBC_SRC		
	Initial conditions		
with {			
the IUT being in the			
	received Beacon information from ItsNodeD and		
	received Beacon information from ItsNodeB and		
	n requested to send a GBC (GBC1) packet to AREA1		
containing Traff	ficClass.SCF set to 1		
containing Basi	c Header		
containing L	.T field		
indicatin	g LT1		
containing GBC	Extended Header		
	containing SN field		
indicatin	indicating value SN1		
	the IUT having been requested to send a GBC (GBC2) packet to AREA1		
containing Traff	ficClass.SCF set to 1		
containing Basi			
containing L			
indicatin			
	Extended Header		
containing S			
	g value SN2		
}			
·	Expected behaviour		
ensure that {			
when {			
the IUT receive	the IUT receives a Beacon packet from either ItsNodeD or ItsNodeB		
	before expiry of LT1 and LT2		
}			
then {			
the IUT broadcasts GBC1 packet			
containing GBC Extended Header			
containing SN field			
indicating value SN1			
	the IUT broadcasts GBC2 packet		
containing GBC Extended Header			
containing SN field			
	indicating value SN2		
}			
}			
U			

TP Id TP/GEONW/PON/FPB/BV-08				
Test objective				
Reference	Reference ETSI EN 302 636-4-1 [1], clauses 8.5.3, 10.3.6.3 and 10.3.11.2			
Config Id				
PICS Selection	PICS_GN_GBC_SRC			
	Initial conditions			
with {				
the IUT being in the	e "initial state" and			
the IUT not having	received Beacon information from ItsNodeD and			
the IUT not having	received Beacon information from ItsNodeB and			
the IUT having bee	n requested to send a GBC (GBC1) packet to AREA1			
	containing TrafficClass.SCF set to 1			
containing Basi	containing Basic Header			
	containing LT field			
indicatin	indicating LT1			
the IUT having bee	the IUT having been requested to send a GBC (GBC2) packet to AREA1			
containing TrafficClass.SCF set to 1				
	containing Basic Header			
containing LT field				
indicating LT2				
}	}			
Expected behaviour				
ensure that {				
when {				
the IUT receives a Beacon packet from either ItsNodeB or ItsNodeD				
after expiry of LT1 and LT2				
}				
then {				
the IUT does not broadcast any of the buffered GBC1 and GBC2				
}				
h	ſ			

}

TP ld	TP/GEONW/PON/FPB/BV-09		
	<b>Test objective</b> Check Source packet buffering into UC forwarding buffer for handling of LT fields in absence of		
a suitable next hop candidate			
Reference			
Config Id	CF03		
PICS Selection	PICS_GN_GUC_SRC		
	Initial conditions		
with {			
the IUT being in the	e "initial state" and		
the IUT not having	received any Beacon information from ItsNodeB and		
	ocation Table Entry for ItsNodeA and		
the IUT having been requested to send a GUC packet addressed to ItsNodeA			
containing TrafficClass.SCF set to 1			
}			
	Expected behaviour		
ensure that {			
when {			
the IUT receive	s a Beacon packet from ItsNodeB		
} th a.e. (			
then {	the lands of a section and		
	the ItsNodeB as the next hop and he buffered GUC packet		
containing GUC Extended Header containing LT field			
indicating (default LT value - WaitingTime (see note))			
}			
}			
NOTE: WaitingTim	e == time difference between Upper layer packet generation and the neighbour Beacon		
reception.	· · · · · · · · · · · · · · · · · · ·		

Test objective	TP/GEONW/PON/FPB/BV-10 Check Source packet buffering into BC forwarding buffer for handling of LT fields for no		
-			
	recipients		
Reference	ETSI EN 302 636-4-1 [1], clauses 8.5.3, 10.3.6.3 and 10.3.11.2		
Config Id	CF02		
PICS Selection			
	Initial conditions		
vith {			
the IUT being in the	e "initial state" and		
the IUT not having	received Beacon information from ItsNodeD and		
the IUT not having received Beacon information from ItsNodeB and			
the IUT having been requested to send a GBC packet to AREA1			
containing TrafficClass.SCF set to 1			
	Expected behaviour		
ensure that {			
when {			
the IUT receive	es a Beacon packet from either ItsNodeB or ItsNodeD		
}			
then {			
	asts the buffered GBC packet		
containing G	GBC Extended Header		
containing LT field			
indic	ating (default LT value - WaitingTime (see note))		
}			
NOTE: WaitingTime	e == time difference between Upper layer packet generation and the Beacon reception.		

TP ld	TP Id TP/GEONW/PON/FPB/BV-11-X	
Test objective	Check immediate broadcasting in absence of a suitable next hop candidate when SCF is	
	disabled - Source operation	
Reference	e ETSI EN 302 636-4-1 [1], clause D.2	
Config Id	CF03	
PICS Selection	SELECTION	
	Initial conditions	
with {		
the IUT being in th	e "initial state" and	
	received any Beacon information from ItsNodeB and	
the IUT having a Location Table Entry for ItsNodeA (see note)		
}		
	Expected behaviour	
ensure that {		
when {		
	ested to send a MESSAGE	
containing Traf	ficClass.SCF set to 0	
}		
then {		
the IUT broadcast the MESSAGE immediately		
}		
}		
	ble Entry is created by sending any GeoNetworking packet, originated by ItsNodeA, from	
ItsNodeC to	) IUT.	

Variants			
#	MESSAGE	SELECTION	
01	GUC packet addressed to ItsNodeA	PICS_GN_GUC_SRC	
02	GAC packet containing DestinationArea indicating AREA2	PICS_GN_GAC_SRC	
03	GBC packet containing DestinationArea indicating AREA2	PICS_GN_GBC_SRC	
04	TSB packet	PICS_GN_TSB_SRC	
05	SHB packet	PICS_GN_SHB_SRC	

TP ld	TP Id TP/GEONW/PON/FPB/BV-12-X		
Test objective	<b>Test objective</b> Check immediate broadcasting in absence of a suitable next hop candidate when SCF is		
	disabled - Forwarder operation		
Reference	ETSI EN 302 636-4-1 [1], clause D.2		
Config Id	CF03		
PICS Selection			
	Initial conditions		
with {			
the IUT being in th	ie "initial state" and		
9	received any Beacon information from ItsNodeB		
}	}		
·	Expected behaviour		
ensure that {			
when {			
the IUT receive	es a MESSAGE		
containing Trat	fficClass.SCF set to 0		
then {			
·			
the IUT broadcast the MESSAGE immediately			
}			
}			

	Variants		
#	MESSAGE	SELECTION	
01	GUC packet addressed to ItsNodeA	PICS_GN_GUC_SRC	
02	GAC packet containing DestinationArea indicating AREA2	PICS_GN_GAC_SRC	
03	GBC packet containing DestinationArea indicating AREA2	PICS_GN_GBC_SRC	
04	TSB packet	PICS_GN_TSB_SRC	

# 6.2.2.6 GeoNetworking Address

TP ld	TP/GEONW/PON/GNA/BV-01	
Test objective	Check the initial GeoNetworking address assignment by IUT with auto-address configuration	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.2.1.2 and 10.3.6.2	
Config Id	CF01	
PICS Selection	PICS_GN_ADDR_AUTO	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT's itsGnLoca	alAddrConfMethod MIB parameter is set to AUTO (0)	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT generat	es a Beacon packet	
}		
then {		
	GeoNetworking packet	
	correctly formatted Common Header	
	ng HT field	
	set to '1' (BEACON)	
	containing HST field	
set to '0' (UNSPECIFIED)		
containing Beacon Extended Header		
containing SOPV field		
containing GN_ADDR field		
in	dicating itsGnLocalGnAddr MIB parameter	
}		
}		

TP ld	TP/GEONW/PON/GNA/BV-02	
Test objective	Check the proper functioning of duplicate address detection mechanism	
Reference	ETSI EN 302 636-4-1 [1], clause 10.2.1.5	
Config Id	CF01	
PICS Selection	PICS_GN_DAD	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having ser	it a SHB packet	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT receive	the IUT receives a SHB packet from ItsNodeB	
containing S	containing SHB Extended Header	
containi	ng SOPV field	
cont	aining GN_ADDR field	
indicating same GN_ADDR as the GN_ADDR field in the last SHB packet originated by the IUT		
}		
then {		
the IUT sends subsequent SHBpacket		
containing SHBExtended Header		
containing SOPV field		
containing GN_ADDR field		
indic	indicating different GN_ADDR as the previous used GN_ADDR	
}	}	
}		

# 6.2.2.7 Beaconing

TP ld	TP/GEONW/PON/BEA/TI-01		
Test objective	Check that the IUT transmits Beacons at prescribed periodicity in the absence of other		
	originated packets		
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.6.2		
Config Id	CF01		
PICS Selection	PICS_GN_BEACON_SRC		
	Initial conditions		
with {			
the IUT being in th	e "initial state"		
}			
	Expected behaviour		
ensure that {			
when {			
the IUT generates Beacon packets			
}			
then {			
the IUT sends	each Beacon packet		
after expiry	of itsGnBeaconServiceRetransmitTimer		
and before expiry of itsGnBeaconServiceRetransmitTimer + itsGnBeaconServiceMaxJitter			
<i>,</i>			

TDII	
TP ld	TP/GEONW/PON/BEA/BV-02
Test objective	Check that the IUT resets its timer for next Beacon transmission when originating other packets
Reference	ETSI EN 302 636-4-1 [1], clauses 10.2.3 and 10.3.10.2
Config Id	CF01
PICS Selection	PICS_GN_BEACON_SRC
	Initial conditions
with {	
the IUT being in th	e "initial state" and
the IUT having rec	eived Beacon information from ItsNodeB
}	
	Expected behaviour
ensure that {	
when {	
the IUT is requ	ested to send a SHB packet
}	
then {	
the IUT broadd	asts a SHB packet and
the IUT sends the next Beacon packet	
after expiry of itsGnBeaconServiceRetransmitTimer	
and before expiry of itsGnBeaconServiceRetransmitTimer + itsGnBeaconServiceMaxJitter	
}	
}	
the IUT sends after expiry	the next Beacon packet of itsGnBeaconServiceRetransmitTimer

## 6.2.2.8 GeoUnicast

# 6.2.2.8.1 All forwading algorithms

TP ld	TP/GEONW/PON/GUC/ALL/BV-03	
Test objective	Check that the protocol header fields (RHL, PV) are correctly updated at each forwarding step	
Config Id	CF03	
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.8.3	
PICS Selection	PICS_GN_GUC_FWD	
	Initial conditions	
with {		
the IUT being in the		
	eived Beacon information from ItsNodeB and	
	eived Beacon information from ItsNodeC and	
the IUT naving rec	eived a GUC packet (GEOUNI1) originated by ItsNodeA	
}	Expected behaviour	
ensure that {		
when {		
	s a GUC packet (GEOUNI2) addressed to ItsNodeA from ItsNodeC	
containing T	TrafficClass.SCF set to 1	
containing E	Basic Header	
	ng RHL field	
	ating value greater than 1	
	Common Header	
	ng MHL field	
	cating value MHL1	
	GUC Extended Header ng DEPV field	
	ating position different from the SOPV value of GEOUNI1	
	ng TST field	
	ating older value than the TimeStamp value of GEOUNI1	
}		
then {		
the IUT retrans	mits GEOUNI2	
containing E	Basic Header	
	ng RHL field	
	ating value decreased by 1 from the incoming value	
	Common Header	
	ng MHL field	
	cating value MHL1	
containing GUC Extended Header containing DEPV field		
	cating same position as the SOPV value of GEOUNI1	
}		
J		

TP ld	TP/GEONW/PON/GUC/ALL/BO-04		
Test objective	Check that the RHL restriction is correctly handled at a forwarding step		
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.8.3		
Config Id	CF03		
PICS Selection	PICS_GN_GUC_FWD		
	Initial conditions		
with {			
the IUT being in the	e "initial state" and		
the IUT having rec	eived Beacon information from ItsNodeB and		
the IUT having rec	eived Beacon information from ItsNodeC		
}			
	Expected behaviour		
ensure that {			
when {			
the IUT receive	es a GUC packet addressed to ItsNodeA from ItsNodeC		
containing	containing TrafficClass.SCF set to 1		
containing E	containing Basic Header		
containing RHL field			
indicating 1			
}			
then {			
the IUT does not retransmit the GUC packet			
}			
}			

TP ld	TP/GEONW/PON/GUC/ALL/BV-05	
Test objective	Check that a received GUC packet is passed over the Gn SAP to the correct upper protocol if	
	the Destination address matches the IUT address	
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.8.4	
Config Id	CF01	
PICS Selection	PICS_GN_GUC_DST	
	Initial conditions	
with { the IUT being in the "initial state"		
Expected behaviour		
ensure that {		
when {	as a GLIC nacket addressed to it	
the IUT receives a GUC packet addressed to it } then { the IUT passes the received GUC packet to the correct Upper Layer }		
}		

TP ld	TP/GEONW/PON/GUC/ALL/BV-06
Test objective	Check that a received GUC packet is not passed over the Gn SAP if the Destination address
	does not match the IUT address
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.8.4
Config Id	CF01
PICS Selection	PICS_GN_GUC_FWD
	Initial conditions
with {	
the IUT being in the	ne "initial state" and
the IUT having rec	ceived Beacon information from ItsNodeB and
	ceived Beacon information from ItsNodeC
3	
J	Expected behaviour
ensure that {	
when {	
	es a GUC packet addressed to ItsNodeB from ItsNodeC
1	
then {	
	and page the received CLIC peaket to any Lipper Lever
the IUT does not pass the received GUC packet to any Upper Layer	
}	
}	

	1
TP Id	TP/GEONW/PON/GUC/ALL/BO-08
Test objective	Check that a received GUC packet is not passed over the Gn SAP to the correct upper protocol
	when the Destination address matches the IUT address if received twice or more
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.9.3
Config Id	CF03
PICS Selection	PICS_GN_GUC_DST
	Initial conditions
with {	
the IUT being in the	e "initial state" and
	eived Beacon information from ItsNodeC and
	eived Beacon information from ItsNodeB and
	eived a GUC packet addressed to IUT from ItsNodeC
	icClass.SCF set to 1
containing Basi	
containing F	
	g value greater than 1
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	s the same GUC packet from ItsNodeB
containing E	Basic Header
containir	ng RHL field
indicating HL1 - 1	
}	-
then {	
the IUT does no	ot pass the received GUC packet to any Upper Layer
}	
}	
<u></u>	

TDL	
TP ld	TP/GEONW/PON/GUC/GRD/BV-01
Test objective	Check that a GUC request over upper Gn SAP triggers the origination of a GUC packet
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.2 and E.2
Config Id	CF01
PICS Selection	PICS_GN_GUC_SRC AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM ==
	'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having rece	eived Beacon information from ItsNodeB
}	
-	Expected behaviour
ensure that {	
when {	
the IUT is reque	ested to send a GUC packet to ItsNodeB
}	
then {	
	a GeoNetworking packet
	a correctly formatted Common Header
	ng HT field
set to '2' (GEOUNICAST)	
containing GUC Extended Header	
containing DEPV field	
indicating same position as the SOPV value of the received Beacon information	
1	
1	
1	

# 6.2.2.8.2 Greedy forwarding

Test objective       Check that a received GUC packet is routed to the correct next hop neighbour according to t greedy forwarding rules         Reference       ETSI EN 302 636-4-1 [1], clauses 10.3.8.3 and E.2         Config Id       CF04         PICS Selection       PICS_GN_GUC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')         Initial conditions       Initial conditions         with {       the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD and the IUT having received Beacon information from ItsNodeC and the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC         Expected behaviour       ensure that {         when {       the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC         containing Basic Header       containing RHL field         indicating value greater than 1       }         then {       the IUT selects ItsNodeB as the next hop and		·
greedy forwarding rules         Reference         ETSI EN 302 636-4-1 [1], clauses 10.3.8.3 and E.2         Config Id       CF04         PICS Selection       PICS_GN_GUC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')         with {       the IUT being in the "initial state" and the IUT being received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD and the IUT having received Beacon information from ItsNodeC and the IUT having received Beacon information from ItsNodeC sector information from ItsNodeC sector information from ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and	TP ld	TP/GEONW/PON/GUC/GRD/BV-02
Reference         ETSI EN 302 636-4-1 [1], clauses 10.3.8.3 and E.2           Config Id         CF04           PICS Selection         PICS_GN_GUC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED') Initial conditions           with {         Initial conditions           with {         Expected beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD and the IUT having received Beacon information from ItsNodeC           Expected behaviour           ensure that {         Expected behaviour           containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1         ItsNodeB and 1           then {         then IUT selects ItsNodeB as the next hop and	Test objective	Check that a received GUC packet is routed to the correct next hop neighbour according to the
Config Id       CF04         PICS Selection       PICS_GN_GUC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')         Initial conditions         with {         the IUT being in the "initial state" and         the IUT being in the "initial state" and         the IUT having received Beacon information from ItsNodeB and         the IUT having received Beacon information from ItsNodeD and         the IUT having received Beacon information from ItsNodeD and         the IUT having received Beacon information from ItsNodeC         Expected behaviour         ensure that {         when {       the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC         containing TrafficClass.SCF set to 1         containing RHL field         indicating value greater than 1         }         then {         the IUT selects ItsNodeB as the next hop and		greedy forwarding rules
PICS Selection       PICS_GN_GUC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED') Initial conditions         with {       the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD and the IUT having received Beacon information from ItsNodeC         Expected behaviour         ensure that {       when {         the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } then {       IsloweB as the next hop and	Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.3 and E.2
I'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')         Initial conditions         with {         the IUT being in the "initial state" and         the IUT having received Beacon information from ItsNodeB and         the IUT having received Beacon information from ItsNodeD and         the IUT having received Beacon information from ItsNodeD and         the IUT having received Beacon information from ItsNodeC         Expected behaviour         ensure that {         when {         the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC         containing TrafficClass.SCF set to 1         containing RHL field         indicating value greater than 1         }         then {         the IUT selects ItsNodeB as the next hop and	Config Id	CF04
Initial conditions with { the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD and the IUT having received Beacon information from ItsNodeC } Expected behaviour ensure that { when { the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and	PICS Selection	PICS_GN_GUC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')
the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD and the IUT having received Beacon information from ItsNodeC } Expected behaviour ensure that { when { the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and		Initial conditions
the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD and the IUT having received Beacon information from ItsNodeC } <u>Expected behaviour</u> ensure that { when { the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and	with {	
the IUT having received Beacon information from ItsNodeD and the IUT having received Beacon information from ItsNodeC } Expected behaviour ensure that { when { the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and	the IUT being in the	e "initial state" and
the IUT having received Beacon information from ItsNodeC } Expected behaviour ensure that { when { the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and	the IUT having rece	eived Beacon information from ItsNodeB and
the IUT having received Beacon information from ItsNodeC } Expected behaviour ensure that { when { the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and	the IUT having rece	eived Beacon information from ItsNodeD and
Expected behaviour ensure that {     when {         the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC             containing TrafficClass.SCF set to 1             containing Basic Header             containing RHL field             indicating value greater than 1         }       then {             the IUT selects ItsNodeB as the next hop and         }       }       }       }		
ensure that {     when {         the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC             containing TrafficClass.SCF set to 1             containing Basic Header             containing RHL field             indicating value greater than 1         }       then {             the IUT selects ItsNodeB as the next hop and         }         }	}	
when {	*	Expected behaviour
the IUT receives a GUC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and	ensure that {	
containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and	when {	
containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and	the IUT receive	s a GUC packet addressed to ItsNodeA from ItsNodeC
containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and		
indicating value greater than 1 } then { the IUT selects ItsNodeB as the next hop and	containing E	Basic Header
} then { the IUT selects ItsNodeB as the next hop and	containir	ng RHL field
the IUT selects ItsNodeB as the next hop and	•	
the IUT selects ItsNodeB as the next hop and		
	then {	
	the IUT selects	ItsNodeB as the next hop and
the IUT forwards the GUC packet		
} ´	}	

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TP ld	TP/GEONW/PON/GUC/GRD/BO-07		
Test objective	Check that a received GUC packet is not triggering forwarding if received twice or more		
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.9.3 and E.2		
Config Id	CF03		
PICS Selection	PICS_GN_GUC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')		
	Initial conditions		
with {			
the IUT being in th	e "initial state" and		
	eived Beacon information from ItsNodeC and		
	eived Beacon information from ItsNodeB and		
	eived a GUC packet addressed to ItsNodeA from ItsNodeC		
	ficClass.SCF set to 1		
containing Basi			
	containing RHL field		
	ig value greater than 1 and		
	the IUT having forwarded the GUC packet		
3			
<u> </u>	Expected behaviour		
ensure that {			
when {			
	es the same GUC packet from ItsNodeB		
	Basic Header		
containing RHL field indicating HL1 - 1			
indic			
} then (			
then {			
	ot forward the packet		
}			
}			

# 6.2.2.8.3 Contention-based forwarding

TP ld	TP/GEONW/PON/GUC/CBF/BV-01	
Test objective	Check that a GUC request over upper Gn SAP triggers the origination of a GUC packet	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.2, 10.3.6.3 and E.3	
Config Id	CF03	
PICS Selection	PICS_GN_GUC_SRC AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having rece	eived Beacon information from ItsNodeB	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT is reque	ested to send a GUC packet to ItsNodeB	
}	-	
then {		
the IUT broadca	asts a GeoNetworking packet	
containing a	a correctly formatted Common Header	
	ng HT field	
	o <sup>'</sup> 2' (GEOUNICAST)	
	GUC Extended Header	
	ng DEPV field	
	indicating same position as the SOPV value of the received Beacon information	
}		
}		
,		

TP Id	TP/GEONW/PON/GUC/CBF/BV-02		
Test objective	Check that a received GUC packet is forwarded at the correct time according to the contention		
	based forwarding rules		
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.3 and E.3		
Config Id	CF03		
PICS Selection	PICS_GN_GUC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'		
	Initial conditions		
with {			
•	he "initial state" and		
0	ceived Beacon information from ItsNodeB and		
	ceived Beacon information from ItsNodeC and		
	een IUT and ItsNodeA being		
	less than itsGnDefaultMaxCommunicationRange MIB attribute		
}			
	Expected behaviour		
ensure that {	<ul> <li>Provide the second secon</li></ul>		
when {			
	es a GUC packet addressed to ItsNodeA from ItsNodeC		
	TrafficClass.SCF set to 1		
	Basic Header		
	ning RHL field		
11101	cating value greater than 1		
} then (			
then {			
	adcasts the received GUC packet		
upon expir	y of calculated CBF delay (see note)		
}			
}			
	lelay timer value is calculated from the itsGnDefaultMaxCommunicationRange, itsGnCbfMinTime,		
and itsGn0	CbfMaxTime MIB attributes, and the distance value between IUT and ItsNodeC.		

when {     the IUT receives the same GUC packet from ItsNodeB         before expiration of the CBF timer     }     then {         the IUT does not re-broadcast the GUC packet     } }		
contention based forwarding rules         Reference       ETSI EN 302 636-4-1 [1], clauses 10.3.8.3 and E.3         Config Id       CF03         PICS Selection       PICS_GN_GUC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'         Initial conditions         with {       the IUT being in the "initial state" and         the IUT baving received Beacon information from ItsNodeB and         the IUT having received Beacon information from ItsNodeC and         the distance between IUT and ItsNodeA being         less than the itsGnDefaultMaxCommunicationRange MIB attribute and         the IUT having received a GUC packet addressed to ItsNodeA from ItsNodeC         containing TrafficClass.SCF set to 1         containing RHL field         indicating value greater than 1 and         the IUT having started a CBF timer for this packet (see note)         }         Expected behaviour         ensure that {         when {         the IUT receives the same GUC packet from ItsNodeB         before expiration of the CBF timer         }         then IUT does not re-broadcast the GUC packet         }	TP ld	TP/GEONW/PON/GUC/CBF/BV-07
Reference         ETSI EN 302 636-4-1 [1], clauses 10.3.8.3 and E.3           Config Id         CF03           PICS Selection         PICS_GN_GUC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'           Initial conditions           with {         the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeC and the distance between IUT and ItsNodeA being less than the itsGnDefaultMaxCommunicationRange MIB attribute and the IUT having received a GUC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing Basic Header containing started a CBF timer for this packet (see note)           Expected behaviour           ensure that {         when { the IUT receives the same GUC packet from ItsNodeB before expiration of the CBF timer         the IUT receives the same GUC packet from ItsNodeB before expiration of the CBF timer           } then IUT does not re-broadcast the GUC packet         the IUT does not re-broadcast the GUC packet	Test objective	Check that GUC packet forwarding correctly avoids packet duplication according to the
Config Id         CF03           PICS Selection         PICS_GN_GUC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF' Initial conditions           with {         Initial conditions           with {         the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeC and the distance between IUT and ItsNodeA being less than the itsGnDefaultMaxCommunicationRange MIB attribute and the IUT having received a GUC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 and the IUT having started a CBF timer for this packet (see note) }           Expected behaviour           ensure that {           when {           the IUT receives the same GUC packet from ItsNodeB before expiration of the CBF timer } then { the IUT does not re-broadcast the GUC packet }           NOTE:         The CBF delay timer value is calculated from the itsGnDefaultMaxCommunicationRange, itsGnCbfMinTime,		contention based forwarding rules
PICS Selection       PICS_GN_GUC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'         Initial conditions         with {         the IUT being in the "initial state" and         the IUT having received Beacon information from ItsNodeB and         the IUT having received Beacon information from ItsNodeC and         the distance between IUT and ItsNodeA being         less than the itsGnDefaultMaxCommunicationRange MIB attribute and         the distance between IUT and ItsNodeA being         less than the itsGnDefaultMaxCommunicationRange MIB attribute and         the distance between IUT and ItsNodeA being         less than the itsGnDefaultMaxCommunicationRange MIB attribute and         the IUT having received a GUC packet addressed to ItsNodeA from ItsNodeC         containing RHL field         indicating value greater than 1 and         the IUT having started a CBF timer for this packet (see note)         Expected behaviour         ensure that {         when {         the IUT receives the same GUC packet from ItsNodeB          before expiration of the CBF timer         then {         then {       the IUT does	Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.3 and E.3
Initial conditions         Initial conditions         with {         the IUT being in the "initial state" and         the IUT having received Beacon information from ItsNodeB and         the IUT having received Beacon information from ItsNodeC and         the distance between IUT and ItsNodeA being         less than the itsGnDefaultMaxCommunicationRange MIB attribute and         the IUT having received a GUC packet addressed to ItsNodeA from ItsNodeC         containing TrafficClass.SCF set to 1         containing RHL field         indicating value greater than 1 and         the IUT having started a CBF timer for this packet (see note)         Expected behaviour         ensure that {         when {         the IUT receives the same GUC packet from ItsNodeB         before expiration of the CBF timer         }         then {         the IUT does not re-broadcast the GUC packet         }         NOTE:         The CBF delay timer value is calculated from the itsGnDefaultMaxCommunicationRange, itsGnCbfMinTime,	Config Id	CF03
with {     the IUT being in the "initial state" and     the IUT having received Beacon information from ItsNodeB and     the IUT having received Beacon information from ItsNodeC and     the distance between IUT and ItsNodeA being     less than the itsGnDefaultMaxCommunicationRange MIB attribute and     the IUT having received a GUC packet addressed to ItsNodeA from ItsNodeC     containing TrafficClass.SCF set to 1     containing Basic Header     containing RHL field         indicating value greater than 1 and     the IUT having started a CBF timer for this packet (see note)     /////////////////////////////////	PICS Selection	PICS_GN_GUC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'
the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeC and the distance between IUT and ItsNodeA being less than the itsGnDefaultMaxCommunicationRange MIB attribute and the IUT having received a GUC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 and the IUT having started a CBF timer for this packet (see note) <u>Expected behaviour</u> ensure that { when { the IUT receives the same GUC packet from ItsNodeB before expiration of the CBF timer } then { the IUT does not re-broadcast the GUC packet } NOTE: The CBF delay timer value is calculated from the itsGnDefaultMaxCommunicationRange, itsGnCbfMinTime,		Initial conditions
ensure that {     when {         the IUT receives the same GUC packet from ItsNodeB             before expiration of the CBF timer         }         then {             then {                 the IUT does not re-broadcast the GUC packet         }     } NOTE: The CBF delay timer value is calculated from the itsGnDefaultMaxCommunicationRange, itsGnCbfMinTime,	the IUT being in the the IUT having rec the IUT having rec the distance betwe less than the its the IUT having rec containing Traf containing Basi containing F indicatin	eived Beacon information from ItsNodeB and eived Beacon information from ItsNodeC and en IUT and ItsNodeA being sGnDefaultMaxCommunicationRange MIB attribute and eived a GUC packet addressed to ItsNodeA from ItsNodeC ficClass.SCF set to 1 c Header RHL field g value greater than 1 and
<pre>when {     the IUT receives the same GUC packet from ItsNodeB         before expiration of the CBF timer     }     then {         the IUT does not re-broadcast the GUC packet     } } NOTE: The CBF delay timer value is calculated from the itsGnDefaultMaxCommunicationRange, itsGnCbfMinTime,</pre>	5	Expected behaviour
	the IUT receive before expire then { the IUT does not } }	ration of the CBF timer

TP Id	TP/GEONW/PON/GUC/CBF/BV-20
Test objective	Check that a received GUC packet forwarding is correctly handling the minimum delay value
	according to the contention based forwarding rules
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.3 and E.3
Config Id	CF03
PICS Selection	PICS_GN_GUC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'
	Initial conditions
with {	
the IUT being in th	e "initial state" and
the IUT having rec	eived Beacon information from ItsNodeB and
the IUT having rec	eived Beacon information from ItsNodeC and
the distance betwe	een IUT and ItsNodeC being
larger than the	itsGnDefaultMaxCommunicationRange MIB attribute
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	es a GUC packet addressed to ItsNodeA from ItsNodeC
containing	TrafficClass.SCF set to 1
containing	Basic Header
containi	ing RHL field
indic	cating value greater than 1
}	
then {	
the IUT re-broadcasts the received GUC packet	
	v of itsGnCbfMinTime delay
}	
}	

TP Id	TP/GEONW/PON/GUC/CBF/BV-21	
Test objective	Check that a received GUC packet is forwarded at the correct time according to the contention	
,,	based forwarding rules when the sender is unknown	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.8.3 and E.3	
Config Id	CF04	
PICS Selection	PICS_GN_GUC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'	
	Initial conditions	
with {		
	e "initial state" and	
	eived Beacon information from ItsNodeB and	
	eived Beacon information from ItsNodeC and	
	received any message from ItsNodeD and	
	een IUT and ItsNodeA being	
	DefaultMaxCommunicationRange MIB attribute	
}		
•	Expected behaviour	
ensure that {	·	
when {		
the IUT receive	es a GUC packet addressed to ItsNodeA generated by ItsNodeC from ItsNodeD	
containing	TrafficClass.SCF set to 1	
containing	Basic Header	
	ng RHL field	
indic	cating value greater than 1	
}		
then {		
the IUT re-broadcasts the received GUC packet		
	upon expiry of CBF_MAX	
}		
}		

TP ld	TP/GEONW/PON/GUC/CBF/BV-22	
Test objective	Check that a received GUC packet is forwarded at the correct time according to the contention	
	based forwarding rules when the sender is known sender with an uncertain position (PAI = 0)	
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.8.3 and E.3	
Config Id	CF04	
PICS Selection	PICS_GN_GUC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'	
	Initial conditions	
with {     the IUT being in the "initial state" and     the IUT having received Beacon information from ItsNodeB and     the IUT having received Beacon information from ItsNodeD         containing Beacon ExtendedHeader         containing SOPV field         containing PAI         set to '0'		
,	Expected behaviour	
ensure that { when {	· · · · · · · · · · · · · · · · · · ·	
the IUT receives a GUC packet addressed to ItsNodeA generated by ItsNodeC from ItsNodeD containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } then { the IUT re-broadcasts the GUC packet upon expiry of CBF_MAX }		

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#### 6.2.2.9 GeoBroadcast

### 6.2.2.9.1 Non-Area Forwarding

6.2.2.9.1.1 All forwarding algorithms

TP ld	TP/GEONW/PON/GBC/NONAREA/ALL/BV-03	
Test objective	Check that the protocol header fields (RHL) are correctly updated during a GBC forwarding step	
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.11.3	
Config Id	CF03	
PICS Selection	PICS_GN_GBC_FWD	
	Initial conditions	
with {		
the IUT being in th	e "initial state" and	
5	eived Beacon information from ItsNodeB	
the IUT having rec	eived Beacon information from ItsNodeC	
}		
	Expected behaviour	
ensure that {		
when {		
	es a GBC packet from ItsNodeC	
	TrafficClass.SCF set to 1	
	Basic Header	
	ng RHL field	
	cating value HL1 higher than 1	
	Common Header	
	ng MHL field	
	cating value MHL1	
containing DestinationArea		
indicating AREA2		
}		
then {		
	mits the GBC packet	
containing Basic Header		
containing RHL field		
indicating value (HL1 - 1)		
containing Common Header		
containing MHL field		
indicating value MHL1		
containing DestinationArea indicating AREA2		
indicatin	IG AKEAZ	
}		
}		

TP ld	TP/GEONW/PON/GBC/NONAREA/ALL/BV-04
Test objective	Check that the RHL restriction is correctly handled at a GBC forwarding step
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.11.3
Config Id	CF03
PICS Selection	PICS_GN_GBC_FWD
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having rec	eived Beacon information from ItsNodeB
the IUT having rec	eived Beacon information from ItsNodeC
}	
	Expected behaviour
ensure that {	
when {	
	s a GBC packet from ItsNodeC
	FrafficClass.SCF set to 1
containing E	Basic Header
containi	ng RHL field
indic	ating 1
containing (	GBC Extended Header
containii	ng DestinationArea
indic	ating AREA2
}	
then {	
the IUT does no	ot retransmit the GBC packet
3	

}

TP ld	TP/GEONW/PON/GBC/NONAREA/ALL/BV-06	
Test objective	Check that a received GBC packet is not passed over the Gn SAP if it is received for the first	
	time outside the GBC destination area	
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.11.3	
Config Id	CF01	
PICS Selection	PICS_GN_GBC_FWD	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having rec	eived Beacon information from ItsNodeB	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT receive	s a GBC packet	
containing 7	FrafficClass.SCF set to 1	
	DestinationArea	
indicating AREA2		
}		
then {		
	ot pass the received GBC packet to any Upper Layer	
ine for does not pass the received Obo packet to any Opper Layer		
}		

TP ld	TP/GEONW/PON/GBC/NONAREA/ALL/BO-09
Test objective	Check that a received GBC packet is discarded when indicating a too big GeoArea
Reference	ETSI EN 302 636-4-1 [1], clause B.3
Config Id	CF04
PICS Selection	PICS_GN_GBC_FWD
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having rece	eived Beacon information from ItsNodeB and
the IUT having rece	eived Beacon information from ItsNodeD
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	s a GBC packet from ItsNodeC
containing T	FrafficClass.SCF set to 1
containing [	DestinationArea
indicatin	g a geoArea bigger than itsGnMaxGeoAreaSize
}	
then {	
the IUT does no	ot retransmit the received GBC packet
}	
}	

TP ld	TP/GEONW/PON/GBC/NONAREA/ALL/BO-10
Test objective	Check that a received GBC packet from inside the destination area is discarded if received for
	the first time from a known sender when IUT is outside the destination area
Reference	ETSI EN 302 636-4-1 [1], annex D
Config Id	CF04
PICS Selection	PICS_GN_GBC_FWD
	Initial conditions
with {	
	ne "initial state" and
	ceived Beacon information from ItsNodeB and
	ceived Beacon information from ItsNodeC and
the IUT having re	ceived Beacon information from ItsNodeD
}	European de la basilione
	Expected behaviour
ensure that {	
when {	es a GBC packet from ItsNodeD
	TrafficClass.SCF set to 1
	GBC Extended Header
	ing DestinationArea
	cating AREA2
}	
then {	
•	ds the received GBC packet
}	
,	

Test objective       Check that GBC request over upper Gn SAP triggersline forwarding if the IUT is outside the Destination Area         Reference       ETSI EN 302 636-4-1 [1], clauses 10.3.11.2 and E.2         Config Id       CF02         PICS Selection       PICS_GN_GBC_SRC AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')         Initial conditions       Initial conditions	TP ld	TP/GEONW/PON/GBC/NONAREA/GRD/BV-01
Config Id         CF02           PICS Selection         PICS_GN_GBC_SRC AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')	Test objective	
PICS Selection         PICS_GN_GBC_SRC AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM ==           'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')	Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.11.2 and E.2
'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')	Config Id	CF02
Initial conditions	PICS Selection	
	Initial conditions	

with {

the IUT being in the "initial state" and

the IUT having received Beacon information from ItsNodeD and

Greedy forwarding

the IUT having received Beacon information from ItsNodeB

#### Expected behaviour

ensure that { when {

the IUT is requested to send a GBC packet containing TrafficClass.SCF set to 1 containing DestinationArea indicating AREA2

then {

}

the IUT selects ItsNodeB as the next hop and the IUT sends the GBC packet (see note)

}

NOTE: Next hop ITS Station being identified by the MAC layer address of ItsNodeB.

TP ld	TP/GEONW/PON/GBC/NONAREA/GRD/BV-02
Test objective	Check that a received GBC packet is triggering line forwarding if received out of its destination
	area for the first time from a known ITS-Station
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.11.3 and E.2
Config Id	CF04
PICS Selection	PICS_GN_GBC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')
	Initial conditions
vith {	
the IUT being in th	ie "initial state" and
the IUT having rec	eived Beacon information from ItsNodeB and
the IUT having rec	eived Beacon information from ItsNodeDand
	eived Beacon information from ItsNodeC
	Expected behaviour
ensure that {	
when {	
the IUT receive	es a GBC packet generated by ItsNodeC
containing	TrafficClass.SCF set to 1
	DestinationArea
	ng AREA2
}	5
, then {	
	s ItsNodeB as the next hop and
the IUT forwards the GBC packet (see note)	
1	
J	
NOTE: Next hop I	S Station being identified by the MAC layer address of ItsNodeB.
NOTE. NEXTROPT	S Station being identified by the MAC layer address of ItsNodeB.

Test objective       Check that a received GBC packet is not triggering line forwarding if received out of its destination area twice or more         Reference       ETSI EN 302 636-4-1[1], clause 10.3.11.3         Config Id       CF04         PICS Selection       PICS_GN_GBC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')         Initial conditions       Initial conditions         with {       Initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD the IUT having received Beacon information from ItsNodeC containing RHL field indicating value BN1 containing Bsic Header containing Bsic Header containing Bsic Header containing DestinationArea indicating AREA2       Expected behaviour         ensure that {       When {       Expected behaviour         ensure that {       when {       the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing Basic Header containing BASIC Header containing BASIC Header containing SN field indicating value SN1 {         indicating Value BAD       the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing SN field indicating value SN1 {         indicating Value SN1 {       the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing BASIC Header containing SN field indicating value SN1 } <th>TP ld</th> <th>TP/GEONW/PON/GBC/NONAREA/GRD/BO-07</th>	TP ld	TP/GEONW/PON/GBC/NONAREA/GRD/BO-07	
Reference         ETSI EN 302 636-4-1 [1], clause 10.3.11.3           Config Id         CF04           PICS Selection         PICS_GN_GBC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')           Initial conditions         Initial conditions           with {         the IUT baving received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD the IUT having received a GBC packet from ItsNodeC containing TrafficClass.SCF set to 1 containing TrafficClass.SCF set to 1 containing GBC Extended Header containing SN field indicating value HL1 higher than 1 containing DestinationArea indicating Value SN1 containing DestinationArea indicating AREA2         Expected behaviour           ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing BL field indicating value lower than HL1 containing BC Extended Header containing BC Extended Header containing Basic Header containing Basic Header containing Basic Header containing SN field indicating value lower than HL1 containing BC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet	Test objective	Check that a received GBC packet is not triggering line forwarding if received out of its	
Config Id         CF04           PICS Selection         PICS_GN_GBC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED') Initial conditions           with {         the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD the IUT having received a GBC packet from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value HL1 higher than 1 containing BK field indicating value SN1 containing SN field indicating AREA2 the IUT having forwarded the received GBC packet } Expected behaviour           ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing RHL field indicating value lower than HL1 containing Basic Header containing RHL field indicating value lower than HL1 containing Basic Header containing RHL field indicating value lower than HL1 containing RHL field indicating value lower than HL1 containing SN field indicating value lower than HL1 containing SN field indicating value lower than HL1 containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
PICS Selection       PICS_GN_GBC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM ==: 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM ==: 'UNSPECIFIED')         with {       Initial conditions         with {       the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD the IUT having received Beacon information from ItsNodeC containing rafficClass.SCF set to 1 containing TrafficClass.SCF set to 1 containing Basic Header containing Datic Header containing DestinationArea indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet }         Image: Imag	Reference	ETSI EN 302 636-4-1 [1], clause 10.3.11.3	
'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')         Initial conditions         with {         the IUT baing received Beacon information from ItsNodeB and         the IUT having received Beacon information from ItsNodeD         containing TrafficClass.SCF set to 1         containing RHL field         indicating value HL1 higher than 1         containing GBC Extended Header         containing BML field         indicating value SN1         containing DestinationArea         indicating value SN1         containing DestinationArea         indicating value GBC packet from ItsNodeD         containing Basic Header         containing Basic Header         containing BAIC Header         containing BAIC Header         containing BAIC Header         containing SAI field         indic			
Initial conditions         with {         the IUT being in the "initial state" and         the IUT having received Beacon information from ItsNodeD         containing TafficClass.SCF set to 1         containing Basic Header         containing BGE Extended Header         containing DestinationArea         indicating value SN1         Expected behaviour         ensure that {         when {         the IUT receives the same GBC packet from ItsNodeD         containing BAI: Field         indicating value lower than HL1	PICS Selection		
<pre>with {     the IUT being in the "initial state" and     the IUT having received Beacon information from ItsNodeB and     the IUT having received a GBC packet from ItsNodeC     containing TrafficClass.SCF set to 1     containing Basic Header     containing RHL field         indicating value HL1 higher than 1     containing GBC Extended Header     containing DestinationArea     indicating AREA2     the IUT having forwarded the received GBC packet } Expected behaviour ensure that {     when {         the IUT receives the same GBC packet from ItsNodeD         containing Basic Header         containing Basic Header         containing Basic Header         containing forwarded the received GBC packet } the IUT receives the same GBC packet from ItsNodeD     containing BBC Extended Header         containing Basic Header         containing BBC Extended Header         containing Basic Header         containing SN field         indicating value lower than HL1         containing SBC Extended Header         containing SBC Extended Header         containing SN field         indicating value SN1     } then {         the IUT does not forward the received GBC packet     } } </pre>			
the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD the IUT having received a GBC packet from ItsNodeC containing TrafficClass.SCF set to 1 containing BHL field indicating value HL1 higher than 1 containing GBC Extended Header containing SN field indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet } <u>Expected behaviour</u> ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing SN field indicating value lower than HL1 containing SN field indicating value lower than HL1 containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet		Initial conditions	
the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD the IUT having received a GBC packet from ItsNodeC containing TrafficClass.SCF set to 1 containing BAL field indicating value HL1 higher than 1 containing GBC Extended Header containing SN field indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet } <u>Expected behaviour</u> ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing BAL field indicating value lower than HL1 containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
the IUT having received Beacon information from ItsNodeD the IUT having received a GBC packet from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing GBC Extended Header containing SN field indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet } Expected behaviour ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value lower than HL1 containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
the IUT having received a GBC packet from ItsNodeC containing TrafficClass.SCF set to 1 containing Balt field indicating value HL1 higher than 1 containing GBC Extended Header containing SN field indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet } Expected behaviour ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing BHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value HL1 higher than 1 containing GBC Extended Header containing SN field indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet } Expected behaviour ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
containing Basic Header containing RHL field indicating value HL1 higher than 1 containing GBC Extended Header containing SN field indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet } Expected behaviour ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value lower than HL1 containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
containing RHL field indicating value HL1 higher than 1 containing GBC Extended Header containing SN field indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet } Expected behaviour ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
indicating value HL1 higher than 1 containing GBC Extended Header containing SN field indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet Expected behaviour ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
containing GBC Extended Header containing SN field indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet } Expected behaviour ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
containing SN field indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet Expected behaviour ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
indicating value SN1 containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet } Expected behaviour ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
containing DestinationArea indicating AREA2 the IUT having forwarded the received GBC packet } Expected behaviour ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then {			
indicating AREA2 the IUT having forwarded the received GBC packet Expected behaviour ensure that { when { the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
the IUT having forwarded the received GBC packet  Expected behaviour  ensure that {     when {         the IUT receives the same GBC packet from ItsNodeD             containing Basic Header             containing RHL field             indicating value lower than HL1             containing GBC Extended Header             containing SN field             indicating value SN1     }     then {         the IUT does not forward the received GBC packet			
<pre>} Expected behaviour ensure that {     when {         the IUT receives the same GBC packet from ItsNodeD             containing Basic Header             containing RHL field             indicating value lower than HL1             containing GBC Extended Header             containing SN field             indicating value SN1     }     then {             the IUT does not forward the received GBC packet         } } </pre>			
ensure that {     when {         the IUT receives the same GBC packet from ItsNodeD             containing Basic Header             containing RHL field             indicating value lower than HL1             containing GBC Extended Header             containing SN field             indicating value SN1     }     then {             the IUT does not forward the received GBC packet         }     }		valueu lite received GDC packet	
<pre>when {     the IUT receives the same GBC packet from ItsNodeD         containing Basic Header         containing RHL field         indicating value lower than HL1         containing GBC Extended Header         containing SN field         indicating value SN1     }     then {         the IUT does not forward the received GBC packet     } }</pre>	J	Expected behaviour	
the IUT receives the same GBC packet from ItsNodeD containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet	ensure that {		
containing Basic Header containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
containing RHL field indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
indicating value lower than HL1 containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
containing GBC Extended Header containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
containing SN field indicating value SN1 } then { the IUT does not forward the received GBC packet			
indicating value SN1 } then { the IUT does not forward the received GBC packet			
} then { the IUT does not forward the received GBC packet		•	
then { the IUT does not forward the received GBC packet			
the IUT does not forward the received GBC packet			
} }	·		
	}		
N			

6.2.2.9.1.3	Contention-based forwarding		
TP ld	TP/GEONW/PON/GBC/NONAREA/CBF/BV-01		
Test objective	Check that a GBC request over upper Gn SAP triggers broadcasting of a GBC packet if the IUT is outside the Destination Area		
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.11.2 and E.3		
Config Id	CF02		
PICS Selection	ection PICS_GN_GBC_SRC AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'		
	Initial conditions		
	e "initial state" and eived Beacon information from ItsNodeD and eived Beacon information from ItsNodeB		
	Expected behaviour		
ensure that {     when {         the IUT is requested to send a GBC packet         containing TrafficClass.SCF set to 1         containing DestinationArea         indicating AREA2			

} then {

the IUT broadcasts immediately the GBC packet

}

TP ld	TP/GEONW/PON/GBC/NONAREA/CBF/BV-02
Test objecti	ive Check that a received GBC packet is forwarded at the correct time according to the contention
	based forwarding rules
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.11.3 and E.3
Config Id	CF03
PICS Select	ion PICS_GN_GBC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'
	Initial conditions
with {	
	ng in the "initial state" and
	ing received Beacon information from ItsNodeB and
	ing received Beacon information from ItsNodeC and
	between IUT and ItsNodeA being
less thar	n itsGnDefaultMaxCommunicationRange MIB attribute
}	
	Expected behaviour
ensure that {	
when {	
	receives a GBC packet addressed to ItsNodeA from ItsNodeC
	aining TrafficClass.SCF set to 1
	aining Basic Header
C	ontaining RHL field indicating value greater than 1
l	
} then {	
	re-broadcasts the received GBC packet
	expiry of calculated CBF delay (see note)
3	expiry of calculated Obr delay (see note)
} }	
NOTE: The	CBF delay timer value is calculated from the itsGnDefaultMaxCommunicationRange,
itsGr	GeoCbfMinTime, and itsGnGeoCbfMaxTime MIB attributes, and the distance value between IUT and deC.

TP ld	TP/GEONW/PON/GBC/NONAREA/CBF/BV-07
Test objective	Check that GBC packet forwarding correctly avoids packet duplication according to the
	contention based forwarding rules
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.11.3 and E.3
Config Id	CF03
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'
	Initial conditions
with {	
	e "initial state" and
	eived Beacon information from ItsNodeB and
	eived Beacon information from ItsNodeC and
	een IUT and ItsNodeA being
	sGnDefaultMaxCommunicationRange MIB attribute and
	eived a GBC packet addressed to ItsNodeA from ItsNodeC
5	ificClass.SCF set to 1
containing Bas containing	
	ng value greater than 1 and
	rted a CBF timer for this packet (see note)
}	ned a ODF limer for this packet (see hole)
,	Expected behaviour
ensure that {	
when {	
the IUT receive	es the same GBC packet from ItsNodeB
before expi	ration of the CBF timer
}	
then {	
the IUT does n	ot re-broadcast the GBC packet
}	
}	
	elay timer value is calculated from the itsGnDefaultMaxCommunicationRange, bfMinTime, and itsGnGeoCbfMaxTime MIB attributes, and the distance value between IUT and

TP ld	TP/GEONW/PON/GBC/NONAREA/CBF/BV-20	
Test objective	Check that a received GBC packet forwarding is correctly handling the minimum delay value	
-	according to the contention based forwarding rules	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.11.3 and E.3	
Config Id	CF03	
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having rec	eived Beacon information from ItsNodeB and	
the IUT having rec	eived Beacon information from ItsNodeC and	
	en IUT and ItsNodeC being	
larger than the	itsGnDefaultMaxCommunicationRange MIB attribute	
}		
	Expected behaviour	
ensure that {		
when {		
	s a GBC packet addressed to ItsNodeA from ItsNodeC	
	TrafficClass.SCF set to 1	
	containing Basic Header	
containing RHL field		
indicating value greater than 1		
}		
then {		
the IUT re-broadcasts the received GBC packet		
upon expiry of itsGnGeoCbfMinTime delay		
}		
}		

TP ld	TP/GEONW/PON/GBC/NONAREA/CBF/BV-21
Test objective	Check that a received GBC packet is forwarded at the correct time according to the contention
	based forwarding rules if received for the first time when IUT is outside of the destination area
	from an unknown sender
Reference	ETSI EN 302 636-4-1 [1], clause E.3
Config Id	CF04
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'
	Initial conditions
with {	
the IUT being in the	
	eived Beacon information from ItsNodeB and
the IUT not having	received any message from ItsNodeD
}	
	Expected behaviour
ensure that {	
when {	
	is a GBC packet generated by ItsNodeC from ItsNodeD
	TrafficClass.SCF set to 1
	GBC Extended Header
containing DestinationArea	
indic	ating AREA2
} there (	
then {	
the IUT re-broadcasts the GBC packet upon expiry of CBF_MAX	
upon expiry	
}	
}	

TP Id       TP/GEONW/PON/GBC/NONAREA/CBF/BV-22         Test objective       Check that a received GBC packet is forwarded at the correct time according to the contention based forwarding rules if received for the first time when IUT is outside of the destination area from a known sender having an uncertain position (PAI = 0)         Reference       ETSI EN 302 636-4-1 [1], clause E.3         Config Id       CF04         PICS Selection       PICS_GN_GBC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'         Initial conditions       Initial conditions         with {       the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD containing SOPV field containing PAI set to '0'         *       Expected behaviour         ensure that {       when {         the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing TafficClass.SCF set to 1 containing DestinationArea indicating AREA2         }       then {         then {       the IUT re-broadcasts the GBC packet upon expiry of CBF_MAX         }       the IUT re-broadcasts the GBC packet			
based forwarding rules if received for the first time when IUT is outside of the destination area from a known sender having an uncertain position (PAI = 0) Reference ETSI EN 302 636-4-1 [1], clause E.3 Config Id CF04 PICS Selection PICS_GN_GBC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF' Initial conditions with { the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD containing Beacon ExtendedHeader containing SOPV field containing PAI set to '0' } Expected behaviour ensure that { when { the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing GBC Extended Header containing GBC Extended Header containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet			
from a known sender having an uncertain position (PAI = 0)         Reference       ETSI EN 302 636-4-1 [1], clause E.3         Config Id       CF04         PICS Selection       PICS_GN_GBC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'         Initial conditions         with {       the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD containing Beacon ExtendedHeader containing SOPV field containing PAI set to '0'         Expected behaviour         ensure that {         when {         the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing TrafficClass.SCF set to 1 containing GBC Extended Header containing GBC Extended Header containing Containing Containing TrafficClass.SCF set to 1 containing GBC Extended Header containing RAEA2         }       then IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing	Test objective	Check that a received GBC packet is forwarded at the correct time according to the contention	
Reference       ETSI EN 302 636-4-1 [1], clause E.3         Config Id       CF04         PICS Selection       PICS_GN_GBC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'         Initial conditions         with {       Initial conditions         with {       Initial conditions         with {       Initial conditions         with {       Initial state" and         the IUT being in the "initial state" and       Ithe IUT having received Beacon information from ItsNodeB and         the IUT having received Beacon information from ItsNodeD       containing Beacon ExtendedHeader         containing SOPV field       containing SOPV field         containing PAI       set to '0'         }       Expected behaviour         ensure that {       when {         the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD       containing TrafficClass.SCF set to 1         containing GBC Extended Header       containing GBC Extended Header         containing DestinationArea       indicating AREA2         }       then {         then {       the IUT re-broadcasts the GBC packet		based forwarding rules if received for the first time when IUT is outside of the destination area	
Config Id       CF04         PICS Selection       PICS_GN_GBC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'         Initial conditions         with {       the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD containing Beacon ExtendedHeader containing SOPV field containing PAI set to '0'         Expected behaviour         ensure that {         when {         the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing TrafficClass.SCF set to 1 containing GBC Extended Header containing GBC Extended Header containing GBC Extended Header containing Containing REA2         }       the IUT re-broadcasts the GBC packet		from a known sender having an uncertain position $(PAI = 0)$	
PICS Selection       PICS_GN_GBC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'         Initial conditions         with {         the IUT being in the "initial state" and         the IUT having received Beacon information from ItsNodeB and         the IUT having received Beacon information from ItsNodeD         containing Beacon ExtendedHeader         containing SOPV field         containing PAI         set to '0'         Expected behaviour         ensure that {         when {         the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD         containing CBC Extended Header         containing DestinationArea         indicating AREA2         }         then {         the IUT re-broadcasts the GBC packet	Reference		
Initial conditions         with {         the IUT being in the "initial state" and         the IUT having received Beacon information from ItsNodeB and         the IUT having received Beacon information from ItsNodeD         containing Beacon ExtendedHeader         containing SOPV field         containing PAI         set to '0'         Expected behaviour         ensure that {         when {         the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD         containing TrafficClass.SCF set to 1         containing GBC Extended Header         containing DestinationArea         indicating AREA2         }         then {         then IUT re-broadcasts the GBC packet	Config Id	CF04	
with { the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD containing Beacon ExtendedHeader containing SOPV field containing PAI set to '0' } Expected behaviour ensure that { when { the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing TrafficClass.SCF set to 1 containing GBC Extended Header containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet	PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'	
the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD containing Beacon ExtendedHeader containing SOPV field containing PAI set to '0' } Expected behaviour ensure that { when { the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing TrafficClass.SCF set to 1 containing GBC Extended Header containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet		Initial conditions	
the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeD containing Beacon ExtendedHeader containing SOPV field containing PAI set to '0' } <u>Expected behaviour</u> ensure that { when { the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing TrafficClass.SCF set to 1 containing GBC Extended Header containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet	with {		
the IUT having received Beacon information from ItsNodeD containing Beacon ExtendedHeader containing SOPV field containing PAI set to '0' } Expected behaviour ensure that { when { the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing TrafficClass.SCF set to 1 containing GBC Extended Header containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet	the IUT being in th	e "initial state" and	
containing Beacon ExtendedHeader containing SOPV field containing PAI set to '0' } Expected behaviour ensure that { when { the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing TrafficClass.SCF set to 1 containing GBC Extended Header containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet	the IUT having rec	eived Beacon information from ItsNodeB and	
containing SOPV field containing PAI set to '0' } ensure that { when { the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing TrafficClass.SCF set to 1 containing GBC Extended Header containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet	the IUT having rec	eived Beacon information from ItsNodeD	
containing PAI set to '0' } ensure that { when { the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing TrafficClass.SCF set to 1 containing GBC Extended Header containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet	containing Bea	con ExtendedHeader	
<pre>set to '0' } Expected behaviour ensure that {     when {         the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD             containing TrafficClass.SCF set to 1             containing GBC Extended Header             containing DestinationArea             indicating AREA2     }     then {         the IUT re-broadcasts the GBC packet     } }</pre>			
<pre>} Expected behaviour ensure that {     when {         the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD             containing TrafficClass.SCF set to 1             containing GBC Extended Header             containing DestinationArea             indicating AREA2     }     then {         the IUT re-broadcasts the GBC packet     } }</pre>	containi		
ensure that {     when {         the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD         containing TrafficClass.SCF set to 1         containing GBC Extended Header         containing DestinationArea         indicating AREA2     }     then {         the IUT re-broadcasts the GBC packet     } }	set t	o '0'	
ensure that {     when {         the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD         containing TrafficClass.SCF set to 1         containing GBC Extended Header         containing DestinationArea         indicating AREA2     }     then {         the IUT re-broadcasts the GBC packet     } }	}		
<pre>when {     the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD         containing TrafficClass.SCF set to 1         containing GBC Extended Header         containing DestinationArea         indicating AREA2     }     then {         the IUT re-broadcasts the GBC packet     } }</pre>		Expected behaviour	
the IUT receives a GBC packet generated by ItsNodeC from ItsNodeD containing TrafficClass.SCF set to 1 containing GBC Extended Header containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet	ensure that {		
containing TrafficClass.SCF set to 1 containing GBC Extended Header containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet	when {		
containing GBC Extended Header containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet			
containing DestinationArea indicating AREA2 } then { the IUT re-broadcasts the GBC packet			
indicating AREA2 } then { the IUT re-broadcasts the GBC packet	containing		
} then { the IUT re-broadcasts the GBC packet	containing DestinationArea		
the IUT re-broadcasts the GBC packet	indic	cating AREA2	
the IUT re-broadcasts the GBC packet	}		
upon expiry of CBF_MAX }	•		
}	upon expiry of CBF_MAX		
}	}		
	}		
	12		

# 6.2.2.9.2 Area Forwarding

#### 6.2.2.9.2.1 All forwarding algorithms

TP Id	TP/GEONW/PON/GBC/AREA/ALL/BV-01
Test objective	Check that a GBC request over upper Gn SAP triggers broadcasting of a GBC packet if the IUT
	is within the Destination Area
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.11.2
Config Id	CF02
PICS Selection	PICS_GN_GBC_SRC
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having rece	eived Beacon information from ItsNodeD and
the IUT having rece	eived Beacon information from ItsNodeB
}	
	Expected behaviour
ensure that {	
when {	
	ested to send a GBC packet
	TrafficClass.SCF set to 1
5	DestinationArea
indicatin	g AREA1
}	
then {	
the IUT broadcasts immediately the GBC packet	
containing DestinationArea	
indicatin	g AREA1
}	
}	

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TDU		
TP Id	TP/GEONW/PON/GBC/AREA/ALL/BV-03	
Test objective	Check that the protocol header fields (RHL) are correctly updated during a GBC retransmition	
	inside area	
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.11.3	
Config Id	CF02	
PICS Selection	PICS_GN_GBC_FWD	
	Initial conditions	
with {		
the IUT being in the		
	eived Beacon information from ItsNodeD and	
the IUT having rec	eived Beacon information from ItsNodeB	
}		
	Expected behaviour	
ensure that {		
when {		
	s a GBC packet	
	TrafficClass.SCF set to 1	
	Basic Header	
	ng RHL field	
	ating value HL1 higher than 1	
	Common Header	
	ng MHL field	
indicating value MHL1		
	containing DestinationArea indicating AREA1	
indicatin	I AREAT	
} then {		
	mitsthe GBC packet	
	Basic Header	
	ng RHL field	
	ating value (HL1 -1)	
	Common Header	
	ng MHL field	
	ating value MHL1	
}		
,		

TP ld	TP/GEONW/PON/GBC/AREA/ALL/BV-04
Test objective	Check that the RHL restriction is correctly handled at a GBC re-broadcasting step
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.11.3
Config Id	CF02
PICS Selection	PICS_GN_GBC_FWD
Initial conditions	
with {	
the IUT being in th	e "initial state" and
	eived Beacon information from ItsNodeD and
the IUT having received Beacon information from ItsNodeB	
}	
Expected behaviour	
ensure that {	

:

TP ld	TP/GEONW/PON/GBC/AREA/ALL/BV-05
Test objective	Check that a received GBC packet is passed over the Gn SAP to the correct upper protocol if it
-	is received for the first time within the GBC destination area
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.11.3
Config Id	CF01
PICS Selection	PICS_GN_GBC_DST
	Initial conditions
with {	
the IUT being in th	e "initial state" and
the IUT having rec	eived Beacon information from ItsNodeB
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	es a GBC packet
containing	TrafficClass.SCF set to 1
containing	DestinationArea
indicatir	ng AREA1
}	-
then {	
the IUT passes	the received GBC packet to the correct Upper Layer
}	
}	

TP Id	TP/GEONW/PON/GBC/AREA/ALL/BO-08
Test objective	Check that a received GBC packet is not passed over the Gn SAP if it is received twice or more
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.11.3
Config Id	CF02
PICS Selection	PICS_GN_GBC_DST
	Initial conditions
with {	
the IUT being in the	ie "initial state" and
	eived Beacon information from ItsNodeD and
	ceived Beacon information from ItsNodeB and
	ceived a GBC packet from ItsNodeB
	fficClass.SCF set to 1
containing Bas	
containing	
indicati	
	C Extended Header
containing	
	ng value SN1
	DestinationArea ng AREA1 and
	ssed the received GBC packet to the correct Upper Layer
۱۱ the for having pa	ssed the received GDC packet to the correct opper Layer
<u>,</u>	Expected behaviour
ensure that {	
when {	
the IUT receive	es the same GBC packet from ItsNodeD
containing	Basic Header
contain	ing RHL field
	cating value lower than HL1
	GBC Extended Header
	ing SN field
indi	cating value SN1
}	
then {	
	ot pass the received GBC packet to any Upper Layer
}	
}	

6.2.2.9.2.2	Simple forwarding
TP ld	TP/GEONW/PON/GBC/AREA/SMP/BV-02
Test objective	Check that a received GBC packet is triggering immediately re-broadcasting if received for the first time within its destination area
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.11.3 and E.2
Config Id	CF02
PICS Selection	PICS_GN_GBC_FWD AND (PICS_GN_AREA_FORWARDING_ALGORITHM == 'SIMPLE' OR PICS_GN_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')
	Initial conditions
	he "initial state" and the IUT having received Beacon information from ItsNodeD and ceived Beacon information from ItsNodeB
angura that (	Expected behaviour
containing containing indicati } then {	es a GBC packet TrafficClass.SCF set to 1 DestinationArea ng AREA1 adcasts immediately the GBC packet

TP ld	TP/GEONW/PON/GBC/AREA/SMP/BO-07
Test objective	Check that a received GBC packet is not triggering re-broadcasting if received twice or more
-	(duplicate packet detection)
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.11.3 and A.2
Config Id	CF02
PICS Selection	PICS_GN_GBC_FWD AND (PICS_GN_AREA_FORWARDING_ALGORITHM == 'SIMPLE' OR
	PICS_GN_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')
	Initial conditions
with {	
the IUT being in the	
	eived Beacon information from ItsNodeD and
	eived Beacon information from ItsNodeB and
	eived a GBC packet from ItsNodeB
	icClass.SCF set to 1
containing Basic	
containing R	
	g value HL1 higher than 1
	Extended Header
containing S	
	g value SN1
	DestinationArea
	g AREA1 and
the IUT having re-b	roadcast the GBC packet
}	
	Expected behaviour
ensure that {	
when {	
	s the same GBC packet from ItsNodeD
	Basic Header
	ng RHL field
	ating value lower than HL1
	BC Extended Header
	ng SN field
	ating value SN1
}	
then {	
	ot re-broadcast the GBC packet
}	
}	

6.2.2.9.2.3	Contention-based forwarding
TP ld	TP/GEONW/PON/GBC/AREA/CBF/BV-02
Test objective	Check that a received GBC packet is triggering contention if received for the first time from a
	known sender when inside of the destination area
Reference	ETSI EN 302 636-4-1 [1], clause E.3
Config Id	CF04
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'CBF'
	Initial conditions
the IUT having rec the IUT having rec	e "initial state" and eeived Beacon information from ItsNodeB and eeived Beacon information from ItsNodeD and eeived Beacon information from ItsNodeC Expected behaviour
an arrive the state	Expected benaviour
containing containing contain indio }	es a GBC packet from ItsNodeC TrafficClass.SCF set to 1 GBC Extended Header ing DestinationArea cating AREA1
the IUT starts t the IUT re-broa	the GBC packet into the CBF buffer and the contention timer and adcasts the received GBC packet y of the contention timer

TP ld	TP/GEONW/PON/GBC/AREA/CBF/BV-07
Test objective	Check that a received GBC packet is discarded if received twice or more
Reference	ETSI EN 302 636-4-1 [1], clause E.3
Config Id	CF04
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'CBF'
	Initial conditions
with {	
the IUT being in the	
	eived Beacon information from ItsNodeB and
	eived Beacon information from ItsNodeD
	eived a GBC packet from ItsNodeC
	ficClass.SCF set to 1
	Extended Header
	DestinationArea
	g AREA1
the IUT having save	ed the packet into CBF buffer
}	Expected behaviour
angura that (	
ensure that { when {	
	s the same GBC packet from ItsNodeD
}	
then {	
	is the GBC packet from the CBF buffer
	s the new received GBC packet
}	
, ,	

TP ld	TP/GEONW/PON/GBC/AREA/CBF/BV-21
Test objective	Check that a received GBC packet is triggering contention if received for the first time when IUT
	lis inside of the destination area from an unknown sender
Reference	ETSI EN 302 636-4-1 [1], clause E.3
Config Id	CF04
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'CBF'
	Initial conditions
with {	
the IUT being in th	e "initial state" and
the IUT is using th	
	eived Beacon information from ItsNodeB and
	received any message from ItsNodeD
•	
	Expected behaviour
ensure that {	
when {	
the IUT receive	es a GBC packet generated by ItsNodeC from ItsNodeD
	TrafficClass.SCF set to 1
	GBC Extended Header
	ing DestinationArea
indic	cating AREA1
}	
then {	
	the GBC packet into the CBF buffer and
	the contention timer set to CBF_MAX and
	casts the received GBC packet
upon expiry	of the contention timer
}	
}	
TP ld	TP/GEONW/PON/GBC/AREA/CBF/BV-22

TP ld	TP/GEONW/PON/GBC/AREA/CBF/BV-22	
Test objective	Check that a received GBC packet is triggering contention if received for the first time when IUT	
-	is inside of the destination area from a known sender having an uncertain position (PAI = 0)	
Reference	ETSI EN 302 636-4-1 [1], clause E.3	
Config Id	CF04	
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'CBF'	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT is using the	CBF algorithm	
	eived Beacon information from ItsNodeB and	
	the IUT having received Beacon information from ItsNodeD	
	containing Beacon ExtendedHeader	
containing S	containing SOPV field	
containir		
set to	0' 0'	
}		
	Expected behaviour	
ensure that {		
when {		
	s a GBC packet generated by ItsNodeC from ItsNodeD	
	containing TrafficClass.SCF set to 1	
9	GBC Extended Header	
	containing DestinationArea	
indic	ating AREA1	
}		
then {		
the IUT saves the GBC packet into the CBF buffer and		
	ne contention timer set to CBF_MAX and	
the IUT re-broadcasts the received GBC packet		
upon expiry	of the contention timer	
}		
}		

6.2.2.9.2.4	Advanced forwarding
TP ld	TP/GEONW/PON/GBC/AREA/ADV/BV-21
Test objective	Check that a received GBC packet with Broadcast MAC destination is triggering contention if received for the first time from an unknown sender when IUT is inside the destination area
Reference	ETSI EN 302 636-4-1 [1], clause F.4
Config Id	CF05
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'ADVANCED'
	Initial conditions
	eived Beacon information from ItsNodeB and received any message from ItsNodeE
	Expected behaviour
addressed containing containing ( containi	es a GBC packet from ItsNodeE to link-layer broadcast address TrafficClass.SCF set to 1 GBC Extended Header ng DestinationArea cating AREA1
the IUT starts t the IUT re-broa	the GBC packet into the CBF buffer and he contention timer set to CBF_MAX and adcasts the received GBC packet of the contention timer

TP ld	TP/GEONW/PON/GBC/AREA/ADV/BV-23
Test objective	Check that a received GBC packet is discarded if received more than MAX_COUNTER times
	when IUT is inside the destination area
Reference	ETSI EN 302 636-4-1 [1], clause F.4
Config Id	CF06
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'ADVANCED'
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having rece	eived Beacon information from ItsNodeB and
the IUT having rece	eived Beacon information from ItsNodeF and
the IUT having rece	eived a GBC packet GBC1 from ItsNodeF
	ficClass.SCF set to 1
	CExtended Header
containing E	DestinationArea
indicatin	g AREA1
the IUT having sav	ed the packet into CBF buffer
the IUT having rece	eived MAX_COUNTER - 1 times the GBC1 packet
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	s the same GBC packet GBC1
}	
then {	
	is GBC1 from the CBF buffer
the IUT discard	s the new received GBC packet
}	
}	

TP ld	TP/GEONW/PON/GBC/AREA/ADV/BV-24
Test objective	Check that a received GBC packet is discarded if received more than once when IUT is inside
	the destination area and inside the sectorial area of the GBC packet Sender
Reference	ETSI EN 302 636-4-1 [1], clause F.4
Config Id	CF05
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'ADVANCED'
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having rece	eived Beacon information from ItsNodeB and
	eived Beacon information from ItsNodeE and
	eived a GBC packet GBC1 from ItsNodeB
	ficClass.SCF set to 1
	Extended Header
	DestinationArea
	g AREA1
	ed the packet into CBF buffer
}	
,	Expected behaviour
ensure that {	•
when {	
	s the same GBC packet GBC1 from ItsNodeE
	e the sectorial area of ItsNodeB
}	
, then {	
	s GBC1 from the CBF buffer
	s the new received GBC packet
}	
\ '	
J	

TP ld	TP/GEONW/PON/GBC/AREA/ADV/BV-25
Test objective	Check that a received GBC packet is triggering contention if received more than once when IUT
	is inside the destination area and outside the sectorial area of the GBC packet Sender
	(Angle_FSR > Angle_TH)
Reference	ETSI EN 302 636-4-1 [1], clause F.4
Config Id	CF06
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'ADVANCED'
	Initial conditions
with {	
the IUT being in th	ne "initial state" and
the IUT having rec	ceived Beacon information from ItsNodeB and
the IUT having rec	ceived Beacon information from ItsNodeF and
the IUT having rec	ceived a GBC packet GBC1 from ItsNodeB
containing Tra	fficClass.SCF set to 1
containing GB	C Extended Header
containing	DestinationArea
indicati	ng AREA1
the IUT having sa	ved the packet into CBF buffer
}	
•	Expected behaviour
ensure that {	÷
when {	
the IUT receive	es the same GBC packet GBC1 from ItsNodeF
the IUT is outs	side the sectorial area of ItsNodeB
}	
then {	
the IUT saves	the GBC packet into the CBF buffer and
	the contention timer and
the IUT re-broa	adcasts the received GBC packet
upon expir	y of the contention timer
}	
}	
NOTE: In this conf	figuration IUT is outside sectorial area of ItsNodeB because of the Angle_FSR.

TP ld	TP/GEONW/PON/GBC/AREA/ADV/BV-26
Test objective	Check that a received GBC packet is triggering contention if received more than once when IUT
	is inside the destination area and outside the sectorial area of the GBC packet Sender
	(Dist_R > Dist_F)
Reference	ETSI EN 302 636-4-1 [1], clause F.4
Config Id	CF07
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'ADVANCED'
	Initial conditions
with {	
the IUT being in th	ie "initial state" and
the IUT having rec	eived Beacon information from ItsNodeB and
the IUT having rec	eived Beacon information from ItsNodeD and
the IUT having rec	eived a GBC packet GBC1 from ItsNodeB
containing Tra	fficClass.SCF set to 1
containing GB	C Extended Header
containing	DestinationArea
indicati	ng AREA1
the IUT having sav	ved the packet into CBF buffer
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	es the same GBC packet GBC1 from ItsNodeD
the IUT is outs	ide the sectorial area of ItsNodeB
}	
then {	
the IUT saves	the GBC packet into the CBF buffer and
	the contention timer and
	adcasts the received GBC packet
upon expir	/ of the contention timer
}	
}	
NOTE: In this conf	iguration IUT is outside sectorial area of ItsNodeB because of dist_R > dist_F.

TP ld	TP/GEONW/PON/GBC/AREA/ADV/BV-27	
Test objective	Check that a received GBC packet with Unicast MAC destination is triggering line forwarding if	
	received for the first time when IUT is inside the destination area	
Reference	ETSI EN 302 636-4-1 [1], clause F.4	
Config Id	CF05	
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'ADVANCED'	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having rec	eived Beacon information from ItsNodeB and	
the IUT having rec	the IUT having received Beacon information from ItsNodeE	
}		
-	Expected behaviour	
ensure that {		
when {		
the IUT receive	s a GBC packet from ItsNodeE addressed to IUT's link-layer address	
containing	FrafficClass.SCF set to 1	
	GBC Extended Header	
	ng DestinationArea	
indicating AREA1		
}	5	
then {		
	ItsNodeB as the next hop ITS station and	
	the IUT forwards the GBC packet	
}		
}		
<u>,</u>		

TP ld	TP/GEONW/PON/GBC/AREA/ADV/BV-28
Test objective	Check that a received GBC packet with Unicast MAC destination is triggering rebroadcast if
	received for the first time when IUT is inside the destination area
Reference	ETSI EN 302 636-4-1 [1], clause F.4
Config Id	CF05
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'ADVANCED'
	Initial conditions
with {	
the IUT being in th	e "initial state" and
	eived Beacon information from ItsNodeB and
the IUT having rec	eived Beacon information from ItsNodeE
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	es a GBC packet from ItsNodeE addressed to IUT's link-layer address
containing -	TrafficClass.SCF set to 1
containing (	GBC Extended Header
containi	ng DestinationArea
indic	cating AREA1
}	
then {	
	he GBC packet into the CBF buffer and
	he contention timer set to CBF_MAX and
the IUT re-broadcasts the received GBC packet	
upon expiry	of the contention timer
}	
}	

TP Id	TP/GEONW/PON/GBC/AREA/ADV/BV-29	
Test objective	Check that a received GBC packet with Broadcast destination is triggering contention if received	
	for the first time from known sender when IUT is inside the destination area	
Reference	ETSI EN 302 636-4-1 [1], clause F.4	
Config Id	CF05	
PICS Selection	PICS_GN_GBC_FWD AND PICS_GN_AREA_FORWARDING_ALGORITHM == 'ADVANCED'	
	Initial conditions	
with {		
the IUT being in the		
	eived Beacon information from ItsNodeB and	
the IUT having rece	the IUT having received Beacon information from ItsNodeE	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT receive	s a GBC packet from ItsNodeB	
addressed t	o broadcast link-layer address	
containing T	rafficClass.SCF set to 1	
containing GBC Extended Header		
containing DestinationArea		
indicating AREA1		
}		
then {		
	tes and starts the contention timer and	
the IUT re-broadcasts the received GBC packet		
	upon expiry of the contention timer	
}		
3		
J		

## 6.2.2.10 Topologically Scoped Broadcast

TP Id	TP/GEONW/PON/TSB/BV-01
Test objective	Check that a TSB request over upper Gn SAP triggers the origination of a TSB packet
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.9.2
Config Id	CF02
PICS Selection	PICS_GN_TSB_SRC
	Initial conditions
with {	
the IUT being in th	e "initial state" and
the IUT having rec	eived Beacon information from ItsNodeB and
	eived Beacon information from ItsNodeD
}	
	Expected behaviour
ensure that {	
when {	
the IUT is requ	ested to send a TSB packet
}	
then {	
the IUT broadc	asts a TSB packet
}	
3	

TP ld	TP/GEONW/PON/TSB/BV-02
Test objective	
	Check that a received TSB packet is triggering re-broadcasting if received for the first time
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.9.3
Config Id	CF02
PICS Selection	PICS_GN_TSB_FWD
	Initial conditions
with {	
the IUT beina in th	e "initial state" and
0	eived Beacon information from ItsNodeD and
	eived Beacon information from ItsNodeB
1 and rot having roo	
]	Expected behaviour
ensure that {	
when {	
•	es a TSB packet
	Basic Header
	ing RHL field
indic	cating HL1 higher than 1
}	
then {	
the IUT re-broa	adcasts the TSB packet
}	
s í	

TP ld	TP/GEONW/PON/TSB/BV-03
Test objective	Check that the protocol header fields (RHL) are correctly updated during a TSB re-broadcasting
-	step
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.9.3
Config Id	CF02
PICS Selection	PICS_GN_TSB_FWD
	Initial conditions
with {	
	he "initial state" and
	ceived Beacon information from ItsNodeD and
the IUT having re	ceived Beacon information from ItsNodeB
}	Expected behaviour
ensure that {	
when {	
	ves a TSB packet
	Basic Header
	ning RHL field
	icating HL1
	Common Header
	ning MHL field
indi	icating value MHL1
}	
then {	
	adcasts the TSB packet
	Basic Header
	ning RHL field
	icating value (HL1 -1)
	Common Header
	ning MHL field
ina.	icating value MHL1
} 1	
[	
<b>TD</b> · · ·	
TP ld	TP/GEONW/PON/TSB/BO-04
Test objective	Check that the RHL restriction is correctly handled at a TSB re-broadcasting step

I P Ia	IPIG IP/GEONW/PON/ISB/BO-04	
Test objective	Check that the RHL restriction is correctly handled at a TSB re-broadcasting step	
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.9.3	
Config Id	CF02	
PICS Selection	PICS_GN_TSB_FWD	
	Initial conditions	
with {		
the IUT being in the	e "initial state"	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT receives	s a TSB packet	
containing B	Basic Header	
containir	ng RHL field	
indica	ating 1	
}		
then {		
the IUT does no	ot re-broadcast the TSB packet	
}		
}		

TP Id	TP/GEONW/PON/TSB/BV-05
Test objective	Check that a received TSB packet is passed over the Gn SAP to the correct upper protocol if it
	is received for the first time
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.9.3
Config Id	CF01
PICS Selection	PICS_GN_TSB_DST
	Initial conditions
with {	
the IUT being in th	ie "initial state"
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	es a TSB packet
}	
then {	
the IUT passes	s the received TSB packet to the correct Upper Layer
}	
}	

TDIA	
TP Id	TP/GEONW/PON/TSB/BO-07
Test objective	Check that a received TSB packet is not triggering re-broadcasting if received twice or more
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.9.3
Config Id	CF02
PICS Selection	PICS_GN_TSB_FWD
	Initial conditions
with {	
	ne "initial state" and
	ceived Beacon information from ItsNodeD and
	ceived Beacon information from ItsNodeB and
	ceived a TSB packet from ItsNodeB
containing Bas	
containing	
	ng HL1 higher than 1
	B Extended Header
containing	
	ng value SN1 and
the IUT naving re-	broadcast the TSB packet
5	Expected behaviour
ensure that {	
when {	
the IUT receive	es the same TSB packet from ItsNodeD
	Basic Header
	ing RHL field
	cating HL1 - 1
	TSB Extended Header
	ing SN field
indi	cating value SN1
}	
then {	
the IUT does n	not re-broadcast the TSB packet
}	
, <i>-</i>	

TP Id	TP/GEONW/PON/TSB/BO-08
Test objective	Check that a received TSB packet is not passed over the Gn SAP if it is received twice or more
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.9.3
Config Id	CF02
PICS Selection	PICS_GN_TSB_DST
	Initial conditions
with {	
the IUT being in the	e "initial state" and
	eived a TSB packet from ItsNodeB
containing Basi	c Header
containing F	
	g HL1 higher than 1
	Extended Header
containing S	
	g value SN1 and
the IUT having pas	sed the received TSB packet to the correct Upper Layer
}	
	Expected behaviour
ensure that {	
when {	
	s the same TSB packet from ItsNodeD
	Basic Header
	ng RHL field
	ating HL1 - 1
	SB Extended Header
	ng SN field
indic	ating value SN1
}	
then {	
the IUT does no	ot pass the received TSB packet to any Upper Layer
}	
}	

## 6.2.2.11 Single-Hop Broadcast

r	r
TP ld	TP/GEONW/PON/SHB/BV-01
Test objective	Check that a SHB request over upper Gn SAP triggers the origination of a SHB packet
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.10.2
Config Id	CF02
PICS Selection	PICS_GN_SHB_SRC
	Initial conditions
with {	
the IUT being in th	e "initial state" and
the IUT having rec	eived Beacon information from ItsNodeD and
the IUT having rec	eived Beacon information from ItsNodeB
}	
-	Expected behaviour
ensure that {	
when {	
the IUT is requ	ested to send a SHB packet
}	
then {	
the IUT broadd	asts the SHB packet
}	
}	

TP Id	TP/GEONW/PON/SHB/BV-05
Test objective	Check that a received SHB packet is passed over the Gn SAP to the correct upper protocol if it
-	is received for the first time
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.10.3
Config Id	CF01
PICS Selection	PICS_GN_SHB_DST
	Initial conditions
with { the IUT being in th }	ne "initial state"
,	Expected behaviour
ensure that { when {	·
}	es a SHB packet
then { the IUT passes } }	s the received SHB packet to the Upper Layer

## 6.2.2.12 GeoAnycast

#### 6.2.2.12.1 Non-Area Forwarding

#### 6.2.2.12.1.1 All forwarding algorithms

<b>TD !!</b>	
TP ld	TP/GEONW/PON/GAC/NONAREA/ALL/BV-03
Test objective	Check that the protocol header fields (RHL) are correctly updated during a GAC forwarding step
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.6.3 and 10.3.12.3
Config Id	CF03
PICS Selection	PICS_GN_GAC_FWD
	Initial conditions
with {	
the IUT being in th	
Ũ	eived Beacon information from ItsNodeB
the IUT having rec	eived Beacon information from ItsNodeC
}	
	Expected behaviour
ensure that {	
when {	
	es a GAC packet from ItsNodeC
	TrafficClass.SCF set to 1
	Basic Header
	ng RHL field
	cating value HL1 higher than 1
	Common Header ng MHL field
	cating value MHL1
	DestinationArea
	ng AREA2
}	
then {	
	mits the GAC packet
	Basic Header
	ng RHL field
	cating value (HL1 - 1)
	Common Header
	ng MHL field
	cating value MHL1
	DestinationArea
	ng AREA2
}	
}	

TP ld	TP/GEONW/PON/GAC/NONAREA/ALL/BO-04
Test objective	Check that the RHL restriction is correctly handled at a GAC forwarding step
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.12.3
Config Id	CF03
PICS Selection	PICS_GN_GAC_FWD
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having rece	eived Beacon information from ItsNodeB
	eived Beacon information from ItsNodeC
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	s a GAC packet from ItsNodeC
containing T	FrafficClass.SCF set to 1
containing E	Basic Header
	ng RHL field
	ating 1
containing C	GAC Extended Header
	ng DestinationArea
indic	ating AREA2
}	
then {	
the IUT does no	pt retransmit the GAC packet
}	
1	

TP ld	TP/GEONW/PON/GAC/NONAREA/ALL/BV-06
Test objective	Check that a received GAC packet is not passed over the Gn SAP if it is received for the first
	time outside the GAC destination area
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.12.3
Config Id	CF01
PICS Selection	PICS_GN_GAC_FWD
	Initial conditions
with {	
the IUT being in th	e "initial state"
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	es a GAC packet from ItsNodeB
	TrafficClass.SCF set to 1
5	DestinationArea
•	g AREA2
}	
, then {	
	ot pass the received GAC packet to any Upper Layer
1	
1	

TP Id	TP/GEONW/PON/GAC/NONAREA/ALL/BO-09
Test objective	Check that a received GAC packet is discarded when indicating a too big GeoArea
Reference	ETSI EN 302 636-4-1 [1], clause B.3
Config Id	CF04
PICS Selection	PICS_GN_GAC_FWD
	Initial conditions
the IUT having rec	ne "initial state" and ceived Beacon information from ItsNodeB and ceived Beacon information from ItsNodeD
,	Expected behaviour
containing containing indication } then {	es a GAC packet from ItsNodeC TrafficClass.SCF set to 1 DestinationArea ng a geoArea bigger than itsGnMaxGeoAreaSize
the IUT does r } }	ot retransmit the received GAC packet

TP ld	TP/GEONW/PON/GAC/NONAREA/ALL/BV-10
Test objective	Check that a received GAC packet from inside the destination area is discarded if received for
	the first time from a known sender when IUT is outside the destination area
Reference	ETSI EN 302 636-4-1 [1], annex D
Config Id	CF04
PICS Selection	PICS_GN_GBC_FWD
	Initial conditions
with {	
the IUT being in the	e "initial state" and
	eived Beacon information from ItsNodeB and
	eived Beacon information from ItsNodeC and
the IUT having rece	eived Beacon information from ItsNodeD
}	
	Expected behaviour
ensure that {	
when {	
	s a GAC packet from ItsNodeD
	TrafficClass.SCF set to 1
•	GAC Extended Header
	ng DestinationArea
indic	ating AREA2
}	
then {	
the IUT discard	s the received GAC packet
}	
}	

6.2.2.12.1.2	Greedy forwarding
TP ld	TP/GEONW/PON/GAC/NONAREA/GRD/BV-01
Test objective	Check that a GAC request over upper Gn SAP triggers line forwarding if the IUT is outside the Destination Area
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.12.2 and E.2
Config Id	CF02
PICS Selection	PICS_GN_GAC_SRC AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')
	Initial conditions
with { the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeD and the IUT having received Beacon information from ItsNodeB	
}	Expected behaviour
oncure that (	
ensure that { when {	
the IUT is requested to send a GAC packet containing TrafficClass.SCF set to 1 containing DestinationArea indicating AREA2	
} then {	
the IUT selects ItsNodeB as the next hop and the IUT sends the GAC packet (see note) containing DestinationArea indicating AREA2	
}	
NOTE: Next hop I	TS Station being identified by the MAC layer address of ItsNodeB.

TP ld	TP/GEONW/PON/GAC/NONAREA/GRD/BV-02	
Test objective	Check that a received GAC packet is triggering line forwarding if received out of its destination	
	area for the first time	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.12.3 and E.2	
Config Id	CF04	
PICS Selection	PICS_GN_GAC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')	
	Initial conditions	
with {		
the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB the IUT having received Beacon information from ItsNodeD		
}	Expected behaviour	
ensure that {		
when {		
•	a CAC packet from ItaNadaC	
	s a GAC packet from ItsNodeC	
	containing TrafficClass.SCF set to 1	
containing DestinationArea		
indicating AREA2		
}		
then {		
the IUT selects ItsNodeB as the next hop and		
the IUT forwards the GAC packet (see note)		
}		
}		
NOTE: Next hop ITS	NOTE: Next hop ITS Station being identified by the MAC layer address of ItsNodeB.	

TP ld	TP/GEONW/PON/GAC/NONAREA/GRD/BO-07	
Test objective	Check that a received GAC packet is not triggering line forwarding if received out of its	
	destination area twice or more	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.12.3 and E.2	
Config Id	CF04	
PICS Selection	PICS_GN_GAC_FWD AND (PICS_GN_NON_AREA_FORWARDING_ALGORITHM ==	
	'GREEDY' OR PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'UNSPECIFIED')	
	Initial conditions	
with {		
the IUT being in th		
	eived Beacon information from ItsNodeB	
	eived Beacon information from ItsNodeD	
	eived a GAC packet from ItsNodeC	
	ficClass.SCF set to 1	
containing Bas		
containing		
	indicating value HL1 higher than 1	
containing GAC Extended Header		
containing SN field		
indicating value SN1 and		
containing DestinationArea		
	ng AREA2	
the IUT having for	warded the GAC packet	
}	Expected behaviour	
ensure that {		
when {		
	es the same GAC packet from other neighbour	
	containing Basic Header	
containing RHL field		
indicating value lower than HL1		
containing GAC Extended Header		
containing SN field		
indicating value SN1		
}		
then {		
the IUT does not forward the received GAC packet		
}		
}	}	
J		

6.2.2.12.1.3	Contention-based forwarding	
TP ld	TP/GEONW/PON/GAC/NONAREA/CBF/BV-01	
Test objective	Check that a GAC request over upper Gn SAP triggers immediate broadcasting of a GAC	
	packet if the IUT is outside the Destination Area	
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.12.2	
Config Id	CF02	
PICS Selection	PICS_GN_GAC_SRC AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'	
	Initial conditions	
with {     the IUT being in the "initial state" and     the IUT having received Beacon information from ItsNodeD and     the IUT having received Beacon information from ItsNodeB		
	Expected behaviour	
ensure that {     when {         the IUT is requested to send a GAC packet             containing TrafficClass.SCF set to 1             containing DestinationArea             indicating AREA2     }     then {         the IUT broadcasts immediately the GAC packet     } }		

TP Id TP/GEONW/PON/GAC/NONAREA/CBF/BV-02 Test objective Check that a received GAC packet is forwarded at the correct time according to the contention based forwarding rules Reference ETSI EN 302 636-4-1 [1], clauses 10.3.12.3 and E.3 Config Id CF03 **PICS Selection** PICS\_GN\_GAC\_FWD AND PICS\_GN\_NON\_AREA\_FORWARDING\_ALGORITHM == 'CBF' Initial conditions with { the IUT being in the "initial state" and the IUT having received Beacon information from ItsNodeB and the IUT having received Beacon information from ItsNodeC and the distance between IUT and ItsNodeA being less than itsGnDefaultMaxCommunicationRange MIB attribute **Expected behaviour** ensure that { when { the IUT receives a GAC packet addressed to ItsNodeA from ItsNodeC containing TrafficClass.SCF set to 1 containing Basic Header containing RHL field indicating value greater than 1 } , then { the IUT re-broadcasts the received GAC packet upon expiry of calculated CBF delay (see note) } NOTE: The CBF delay timer value is calculated from the itsGnDefaultMaxCommunicationRange, itsGnCbfMinTime, and itsGnCbfMaxTime MIB attributes, and the distance value between IUT and ItsNodeC.

TP Id	TP/GEONW/PON/GAC/NONAREA/CBF/BV-07	
Test objective	Check that GAC packet forwarding correctly avoids packet duplication according to the	
-	contention based forwarding rules	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.12.3 and E.3	
Config Id	CF03	
PICS Selection	PICS_GN_GAC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'	
	Initial conditions	
with {		
the IUT being in the		
0	ived Beacon information from ItsNodeB and	
	ived Beacon information from ItsNodeC and	
	en IUT and ItsNodeA being	
	GnDefaultMaxCommunicationRange MIB attribute and	
	the IUT having received a GAC packet addressed to ItsNodeA from ItsNodeC	
containing TrafficClass.SCF set to 1		
containing Basic Header		
containing RHL field		
indicating value greater than 1 and		
the IOT naving start	ted a CBF timer for this packet (see note)	
}	Expected behaviour	
ensure that {		
when {		
the IUT receives	the IUT receives the same GAC packet from ItsNodeB	
before expira	before expiration of the CBF timer	
}		
then {		
the IUT does not re-broadcast the GAC packet		
}		
}		
	lay timer value is calculated from the itsGnDefaultMaxCommunicationRange, itsGnCbfMinTime, fMaxTime MIB attributes, and the distance value between IUT and ItsNodeC.	

TP Id	TP/GEONW/PON/GAC/NONAREA/CBF/BV-20	
Test objective	Check that a received GAC packet forwarding is correctly handling the minimum delay value	
	according to the contention based forwarding rules	
Reference	ETSI EN 302 636-4-1 [1], clauses 10.3.12.3 and E.3	
Config Id	CF03	
PICS Selection	PICS_GN_GAC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'	
	Initial conditions	
with {		
the IUT being in th	e "initial state" and	
the IUT having rec	eived Beacon information from ItsNodeB and	
the IUT having rec	eived Beacon information from ItsNodeC and	
	en IUT and ItsNodeC being	
	itsGnDefaultMaxCommunicationRange MIB attribute	
}	5	
	Expected behaviour	
ensure that {		
when {		
the IUT receive	es a GAC packet addressed to ItsNodeA from ItsNodeC	
containing	containing TrafficClass.SCF set to 1	
	Basic Header	
	ng RHL field	
	indicating value greater than 1	
}		
then {		
the IUT re-broadcasts the received GAC packet		
upon expiry of itsGnCbfMinTime delay		
J J		
V		

TP ld	TP/GEONW/PON/GAC/NONAREA/CBF/BV-21	
Test objective	Check that a received GAC packet is forwarded at the correct time according to the contention	
	based forwarding rules if received for the first time when IUT is outside of the destination area	
	from an unknown sender	
Reference	ETSI EN 302 636-4-1 [1], clause E.3	
Config Id	CF04	
PICS Selection	PICS_GN_GAC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'	
	Initial conditions	
with {		
	ne "initial state" and	
	ceived Beacon information from ItsNodeB and	
the IUT not having	g received any message from ItsNodeD	
}		
	Expected behaviour	
ensure that {		
when {		
	es a GAC packet generated by ItsNodeC from ItsNodeD	
	TrafficClass.SCF set to 1	
	GAC Extended Header	
	ing DestinationArea	
indi	indicating AREA2	
}		
then {		
the IUT re-broadcasts the GAC packet		
upon expiry	y of CBF_MAX	
}		
}		

TP ld	TP/GEONW/PON/GAC/NONAREA/CBF/BV-22
Test objective	Check that a received GAC packet is forwarded at the correct time according to the contention
	based forwarding rules if received for the first time when IUT is outside of the destination area
	from a known sender having an uncertain position (PAI = 0)
Reference	ETSI EN 302 636-4-1 [1], clause E.3
Config Id	CF04
PICS Selection	PICS_GN_GAC_FWD AND PICS_GN_NON_AREA_FORWARDING_ALGORITHM == 'CBF'
	Initial conditions
with {	
the IUT being in the	e "initial state" and
the IUT having rece	eived Beacon information from ItsNodeB and
the IUT having rece	eived Beacon information from ItsNodeD
	con ExtendedHeader
containing S	
containir	
set to	o'O'
}	
	Expected behaviour
ensure that {	
when {	
	s a GAC packet generated by ItsNodeC from ItsNodeD
	TrafficClass.SCF set to 1
	GAC Extended Header
	ng DestinationArea
1 IIIUIC	ating AREA2
} then {	
	dcasts the GAC packet
	of CBF_MAX
apon expiry	
3	

TP ld	TP/GEONW/PON/GAC/AREA/ALL/BV-01	
Test objective	Check that indication GAC request over upper Gn SAP triggers broadcasting of a GAC packet if	
	the IUT is within the Destination Area	
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.12.2	
Config Id	CF02	
PICS Selection	PICS_GN_GAC_SRC	
	Initial conditions	
with {		
the IUT being in th	e "initial state" and	
the IUT having rec	eived Beacon information from ItsNodeD and	
the IUT having rec	the IUT having received Beacon information from ItsNodeB	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT is requ	ested to send a GAC packet	
	TrafficClass.SCF set to 1	
containing I	containing DestinationArea	
indicatir	ng AREA1	
}		
then {		
the IUT broadcasts immediately the GAC packet		
containing I	DestinationArea	
indicatir	ng AREA1	
}		
}		

TDL		
TP ld	TP/GEONW/PON/GAC/AREA/ALL/BV-02	
Test objective	Check that a received GAC packet is not triggering forwarding or re-broadcasting if the IUT is	
	within the Destination Area	
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.12.3	
Config Id	CF02	
PICS Selection	PICS_GN_GAC_FWD	
	Initial conditions	
with {		
the IUT being in the	e "initial state" and	
the IUT having rece	eived Beacon information from ItsNodeD and	
	eived Beacon information from ItsNodeB	
}		
	Expected behaviour	
ensure that {		
when {		
the IUT receive	s a GAC packet	
containing 1	FrafficClass.SCF set to 1	
	DestinationArea	
indicating AREA1		
}	5	
, then {		
the IUT does not retransmit the received GAC packet		
}		
<u>J</u>		

TP ld	TP/GEONW/PON/GAC/AREA/ALL/BV-05
Test objective	Check that a received GAC packet is passed over the Gn SAP to the correct upper protocol if it
-	is received for the first time within the GAC destination area
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.12.3
Config Id	CF01
PICS Selection	PICS_GN_GAC_DST
	Initial conditions
with {	
the IUT being in th	e "initial state"
}	
	Expected behaviour
ensure that {	
when {	
the IUT receive	es a GAC packet from ItsNodeB
containing	TrafficClass.SCF set to 1
containing	DestinationArea
indicating AREA1	
}	-
then {	
the IUT passes the received GAC packet to the correct Upper Layer	
}	
}	
<u>.</u>	

TP ld	TP/GEONW/PON/GAC/AREA/ALL/BO-08			
Test objective	Check that a received GAC packet is not passed over the Gn SAP if it is received twice or more			
Reference	ETSI EN 302 636-4-1 [1], clause 10.3.12.3			
Config Id	CF02			
PICS Selection	PICS_GN_GAC_DST			
	Initial conditions			
with {				
the IUT being in t	he "initial state" and			
the IUT having re	ceived a GAC packet from ItsNodeD			
	afficClass.SCF set to 1			
containing Ba				
containing				
indicating HL1				
	GAC Extended Header			
containing				
	ing value SN1 and			
containing	DestinationArea			
indicat	ing AREA1 and			
indicat				
indicat	ing AREA1 and assed the received GAC packet to the correct Upper Layer			
indicat the IUT having pa }	ing AREA1 and			
indicat the IUT having pa }	ing AREA1 and assed the received GAC packet to the correct Upper Layer			
indicat the IUT having pa ensure that { when {	ing AREA1 and assed the received GAC packet to the correct Upper Layer			
indicat the IUT having pa ensure that { when { the IUT receiv	ing AREA1 and assed the received GAC packet to the correct Upper Layer Expected behaviour			
indicat the IUT having pa ensure that { when { the IUT receiv containing	ing AREA1 and assed the received GAC packet to the correct Upper Layer Expected behaviour res the same GAC packet from ItsNodeB			
indicat the IUT having pa ensure that { when { the IUT receiv containing contain	ing AREA1 and assed the received GAC packet to the correct Upper Layer Expected behaviour res the same GAC packet from ItsNodeB Basic Header			
indicat the IUT having pa ensure that { when { the IUT receiv containing contain ind	ing AREA1 and assed the received GAC packet to the correct Upper Layer Expected behaviour res the same GAC packet from ItsNodeB Basic Header hing RHL field			
indicat the IUT having pa ensure that { when { the IUT receiv containing contain ind containing	ing AREA1 and assed the received GAC packet to the correct Upper Layer Expected behaviour res the same GAC packet from ItsNodeB Basic Header hing RHL field icating value lower than HL1			
indicat the IUT having pa } ensure that { when { the IUT receiv containing contain ind containing contain	ing AREA1 and assed the received GAC packet to the correct Upper Layer Expected behaviour res the same GAC packet from ItsNodeB Basic Header hing RHL field icating value lower than HL1 GAC Extended Header			
indicat the IUT having pa } ensure that { when { the IUT receiv containing contain ind containing contain	ing AREA1 and assed the received GAC packet to the correct Upper Layer Expected behaviour res the same GAC packet from ItsNodeB Basic Header hing RHL field icating value lower than HL1 GAC Extended Header hing SN field			
indicat the IUT having pa } ensure that { when { the IUT receiv containing contain ind containing contain ind } then {	ing AREA1 and assed the received GAC packet to the correct Upper Layer Expected behaviour res the same GAC packet from ItsNodeB Basic Header hing RHL field icating value lower than HL1 GAC Extended Header hing SN field icating value SN1			
indicat the IUT having pa } ensure that { when { the IUT receiv containing contain ind containing contain ind } then {	ing AREA1 and assed the received GAC packet to the correct Upper Layer Expected behaviour res the same GAC packet from ItsNodeB Basic Header ning RHL field icating value lower than HL1 GAC Extended Header ning SN field			
indicat the IUT having pa } ensure that { when { the IUT receiv containing contain ind containing contain ind } then {	ing AREA1 and assed the received GAC packet to the correct Upper Layer Expected behaviour res the same GAC packet from ItsNodeB Basic Header hing RHL field icating value lower than HL1 GAC Extended Header hing SN field icating value SN1			

## 6.2.3 Buffer Capacities

#### 6.2.3.1 Location Service

TP ld	TP/GEONW/CAP/LOS/BV-01				
Test objecti	Check of LS buffer capacity according to itsGnLocationServicePacketBufferSize parameter and				
the overflow handling procedure					
Reference					
Config Id	CF01				
PICS Selecti	PICS GN LS REQ SRC				
1100 001001					
with {					
	the IUT being in the "initial state" and				
	ng no Location Table Entry for ItsNodeA and				
the IUT having received Beacon information from ItsNodeB and					
	the IUT having been requested to send multiple GUC packets to ItsNodeA				
containir	containing TrafficClass.SCF set to 1 and				
the IUT havi	ng sent a LS_REQUEST packet and				
	naving received a LS_REPLY packet				
}					
	Expected behaviour				
ensure that {					
when {					
	s requested to send a GUC packet to ItsNodeA				
	containing TrafficClass.SCF set to 1 and				
the locat	the location service buffer capacity exceeded (see note 1)				
}					
then {					
	the IUT removes the older packet(s) in the location service buffer and,				
the IUT i	nserts the new received packet at the end of the location service buffer (see note 2)				
}					
}					
	amount of stored data exceeds Location Service buffer capacity defined by the				
	LocationServicePacketBufferSize MIB parameter.				
NOTE 2: Buffe	DTE 2: Buffered packets will be delivered upon reception of LS_REPLY message.				

TP Id	TP/GEONW/CAP/FPB/BV-01					
Test objective	Check of UC forwarding buffer capacity according to itsGnUcForwardingPacketBufferSize					
	parameter and the overflow handling procedure					
Reference	ETSI EN 302 636-4-1 [1], clause 8.5.3					
Config Id	CF03					
PICS Selection						
	Initial conditions					
with {						
the IUT being in the						
the IUT having no I	the IUT having no Location Table Entry for ItsNodeB and					
the IUT having received multiple GUC packets addressed to ItsNodeA from ItsNodeC						
containing Traff	containing TrafficClass.SCF set to 1					
}						
	Expected behaviour					
ensure that {						
when {						
	s a GUC packet addressed to ItsNodeA from ItsNodeC					
	rafficClass.SCF set to 1					
0	containing Basic Header					
	containing RHL field					
indicating HL1 higher than 1						
	ng packet buffer capacity exceeded (see note 1)					
}						
	then {					
	the IUT removes the older packet(s) in the UC forwarding packet buffer and, the IUT inserts the new received GUC packet at the end of the UC forwarding packet buffer (see note 2)					
ine io rinseris	the new received GOC packet at the end of the OC forwarding packet buller (see note 2)					
1						
NOTE 1: The amount	of stored data exceeds UC forwarding packet capacity defined by the					
	wardingPacketBufferSize MIB parameter.					
	OTE 2: Buffered packets will be delivered upon reception of Beacon message from ItsNodeB.					
Dulleleu pa	shots will be delivered upon reception of Dedeen message non-nanodeb.					

## 6.2.3.2 Forwarding Packet Buffer

TP ld	TP/GEONW/CAP/FPB/BV-02			
Test objective	Check of BC forwarding buffer capacity according to itsGnBcForwardingPacketBufferSize			
parameter and the overflow handling procedure				
Reference	ETSI EN 302 636-4-1 [1], clause 8.5.3			
Config Id	CF03			
PICS Selection	PICS_GN_GBC_FWD			
Initial conditions				
with {				
the IUT being in the				
the IUT having no Location Table Entry for ItsNodeB				
	eived multiple GBC packets			
containing TrafficClass.SCF set to 1				
	containing GBC Extended Header			
	containing GBC Destination Area			
indicating	g AREA2			
}				
1	Expected behaviour			
ensure that {				
when {				
the IUT receives				
	rafficClass.SCF set to 1			
containing GBC Extended Header				
containing GBC Destination Area				
indicating AREA2 and the BC forwarding packet buffer capacity exceeded (see note 1)				
}				
then {				
the IUT removes the older packet(s) in the BC forwarding packet buffer and,				
the IUT inserts the new received GBC packet at the end of the BC forwarding packet buffer (see note 2)				
}				
}				
NOTE 1: The amount	of stored data exceeds BC forwarding buffer capacity defined by the			
	vardingPacketBufferSize MIB parameter.			
	IOTE 2: Buffered packets will be delivered upon reception of Beacon message from ItsNodeB.			

# History

Document history					
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