

ETSI TS 103 683 V2.1.1 (2023-02)



**Mobile Standards Group (MSG);
Testing;
Next Generation eCall High Level Application Protocol (HLAP)
Interoperability Testing**



Reference

RTS/MSG-001132

Keywords

eCall, interoperability, testing

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

If you find a security vulnerability in the present document, please report it through our
Coordinated Vulnerability Disclosure Program:

<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2023.
All rights reserved.

Contents

Intellectual Property Rights	5
Foreword.....	5
Modal verbs terminology.....	5
1 Scope	6
2 References	6
2.1 Normative references	6
2.2 Informative references.....	7
3 Definition of terms, symbols and abbreviations.....	7
3.1 Terms.....	7
3.2 Symbols.....	8
3.3 Abbreviations	8
4 Conventions.....	9
4.1 Interoperability test process.....	9
4.1.1 Principles	9
4.1.2 The test description proforma	9
4.1.3 Interoperable Functions Statement	10
4.2 Tooling	11
4.3 Test Description naming convention	11
4.4 Test Summary	11
4.5 Overview of Related IVS Tests.....	13
5 Test Bed Architecture.....	13
5.1 Test site layout	13
5.2 NG eCall H LAP flow diagram	15
6 Test Configurations	17
6.0 Introduction	17
6.1 Home Interoperability Test Configuration	17
6.2 Home Interoperability Test Configuration with fallback to legacy eCall.....	18
6.3 Visited Interoperability Test Configuration	18
6.4 Multiple IVS Interoperability Test Configuration.....	19
6.5 Home Interoperability Test Configuration rerouting to another PSAP	19
6.6 Home Interoperability Test Configuration without VoIMS support	19
6.7 Home Interoperability Test Configuration with ESInet	20
6.8 Visited Interoperability Test Configuration with ESInet.....	20
6.9 Home Interoperability Test Configuration with TPSP	20
6.10 Default pre-test conditions	21
6.11 Interoperable Functions Statement (IFS).....	22
7 NG eCall test scenarios/descriptions	23
7.0 Introduction	23
7.1 Basic test scenarios.....	23
7.1.1 Initiation of manual eCall	23
7.1.2 Initiation of automatic eCall	24
7.1.3 Initiation of test eCall	24
7.1.4 MSD transfer to PSAP supporting IMS eCall.....	25
7.1.5 MSD transfer to PSAP supporting IMS eCall in a roaming scenario	25
7.1.6 PSAP initiated callback to IVS	26
7.1.7 PSAP initiated call clear-down	26
7.1.8 IVS initiated call clear-down not allowed.....	27
7.1.9 Verification of audio interfaces of IVS and PSAP.....	27
7.1.10 MSD update on request from PSAP	28
7.1.11 Void	28
7.1.12 Void	28
7.1.13 Format of encoded and decoded MSD in accordance with EN 15722:2015	28

7.1.14	Void	29
7.1.15	Negative acknowledgement for the initial MSD.....	29
7.1.16	Format of encoded and decoded MSD in accordance with EN 15722:2020	30
7.2	Advanced test scenarios	31
7.2.1	MSD transfer to PSAP supporting IMS eCall over IPv4.....	31
7.2.2	MSD transfer to PSAP supporting IMS eCall over IPv6.....	31
7.2.3	Void	31
7.2.4	MSD transfer to PSAP not supporting IMS eCall	32
7.2.5	IMS eCall establishment with IMS emergency registration	34
7.2.6	IMS eCall establishment without IMS emergency registration	36
7.2.7	IMS eCall establishment without IMS emergency registration GIBA supported.....	36
7.2.8	MSD transfer via in-band modem after negative acknowledgement for the MSD.....	37
7.2.9	MSD transfer via in-band modem after missing acknowledgement for the MSD	38
7.2.10	MSD transfer via in-band modem after missing MSD in INVITE request.....	39
7.2.11	MSD update during PSAP initiated callback.....	40
7.3	Advanced IVS test scenarios	43
7.3.1	Fallback to legacy eCall following busy during call setup	43
7.3.2	Fallback to legacy eCall following unavailable response during call setup.....	45
7.3.3	Fallback to legacy eCall following no-answer during call setup	46
7.3.4	Dropped eCall after MSD has been acknowledged	48
7.3.5	Dropped eCall before call has been established - reattempt to CS	49
7.3.6	IVS configured for 'eCall only' service (restricted)	50
7.3.7	eCall is attempted when no networks are available (limited service condition with forbidden PLMN on SIM/USIM).....	50
7.3.8	MSD transfer to PSAP supporting IMS eCall via PLMN without VoIMS support.....	51
7.3.9	Termination of manually triggered eCall by vehicle occupant	51
7.3.10	Termination of automatically triggered eCall by vehicle occupant not allowed/not possible	52
7.3.11	Ongoing eCall shall not be disconnected if new trigger is received	52
7.3.12	No fallback to legacy eCall following busy during call setup	53
7.3.13	No fallback to legacy eCall following unavailable response during call setup.....	54
7.3.14	Dropped eCall after call has been established - reattempt to PS.....	55
7.3.15	Dropped eCall before call has been established - reattempt to PS.....	56
7.3.16	Test eCall is not attempted when no networks are available (limited service condition with forbidden PLMN on SIM/USIM).....	56
7.3.17	Reattempt of eCall following no-answer during call setup.....	57
7.4	Advanced PSAP test scenarios	58
7.4.1	PSAP handling of more than one eCall simultaneously	58
7.4.2	PSAP correct MSD additional data decoding	58
7.4.3	Rerouting to another PSAP/emergency control centre	59
7.4.4	PSAP operator user interface	59
7.4.5	Invalid MSD	60
7.5	Advanced Tests for TPS.....	60
7.5.1	TPSP and rerouting to national PSAP.....	60
7.5.2	Conference call between TPS IVS, TPSP and national PSAP.....	61
Annex A (informative): Source code of MSC figures.....		62
A.1	Overview	62
History		63

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Mobile Standards Group (MSG).

Modal verbs terminology

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

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

1 Scope

The present document defines Interoperability Test Descriptions for the NG eCall High Level Application Protocol (HLAP).

2 References

2.1 Normative references

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

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

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

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

- [1] [ETSI TS 124 229](#) (V15.13.0): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229 version 15.13.0 Release 15)".
- [2] [ETSI TS 123 167](#) (V15.7.0): "Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS) emergency sessions (3GPP TS 23.167 version 15.7.0 Release 15)".
- [3] [ETSI TS 123 228](#) (V15.5.0): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS); Stage 2 (3GPP TS 23.228 version 15.5.0 Release 15)".
- [4] TS 17184:2022: "Intelligent transport systems - eSafety - eCall High level application Protocols (HLAP) using IMS packet switched networks", produced by CEN.
- [5] EENA Technical Committee Document: "Next Generation eCall".
- [6] [ETSI TS 123 401](#) (V15.12.0): "LTE; General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access (3GPP TS 23.401 version 15.12.0 Release 15)".
- [7] EN 16072:2022: "Intelligent transport systems - eSafety - Pan European eCall - Operating requirements", produced by CEN.
- [8] IETF RFC 8147: "Next-Generation Pan-European eCall".
- [9] [ETSI TS 103 428](#) (V1.2.2): "Mobile Standards Group (MSG); eCall HLAP Interoperability Testing".
- [10] EN 15722:2015: "Intelligent transport systems - ESafety - Ecall minimum set of data", produced by CEN, withdrawn.
- [11] [ETSI TS 122 101](#) (V15.7.0): "Universal Mobile Telecommunications System (UMTS); LTE; Service aspects; Service principles (3GPP TS 22.101 version 15.7.0 Release 15)".
- [12] EN 15722:2020: "Intelligent transport systems - ESafety - Ecall minimum set of data", produced by CEN.
- [13] prEN 17905:2022: "Intelligent transport systems - eSafety - eCall HLAP in hybrid Circuit Switched/Packet Switched network environments", produced by CEN.

- [14] EN 16102:2011: "Intelligent transport systems - eCall - Operating requirements for third party support", produced by CEN.
- [15] [ETSI TS 103 479](#) (V1.1.1): "Emergency Communications (EMTEL); Core elements for network independent access to emergency services".

2.2 Informative references

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

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

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

- [i.1] ETSI ETR 266: "Methods for Testing and Specification (MTS); Test Purpose style guide".
- [i.2] EN 16062:2022: "Intelligent Transport Systems - eSafety - eCall - High Level Application Requirements (HLAP)", produced by CEN.
- [i.3] ETSI EG 202 798 (V1.1.1): "Intelligent Transport Systems (ITS); Testing; Framework for conformance and interoperability testing".
- [i.4] [PlantUML](#): "PlantUML utility".

3 Definition of terms, symbols and abbreviations

3.1 Terms

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

base specification: specification of a protocol, telecommunication service, interface, abstract syntax, encoding rules, or information object

eCall: manually or automatically initiated emergency call, from a vehicle, supplemented with a Minimum Set of emergency related Data (MSD), as defined under the EU Commission's eSafety initiative

eCall Over IMS support (ECL): As indicated by the eCall support indicator defined in ETSI TS 123 401 [6].

implementation: instance of the reference specification for which conformity to that reference specification is claimed

IMS eCall: eCall deployed using IMS emergency call in 3GPP Release-14, instead of in-band modem and circuit switched 112

NOTE: This term is taken from EENA Technical Committee Document [5].

IMS Emergency Service support (EMS): IMS Emergency Services supported as indicated by Emergency Service Support indicator as defined in ETSI TS 123 401 [6].

in-band modem eCall: eCall deployed using in-band modem and circuit switched 112 according to EN 16062:2022 [i.2] and EN 16072:2022 [7]

NOTE: This term is based on definition in EENA Technical Committee Document [5].

IVS configured for eCall only service (restricted): eCall capable IVS that is not subscribed to other non-emergency services

NOTE: The IVS is not permitted to register on a PLMN except for the purpose of making an eCall, or a test/reconfiguration call to a designated non-emergency number, in accordance with ETSI TS 122 101 [11]. Following power-up the IVS may perform a PLMN search and maintain a list of available networks upon which to register, when an eCall or test/reconfiguration call is activated. Following an eCall or test/reconfiguration call, the IVS de-registers from the serving network within 12 hours.

IVS configured for eCall and other services (unrestricted): eCall capable IVS that has valid subscriptions to access other non-emergency services

NOTE: The IVS may register on a PLMN at any time and may remain registered on a serving network indefinitely.

Minimum Set of Data (MSD): data component of an eCall sent from a vehicle to a Public Safety Answering Point or other designated emergency call centre

NOTE: The MSD has a maximum size of 140 bytes and includes, for example, vehicle identity, location information and time-stamp, as defined in EN 15722:2015 [10].

Next Generation eCall (NG eCall): based on IMS eCall and offering data, multimedia and two-way data

NOTE: This term is based on the definition in EENA Technical Committee Document [5].

Plugtests: testing events, similar to a plugfest, developed and hosted by ETSI where the participants can test the interoperability or the conformance of their implementations

PSAP eCall Modem-server: PSAP equipment used to receive, validate and acknowledge the MSD sent from an IVS, to manage the voice call transfer to the PSAP operator and to facilitate callback to the vehicle

NOTE: The eCall modem-server may also support other functions.

reference specification: standard which provides a base specification, or a set of base specifications, or a profile, or a set of profiles, and for conformance to which the ICS proforma and test specifications are written

VoIMS: Voice over IMS over PS sessions support as indicated by IMS Voice over PS session supported indication as defined in ETSI TS 123 401 [6]

3.2 Symbols

Void.

3.3 Abbreviations

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

3GPP	Third Generation Partnership Project
ACK	ACKnowledgement
CEN	Comité Européen de Normalisation
CFG	ConFiGuration
CS	Circuit Switched
CSCF	Call Session Control Function
ECL	eCall Over IMS support
E-CSCF	Emergency CSCF
EMS	IMS Emergency Services
ESInet	Emergency Services IP network
ESRP	Emergency Service Routing Proxy
ETR	ETSI Technical Report
ETSI	European Telecommunications Standards Institute
EU	European Union
EUT	Equipment Under Test

E-UTRAN	Enhanced UMTS Terrestrial Radio Access Network
GIBA	GPRS-IMS-Bundled-Authentication
GSM	Global System of Mobile telecommunications
HLAP	High Level Application Protocol
HMI	Human Machine Interface
HPLMN	Home PLMN
HSS	Home Subscriber Server
I-CSCF	Interrogating CSCF
IFS	Interoperable Functions Statement
IFS_ID	IFS Identifier
IMS	IP Multimedia Subsystem
IMSI	International Mobile Subscriber Identity
IVS	In Vehicle System
LTE	Long Term Evolution
MNO	Mobile Network Operator
MSC	Message Sequence Chart
MSD	Minimum Set of Data
NG	Next Generation
P-CSCF	Proxy CSCF
PLMN	Public Land Mobile Network
PS	Packet Switched
PSAP	Public Safety Answering Point
S-CSCF	Serving CSCF
SIP	Session Initiation Protocol
TD	Test Description
TPS	Third Party Service
TPSP	Third Party Service Provider
TSD	TPS-eCall Set of Data
UML	Unified Modelling Language
UMTS	Universal Mobile Telecommunications System
URN	Unique Resource Name
USIM	UMTS Subscriber Identity Module
VoIMS	Voice over IMS
VoLTE	Voice over LTE
VPLMN	Visited PLMN

4 Conventions

4.1 Interoperability test process

4.1.1 Principles

The goal of interoperability tests is to check that devices resulting from protocol implementations are able to work together and provide the functionalities provided by the protocols. As necessary, one message may be checked during a test, for instance, when a successful functional verification may result from an incorrect behaviour. Detailed protocol checks are part of the conformance testing process and are thus avoided during the interoperability tests.

4.1.2 The test description proforma

The test descriptions are provided in proforma tables following the format described in ETSI EG 202 798 [i.3] and ETSI ETR 266 [i.1]. The following different test event types are considered during the test execution:

- A **stimulus** corresponds to an event that enforces an EUT to proceed with a specific protocol action, like sending a message, for instance.
- A **verify** consists of verifying that the EUT behaves according to the expected behaviour (for instance, the EUT behaviour shows that it receives the expected message).

- A **configure** corresponds to an action to modify the EUT configuration.
- A **check** ensures the receipt of protocol messages on reference points, with valid content. This "check" event type corresponds to the interoperability testing with the conformance check method.

4.1.3 Interoperable Functions Statement

The "Interoperable Functions Statement" (IFS) identifies the standardized functions of an EUT. These functions can be mandatory, optional or conditional (depending on other functions), and depend on the role played by the EUT.

The IFS can also be used as a pro-forma by a vendor to identify the functions that its EUT will support when interoperating with corresponding functions from other vendors.

Item column

The item column contains a number, which identifies the item.

Item description column

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

IFS ID column

The IFS ID column defines an identifier for this particular IFS item. The IFS ID is in the Test Description field "Applicability" to select/deselect the execution of a test.

Status column

The following notations are used for the status column:

m	mandatory - the capability is required to be supported.
o	optional - the capability may be supported or not.
n/a	not applicable - in the given context, it is impossible to use the capability.
x	prohibited (excluded) - there is a requirement not to use this capability in the given context.
o.i	qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies a unique group of related optional items and the logic of their selection, which is defined immediately following the table.
c.i	conditional - the requirement on the capability ("m", "o", "x" or "n/a") depends on the support of other optional or conditional items. "i" is an integer identifying a unique conditional status expression which is defined immediately following the table.
i	irrelevant (out-of-scope) - capability outside the scope of the reference specification. No answer is requested from the supplier.

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

Support column

The support column shall be filled in by the supplier of the implementation using the following notations:

Y or y	supported by the implementation.
N or n	not supported by the implementation.
N/A or n/a	no answer required (allowed only if the status is n/a, directly or after evaluation of a conditional status).

4.2 Tooling

Message monitoring solutions, including audio recording and event logging, where supported, may be used to facilitate the resolution of any interoperability and/or performance issues that may be encountered during interoperability testing.

4.3 Test Description naming convention

Table 1: TD naming convention

TD_<root>_[gr]_<nn>		
<root> = root applicability	BAS	Basic test
	ADV	Advanced test
[gr] = group	IVS	IVS eCall terminal
	PSAP	PSAP eCall server
		IVS or PSAP
<nn> = sequential number	01 to 99	Sequential numbers

4.4 Test Summary

The detailed test descriptions are defined in clause 7. It is recommended to conduct all test cases supported by PSAP and IVS. Some of the test cases require a fallback to CS (legacy) eCall. The interoperability test cases for CS domain are specified in ETSI TS 103 428 [9].

The test scenarios of the present document are split into 5 groups:

- 1) The basic scenarios, which shall be executed during all interoperability test sessions, covering the mandatory features of an NG eCall device (IVS and PSAP).
- 2) The advanced test scenarios, to do additional testing which goes beyond the basic test scenarios. These scenarios are focusing on IVS and PSAP features.
- 3) The advanced IVS test scenarios, to do additional testing which goes beyond the basic test scenarios. These scenarios are focusing only on IVS features.
- 4) The advanced PSAP test scenarios, to do additional testing which goes beyond the basic test scenarios. These scenarios are focusing only on PSAP features.
- 5) The advanced test scenarios for TPS, to do additional testing which goes beyond the basic test scenarios. These scenarios are focusing only on TPS features.

The basic test scenarios in Table 2 are foreseen to be executed during all interoperability test sessions, either with real IVS and PSAP but also with testing devices simulating an IVS or a PSAP.

Table 2: Basic Tests

Test case ID	Title
TD_BAS_01	Initiation of manual eCall
TD_BAS_02	Initiation of automatic eCall
TD_BAS_03	Initiation of test eCall
TD_BAS_04	MSD transfer to PSAP supporting IMS eCall
TD_BAS_05	MSD transfer to PSAP supporting IMS eCall in a roaming scenario
TD_BAS_06	PSAP initiated callback to IVS
TD_BAS_07	PSAP initiated call clear-down
TD_BAS_08	IVS initiated call clear-down not allowed
TD_BAS_09	Verification of audio interfaces of IVS and PSAP
TD_BAS_10	MSD update on request from PSAP
TD_BAS_11	Void
TD_BAS_12	Void
TD_BAS_13	Format of encoded and decoded MSD in accordance with EN 15722:2015 [10]
TD_BAS_14	Void
TD_BAS_15	Negative acknowledgement for the initial MSD
TD_BAS_16	Format of encoded and decoded MSD in accordance with EN 15722:2020 [12]

The advanced test scenarios in Tables 3, 4, 5 and 6 are foreseen to do additional testing which goes beyond the basic test scenarios.

Table 3: Advanced Tests for PSAP and IVS

Test case ID	Title
TD_ADV_01	MSD transfer to PSAP supporting IMS eCall over IPv4
TD_ADV_02	MSD transfer to PSAP supporting IMS eCall over IPv6
TD_ADV_03	Void
TD_ADV_04	MSD transfer to PSAP not supporting IMS eCall
TD_ADV_05	IMS eCall establishment with IMS emergency registration
TD_ADV_06	IMS eCall establishment without IMS emergency registration
TD_ADV_07	IMS eCall establishment without IMS emergency registration GIBA supported
TD_ADV_08	MSD transfer via in-band modem after negative acknowledgement for the MSD
TD_ADV_09	MSD transfer via in-band modem after missing acknowledgement for the MSD
TD_ADV_10	MSD transfer via in-band modem after missing MSD in INVITE request
TD_ADV_11	MSD update during PSAP initiated callback

Table 4: Advanced Tests for IVS

Test case ID	Title
TD_ADV_IVS_01	Fallback to legacy eCall following busy during call setup
TD_ADV_IVS_02	Fallback to legacy eCall following unavailable response during call setup
TD_ADV_IVS_03	Fallback to legacy eCall following no-answer during call setup
TD_ADV_IVS_04	Dropped eCall after MSD has been acknowledged
TD_ADV_IVS_05	Dropped eCall before call has been established - reattempt to CS
TD_ADV_IVS_06	IVS configured for 'eCall only' service (restricted)
TD_ADV_IVS_07	eCall is attempted when no networks are available (limited service condition with forbidden PLMN on SIM/USIM)
TD_ADV_IVS_08	MSD transfer to PSAP supporting IMS eCall via PLMN without VoIMS support
TD_ADV_IVS_09	Termination of manually triggered eCall by vehicle occupant
TD_ADV_IVS_10	Termination of automatically triggered eCall by vehicle occupant not allowed/not possible
TD_ADV_IVS_11	Ongoing eCall shall not be disconnected if new trigger is received
TD_ADV_IVS_12	No Fallback to legacy eCall following busy during call setup
TD_ADV_IVS_13	No Fallback to legacy eCall following unavailable response during call setup
TD_ADV_IVS_14	Dropped eCall after call has been established - reattempt to PS
TD_ADV_IVS_15	Dropped eCall before call has been established - reattempt to PS
TD_ADV_IVS_16	Test eCall is not attempted when no networks are available (limited service condition with forbidden PLMN on SIM/USIM)
TD_ADV_IVS_17	Reattempt of eCall following no-answer during call setup

Table 5: Advanced Tests for PSAP

Test case ID	Title
TD_ADV_PSAP_01	PSAP handling of more than one eCall simultaneously
TD_ADV_PSAP_02	PSAP correct MSD additional data decoding
TD_ADV_PSAP_03	Rerouting to another PSAP/emergency control centre
TD_ADV_PSAP_04	PSAP operator user interface
TD_ADV_PSAP_05	Invalid MSD

Table 6: Advanced Tests for TPS

Test case ID	Title
TD_ADV_TPS_01	TPSP and rerouting to national PSAP
TD_ADV_TPS_02	Conference call between TPS IVS, TPSP and national PSAP

4.5 Overview of Related IVS Tests

Table 7 provides an overview of related IVS tests. The tests on the left verify the IVS behaviour in case of a hybrid network environment (including the CS and PS domain) based on the current ETSI requirements, while the tests on the right side verify the IVS behaviour in case of a PS-only environment based on the updated CEN requirements in TS 17184:2022 [4].

Table 7: Related IVS Tests

ETSI (PS & CS domain)		CEN (PS domain)	
Test case ID	Configuration(s)	Test case ID	Configuration(s)
TD_ADV_IVS_01	NG_eCall_CFG_02	TD_ADV_IVS_12	NG_eCall_CFG_01 or NG_eCall_CFG_07
TD_ADV_IVS_02	NG_eCall_CFG_02	TD_ADV_IVS_13	NG_eCall_CFG_01 or NG_eCall_CFG_07
TD_ADV_IVS_03	NG_eCall_CFG_02	TD_ADV_IVS_17	NG_eCall_CFG_01 or NG_eCall_CFG_07
TD_ADV_IVS_05	NG_eCall_CFG_02	TD_ADV_IVS_15	NG_eCall_CFG_01 or NG_eCall_CFG_07

5 Test Bed Architecture

5.1 Test site layout

The generic test bed used to carry out interoperability tests, is summarized in the below Figure 1.

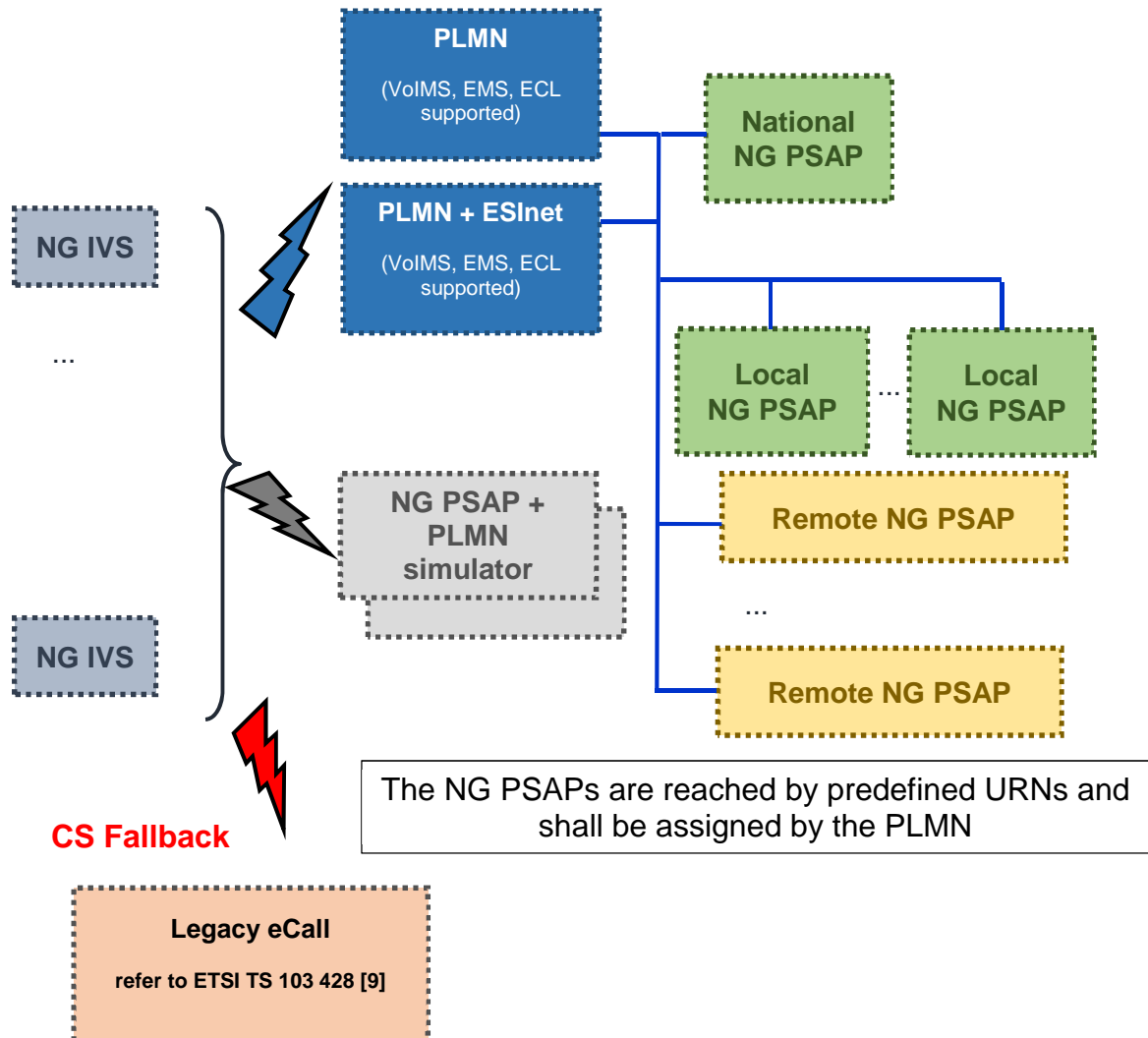


Figure 1: Architecture

In normal operation conditions, the NG IVS establishes an NG eCall via the correct URN. This call setting is then interpreted by the mobile network (PLMN) or combined network with PLMN and ESInet as a requirement to connect the NG IVS with the most appropriate NG PSAP, able to handle NG eCalls, accordingly to TS 17184:2022 [4]. ESInet and core elements for network independent access to emergency services are specified in ETSI TS 103 479 [15].

However, during an NG eCall interoperability event, an NG IVS needs to be connected to a given NG PSAP in order to carry out pairing test sessions, following the test scenarios provided in the present document. The selection of the NG PSAP is therefore achieved by the use of the pre-defined URNs (see Table 6), if supported (configured) by the PLMN operator.

For the purpose of carrying out tests under real conditions, different options are available:

- Using test systems providing PLMN and NG PSAP simulation (connection in shielded cases or via cable).
- Using different non-standardized URNs, if the local authorities do not allow using the standardized URNs connections and thus reaching the real PSAP.

Table 8: NG eCall Types and related URNs

NG eCall Type	NG eCall URNs IETF RFC 8147 [8]	Proposed Plugtests URNs
Manual	urn:service:sos.ecall.manual	urn:service:test.sos.ecall.manual.psap1 urn:service:test.sos.ecall.manual.psap2 .. urn:service:test.sos.ecall.manual.psapn
Automatic	urn:service:sos.ecall.automatic	urn:service:test.sos.ecall.automatic.psap1 urn:service:test.sos.ecall.automatic.psap2 .. urn:service:test.sos.ecall.automatic.psapn
Test	urn:service:test.sos.ecall	urn:service:test.sos.ecall.psap1 urn:service:test.sos.ecall.psap2 .. urn:service:test.sos.ecall.psapn
NOTE: Not every IVS may support proposed Plugtests URNs.		

5.2 NG eCall HLAP flow diagram

An NG IVS should register to the network by performing the attach procedure. NG IVS may perform IMS registration if used for other services than eCall. When NG eCall is triggered, an NG IVS will perform the IMS emergency registration procedure as shown in Figure 2.

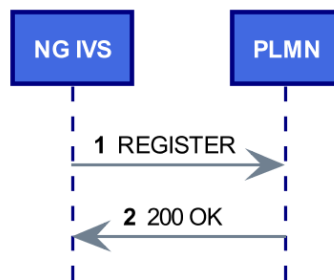


Figure 2: IMS emergency registration

- 1) NG IVS sends REGISTER to the PLMN.
- 2) NG IVS receives 200 OK from the PLMN.

After the IMS emergency registration procedure, the NG IVS initiates an IMS eCall, as shown in Figure 3.

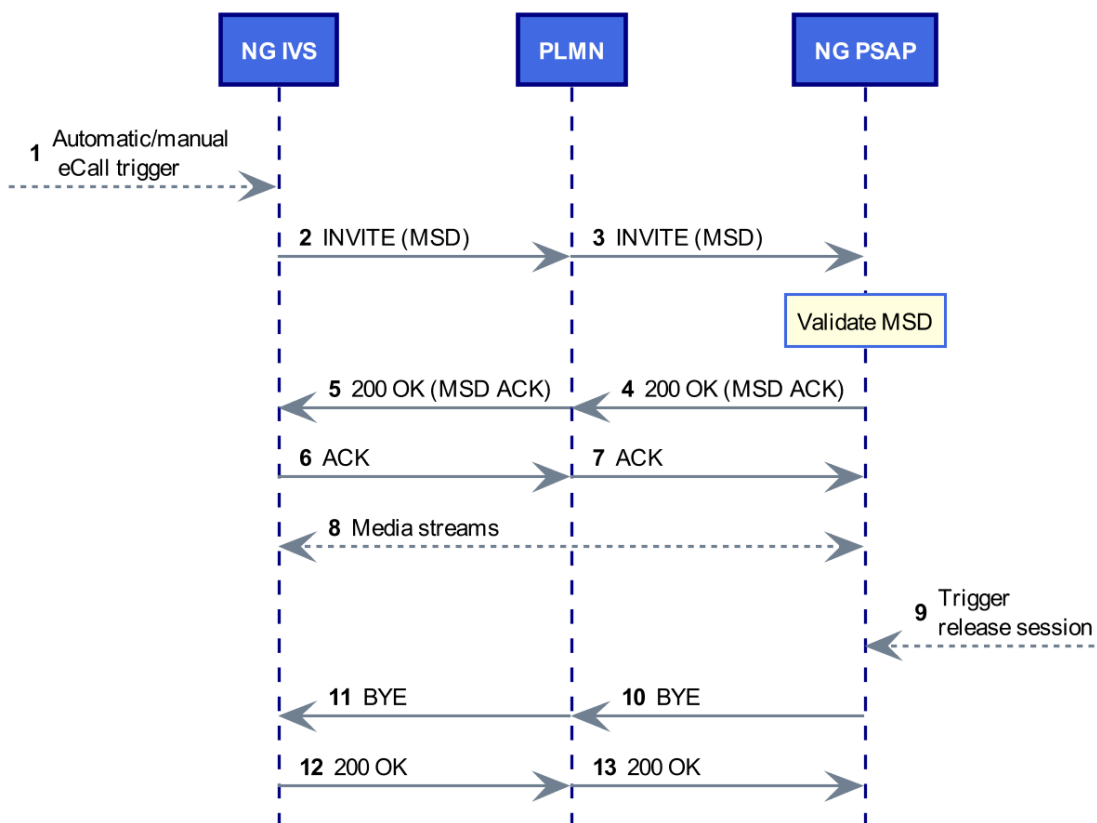


Figure 3: eCall session

- 1) The NG IVS receives a trigger to establish a manual or automatic NG eCall.
- 2) An initial emergency INVITE is sent to the PLMN. The INVITE shall contain the initial MSD and the eCall type of emergency service indicator (automatic, manual).
- 3) The PLMN network routes the INVITE towards the appropriate NG PSAP.
- 4) The NG PSAP verifies the correctness of the initial MSD and returns a 200 OK, which includes a positive or negative acknowledgement for the initial MSD.
- 5) The PLMN network sends the 200 OK to the NG IVS.
- 6) The NG IVS sends ACK for the 200 OK INVITE.
- 7) The NG PSAP receives ACK for the 200 OK INVITE from the PLMN.
- 8) The emergency call establishment is completed. The established media channel supports bidirectional voice communication.
- 9) Only the NG PSAP is able to release the session.
- 10) The NG PSAP sends BYE towards PLMN.
- 11) PLMN routes BYE towards NG IVS.
- 12) NG IVS confirms session release and sends the 200 OK BYE to the PLMN.
- 13) PLMN forwards 200 OK to the NG PSAP.

Figure 4 illustrates when 2-way-speech is established and during the call, the NG PSAP sends a request for an MSD update in an INFO request. The NG IVS sends the updated MSD in a new INFO request.

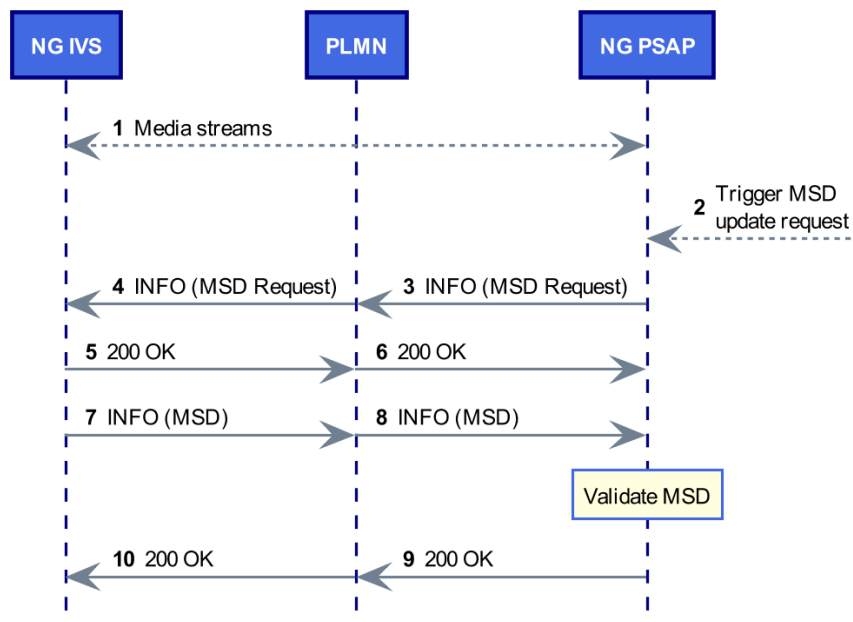


Figure 4: PSAP requests MSD update

- 1) The emergency call establishment is completed. The established media channel supports bidirectional voice communication.
- 2) NG PSAP triggers MSD update request.
- 3) NG PSAP sends a request for an MSD in an INFO request towards NG IVS.
- 4) NG IVS receives a request for an MSD update.
- 5) NG IVS confirms the reception of the request with 200 OK INFO.
- 6) NG PSAP receives 200 OK INFO.
- 7) NG IVS sends new INFO with updated MSD towards NG PSAP.
- 8) NG PSAP receives INFO with updated MSD and validates it.
- 9) NG PSAP sends 200 OK INFO.
- 10) The PLMN network routes the 200 OK INFO to the NG IVS.

6 Test Configurations

6.0 Introduction

The following clauses define multiple test configurations, which reflect the cases A and D from Table H.2 in ETSI TS 123 167 [2].

6.1 Home Interoperability Test Configuration

Interoperability tests will be performed using the setup shown in Figure 5. The HPLMN shall indicate support of Voice over IMS (VoIMS), IMS Emergency Services (EMS) and eCall Over IMS (ECL). Ancillary measurement and message logging devices are not shown but may be used, with the agreement of the participants, to help identify the likely cause of any interoperability test failures that may arise.

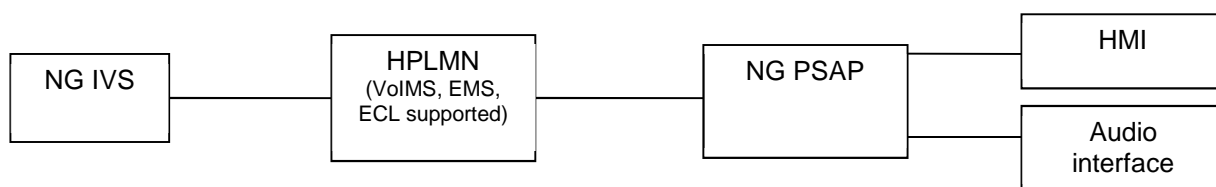


Figure 5: NG_eCall_CFG_01

NG IVS, HPLMN and NG PSAP can be either real devices or simulators. PSAP simulator is understood to be only simulating the PSAP connected to the public network with a fixed line connection (SIP trunk).

NOTE: To switch between NG_eCall_CFG_01 (Home) and NG_eCall_CFG_03 (Visited) configuration simply change the NG IVS USIM card.

6.2 Home Interoperability Test Configuration with fallback to legacy eCall

Interoperability tests will be performed using the setup shown in Figure 6. Ancillary measurement and message logging devices are not shown but may be used, with the agreement of the participants, to help identify the likely cause of any interoperability test failures that may arise.

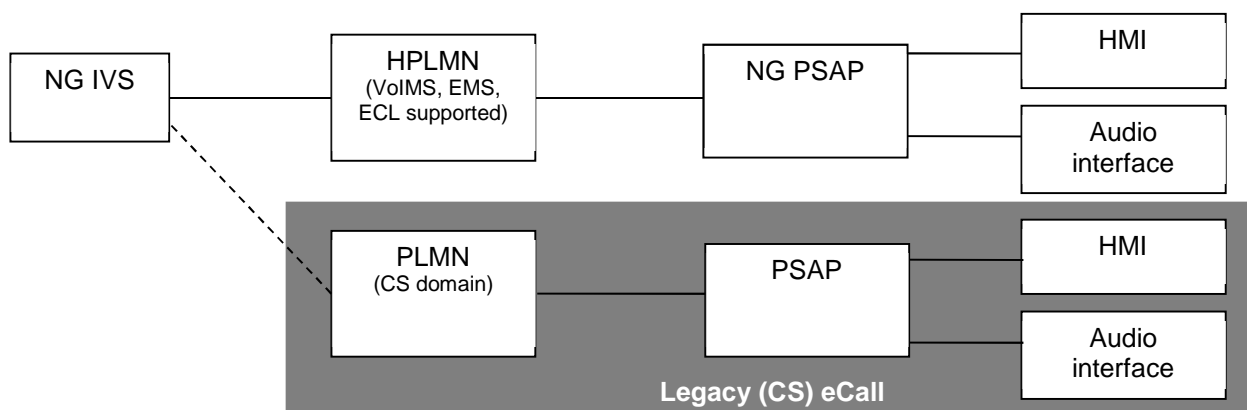


Figure 6: NG_eCall_CFG_02

NG IVS, HPLMN, PLMN, NG PSAP and PSAP can be either real devices or simulators.

6.3 Visited Interoperability Test Configuration

This configuration is used to represent a roaming scenario. Interoperability tests will be performed using the setup shown in Figure 7. Ancillary measurement and message logging devices are not shown but may be used, with the agreement of the participants, to help identify the likely cause of any interoperability test failures that may arise.

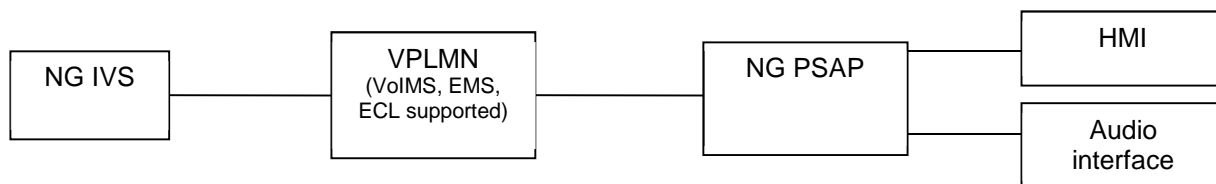


Figure 7: NG_eCall_CFG_03

NG IVS, VPLMN and NG PSAP can be either real devices or simulators. PSAP simulator is understood to be only simulating the PSAP connected to the public network with a fixed line connection (SIP trunk).

6.4 Multiple IVS Interoperability Test Configuration

In the Interoperability test configuration NG_eCall_CFG_04, more than one NG IVS will repetitively call the same NG PSAP to simulate a real service, as shown in Figure 8. The NG PSAP shall be able to handle a certain number of parallel emergency calls and route them to a certain number of operator phones.

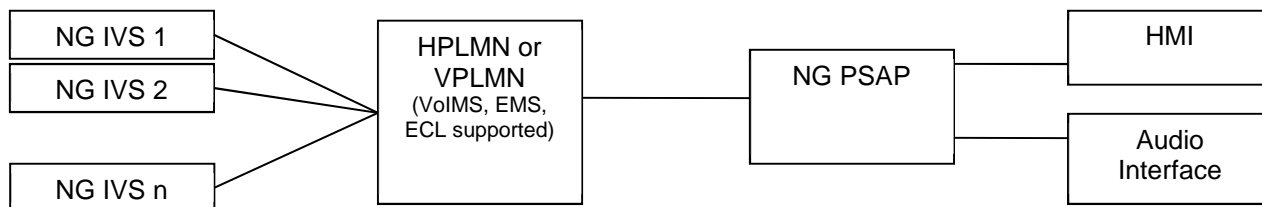


Figure 8: NG_eCall_CFG_04

6.5 Home Interoperability Test Configuration rerouting to another PSAP

Interoperability tests will be performed using the setup shown in Figure 9. Ancillary measurement and message logging devices are not shown but may be used, with the agreement of the participants, to help identify the likely cause of any interoperability test failures that may arise.

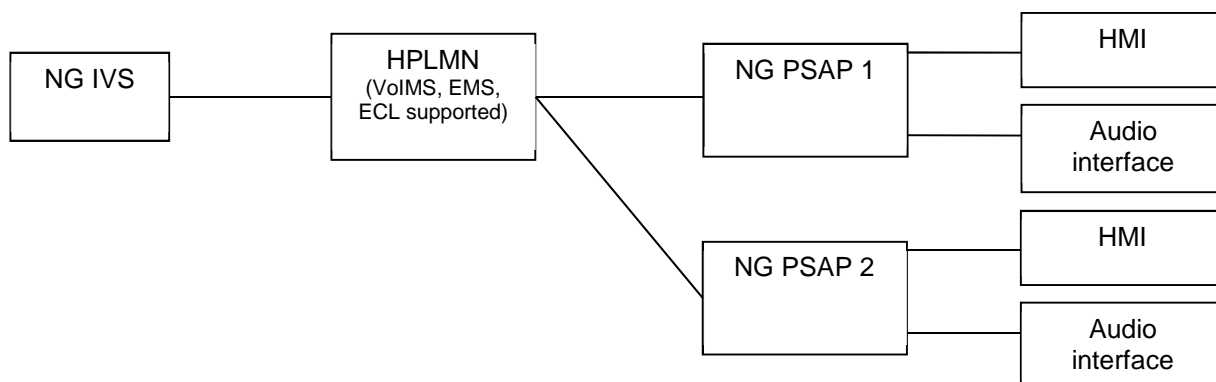


Figure 9: NG_eCall_CFG_05

NG IVS, HPLMN, NG PSAP 1 and NG PSAP 2 can be either real devices or simulators. The PSAP simulator is understood to only simulate the PSAP connected to the public network with a fixed line connection (SIP trunk).

6.6 Home Interoperability Test Configuration without VoIMS support

Following test configuration reflects case D from Table H.2 in ETSI TS 123 167 [2]. The HPLMN shall indicate support of IMS Emergency Services (EMS) and eCall Over IMS (ECL) and shall not indicate support of Voice over IMS (VoIMS).

Interoperability tests will be performed using the setup shown in Figure 10. Ancillary measurement and message logging devices are not shown but may be used, with the agreement of the participants, to help identify the likely cause of any interoperability test failures that may arise.

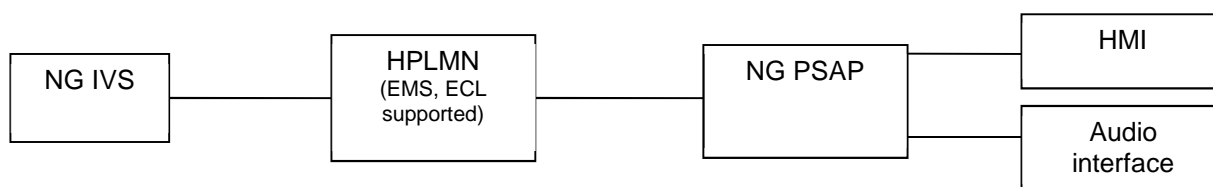


Figure 10: NG_eCall_CFG_06

NG IVS, HPLMN and NG PSAP can be either real devices or simulators. The PSAP simulator is understood to only simulate the PSAP connected to the public network with a fixed line connection (SIP trunk).

6.7 Home Interoperability Test Configuration with ESInet

Interoperability tests will be performed using the setup shown in Figure 11. The HPLMN shall indicate support of Voice over IMS (VoIMS), IMS Emergency Services (EMS) and eCall Over IMS (ECL). Ancillary measurement and message logging devices are not shown but may be used, with the agreement of the participants, to help identify the likely cause of any interoperability test failures that may arise.

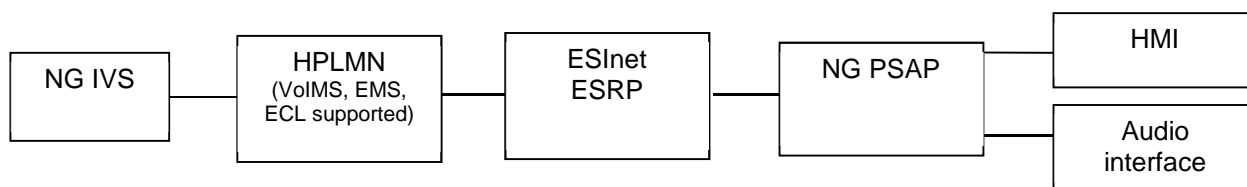


Figure 11: NG_eCall_CFG_07

NG IVS, HPLMN, ESInet and NG PSAP can be either real devices or simulators. The PSAP simulator is understood to only simulate the PSAP connected to the public network with a fixed line connection (SIP trunk).

NOTE: To switch between NG_eCall_CFG_07 (Home) and NG_eCall_CFG_08 (Visited) configuration simply change the NG IVS USIM card.

6.8 Visited Interoperability Test Configuration with ESInet

This configuration is used to represent a roaming scenario. Interoperability tests will be performed using the setup shown in Figure 12. Ancillary measurement and message logging devices are not shown but may be used, with the agreement of the participants, to help identify the likely cause of any interoperability test failures that may arise.

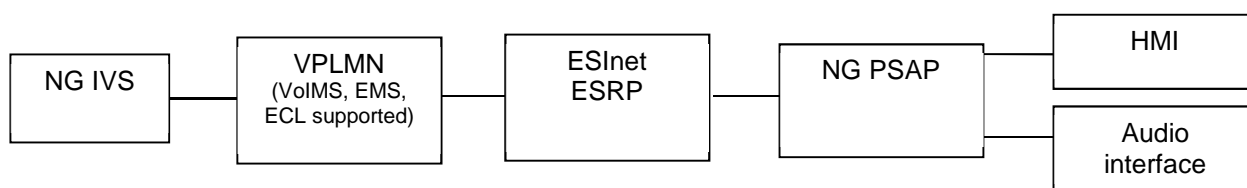


Figure 12: NG_eCall_CFG_08

NG IVS, VPLMN, ESInet and NG PSAP can be either real devices or simulators. The PSAP simulator is understood to only simulate the PSAP connected to the public network with a fixed line connection (SIP trunk).

6.9 Home Interoperability Test Configuration with TPSP

Interoperability tests will be performed using the setup shown in Figure 9. Ancillary measurement and message logging devices are not shown but may be used, with the agreement of the participants, to help identify the likely cause of any interoperability test failures that may arise.

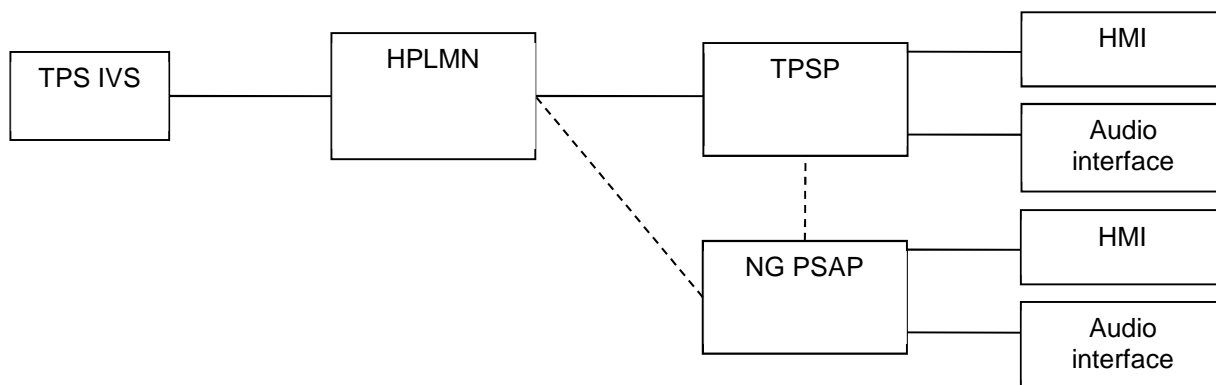


Figure 13: NG_eCall_CFG_09

TPS IVS, HPLMN, TPSP and NG PSAP can be either real devices or simulators. The PSAP simulator is understood to only simulate the PSAP connected to the public network with a fixed line connection (SIP trunk).

6.10 Default pre-test conditions

The following default pre-test conditions apply to all tests unless otherwise stated in the test cases description:

- 1) Ignition is ON, and NG IVS is in mobile network coverage
- 2) NG MNO and NG PSAP test points are available
- 3) NG IVS registered to the PLMN (HPLMN or VPLMN)
- 4) NG IVS has all the information needed to compile the MSD
- 5) NG IVS configured to support IMS communication profile
- 6) NG IVS contains USIM

6.11 Interoperable Functions Statement (IFS)

All IFS items referred to in this clause are specified in TS 17184:2022 [4] unless indicated otherwise by another numbered reference.

Table 9: PSAP features

Item	Entity	IFS_ID	Reference	Status	Support
1	PSAP supports IMS-eCall	PSAP_ims_eCall	7.1.3	m	
2	PSAP supports legacy CS in-band eCall	PSAP_legacy_eCall	prEN 17905:2022 [13]	m	
3	PSAP supports IPv4	PSAP_IPv4	7.1.3	m	
4	PSAP supports IPv6	PSAP_IPv6	7.1.3	m	
5	PSAP supports voice communication	PSAP_speech	7.5	m	
6	PSAP supports simultaneous eCalls	PSAP_simult_eCalls	EN 16072:2022 [7]	o	
7	PSAP supports callback	PSAP_callback	7.11	m	
8	PSAP supports request MSD update or new MSD	PSAP_MSD_update	7.7	m	
9	PSAP supports reception of MSD via in-band modem within the IMS eCall	PSAP_MSD_usingInBand_via_VoIMS	7.8	o	
10	PSAP supports additional MSD data	PSAP_add_MSD_data	EN 15722:2020 [12]	o	
11	PSAP supports MSD version 2	PSAP_MSDv2	EN 15722:2015 [10]	m	
12	PSAP supports MSD version 3	PSAP_MSDv3	EN 15722:2020 [12]	m	
13	PSAP supports interface to receive MSD from TPSP	PSAP_TPSP_interface	EN 16102:2011 [14]	o	
14	PSAP supports interface to transfer/receive MSD to/from another PSAP	PSAP_PSAP_interface	7.12	m	

Table 10: IVS features

Item	Entity	IFS_ID	Reference	Status	Support
1	IVS supports IMS-eCall	IVS_ims_eCall	7.1.2	m	
2	IVS supports legacy CS in-band eCall	IVS_legacy_eCall	prEN 17905:2022 [13]	m	
3	IVS supports automatic eCall activation	IVS_auto_eCall	7.4.5	m	
4	IVS supports manual eCall activation	IVS_man_eCall	7.4.5	m	
5	IVS supports test call	IVS_test_eCall	7.3.2	m	
6	IVS supports eCall only	IVS_eCall_only	7.1.4	o	
7	IVS supports IPv4	IVS_IPv4	7.1.2	m	
8	IVS supports IPv6	IVS_IPv6	7.1.2	m	
9	IVS supports voice communication	IVS_speech	7.5	m	
10	IVS supports MSD version 2	IVS_MSDv2	EN 15722:2015 [10]	m	
11	IVS supports additional MSD data	IVS_add_MSD_data	EN 15722:2020 [12]	o	
12	IVS supports PSAP callback	IVS_callback	7.11	m	
13	IVS supports transfer of MSD update or new MSD	IVS_MSD_update	7.7	m	
14	IVS supports transfer of MSD via in-band modem within the IMS eCall	IVS_MSD_usingInBand_via_VoIMS	7.8	o	
15	IVS supports GIBA procedure	IVS_GIBA	ETSI TS 124 229 [1]	o	
16	IVS supports MSD version 3	IVS_MSDv3	EN 15722:2020 [12]	o	
17	IVS supports TPS eCall	IVS_TPS_eCall	EN 16102:2011 [14]	o	

Table 11: TPSP features

Item	Entity	IFS_ID	Reference	Status	Support
1	TPSP supports interface to transfer MSD to PSAP	TPSP_PSAP_interface	EN 16102:2011 [14]	o	
2	TPSP supports conference call between TPSP operator, TPS IVS and PSAP operator	TPSP_conf_call	EN 16102:2011 [14]	m	

7 NG eCall test scenarios/descriptions

7.0 Introduction

The tests defined in the present document shall be performed according to the test applicability. The test applicability is defined in each test in the 'Applicability' field and is expressed with IFS statements. The tests apply to IVS and PSAP as well as to IVS and PSAP simulators.

Following test descriptions are covering IMS eCall scenarios and some CS eCall fallback scenarios. Legacy CS eCall test descriptions are specified in ETSI TS 103 428 [9].

7.1 Basic test scenarios

7.1.1 Initiation of manual eCall

Interoperability Test Description			
Identifier:	TD_BAS_01		
Objective:	Verify that the IVS is able to initiate a manual eCall containing an INVITE request indicating service URN value. Verify that the received MSD contains the correct eCall initiation indicator for a manually triggered eCall.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.1.2, 7.1.3 and 7.4.5 of TS 17184:2022 [4] Clause 14.2 of IETF RFC 8147 [8] Clause 5.3.2 of EN 15722:2020 [12]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_man_eCall		
Pre-test conditions:	Default see clause 6.10 (see note 2)		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates a manual eCall
	2	check	Open the received INVITE request and check if service URN contains "urn:service:sos.ecall.manual" (see note 1)
	3	verify	PSAP verifies the MSD (in an INVITE request) is received
	4	check	Open the received MSD and check if block 3 contains an indication that the eCall was manually initiated (automaticActivation = false)
NOTE 1: Test step 2 is only relevant, if the URN value "urn:service:sos.ecall.manual" is used.			
NOTE 2: If the PSAP is only reachable via test URN, for testing purposes, the URN value "urn:service:test.sos.ecall" should be used instead of the URN value "urn:service:sos.ecall.manual".			

7.1.2 Initiation of automatic eCall

Interoperability Test Description			
Identifier:	TD_BAS_02		
Objective:	Verify that the IVS is able to initiate an automatic eCall containing an INVITE request indicating service URN value. Verify that the received MSD contains the eCall initiation indicator for an automatic triggered eCall.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.1.2, 7.1.3 and 7.4.5 of TS 17184:2022 [4] Clause 14.2 of IETF RFC 8147 [8] Clause 5.3.2 of EN 15722:2020 [12]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_auto_eCall		
Pre-test conditions:	Default see clause 6.10 (see note 2)		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an automatic eCall
	2	check	Open the received INVITE request and check if service URN contains "urn:service:sos.ecall.automatic" (see note 1)
	3	verify	PSAP verifies the MSD (in an INVITE request) is received
	4	check	Open the received MSD and check if block 3 contains an indication that the eCall was automatically initiated (automaticActivation = true)
NOTE 1: Test step 2 is only relevant, if the URN value "urn:service:sos.ecall.automatic" is used.			
NOTE 2: If the PSAP is only reachable via test URN, for testing purposes the URN value "urn:service:test.sos.ecall" should be used instead of the URN value "urn:service:sos.ecall.automatic".			

7.1.3 Initiation of test eCall

Interoperability Test Description			
Identifier:	TD_BAS_03		
Objective:	Verify that the IVS is able to initiate a test eCall containing INVITE request indicating service URN value "urn:service:test.sos.ecall". Verify that the received MSD contains the correct test eCall indicator for a test eCall (see note).		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.3.2 of TS 17184:2022 [4] Clause 14.2 of IETF RFC 8147 [8] Clause 5.3.2 of EN 15722:2020 [12]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_test_eCall		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates a test eCall
	2	check	Open the received INVITE request and check if service URN contains "urn:service:test.sos.ecall"
	3	verify	PSAP verifies the MSD (in an INVITE request) is received (see note)
	4	check	Open the received MSD and check if block 3 contains an indication that the eCall is a test eCall (testCall = true) (see note)
NOTE: The second test objective and the test steps 3 to 4 are optional until detailed requirements for the MSD transfer in a test eCall become available.			

7.1.4 MSD transfer to PSAP supporting IMS eCall

Interoperability Test Description			
Identifier:	TD_BAS_04		
Objective:	Verify that the IVS is able to transfer the MSD (in an INVITE request) to a PSAP supporting IMS eCall.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.5 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	5	check	MSD content at PSAP is identical to content transmitted by IVS
	6	verify	PSAP receives ACK request on 200 OK INVITE response

7.1.5 MSD transfer to PSAP supporting IMS eCall in a roaming scenario

Interoperability Test Description			
Identifier:	TD_BAS_05		
Objective:	Verify that the IVS is able to transfer the MSD (in an INVITE request) to a PSAP supporting IMS eCall in a roaming scenario.		
Configuration:	NG_eCall_CFG_03 or NG_eCall_CFG_08		
References:	Clauses 7.4.3.2 and 7.5 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	5	check	MSD content at PSAP is identical to content transmitted by IVS
	6	verify	PSAP receives ACK request on 200 OK INVITE response

7.1.6 PSAP initiated callback to IVS

Interoperability Test Description			
Identifier:	TD_BAS_06		
Objective:	Verify that if an eCall has been successfully terminated by the PSAP, then the IVS shall answer a PSAP callback.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.7.3 and 7.11 of TS 17184:2022 [4] Clause 7.17.3 of EN 16072:2022 [7]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech AND IVS_callback AND PSAP_callback		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	check	PSAP verifies the MSD is correctly decoded (MSD ID = 1)
	4	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	verify	2-way speech can be exchanged
	7	stimulus	PSAP clears down the call (via BYE request)
	8	verify	IVS has cleared down the call (confirmed with 200 OK BYE response)
	9	stimulus	PSAP initiates a callback (via INVITE request) using IVS callback number, SIP identifier or IP address
	10	verify	IVS confirms the call with a 200 OK INVITE response
	11	verify	PSAP sends ACK request on 200 OK INVITE response
	12	verify	2-way speech can be exchanged
	13	stimulus	PSAP clears down the call (via BYE request)
	14	verify	IVS has cleared down the call (confirmed with a 200 OK BYE response)

7.1.7 PSAP initiated call clear-down

Interoperability Test Description			
Identifier:	TD_BAS_07		
Objective:	Verify that when the PSAP clears down the call, the IVS also clears down the call following receipt of a BYE request.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.10 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS verifies the 200 OK INVITE response with positive acknowledgement for the received MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	verify	2-way speech can be exchanged
	7	stimulus	PSAP clears down the call (via BYE request)
	8	verify	IVS has cleared down the call (confirmed with a 200 OK BYE response)

NOTE: An application layer clear-down as defined in EN 16062:2022 [i.2] is not applicable for IMS eCall.

7.1.8 IVS initiated call clear-down not allowed

Interoperability Test Description			
Identifier:	TD_BAS_08		
Objective:	Verify that when the eCall was established an IVS initiated call clear-down is not allowed before expiry of timer T2.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.4.7 and Annex A of TS 17184:2022 [4] Clauses 7.10.3 and 7.11 of EN 16072:2022 [7]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS verifies the 200 OK INVITE response with positive acknowledgement for the received MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	verify	2-way speech can be exchanged
	7	stimulus	IVS attempts to clear down the call (see note 1) before the expiry of timer T2
	8	verify	eCall in progress was not disconnected (see note 2)
	9	stimulus	PSAP clears down the call (via BYE request)
	10	verify	IVS has cleared down the call (confirmed with a 200 OK BYE response)
NOTE 1: A compliant IVS should not be able to clear down the call before the expiry of timer T2. This 'negative' test should ensure that the IVS can gracefully handle invalid input or unexpected user behaviour.			
NOTE 2: The user request on IVS side to clear down the test call should be typically rejected by the IVS application layer. If the IVS supports only the test execution on modem level, this test case may be skipped.			

7.1.9 Verification of audio interfaces of IVS and PSAP

Interoperability Test Description			
Identifier:	TD_BAS_09		
Objective:	Verify that the PSAP sends an acknowledgement (in the final response to the INVITE), if MSD check is successful. Verify that the IVS and PSAP audio interfaces are connected and 2-way speech is possible between the IVS and PSAP.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.6.2 and 7.9 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS verifies the 200 OK INVITE response with positive acknowledgement for the received MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	verify	2-way speech can be exchanged

7.1.10 MSD update on request from PSAP

Interoperability Test Description			
Identifier:	TD_BAS_10		
Objective:	Verify that the IVS is able to recognize and act upon a request from the PSAP, during ongoing eCall, to send an updated MSD.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.7.2 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech AND IVS_MSD_update AND PSAP_MSD_update		
Pre-test conditions: Default see clause 6.10			
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	check	PSAP verifies the MSD is correctly decoded (MSD ID = 1)
	4	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	verify	2-way speech can be exchanged
	7	stimulus	PSAP sends a request (in an INFO request) for MSD update while the 2-way conversation is in progress
	8	verify	PSAP receives 200 OK INFO response
	9	verify	PSAP verifies the MSD update (in an INFO request) is received
	10	check	PSAP verifies the MSD is correctly decoded (MSD ID = 2)
11	verify	IVS receives a 200 OK INFO response	

7.1.11 Void

7.1.12 Void

7.1.13 Format of encoded and decoded MSD in accordance with EN 15722:2015

Interoperability Test Description			
Identifier:	TD_BAS_13		
Objective:	Verify that the IVS formats the MSD in accordance with EN 15722:2015 [10] and encodes it correctly, and that the PSAP decodes and displays the MSD correctly.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 6.3.2 of EN 15722:2015 [10] Clause 7.6.2 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_MSDv2 AND PSAP_MSDv2		
Pre-test conditions: Default see clause 6.10:			
<ul style="list-style-type: none"> PSAP operator knows the content of the transmitted MSD 			
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives the 200 OK INVITE response with positive acknowledgement for the MSD
5	verify	PSAP receives ACK request on 200 OK INVITE response	

Interoperability Test Description			
	6	check	<p>Visually inspect format, content, logic and accuracy of MSD when decoded and displayed PSAP on screen. Check all MSD fields according to EN 15722:2015 [10].</p> <p>Mandatory MSD elements:</p> <ul style="list-style-type: none"> • msdVersion (shall be set to 2) • messageIdentifier (shall be set to 1) • automaticActivation • testCall • positionCanBeTrusted • vehicleType • vehicleIdentificationNumber • gasolineTankPresent • dieselTankPresent • compressedNaturalGas • liquidPropaneGas • electricEnergyStorage • hydrogenStorage • otherStorage • timestamp • vehicleDirection • vehicleLocation <p>Optional MSD elements:</p> <ul style="list-style-type: none"> • recentVehicleLocationN1 • recentVehicleLocationN2 • numberOfOccupants • optionalAdditionalData

7.1.14 Void

7.1.15 Negative acknowledgement for the initial MSD

Interoperability Test Description			
Identifier:	TD_BAS_15		
Objective:	Verify that the IVS does not attempt to re-send the MSD after it received a negative acknowledgement for the initial MSD.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.6.3 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> • The PSAP should be configured to send 200 OK INVITE response with a negative acknowledgement for the MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	IVS receives a 200 OK INVITE response with a negative acknowledgement for the MSD
	4	verify	PSAP receives ACK request on 200 OK INVITE response
	5	verify	IVS shall not retransfer the MSD
	6	verify	2-way speech can be exchanged

7.1.16 Format of encoded and decoded MSD in accordance with EN 15722:2020

Interoperability Test Description			
Identifier:	TD_BAS_16		
Objective:	Verify that the IVS formats the MSD in accordance with EN 15722:2020 [12] and encodes it correctly, and that the PSAP decodes and displays the MSD correctly.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 5.3.2 of EN 15722:2020 [12] Clause 7.6.2 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_MSDv3 AND PSAP_MSDv3		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives the 200 OK INVITE response with positive acknowledgement for the MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	check	Visually inspect format, content, logic and accuracy of MSD when decoded and displayed PSAP on screen. Check all MSD fields according to EN 15722:2020 [12]. Mandatory MSD elements: <ul style="list-style-type: none"> msdVersion (shall be set to 3) messageIdentifier (shall be set to 1) automaticActivation testCall positionCanBeTrusted vehicleType vehicleIdentificationNumber gasolineTankPresent dieselTankPresent compressedNaturalGas liquidPropaneGas electricEnergyStorage hydrogenStorage otherStorage timestamp vehicleDirection vehicleLocation recentVehicleLocationN1 recentVehicleLocationN2 Optional MSD elements: <ul style="list-style-type: none"> numberOfPassengers optionalAdditionalData

7.2 Advanced test scenarios

7.2.1 MSD transfer to PSAP supporting IMS eCall over IPv4

Interoperability Test Description			
Identifier:	TD_ADV_01		
Objective:	Verify that the IVS is able to transfer the MSD (in an INVITE request) to a PSAP supporting IMS eCall, if IVS and PSAP are connected over IPv4.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.1.2 and 7.1.3 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_IPv4 AND PSAP_IPv4		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	check	IVS sends an INVITE request over IPv4
	3	check	PSAP verifies the MSD (in an INVITE request) is received over IPv4
	4	verify	PSAP verifies the MSD is correctly decoded
	5	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	6	verify	PSAP receives ACK request on 200 OK INVITE response
	7	check	MSD content at PSAP is identical to content transmitted by IVS

7.2.2 MSD transfer to PSAP supporting IMS eCall over IPv6

Interoperability Test Description			
Identifier:	TD_ADV_02		
Objective:	Verify that the IVS is able to transfer the MSD (in an INVITE request) to a PSAP supporting IMS eCall, if IVS and PSAP are connected over IPv6.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.1.2 and 7.1.3 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_IPv6 AND PSAP_IPv6		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	check	IVS sends an INVITE request over IPv6
	3	check	PSAP verifies the MSD (in an INVITE request) is received over IPv6
	4	verify	PSAP verifies the MSD is correctly decoded
	5	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	6	verify	PSAP receives ACK request on 200 OK INVITE response
	7	check	MSD content at PSAP is identical to content transmitted by IVS

7.2.3 Void

7.2.4 MSD transfer to PSAP not supporting IMS eCall

Interoperability Test Description			
Identifier:	TD_ADV_04		
Objective:	Verify that the IVS is able to transfer the MSD via in-band modem to a PSAP not supporting IMS eCall.		
Configuration:	NG_eCall_CFG_02		
References:	Clause 7.8 of TS 17184:2022 [4] Clause 7.5.3 of prEN 17905:2022 [13] Clause 5.1.6.11.2 (2 nd numbered list/item 1) of ETSI TS 124 229 [1]		
Applicability:	IVS_ims_eCall AND PSAP_legacy_eCall AND IVS_MSD_usingInBand_via_VoIMS AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> the PSAP shall not support IMS eCall MNO needs to support IMS eCall to legacy eCall transfer PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	IVS sent an INVITE request (see note 1)
	3	verify	The IMS network routes the emergency INVITE request towards the appropriate PSAP
	4	verify	The INVITE request is sent to a gateway function for interfacing to the CS domain
	5	verify	The gateway function sends a notification request to the appropriate PSAP
	6	verify	The emergency voice call establishment is completed with a voice path only
	7	verify	The IVS receives a 200 (OK) response to the INVITE (generated by the gateway) that lacks an ACK for the MSD
	8	verify	The IVS shall attempt to transfer the MSD to the PSAP via in-band modem within the IMS eCall (see note 2)
	9	verify	PSAP immediately transmits SEND-MSD (START) message without waiting for the valid Initiation Signal (see note 3)
	10	verify	If IVS had started to send an INITIATION message then IVS stopped sending the INITIATION message on receipt of the SEND-MSD message from the PSAP
	11	verify	PSAP verifies MSD is received
	12	verify	Verify the MSD is correctly decoded
	13	check	MSD content at PSAP is identical to content transmitted by IVS
	14	verify	PSAP sends acknowledgement
	15	verify	Verify that the IVS has stopped transmitting the MSD
	16	verify	2-way speech can be exchanged
<p>NOTE 1: The INVITE request shall contain:</p> <ul style="list-style-type: none"> The eCall type of emergency service indication (automatic, manual) but shall not include the initial MSD in case the PS access is available, but the IVS does not detect the "IMS eCall supported" indicator. The initial MSD and the eCall type of emergency service indicator (automatic, manual) if the IVS detected the "IMS eCall supported" indicator. <p>NOTE 2: The test steps 9 to 15 are copied from clause 7.1.1 of ETSI TS 103 428 [9]. Other tests from ETSI TS 103 428 [9] could also be tested here.</p> <p>NOTE 3: Step 9 is only applicable if the PSAP is configured in PULL mode and should be skipped if PSAP is configured in PUSH mode.</p> <p>NOTE 4: MSC of MSD transfer to a non IMS PSAP is shown in Figure 14.</p>			

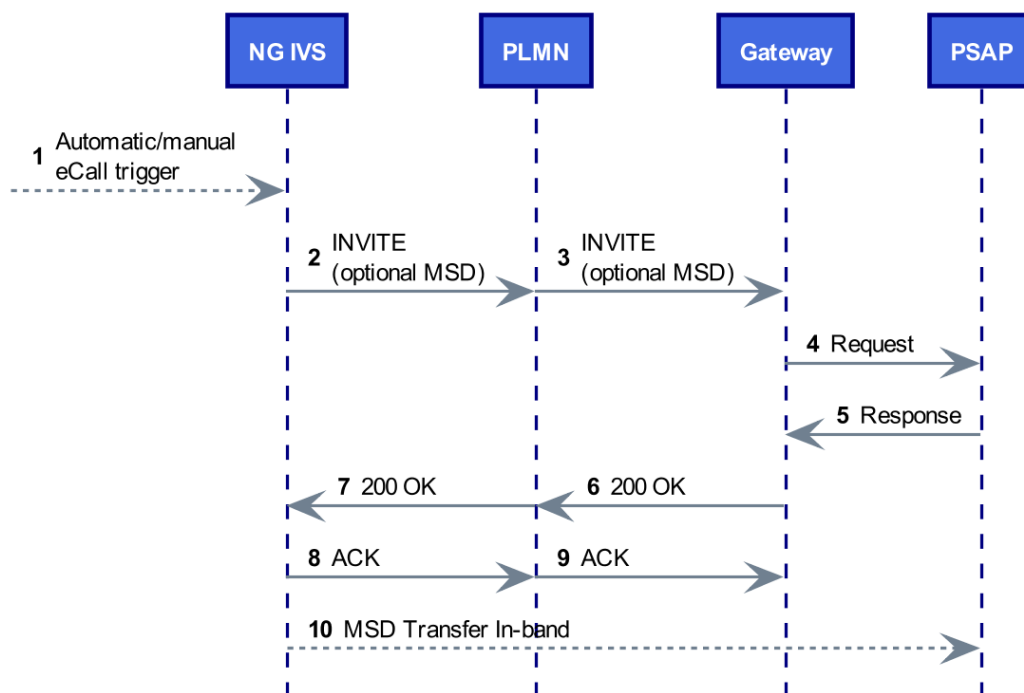


Figure 14: MSD transfer to a non IMS PSAP

- 1) The NG IVS sends an instruction to establish a manual or automatic NG eCall.
- 2) An initial emergency INVITE is sent to the PLMN. The INVITE may optionally contain the initial MSD and the eCall type of emergency service indicator (automatic, manual).
- 3) The PLMN network routes the emergency INVITE towards the appropriate PSAP. In this call flow, the appropriate PSAP is accessed over the gateway function and the CS domain after translating the eCall type of emergency service indication into the corresponding PSAP.
- 4) The Gateway forwards the request to the legacy PSAP.
- 5) The PSAP answers the eCall to the gateway.
- 6) The gateway sends the 200 OK to the PLMN.
- 7) The PLMN forwards the 200 OK to the NG IVS.
- 8) The NG IVS sends ACK for the 200 OK INVITE.
- 9) The gateway receives ACK for the 200 OK INVITE from the PLMN.
- 10) The IVS shall attempt to transfer the MSD to the PSAP via the eCall in-band modem.

7.2.5 IMS eCall establishment with IMS emergency registration

Interoperability Test Description			
Identifier:	TD_ADV_05		
Objective:	Verify that the IVS is able to initiate an IMS emergency session with IMS emergency registration.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.4.4 of TS 17184:2022 [4] Clause 7.2 of ETSI TS 123 167 [2] Clause 5.2.2.3 of ETSI TS 123 228 [3]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	IVS sends a REGISTER request to initiate IMS emergency registration (see note 1)
	3	check	"sos" is present within the Contact header field of REGISTER request (see note 2)
	4	verify	IVS receives a 200 OK REGISTER response
	5	verify	IVS sends an INVITE request
	6	verify	PSAP verifies the MSD (in an INVITE request) is received
	7	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	8	verify	PSAP receives ACK request on 200 OK INVITE response
NOTE 1: MSC of IMS emergency registration procedure (step 2) is shown in Figure 15.			
NOTE 2: The test step 3 is optional if there is no possibility to check the REGISTER message.			

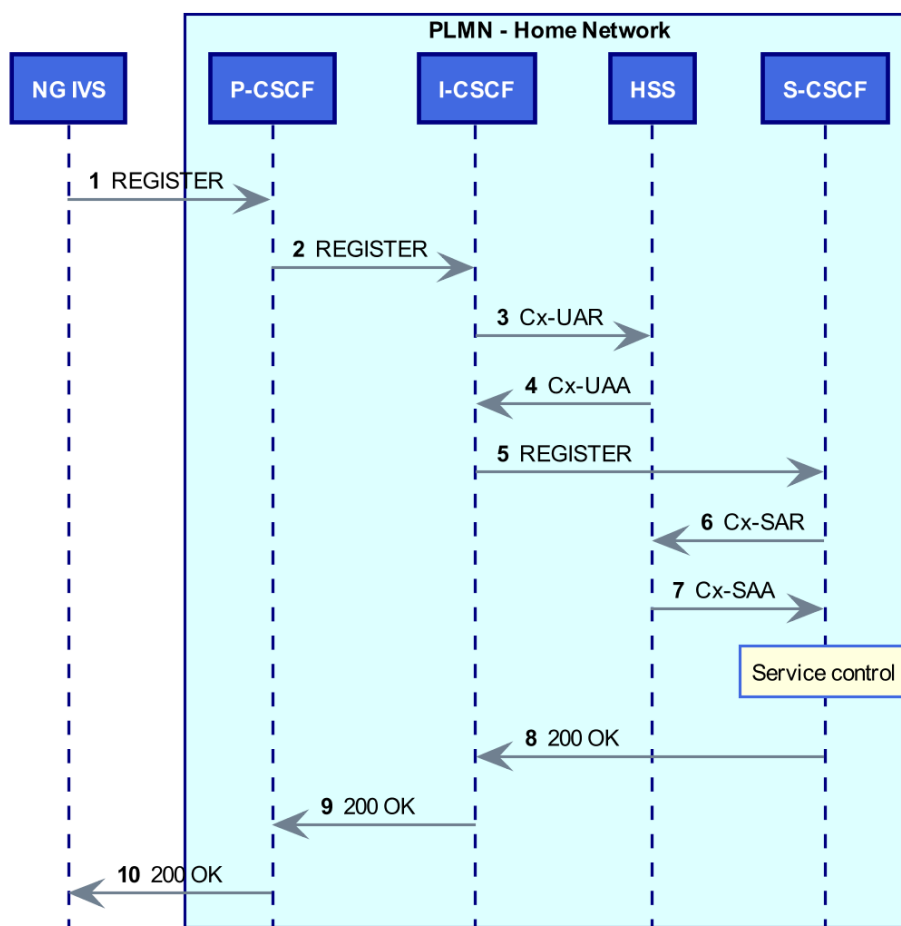


Figure 15: IMS emergency registration - IVS not registered

- 1) NG IVS sends REGISTER to the PLMN (P-CSCF).
- 2) P-CSCF sends REGISTER to the I-CSCF.
- 3) I-CSCF sends Diameter UA-Request to the HSS.
- 4) HSS sends Diameter UA-Answer to the I-CSCF.
- 5) I-CSCF send REGISTER to the S-CSCF.
- 6) S-CSCF sends Diameter SA-Request to the HSS.
- 7) S-CSCF receives Diameter SA-Answer from the HSS.
- 8) After successful confirmation, S-CSCF sends 200 OK REGISTER to the I-CSCF.
- 9) I-CSCF forwards 200 OK REGISTER to the P-CSCF.
- 10) NG IVS receives 200 OK from the PLMN (P-CSCF).

7.2.6 IMS eCall establishment without IMS emergency registration

Interoperability Test Description			
Identifier:	TD_ADV_06		
Objective:	Verify that the IVS is able to initiate an IMS emergency session without IMS emergency registration and includes the "anonymous user" indication in the emergency session establishment if GIBA is not supported.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.4.4 of TS 17184:2022 [4] Clause 7.4 and Annex K steps 13-15 of ETSI TS 123 167 [2]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND NOT IVS_GIBA		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> P-CSCF should not reject "anonymous user" 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	IVS sends a REGISTER request to initiate IMS emergency registration
	3	verify	IVS receives any 4XX response to REGISTER
	4	check	IVS sends an INVITE request with an "anonymous user" indication to establish the eCall after an unsuccessful registration
	5	verify	PSAP verifies the MSD (in an INVITE request) is received
	6	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	7	verify	PSAP receives ACK request on 200 OK INVITE response

7.2.7 IMS eCall establishment without IMS emergency registration GIBA supported

Interoperability Test Description			
Identifier:	TD_ADV_07		
Objective:	Verify that the IVS is able to initiate an IMS emergency session without IMS emergency registration, if GIBA is supported.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.4.4 of TS 17184:2022 [4] Clauses 7.4 and K.3 steps 9-12 of ETSI TS 123 167 [2] Clauses 5.1.1.2.6 (c, d), 5.1.1.4.6 (c, d) and 5.1.1.6.6 (c, d) of ETSI TS 124 229 [1]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_GIBA		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	IVS sends a REGISTER request to initiate IMS emergency registration
	3	verify	IVS receives 420 response to REGISTER
	4	verify	IVS sends a new REGISTER request with temporary public user identity derived from the IMSI and without Authorization header field
	5	verify	IVS receives 200 OK REGISTER response
	6	check	IVS sends an INVITE request with to establish the eCall
	7	verify	PSAP verifies the MSD (in an INVITE request) is received
	8	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	9	verify	PSAP receives ACK request on 200 OK INVITE response

7.2.8 MSD transfer via in-band modem after negative acknowledgement for the MSD

Interoperability Test Description			
Identifier:	TD_ADV_08		
Objective:	Verify that the IVS is able to transfer the MSD via in-band modem to a PSAP supporting IMS eCall after reception of 200 OK INVITE response with a negative acknowledgement for the initial MSD.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.6.3 and 7.8 of TS 17184:2022 [4] Clause 5.1.6.11.2 (2 nd numbered list/item 1) of ETSI TS 124 229 [1]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_MSD_usingInBand_via_VoIMS AND PSAP_MSD_usingInBand_via_VoIMS AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> The PSAP should be configured to send 200 OK INVITE response with a negative acknowledgement for the MSD PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	IVS receives a 200 OK INVITE response with a negative acknowledgement for the MSD
	4	verify	PSAP receives ACK request on 200 OK INVITE response
	5	verify	IVS shall not retransfer the MSD
	6	stimulus	PSAP requests MSD transfer via in-band modem within the IMS eCall
	7	verify	PSAP transmits SEND-MSD (START) message
	8	verify	The IVS shall attempt to transfer the MSD to the PSAP via in-band modem within the IMS eCall
	9	verify	PSAP verifies MSD is received
	10	verify	Verify the MSD is correctly decoded
	11	check	MSD content at PSAP is identical to content transmitted by IVS
	12	verify	PSAP sends an acknowledgement for the MSD
	13	verify	Verify that the IVS has stopped transmitting the MSD
	14	verify	2-way speech can be exchanged

7.2.9 MSD transfer via in-band modem after missing acknowledgement for the MSD

Interoperability Test Description			
Identifier:	TD_ADV_09		
Objective:	Verify that the IVS is able to transfer the MSD via in-band modem to a PSAP supporting IMS eCall after reception of 200 OK INVITE response without an acknowledgement for the initial MSD.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.6.4 and 7.8 of TS 17184:2022 [4] Clause 5.1.6.11.2 (2 nd numbered list/item 1) of ETSI TS 124 229 [1]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_MSD_usingInBand_via_VoIMS AND PSAP_MSD_usingInBand_via_VoIMS AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> • The PSAP should be configured to send 200 OK INVITE response without an acknowledgement for the MSD • PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	IVS receives a 200 OK INVITE response without an acknowledgement for the MSD
	4	verify	PSAP receives ACK request on 200 OK INVITE response
	5	verify	IVS shall not retransfer the MSD
	6	stimulus	PSAP requests MSD transfer via in-band modem within the IMS eCall
	7	verify	PSAP transmits SEND-MSD (START) message
	8	verify	The IVS shall attempt to transfer the MSD to the PSAP via in-band modem within the IMS eCall
	9	verify	PSAP verifies MSD is received
	10	verify	Verify the MSD is correctly decoded
	11	check	MSD content at PSAP is identical to content transmitted by IVS
	12	verify	PSAP sends an acknowledgement for the MSD
	13	verify	Verify that the IVS has stopped transmitting the MSD
	14	verify	2-way speech can be exchanged

7.2.10 MSD transfer via in-band modem after missing MSD in INVITE request

Interoperability Test Description			
Identifier:	TD_ADV_10		
Objective:	Verify that the IVS is able to transfer the MSD via in-band modem to a PSAP supporting IMS eCall after MSD request from PSAP.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.6.3 and 7.8 of TS 17184:2022 [4] Clause 5.1.6.11.2 (2 nd numbered list/item 1) of ETSI TS 124 229 [1]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_MSD_usingInBand_via_VoIMS AND PSAP_MSD_usingInBand_via_VoIMS AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> • The IVS should be configured to send INVITE request without MSD • PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies an INVITE request without MSD is received
	3	verify	IVS receives a 200 OK INVITE response
	4	verify	PSAP receives ACK request on 200 OK INVITE response
	5	verify	IVS shall not retransfer the MSD
	6	stimulus	PSAP requests MSD transfer via in-band modem within the IMS eCall
	7	verify	PSAP transmits SEND-MSD (START) message
	8	verify	The IVS shall attempt to transfer the MSD to the PSAP via in-band modem within the IMS eCall
	9	verify	PSAP verifies MSD is received
	10	verify	Verify the MSD is correctly decoded
	11	check	MSD content at PSAP is identical to content transmitted by IVS
	12	verify	PSAP sends an acknowledgement for the MSD
	13	verify	Verify that the IVS has stopped transmitting the MSD
	14	verify	2-way speech can be exchanged

7.2.11 MSD update during PSAP initiated callback

Interoperability Test Description			
Identifier:	TD_ADV_11		
Objective:	Verify that the IVS answers a PSAP callback and may send an MSD update on request of the PSAP.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.7.3 and 7.11 of TS 17184:2022 [4] Clause 7.17.3 of EN 16072:2022 [7]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech AND IVS_callback AND PSAP_callback AND IVS_MSD_update AND PSAP_MSD_update		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	check	PSAP verifies the MSD is correctly decoded (MSD ID = 1)
	4	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	verify	2-way speech can be exchanged
	7	stimulus	PSAP clears down the call (via BYE request)
	8	verify	IVS has cleared down the call (confirmed with 200 OK BYE response)
	9	stimulus	PSAP initiates a callback (via INVITE request) using IVS callback number, SIP identifier or IP address
	10	verify	IVS confirms the call with a 200 OK INVITE response
	11	verify	PSAP sends ACK request on 200 OK INVITE response
	12	verify	2-way speech can be exchanged
	13	stimulus	PSAP sends request (in an INFO request) for MSD update while the 2-way conversation is in progress
	14	verify	PSAP receives 200 OK INFO response
	15	verify	PSAP verifies the MSD update (in an INFO request) is received (see note 1)
	16	check	PSAP verifies the MSD is correctly decoded (MSD ID = 2)
	17	verify	IVS receives a 200 OK INFO response
	18	verify	2-way speech can be exchanged
	19	stimulus	PSAP clears down the call (via BYE request)
	20	verify	IVS has cleared down the call (confirmed with a 200 OK BYE response)
NOTE 1: Steps 15 and 16 are currently optional due to the following note in clause 7.11 of TS 17184:2022 [4]: "The eCall using IMS over packet switched networks solution currently defined in ETSI TS 122 101, ETSI TS 123 167 and IETF eCall RFC 8147 does not support authentication by a vehicle IVS that an incoming call is from a PSAP. A planned (future) Release of the ETSI IMS specification will make provision to enable the vehicle IVS to authenticate that any incoming call is from a genuine PSAP. Until then, the PSAP will not be able to request the resend of the MSD."			
NOTE 2: MSC of callback scenario after successfully terminated eCall is shown in Figure 16.			

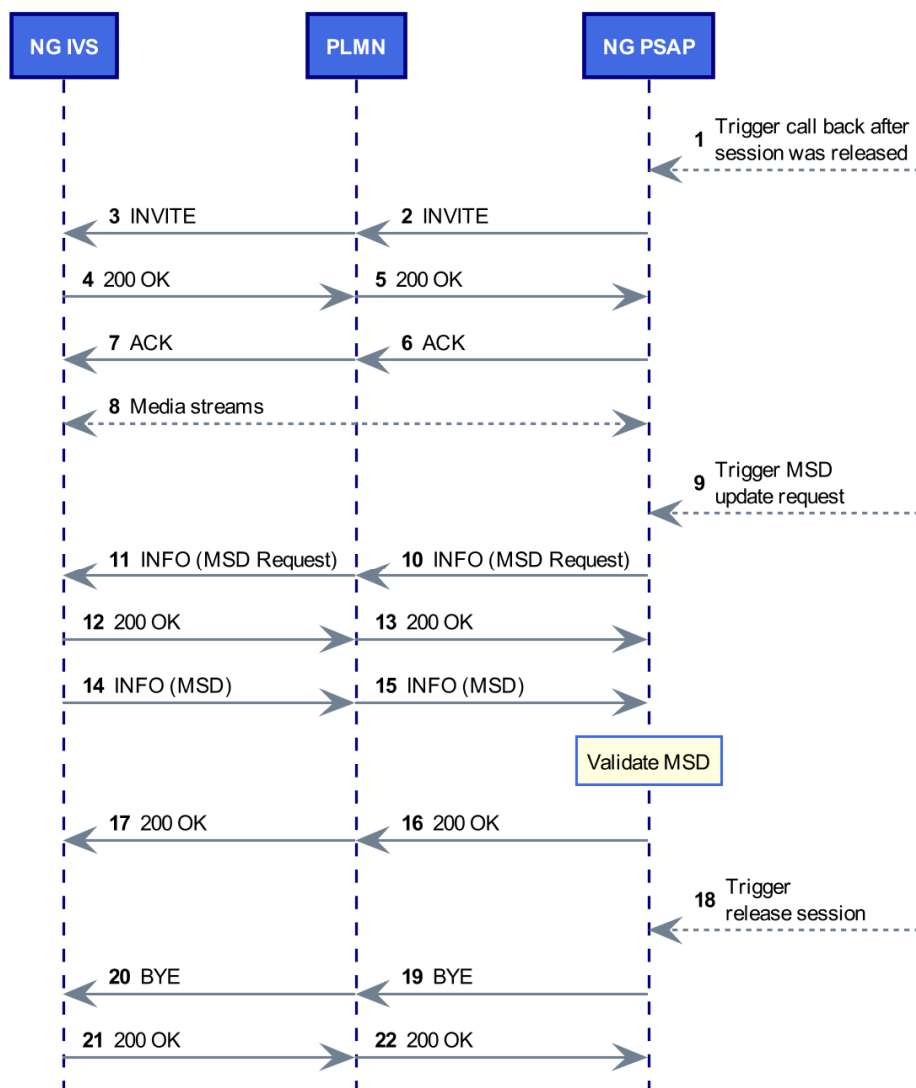


Figure 16: Callback scenario after successfully terminated eCall

- 1) After NG IVS was registered and the NG eCall was successfully released NG PSAP triggers a callback.
- 2) An initial INVITE is sent to the PLMN.
- 3) The PLMN network routes the INVITE towards the NG IVS.
- 4) The NG IVS returns a 200 OK INVITE to the PLMN.
- 5) The PLMN network sends the 200 OK INVITE to the NG PSAP.
- 6) The NG PSAP sends ACK for the 200 OK INVITE.
- 7) The NG IVS receives ACK for the 200 OK INVITE from the PLMN.
- 8) The callback establishment is completed. Media channels are established.
- 9) NG PSAP trigger MSD update request.
- 10) NG PSAP sends a request for an MSD in an INFO request towards NG IVS.
- 11) NG IVS receives request for an MSD update.
- 12) NG IVS confirms the reception of the request with 200 OK INFO.
- 13) NG PSAP receives 200 OK INFO.

- 14) NG IVS sends new INFO with updated MSD towards NG PSAP.
- 15) NG PSAP receives INFO with updated MSD and validates it.
- 16) NG PSAP sends 200 OK INFO.
- 17) The PLMN network routes the 200 OK INFO to the NG IVS.
- 18) Only NG PSAP is able to release the session.
- 19) The NG PSAP sends BYE towards PLMN.
- 20) PLMN routes BYE towards NG IVS.
- 21) NG IVS confirms session release and sends the 200 OK BYE to the PLMN.
- 22) PLMN forwards 200 OK to the NG PSAP.

7.3 Advanced IVS test scenarios

7.3.1 Fallback to legacy eCall following busy during call setup

Interoperability Test Description			
Identifier:	TD_ADV_IVS_01		
Objective:	Verify that the IVS is able to fallback to legacy eCall after the IVS receives a 486 (Busy Here), 600 (Busy Everywhere) or 603 (Decline) response with a positive acknowledgement for the MSD to the INVITE request.		
Configuration:	NG_eCall_CFG_02		
References:	Clauses 7.4.5 and 7.13.3.3 of TS 17184:2022 [4] Clause 7.4.4.4.3 of prEN 17905:2022 [13] Clause 5.1.6.11.2 (2 nd numbered list/item 3) of ETSI TS 124 229 [1]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_legacy_eCall AND PSAP_legacy_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> The PSAP should be configured to send 486 (Busy Here), 600 (Busy Everywhere) or 603 (Decline) response with a positive acknowledgement for the MSD to the INVITE request PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives a 486 (Busy Here), 600 (Busy Everywhere) or 603 (Decline) response with a positive acknowledgement for the MSD to the INVITE request
	5	verify	PSAP receives ACK on 486 (Busy Here), 600 (Busy Everywhere) or 603 (Decline) response
	6	verify	IVS re-attempts the eCall due to domain selection rules
	7	verify	The IVS shall attempt to transfer the MSD to the PSAP via in-band modem in CS domain (see note 2)
	8	verify	PSAP answers call and immediately transmits SEND-MSD (START) message without waiting for the valid Initiation Signal (see note 3)
	9	verify	If IVS had started to send an INITIATION message, then IVS stopped sending the INITIATION message on receipt of the SEND-MSD message from the PSAP
	10	verify	PSAP verifies MSD is received
	11	verify	Verify the MSD is correctly decoded
	12	check	MSD content at PSAP is identical to content transmitted by IVS
	13	verify	PSAP sends acknowledgement
	14	verify	Verify that the IVS has stopped transmitting the MSD
	15	verify	2-way speech can be exchanged
NOTE 1: It may happen that the IMS core is translating the 486, 600 or 603 response from PSAP into another response (e.g. 380), before sending towards IVS.			
NOTE 2: The test steps 8 to 14 are copied from clause 7.1.1 of ETSI TS 103 428 [9]. Other tests from ETSI TS 103 428 [9] could also be tested here.			
NOTE 3: Step 8 is only applicable if the PSAP is configured in PULL mode and should be skipped if PSAP is configured in PUSH mode.			
NOTE 4: MSC of the fallback scenario is shown in Figure 17.			
NOTE 5: In case if there is PS-only environment, see test case TD_ADV_IVS_12.			

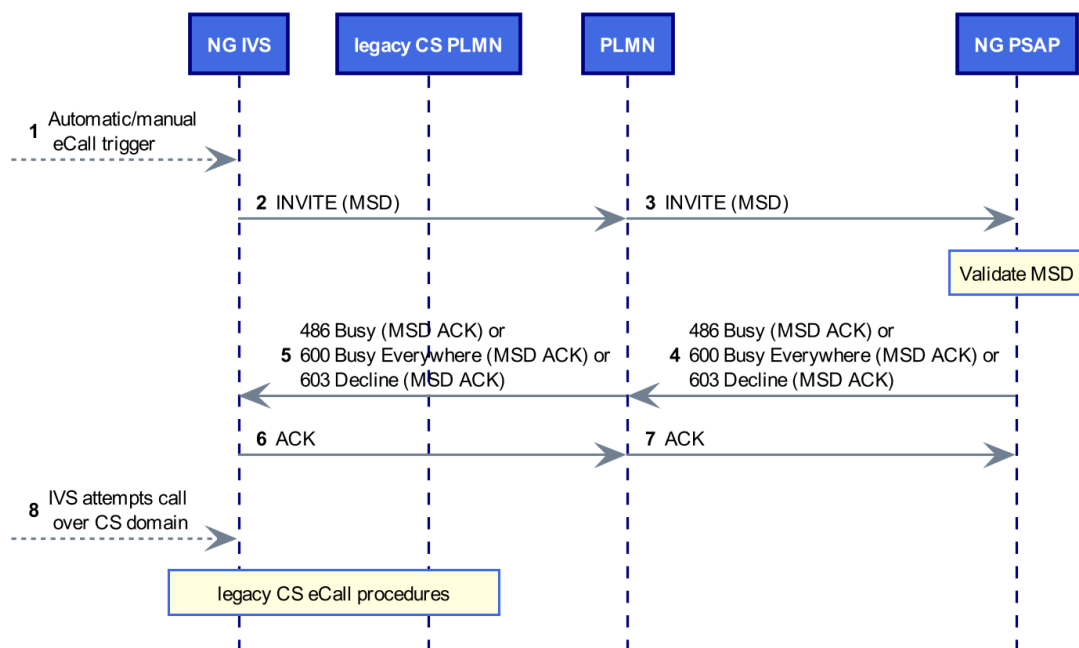


Figure 17: Fallback scenario

- 1) The NG IVS sends an instruction to establish a manual or automatic NG eCall.
- 2) An initial emergency INVITE is sent to the PLMN. The INVITE shall contain the initial MSD and the eCall type of emergency service indicator (automatic, manual).
- 3) The PLMN network routes the INVITE towards the appropriate NG PSAP.
- 4) MSD is received, and due to busy NG eCall, the NG PSAP returns a response (486 or 600 or 603) which includes a positive or negative acknowledgement for the initial MSD.
- 5) The PLMN network sends the response (486 or 600 or 603 or alternative response, see note 1) to the NG IVS.
- 6) The NG IVS sends ACK for the response.
- 7) The NG PSAP receives ACK for the response from the PLMN.
- 8) IVS attempts call over CS domain.

7.3.2 Fallback to legacy eCall following unavailable response during call setup

Interoperability Test Description			
Identifier:	TD_ADV_IVS_02		
Objective:	Verify that the IVS is able to fallback to legacy eCall after the IVS receives a 480 (Temporarily Unavailable) response to the INVITE request.		
Configuration:	NG_eCall_CFG_02		
References:	Clauses 7.4.5 and 7.13.3.3 of TS 17184:2022 [4] Clause 7.4.4.4.3 of prEN 17905:2022 [13] Clause 5.1.6.11.2 (2 nd numbered list/item 4) of ETSI TS 124 229 [1]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_legacy_eCall AND PSAP_legacy_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> The PSAP should be configured to send 480 (Temporarily Unavailable) response for the MSD to the INVITE request PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives a 480 (Temporarily Unavailable) response for the MSD to the INVITE request
	5	verify	PSAP receives ACK on 480 (Temporary Unavailable) response (see note 1)
	6	verify	IVS re-attempts the eCall due to domain selection rules
	7	verify	The IVS shall attempt to transfer the MSD to the PSAP via in-band modem in CS domain (see note 2)
	8	verify	PSAP answers call and immediately transmits SEND-MSD (START) message without waiting for the valid Initiation Signal (see note 3)
	9	verify	If IVS had started to send an INITIATION message then IVS stopped sending the INITIATION message on receipt of the SEND-MSD message from the PSAP
	10	verify	PSAP verifies MSD is received
	11	verify	Verify the MSD is correctly decoded
	12	check	MSD content at PSAP is identical to content transmitted by IVS
	13	verify	PSAP sends acknowledgement
	14	verify	Verify that the IVS has stopped transmitting the MSD
	15	verify	2-way speech can be exchanged
NOTE 1: It may happen that the IMS core is translating the 480 response from PSAP into another response (e.g. 380), before sending towards IVS.			
NOTE 2: The test steps 8 to 14 are copied from clause 7.1.1 of ETSI TS 103 428 [9]. Other tests from ETSI TS 103 428 [9] could also be tested here.			
NOTE 3: Step 8 is only applicable if the PSAP is configured in PULL mode and should be skipped if PSAP is configured in PUSH mode.			
NOTE 4: In case if there is PS-only environment, see test case TD_ADV_IVS_13.			

7.3.3 Fallback to legacy eCall following no-answer during call setup

Interoperability Test Description			
Identifier:	TD_ADV_IVS_03		
Objective:	Verify that the IVS is able to fallback to legacy eCall, if there is no-answer (e.g. 200 OK INVITE response) from the PSAP except optional 100 (Trying) or 180 (Ringing).		
Configuration:	NG_eCall_CFG_02		
References:	Clauses 7.4.5 and 7.13.3.3 of TS 17184:2022 [4] Clause 7.4.4.4.3 of prEN 17905:2022 [13] Clause 5.1.6.11.2 (2 nd numbered list/item 4) of ETSI TS 124 229 [1]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_legacy_eCall AND PSAP_legacy_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> The PSAP should be configured to send no-answer (e.g. 200 OK INVITE response) except optional 100 (Trying) or 180 (Ringing) PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	IVS receives no-answer (e.g. 200 OK INVITE response) except optional 100 (Trying) or 180 (Ringing)
	4	verify	PSAP receives a CANCEL request (see note 1)
	5	verify	IVS receives 200 OK CANCEL response
	6	verify	IVS receives 487 (Request Terminated) response
	7	verify	PSAP receives ACK request
	8	verify	IVS re-attempts the eCall due to domain selection rules
	9	verify	The IVS shall attempt to transfer the MSD to the PSAP via in-band modem in CS domain (see note 3)
	10	verify	PSAP answers call and immediately transmits SEND-MSD (START) message without waiting for the valid Initiation Signal (see note 4)
	11	verify	If IVS had started to send an INITIATION message then IVS stopped sending the INITIATION message on receipt of the SEND-MSD message from the PSAP
	12	verify	PSAP verifies MSD is received
	13	verify	Verify the MSD is correctly decoded
	14	check	MSD content at PSAP is identical to content transmitted by IVS
	15	verify	PSAP sends acknowledgement
	16	verify	Verify that the IVS has stopped transmitting the MSD
	17	verify	2-way speech can be exchanged
NOTE 1: The test steps 4 to 7 are optional.			
NOTE 2: It may happen that the IMS core is translating the 487 response from PSAP into another response (e.g. 380), before sending towards IVS.			
NOTE 3: The test steps 10 to 16 are copied from clause 7.1.1 of ETSI TS 103 428 [9]. Other tests from ETSI TS 103 428 [9] could also be tested here.			
NOTE 4: Step 10 is only applicable if the PSAP is configured in PULL mode and should be skipped, if PSAP is configured in PUSH mode.			
NOTE 5: MSC of no answer scenario is shown in Figure 18.			
NOTE 6: Step 8 and following steps verify ETSI/3GPP requirements only. CEN would expect reattempt to PS for a maximum of 2 minutes.			
NOTE 7: In case if there is PS-only environment, see test case TD_ADV_IVS_17.			

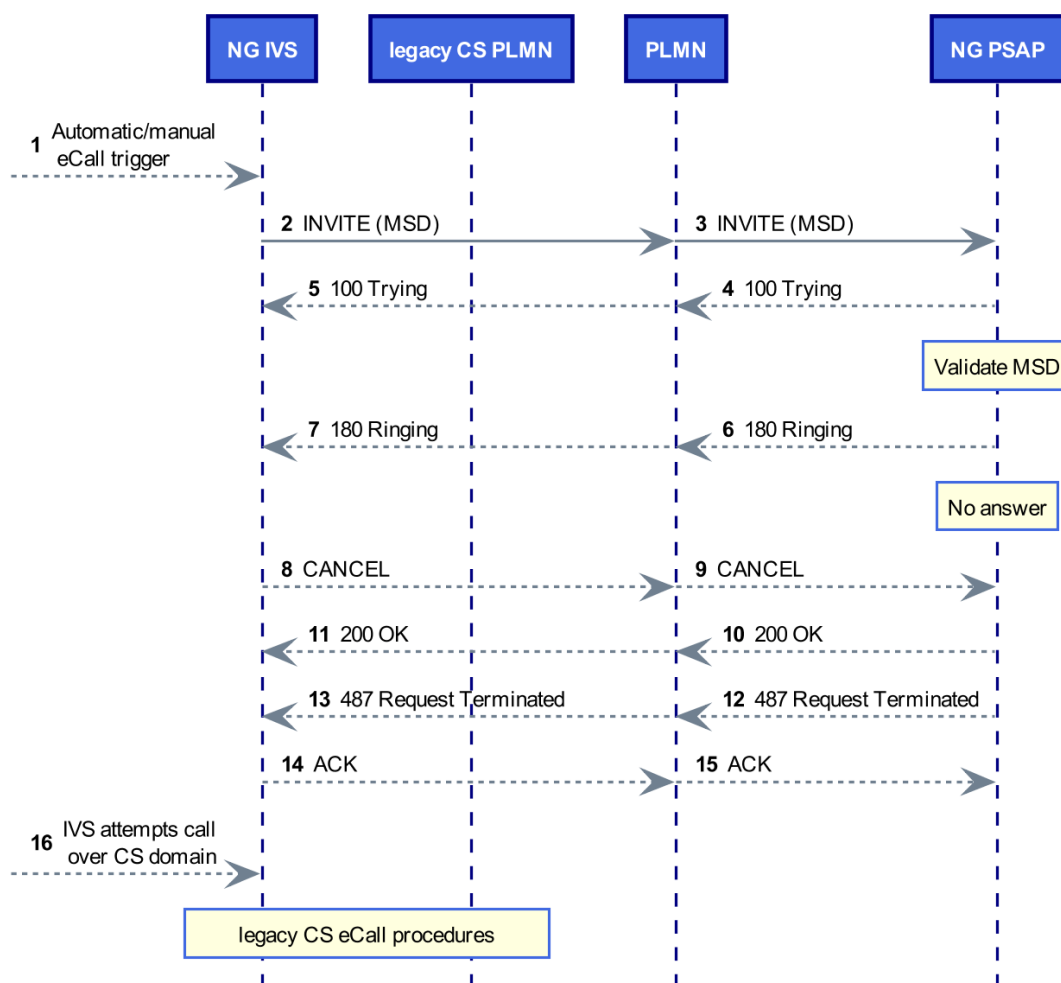


Figure 18: No-answer scenario

- 1) The NG IVS sends an instruction to establish a manual or automatic NG eCall.
- 2) An initial emergency INVITE is sent to the PLMN. The INVITE shall contain the initial MSD and the eCall type of emergency service indicator (automatic, manual).
- 3) The PLMN network routes the INVITE towards the appropriate NG PSAP.
- 4) NG PSAP may respond with 100 Trying to the PLMN.
- 5) PLMN may send 100 Trying to NG IVS.
- 6) NG PSAP may send 180 Ringing to the PLMN.
- 7) PLMN may send 180 Ringing to the NG IVS.
- 8) After no-answer is received NG IVS optionally sends CANCEL request to the PLMN.
- 9) PLMN resends CANCEL to the NG PSAP.
- 10) NG PSAP responds with 200 OK CANCEL to the PLMN.
- 11) PLMN resends 200 OK CANCEL to the NG IVS.
- 12) NG PSAP sends 487 Request Terminated response to the PLMN.
- 13) PLMN resends 487 Request Terminated response or alternative response (see note 2) to the NG IVS.
- 14) NG IVS sends ACK request to the PLMN.

- 15) The NG PSAP receives ACK for the response from the PLMN.
- 16) IVS attempts call over CS domain.

7.3.4 Dropped eCall after MSD has been acknowledged

Interoperability Test Description			
Identifier:	TD_ADV_IVS_04		
Objective:	Verify that the IVS does not attempt to establish a new eCall, if the IMS eCall dropped after the eCall has been successfully established and the MSD has been acknowledged. Verify that the IVS answers a PSAP callback.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.4.5, 7.11 and 7.13.4.2 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech AND IVS_callback AND PSAP_callback		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	verify	2-way speech can be exchanged
	7	stimulus	Simulate a call drop
	8	verify	IVS does not attempt to establish new eCall
	9	stimulus	PSAP initiates a callback (via INVITE request) using IVS callback number, SIP identifier or IP address
	10	verify	IVS confirms the call with a 200 OK INVITE
	11	verify	PSAP sends ACK request on OK INVITE
12	verify	2-way speech can be exchanged	

7.3.5 Dropped eCall before call has been established - reattempt to CS

Interoperability Test Description			
Identifier:	TD_ADV_IVS_05		
Objective:	Verify that the IVS attempts a new eCall in CS domain, if the IMS eCall dropped before the call has been established.		
Configuration:	NG_eCall_CFG_02		
References:	Clauses 7.4.5, 7.4.8 and 7.13.4.1 of TS 17184:2022 [4] Clause 7.4.4.4.3 of prEN 17905:2022 [13] Clause 5.1.6.11.2 (2 nd numbered list/item 4) of ETSI TS 124 229 [1]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_legacy_eCall AND PSAP_legacy_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> The PSAP should be configured to send no 200 OK INVITE response in step 3 PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	stimulus	PSAP sends no 200 OK INVITE response
	4	stimulus	Simulate a call drop before the call has been established (before the IVS received a 200 OK INVITE response)
	5	verify	IVS re-attempt the eCall due to domain selection rules
	6	verify	The IVS shall attempt to transfer the MSD to the PSAP via in-band modem in CS domain (see note 1)
	7	verify	PSAP answers call and immediately transmits SEND-MSD (START) message without waiting for the valid Initiation Signal (see note 2)
	8	verify	If IVS had started to send an INITIATION message then IVS stopped sending the INITIATION message on receipt of the SEND-MSD message from the PSAP
	9	verify	PSAP verifies MSD is received
	10	verify	Verify the MSD is correctly decoded
	11	check	MSD content at PSAP is identical to content transmitted by IVS
	12	verify	PSAP sends acknowledgement
	13	verify	Verify that the IVS has stopped transmitting the MSD
	14	verify	2-way speech can be exchanged
NOTE 1: The test steps 7 to 13 are copied from clause 7.1.1 of ETSI TS 103 428 [9]. Other tests from ETSI TS 103 428 [9] could also be tested here.			
NOTE 2: Step 7 is only applicable if the PSAP is configured in PULL mode and should be skipped, if PSAP is configured in PUSH mode.			
NOTE 3: In case if there is PS-only environment, see test case TD_ADV_IVS_15.			

7.3.6 IVS configured for 'eCall only' service (restricted)

Interoperability Test Description			
Identifier:	TD_ADV_IVS_06		
Objective:	Verify that the IVS does not attempt network registration until an eCall is initiated, if configured for 'eCall only' service.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.1.4 and 7.2.2 of TS 17184:2022 [4] Clause 10.7 of ETSI TS 122 101 [11]		
Applicability:	IVS_ims_eCall AND IVS_eCall_only		
Pre-test conditions:	<ul style="list-style-type: none"> • IVS is configured for 'eCall only' service (restricted) • Ignition is OFF and NG IVS is in mobile network coverage • NG MNO and NG PSAP test points are available • NG IVS configured to support IMS communication profile 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS power on
	2	verify	IVS does not attempt to register on PLMN
	3	stimulus	IVS initiates an eCall (manual, automatic, test or reconfiguration)
	4	verify	IVS registered to the HPLMN
	5	verify	PSAP verifies the MSD (in an INVITE request) is received
	6	verify	PSAP verifies the MSD is correctly decoded

7.3.7 eCall is attempted when no networks are available (limited service condition with forbidden PLMN on SIM/USIM)

Interoperability Test Description			
Identifier:	TD_ADV_IVS_07		
Objective:	Verify that an eCall is attempted when the IVS is in mobile network coverage but no networks are available for registration (limited service condition due to forbidden PLMN on SIM/USIM).		
Configuration:	NG_eCall_CFG_03 or NG_eCall_CFG_08		
References:	Clauses 7.4.4 and 7.13.1.1 of TS 17184:2022 [4] Clause 10.7 of ETSI TS 122 101 [11]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall		
Pre-test conditions:	<ul style="list-style-type: none"> • Ignition is OFF and NG IVS is in mobile network coverage • NG MNO and NG PSAP test points are available • NG IVS configured to support IMS communication profile • NG IVS contains USIM with forbidden PLMN (limited service condition) 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS power on
	2	verify	IVS does not attempt to register on PLMN due to limited service condition
	3	stimulus	IVS initiates an eCall (manual or automatic)
	4	verify	IVS performs IMS emergency registration
	5	verify	PSAP verifies the MSD (in an INVITE request) is received
	6	verify	PSAP verifies the MSD is correctly decoded
NOTE:	To test the IVS behaviour in limited service condition it is also possible to use a mobile network simulator, which is rejecting the IVS attempts to register to the mobile network.		

7.3.8 MSD transfer to PSAP supporting IMS eCall via PLMN without VoIMS support

Interoperability Test Description			
Identifier:	TD_ADV_IVS_08		
Objective:	Verify that the IVS is able to transfer the MSD (in an INVITE request) to a PSAP supporting IMS eCall via a mobile network without VoIMS support.		
Configuration:	NG_eCall_CFG_06		
References:	Clause 7.13.1.2 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall		
Pre-test conditions:	<ul style="list-style-type: none"> The network shall indicate support of IMS Emergency Services (EMS) and eCall Over IMS (ECL) and shall not indicate support of Voice over IMS (VoIMS) Ignition is OFF and NG IVS is in mobile network coverage, but VoIMS is not supported NG MNO and NG PSAP test points are available NG IVS configured to support IMS communication profile NG IVS contains USIM 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS power on
	2	verify	IVS registers to the PLMN but does not attempt IMS registration due to missing VoIMS support indication
	3	stimulus	IVS initiates an eCall
	4	verify	IVS performs IMS emergency registration
	5	verify	PSAP verifies the MSD (in an INVITE request) is received
	6	verify	PSAP verifies the MSD is correctly decoded

7.3.9 Termination of manually triggered eCall by vehicle occupant

Interoperability Test Description			
Identifier:	TD_ADV_IVS_09		
Objective:	Verify that the vehicle occupant is able to abort a manually triggered eCall before expiry of timer T1.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.4.7 and Table A.1 of TS 17184:2022 [4] Clause 7.10.3 of EN 16072:2022 [7]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> IVS timer T1 shall not be set to 0. 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates a manual eCall
	2	verify	IVS does not send an INVITE request
	3	stimulus	Terminate the eCall before expiry of timer T1
	4	verify	eCall is terminated successfully

7.3.10 Termination of automatically triggered eCall by vehicle occupant not allowed/not possible

Interoperability Test Description			
Identifier:	TD_ADV_IVS_10		
Objective:	Verify that the vehicle occupant is not able to abort an automatically triggered eCall.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.4.7 of TS 17184:2022 [4] Clause 7.10.3 of EN 16072:2022 [7]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an automatic eCall
	2	stimulus	Try to terminate or abort the eCall
	3	verify	eCall established successfully and was not terminated

7.3.11 Ongoing eCall shall not be disconnected if new trigger is received

Interoperability Test Description			
Identifier:	TD_ADV_IVS_11		
Objective:	Verify that the IVS does not attempt to establish a new eCall on new trigger during ongoing eCall, if the eCall has been successfully established and the MSD has been acknowledged before.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.4.2 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	verify	2-way speech can be exchanged
	7	stimulus	Stimulate manual trigger or stimulate sensor
	8	verify	IVS does not attempt to establish new eCall and does not disconnect the ongoing eCall
	9	verify	2-way speech can be exchanged

7.3.12 No fallback to legacy eCall following busy during call setup

Interoperability Test Description			
Identifier:	TD_ADV_IVS_12		
Objective:	Verify that the IVS remains registered in the mobile network (unless in limited service state) after the IVS receives a 486 (Busy Here), 600 (Busy Everywhere) or 603 (Decline) response with a positive acknowledgement for the MSD to the INVITE request. Verify that the IVS answers a PSAP callback.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.4.5, 7.6.2 and 7.13.3.3 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech AND IVS_callback AND PSAP_callback		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> The PSAP should be configured to send 486 (Busy Here), 600 (Busy Everywhere) or 603 (Decline) response with a positive acknowledgement for the MSD to the INVITE request 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives a 486 (Busy Here), 600 (Busy Everywhere) or 603 (Decline) response with a positive acknowledgement for the MSD to the INVITE request
	5	verify	PSAP receives ACK on 486 (Busy Here), 600 (Busy Everywhere) or 603 (Decline) response (see note 1)
	6	verify	IVS remains registered in the mobile network, unless in limited service state (see note 2)
	7	stimulus	PSAP initiates a callback (via INVITE request) using IVS callback number, SIP identifier or IP address
	8	verify	IVS confirms the call with a 200 OK INVITE response
	9	verify	PSAP sends ACK request on 200 OK INVITE response
	10	verify	2-way speech can be exchanged
NOTE 1: Due to the positive acknowledgement for the MSD, the IVS shall consider the transfer of the MSD to be successful.			
NOTE 2: The part of clause 5.1.6.11.2 in ETSI TS 124 229 [1] where a call rejection with response code 6xx or 4xx containing an ACK for the MSD (immediately) triggers a domain selection is optional. This optional requirement is verified in the test case TD_ADV_IVS_01.			

7.3.13 No fallback to legacy eCall following unavailable response during call setup

Interoperability Test Description			
Identifier:	TD_ADV_IVS_13		
Objective:	Verify that the IVS remains registered in the mobile network (unless in limited service state) after the IVS receives a 480 (Temporarily Unavailable) response to the INVITE request. Verify that the IVS answers a PSAP callback.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.4.5, 7.6.2 and 7.13.3.3 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech AND IVS_callback AND PSAP_callback		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> The PSAP should be configured to send 480 (Temporarily Unavailable) response for the MSD to the INVITE request 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives a 480 (Temporarily Unavailable) response for the MSD to the INVITE request (see note 1)
	5	verify	PSAP receives ACK on 480 (Temporary Unavailable) response
	6	verify	IVS remains registered in the mobile network, unless in limited service state (see note 2)
	7	stimulus	PSAP initiates a callback (via INVITE request) using IVS callback number, SIP identifier or IP address
	8	verify	IVS confirms the call with a 200 OK INVITE response
	9	verify	PSAP sends ACK request on 200 OK INVITE response
	10	verify	2-way speech can be exchanged
NOTE 1: Due to the positive acknowledgement for the MSD, the IVS shall consider the transfer of the MSD to be successful.			
NOTE 2: The part of clause 5.1.6.11.2 in ETSI TS 124 229 [1] where a call rejection with response code 6xx or 4xx containing an ACK for the MSD (immediately) triggers a domain selection is optional. This optional requirement is verified in the test case TD_ADV_IVS_02.			

7.3.14 Dropped eCall after call has been established - reattempt to PS

Interoperability Test Description			
Identifier:	TD_ADV_IVS_14		
Objective:	Verify that the IVS attempts a new eCall in PS domain, if the IMS eCall dropped after the eCall has been successfully established and the MSD has not been acknowledged.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.4.5, 7.4.8 and 7.13.4.1 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> The PSAP should be configured to send 200 OK INVITE response with a negative acknowledgement for the MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives a 200 OK INVITE response with a negative acknowledgement for the MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	verify	2-way speech can be exchanged
	7	stimulus	Simulate a call drop
	8	verify	IVS re-attempts a new eCall in PS domain for a period no more than 2 minutes after the initial triggering
	9	verify	PSAP verifies the MSD is correctly decoded
	10	verify	IVS verifies the 200 OK INVITE response with positive acknowledgement for the received MSD
	11	verify	PSAP receives ACK request on 200 OK INVITE response
	12	verify	2-way speech can be exchanged
NOTE:	Step 6 verify CEN requirements only. ETSI/3GPP would expect to transfer the MSD to the PSAP via in-band modem within the IMS eCall.		

7.3.15 Dropped eCall before call has been established - reattempt to PS

Interoperability Test Description			
Identifier:	TD_ADV_IVS_15		
Objective:	Verify that the IVS attempts a new eCall in PS domain for a period no more than 2 minutes after the initial triggering, if the IMS eCall dropped before the call has been established.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clauses 7.4.5, 7.4.8 and 7.13.4.1 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> The PSAP should be configured to send no 200 OK INVITE response in step 3 PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	stimulus	PSAP sends no 200 OK INVITE response
	4	stimulus	Simulate a call drop before the call has been established (before the IVS received a 200 OK INVITE response)
	5	verify	IVS re-attempts a new eCall in PS domain for a period no more than 2 minutes after the initial triggering
	6	verify	PSAP verifies the MSD is correctly decoded
	7	verify	IVS verifies the 200 OK INVITE response with positive acknowledgement for the received MSD
	8	verify	PSAP receives ACK request on 200 OK INVITE response
	9	verify	2-way speech can be exchanged
NOTE:	The part of clause 5.1.6.11.2 in ETSI TS 124 229 [1] where a failed call (immediately) triggers a domain selection is optional but, if implemented, shall be implemented in accordance with ETSI TS 124 229 [1]. This requirement is verified in the test case TD_ADV_IVS_05.		

7.3.16 Test eCall is not attempted when no networks are available (limited service condition with forbidden PLMN on SIM/USIM)

Interoperability Test Description			
Identifier:	TD_ADV_IVS_16		
Objective:	Verify that a test eCall is not attempted when the IVS is in mobile network coverage but no networks are available for registration (limited service condition due to forbidden PLMN on SIM/USIM).		
Configuration:	NG_eCall_CFG_03 or NG_eCall_CFG_08		
References:	Clause 7.3.2 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall		
Pre-test conditions:	<ul style="list-style-type: none"> Ignition is OFF and NG IVS is in mobile network coverage NG MNO test point is available NG IVS configured to support IMS communication profile NG IVS contains USIM with forbidden PLMN (limited service condition) 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS power on
	2	verify	IVS does not attempt to register on PLMN due to limited service condition
	3	stimulus	IVS initiates a test eCall
	4	verify	IVS does not attempt to register on PLMN due to limited service condition
NOTE:	To test the IVS behaviour in limited service condition it is also possible to use a mobile network simulator, which is rejecting the IVS attempts to register to the mobile network.		

7.3.17 Reattempt of eCall following no-answer during call setup

Interoperability Test Description			
Identifier:	TD_ADV_IVS_17		
Objective:	Verify that the IVS reattempts the eCall, if there is no-answer (e.g. 200 OK INVITE response) from the PSAP except optional 100 (Trying) or 180 (Ringing).		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.4.8 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_legacy_eCall AND PSAP_legacy_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> The PSAP should be configured to send no-answer (e.g. 200 OK INVITE response) except optional 100 (Trying) or 180 (Ringing) PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	IVS receives no-answer (e.g. 200 OK INVITE response) except optional 100 (Trying) or 180 (Ringing)
	4	verify	PSAP receives a CANCEL request (see note 1)
	5	verify	IVS receives 200 OK CANCEL response
	6	verify	IVS receives 487 (Request Terminated) response
	7	verify	PSAP receives ACK request
	8	stimulus	The PSAP should be configured to send answer (200 OK INVITE response)
	9	verify	IVS re-attempts a new eCall in the PS domain for a period no more than 2 minutes after the initial triggering
	10	verify	PSAP verifies the MSD is correctly decoded
	11	verify	IVS verifies the 200 OK INVITE response with positive acknowledgement for the received MSD
	12	verify	PSAP receives ACK request on 200 OK INVITE response
	13	verify	2-way speech can be exchanged
NOTE 1: Step 9 and following steps verify CEN requirements only. ETSI/3GPP would expect that IVS re-attempts the eCall due to domain selection rules.			
NOTE 2: In case if there is PS/CS environment (NG_eCall_CFG_02) see test case TD_ADV_IVS_03.			

7.4 Advanced PSAP test scenarios

7.4.1 PSAP handling of more than one eCall simultaneously

Interoperability Test Description			
Identifier:	TD_ADV_PSAP_01		
Objective:	Verify that a PSAP is able to receive and process more than one eCall simultaneously from different IVS devices.		
Configuration:	NG_eCall_CFG_04		
References:	Clause 7.1 of EN 16072:2022 [7]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND PSAP_simult_eCalls		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> • PSAP has the ability to answer and process more than one eCall simultaneously • All involved IVS with ignition are ON and in mobile network coverage • PSAP Operator/s ready to receive eCalls • PSAP ready to collect MSD information and timing 		
Test Sequence:	Step	Type	Description
	1	stimulus	All IVSs initiate an eCall to the same PSAP (using their allocated numbers or URNs)
	2	verify	PSAP verifies the calls are established
	3	verify	PSAP verifies that MSDs are correctly received and acknowledged (see note)
	4	stimulus	The eCalls are queued for PSAP operator or routed to different operators
	5	stimulus	The eCalls are answered either in-turn or simultaneously
	6	verify	Establishment of voice communication between the PSAP operator(s) and the IVS(s), and that the correct MSD information is displayed for each call
	7	stimulus	PSAP operator(s) clears down calls (via BYE request)
	8	verify	All IVSs cleared down the calls (confirmed with 200 OK BYE response)
NOTE:	The PSAP shall be able to collect the information about the successful MSD reception and related timing for the evaluation. The PSAP shall be able to queue multiple calls until an operator answers the call.		

7.4.2 PSAP correct MSD additional data decoding

Interoperability Test Description			
Identifier:	TD_ADV_PSAP_02		
Objective:	Verify that the PSAP is able to decode optional additional MSD data.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.7.2 of EN 16072:2022 [7] Clause 5.1.5 of EN 15722:2020 [12]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_add_MSD_data AND PSAP_add_MSD_data		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> • PSAP operator knows the content of the transmitted MSD, including the optional additional MSD data 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	check	MSD content (including the optional additional MSD data) at PSAP is identical to content transmitted by IVS

7.4.3 Rerouting to another PSAP/emergency control centre

Interoperability Test Description			
Identifier:	TD_ADV_PSAP_03		
Objective:	Verify that the PSAP is able to reroute the eCall to another PSAP/emergency control centre, in order to transfer the MSD and establish a voice connection with another PSAP.		
Configuration:	NG_eCall_CFG_05		
References:	Clause 7.12 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND PSAP_PSAP_interface		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> PSAP operator knows the content of the transmitted MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives a 200 OK INVITE response with a positive acknowledgement for the MSD
	5	check	MSD content at PSAP is identical to content transmitted by IVS
	6	verify	PSAP receives ACK request on 200 OK INVITE response
	7	verify	2-way speech can be exchanged between IVS and PSAP
	8	stimulus	PSAP operator reroutes eCall to another PSAP or emergency control centre
	9	verify	eCall is forwarded to another PSAP
	10	verify	2-way speech can be exchanged between IVS and another PSAP
	11	check	MSD content at another PSAP is identical to content transmitted by IVS

7.4.4 PSAP operator user interface

Interoperability Test Description			
Identifier:	TD_ADV_PSAP_04		
Objective:	Verify that the PSAP user interface displays caller identity, caller location and MSD.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 6.2.4 of EN 16072:2022 [7]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall		
Pre-test conditions:	Default see clause 6.10		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	PSAP verifies the MSD is correctly decoded
	4	verify	IVS receives the 200 OK INVITE response with positive acknowledgement for the MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	check	PSAP user interface displays caller identity, caller location and MSD

7.4.5 Invalid MSD

Interoperability Test Description			
Identifier:	TD_ADV_PSAP_05		
Objective:	Verify that the PSAP performs a format and consistency check of an invalid (or corrupted) initial MSD and hereafter provides a 200 OK INVITE response with a negative acknowledgement for the MSD.		
Configuration:	NG_eCall_CFG_01 or NG_eCall_CFG_07		
References:	Clause 7.6.3 of TS 17184:2022 [4]		
Applicability:	IVS_ims_eCall AND PSAP_ims_eCall AND IVS_speech AND PSAP_speech		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> The IVS should be configured to send an invalid MSD in the SIP INVITE 		
Test Sequence:	Step	Type	Description
	1	stimulus	IVS initiates an eCall
	2	verify	PSAP verifies the MSD (in an INVITE request) is received
	3	verify	MSD format or consistency check fails
	4	verify	IVS receives a 200 OK INVITE response with a negative acknowledgement for the MSD
	5	verify	PSAP receives ACK request on 200 OK INVITE response
	6	verify	2-way speech can be exchanged

7.5 Advanced Tests for TPS

7.5.1 TPSP and rerouting to national PSAP

Interoperability Test Description			
Identifier:	TD_ADV_TPS_01		
Objective:	Verify that TPSP is able to reroute the eCall to the national PSAP/emergency control centre, in order to transfer the MSD and establish a voice connection with the national PSAP.		
Configuration:	NG_eCall_CFG_09		
References:	Clauses 9.9, 10.3 and 10.4 of EN 16102:2011 [14]		
Applicability:	IVS_TPS_eCall AND PSAP_TPSP_interface AND TPSP_PSAP_interface		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> PSAP operator knows the content of the transmitted TSD/MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	TPS IVS initiates an eCall
	2	verify	TPSP verifies the TSD is received
	3	verify	TPSP verifies the TSD is correctly decoded
	4	verify	TPS IVS receives a positive acknowledgement for the TSD
	5	check	TSD content at TPSP is identical to content transmitted by TPS IVS
	6	verify	2-way speech can be exchanged between TPS IVS and TPSP
	7	stimulus	TPSP operator reroutes eCall to national PSAP or emergency control centre
	8	verify	eCall is rerouted to national PSAP (including the MSD)
	9	verify	2-way speech can be exchanged between TPS IVS and national PSAP
	10	check	MSD content at national PSAP is identical to the content of the mandatory information elements of the TSD transmitted by TPS IVS

7.5.2 Conference call between TPS IVS, TPSP and national PSAP

Interoperability Test Description			
Identifier:	TD_ADV_TPS_02		
Objective:	Verify that TPSP is able to forward the eCall to the national PSAP/emergency control centre, in order to transfer the MSD and establish a conference call between TPS IVS, TPSP and national PSAP.		
Configuration:	NG_eCall_CFG_09		
References:	Clauses 9.3, 9.9, 10.3 and 10.4 of EN 16102:2011 [14]		
Applicability:	IVS_TPS_eCall AND PSAP_TPSP_interface AND TPSP_PSAP_interface AND TPSP_conf_call		
Pre-test conditions:	Default see clause 6.10: <ul style="list-style-type: none"> PSAP operator knows the content of the transmitted TSD/MSD 		
Test Sequence:	Step	Type	Description
	1	stimulus	TPS IVS initiates an eCall
	2	verify	TPSP verifies the TSD is received
	3	verify	TPSP verifies the TSD is correctly decoded
	4	verify	TPS IVS receives a positive acknowledgement for the TSD
	5	check	TSD content at TPSP is identical to content transmitted by TPS IVS
	6	verify	2-way speech can be exchanged between TPS IVS and TPSP
	7	stimulus	TPSP operator forwards eCall (including the MSD) to the national PSAP or emergency control centre and establishes a conference call between TPS IVS, TPSP and national PSAP
	8	verify	3 party conference is established and 2-way speech for each participant can be exchanged (between TPS IVS, TPSP and national PSAP)
	9	check	MSD content at national PSAP is identical to the content of the mandatory information elements of the TSD transmitted by TPS IVS

Annex A (informative): Source code of MSC figures

A.1 Overview

MSC figures were produced with the open-source tool PlantUML [i.4], which allows to create UML diagrams from a plain text language. Source code of the figures are contained in archive ts_103683v020101p0.zip which accompanies the present document.

History

Document history		
V1.1.1	February 2020	Publication
V2.1.1	February 2023	Publication