



SLOVENSKI STANDARD
oSIST prEN 18052:2024

01-julij-2024

Inteligentni transportni sistemi - e-Varnost - Preskušanje skladnosti e-klica HLAP v hibridnih omrežnih okoljih s komutiranim vezjem/paketno komutiranim omrežjem

Intelligent transport systems - ESafety - ECall end to end conformance testing for eCall HLAP in hybrid circuit switched/packet switched network environments

Intelligente Verkehrssysteme - eSicherheit - eCall-Ende-zu-Ende Konformitätsprüfungen für übergeordnete eCall-Anwendungen in hybriden leitungs-/paketvermittelnden Netzwerkumgebungen

Systèmes de transport intelligents - eSafety - Essais de conformité du système eCall de bout en bout pour le HLAP d'eCall dans les environnements réseaux hybrides à commutation de circuits et de paquets

<https://standards.iteh.ai/standards/osist-pr-en-18052-2024>
Ta slovenski standard je istoveten z: prEN 18052

ICS:

03.220.20	Cestni transport	Road transport
13.200	Preprečevanje nesreč in katastrof	Accident and disaster control
35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport

oSIST prEN 18052:2024

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 18052

May 2024

ICS

English Version

Intelligent transport systems - ESafety - ECall end to end conformance testing for eCall HLAP in hybrid circuit switched/packet switched network environments

Intelligente Verkehrssysteme - eSicherheit - eCall-Ende-zu-Ende Konformitätsprüfungen für übergeordnete eCall-Anwendungen in hybriden leitungs/paketvermittelnden Netzwerkkumgebungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 278.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation. <https://standards.iteh.ai/>

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword	5
Introduction	6
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions	9
4 Symbols and abbreviations	12
5 Conformance.....	14
5.1 General.....	14
5.2 General conditions	14
6 General overview of the eCall transaction for pan-European eCall.....	14
6.1 General principle	14
7 How to use this Standard	18
7.1 Layout and procedures	18
7.2 System under test	19
8 Requirements.....	20
8.1 General objectives	20
8.1.1 State transitions	20
8.1.2 Classification of testing	26
8.1.3 CTP naming conventions.....	28
8.1.4 CTP <stage> naming convention for conformance tests.....	28
8.2 CTP structure.....	29
8.3 eCall timers	30
9 Conformance tests for in-vehicle systems (IVS)	31
9.1 Taxonomy of testing	31
9.2 Conformance tests for eCall In-Vehicle Systems (IVS) to demonstrate compliance with EN 17905.....	31
9.2.1 General.....	31
9.2.2 CTP 1.1.1.1 — Self-test and fault indication — IVS	33
9.2.3 CTP 1.1.2.1 — Domain selection skipped in CS domain — IVS.....	34
9.2.4 CTP 1.1.2.2 — Domain selection skipped in PS domain — IVS.....	35
9.2.5 CTP 1.1.2.3 — Domain selection performed and eCall initiated in CS domain — IVS.....	36
9.2.6 CTP 1.1.2.4 — Domain selection performed and eCall initiated in PS domain — IVS.....	37
9.2.7 CTP 1.1.2.5 — Domain selection performed and eCall initiated in PS domain in different RAT — IVS	38
9.2.8 CTP 1.1.6.1 — eCall successful in CS domain — IVS.....	39
9.2.9 CTP 1.1.6.2 — eCall successful in CS domain in limited service state — IVS	40
9.2.10 CTP 1.1.6.3 — eCall successful in PS domain — IVS.....	41
9.2.11 CTP 1.1.10.1 — Fallback to IMS emergency call in PS domain after network registration and eCall failed in CS domain — IVS.....	42
9.2.12 CTP 1.1.10.2 — Fallback to IMS emergency call in PS domain after eCall failed in CS domain — IVS	43
9.2.13 CTP 1.1.10.3 — Fallback to IMS emergency call in PS domain after negative AL-ACK for initial MSD — IVS.....	45

9.2.14	CTP 1.1.10.4 — Fallback to IMS emergency call in PS domain after missing AL-ACK for initial MSD — IVS	46
9.2.15	CTP 1.1.10.5 — Fallback to IMS emergency call in PS domain after eCall is dropped in CS domain before the MSD is acknowledged and after unsuccessful re-attempt in CS domain — IVS	47
9.2.16	CTP 1.1.10.6 — Fallback to emergency call in CS domain — IVS.....	48
9.2.17	CTP 1.1.10.7 — Fallback to eCall in PS domain after network registration and eCall failed in CS domain — IVS.....	50
9.2.18	CTP 1.1.10.8 — Fallback to eCall in PS domain after eCall failed in CS domain — IVS	51
9.2.19	CTP 1.1.10.9 — Fallback to eCall in CS domain after eCall failed in PS domain — IVS	53
9.2.20	CTP 1.1.10.10 — Fallback to eCall (emergency call) in CS domain after eCall failed in PS domain — IVS.....	54
9.2.21	CTP 1.1.10.11 — Fallback to eCall in PS domain after eCall is dropped in CS domain before the MSD is acknowledged and after unsuccessful re-attempt in CS domain — IVS.....	55
9.2.22	CTP 1.1.10.12 — Fallback to eCall in PS domain after eCall is dropped in CS domain before the MSD is acknowledged and after unsuccessful re-attempt in CS domain — IVS.....	57
9.2.23	CTP 1.1.10.13 — Immediate fallback to CS domain after eCall is rejected and MSD acknowledged — IVS	59
9.2.24	CTP 1.1.10.14 — Fallback to CS domain after eCall is rejected and negative AL-ACK and unsuccessful re-attempt in PS domain — IVS.....	60
9.2.25	CTP 1.1.10.15 — Immediate fallback to CS domain after eCall is rejected and negative AL-ACK — IVS	62
9.2.26	CTP 1.1.10.16 — Fallback to CS domain after eCall is rejected and missing AL-ACK and unsuccessful re-attempt in PS domain — IVS.....	63
9.2.27	CTP 1.1.10.17 — Immediate fallback to CS domain after eCall is rejected and missing AL-ACK — IVS.....	64
9.2.28	CTP 1.1.10.18 — Fallback to CS domain after eCall is not answered and unsuccessful re-attempt in PS domain — IVS	66
9.2.29	CTP 1.1.10.19 — Immediate fallback to CS domain after eCall is not answered — IVS	67
9.2.30	CTP 1.1.10.20 — Fallback to CS domain after eCall is dropped in PS domain before the MSD is acknowledged and after unsuccessful re-attempt in PS domain — IVS	68
9.2.31	CTP 1.1.10.21 — Immediate fallback to CS domain after eCall is dropped in PS domain before the MSD is acknowledged — IVS	69
9.2.32	CTP 1.1.15.1 — In-call domain handover — IVS.....	71
9.2.33	CTP 1.1.15.2 — New/updated MSD received after in-call domain handover — IVS ..	72
9.2.34	CTP 1.1.17.1 — Call-back allowed after change to CS domain — IVS.....	73
9.2.35	CTP 1.1.17.2 — Call-back allowed after change to PS domain — IVS.....	74
9.2.36	CTP 1.1.17.3 — Remain registered for ≥ 1 hr after in-call domain handover — IVS..	76
9.2.37	CTP 1.1.17.4 — Remain registered for ≥ 1 hr after change to CS domain — IVS	77
9.2.38	CTP 1.1.17.5 — Remain registered for ≥ 1 hr after change to PS domain — IVS	79
9.2.39	CTP 1.1.18.1 — MSD transfer using in-band modem in PS domain after negative AL-ACK for initial MSD — IVS	80
9.2.40	CTP 1.1.18.2 — MSD transfer using in-band modem in PS domain after missing AL-ACK for initial MSD — IVS	81
9.3	Additional conformance tests for eCall-only in-vehicle systems to demonstrate compliance with EN 17905.....	83
9.3.1	General	83

prEN 18052:2024 (E)

9.3.2	CTP 1.2.6.1 — eCall successful in PS domain in limited service state — eCall-only IVS	84
9.3.3	CTP 1.2.10.1 — Immediate fallback to CS domain after eCall is rejected and MSD acknowledged in limited service state — eCall-only IVS.....	85
9.3.4	CTP 1.2.10.2 — Fallback to eCall in CS domain after network registration and eCall failed in PS domain — eCall-only IVS.....	86
9.3.5	CTP 1.2.17.1 — Remain registered for ≥ 1 hr ≤ 12 hr after in-call domain handover — eCall-only IVS.....	87
10	Conformance tests for Mobile Network Operator (MNO) systems	89
10.1	Taxonomy of testing	89
10.2	Conformance tests for MNOs to demonstrate compliance with EN 17905	89
10.2.1	General.....	89
10.2.2	CTP 2.1.3.1 — New/updated MSD after in-call domain handover — MNO	91
10.2.3	CTP 2.1.3.2 — New/updated MSD after in-call domain handover - Roaming — MNO	92
10.2.4	CTP 2.1.5.1 — Call-back after in-call domain handover — MNO.....	93
10.2.5	CTP 2.1.5.2 — Call-back after in-call domain handover - Roaming — MNO.....	94
10.2.6	CTP 2.1.5.3 — Call-back after change to CS domain — MNO	96
10.2.7	CTP 2.1.5.4 — Call-back after change to PS domain — MNO	97
11	Conformance tests for Public Safety Answering Point (PSAP) systems	98
11.1	Taxonomy of testing	98
11.2	Conformance tests for PSAPs to demonstrate compliance with EN 17905.....	98
11.2.1	General.....	98
11.2.2	CTP 3.1.10.1 — Logging of MSD transfer type of eCall in CS domain — PSAP	100
11.2.3	CTP 3.1.10.2 — Logging of MSD transfer type of eCall in PS domain — PSAP.....	101
11.2.4	CTP 3.1.10.3 — Logging of MSD transfer type (in-band modem) of eCall in PS domain — PSAP.....	101
11.2.5	CTP 3.1.13.1 — Request new MSD after in-call domain handover before call clear-down — PSAP	103
11.2.6	CTP 3.1.15.1 — Call-back to vehicle after in-call domain handover — PSAP.....	104
11.2.7	CTP 3.1.15.2 — Call-back to vehicle after change to CS domain — PSAP	105
11.2.8	CTP 3.1.15.3 — Call-back to vehicle after change to PS domain — PSAP.....	106
11.2.9	CTP 3.1.16.1 — Request new MSD failed after call clear-down and change to CS domain — PSAP.....	107
11.2.10	CTP 3.1.16.2 — Request new MSD failed after call clear-down and change to PS domain — PSAP	108
11.2.11	CTP 3.1.16.3 — Request new MSD after call clear-down and change to CS domain — PSAP.....	109
11.2.12	CTP 3.1.16.4 — Request new MSD after call clear-down and change to PS domain — PSAP.....	111
12	Marking, labelling and packaging.....	112
13	Declaration of patents and intellectual property.....	112
	Bibliography	113

European foreword

This document (prEN 18052:2024) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document is the result of narrowing down the scope of prEN 17240 to exclusively describe end to end conformance tests for the eCall High Level Application Protocols in packet switched networks.

This document complements EN 16454 and prEN 17240.

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[oSIST prEN 18052:2024](https://standards.iteh.ai/catalog/standards/sist/4111da8f-fc64-4fe3-b21a-19b4be9fb5ad/osist-pren-18052-2024)

<https://standards.iteh.ai/catalog/standards/sist/4111da8f-fc64-4fe3-b21a-19b4be9fb5ad/osist-pren-18052-2024>

prEN 18052:2024 (E)

Introduction

An *eCall* is an emergency call generated either automatically via activation of in-vehicle sensors or manually by the *vehicle occupants*; when activated, to provide notification and relevant location information to the most appropriate *Public Safety Answering Point* (PSAP), by means of *mobile wireless communications networks* and carries a defined standardized *Minimum Set of Data*, notifying that there has been an incident that requires response from the emergency services and establishes an audio channel between the occupants of the vehicle and the *most appropriate PSAP*.

NOTE 1 The term PSAP, which is most widely used in the *eCall* documentation, European Commission documents, etc., is used throughout this document and equates to the term *emergency call response centre* used in the ITS Implementation Directive.

EN 15722 specifies a standardized MSD for eCall, EN 16062 specifies high level application protocols for eCall and EN 16072 specifies pan-European eCall operating requirements. For third party systems, EN 16102 specifies third party services supporting eCall operating requirements.

The pan-European *eCall* are made using Public Land Mobile Networks (PLMN) for which operating requirements are specified in a number of ETSI standards and technical specifications. In order to provide the *eCall service* across a wireless network, high level application protocols are required as an important essential element to affect this service provision. Originally PLMN were circuit switched networks for which EN 16062 specifies High Level Application Protocols. In these networks eCall uses Teleservice No 12 (TS12) and in-band modem transfer of data.

Over time new communications technologies have become available. These technologies use so called 'packet switched' technologies using Internet protocols (IP). Particularly, 3GPP have evolved a communication management system called IMS (IP Multimedia Subsystem) which is suitable to operate over a number of bearer technologies, including LTE, NR and their successors. It is anticipated that packet switched networks (such as LTE, NR and their successors), which now co-exist with circuit switched networks (like GSM/UMTS), will, over the course of time, replace circuit switched networks.

CEN/TS 17184 provides High Level Application Protocols (HLAP) for eCall using IMS over packet switched networks. It provides the equivalent of EN 16062 for circuit switched networks and should be suitable for all/any packet switched networks and wireless access such as LTE, NR and their successors. A new Standards Deliverable EN 17905 has been developed for the provision of *eCall* HLAP in hybrid circuit switched/packet switched network environments.

During at least a couple of years, packet switched networks will not be available throughout the working area of eCall. In other areas both circuit switched and packet switched networks will co-exist, but there will be areas that only have packet switched network services. This document specifies the protocols in this hybrid situation, in order to make sure that pan-European *eCall* will function as efficiently as possible.

NOTE 2 A (possibly) large number of vehicles support circuit switched in-band eCall only (and not eCall using IMS over packet switched networks). For these to be able to continue using the *eCall service* either the onboard equipment will need to be upgraded (to support eCall using IMS) or sufficient circuit switched networks need to remain operational. This falls outside the scope of this document and is not addressed herein.

This Standards Deliverable complements EN 16454 and prEN 17240 and provides a set of end to end conformance tests in order to verify the support of *eCall* HLAP in hybrid circuit switched/packet switched network environments. This deliverable provides tests to enable actors in the eCall chain to be able to claim conformance with EN 17905, even though they are unable to control the behaviour of systems of other actors in the eCall chain.

NOTE 3 Conformance tests in this document allow demonstration that a system complies with EN 17905 is a prerequisite to providing an interoperable compliant system, but do not by themselves demonstrate that a system will function nor guarantee the quality of service.

The European Committee for Standardization (CEN) draws attention to the fact that it is claimed that compliance with this European Standard may involve the use of patents concerning eCall given in EN 16062 and various ETSI standards for the *network access device* and cellular mobile networks.

CEN takes no position concerning the evidence, validity and scope of these patent rights.

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[oSIST prEN 18052:2024](https://standards.iteh.ai/catalog/standards/sist/4111da8f-fc64-4fe3-b21a-19b4be9fb5ad/osist-pren-18052-2024)

<https://standards.iteh.ai/catalog/standards/sist/4111da8f-fc64-4fe3-b21a-19b4be9fb5ad/osist-pren-18052-2024>

prEN 18052:2024 (E)

1 Scope

This document describes the key actors in the eCall chain of service provision in hybrid circuit switched/packet switched network environments as:

- 1) *In-Vehicle System (IVS)/vehicle*,
- 2) *Mobile Network Operator (MNO)*,
- 3) *Public Safety Answering Point (PSAP)*,

and to provide conformance tests for actor groups 1) – 3).

NOTE 1 Conformance tests are not appropriate nor required for *vehicle occupants*, although they are the recipient of the service.

NOTE 2 Third party eCall systems (*TPS-eCall*) are not within the scope of this deliverable. This is because the core *TPS-eCall* standard (EN 16102) does not specify the communications link between the vehicle and the *TPS service provider*.

NOTE 3 These conformance tests are partly based on the appropriate conformance tests from EN 16454 and prEN 17240. This deliverable therefore adapts and revises Conformance Test Procedures (CTPs) from EN 16454 and prEN 17240 for hybrid circuit switched/packet switched network environments.

This document complements EN 16454 and prEN 17240 and provides a suite of conformance tests for IVS equipment, MNOs and PSAPs, required to ensure and demonstrate compliance with EN 17905.

The scope covers conformance testing of new engineering developments, products and systems, and does not imply testing associated with individual installations in vehicles or locations.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 17905:2023, *Intelligent transport systems — eSafety — eCall HLAP in hybrid circuit switched/packet switched network environments*

CEN/TS 17184:2022, *Intelligent transport systems — eSafety — eCall High level application Protocols (HLAP) using IMS packet switched networks*

prEN 17240, *Intelligent transport systems — eSafety — eCall end to end conformance testing for IMS packet switched based systems*

EN 16454, *Intelligent transport systems — eSafety — eCall end to end conformance testing*

EN 15722, *Intelligent transport systems — eSafety — eCall minimum set of data*

EN 16062:2023, *Intelligent transport systems — eSafety — eCall high level application requirements (HLAP) using GSM/UMTS circuit switched networks*

EN 16072:2022, *Intelligent transport systems — eSafety — Pan—European eCall operating requirements*

ETSI TS 124 229 (Release 16 or later), *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 16.13.1 Release 16)

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

clear-down

act of ending a call, following call completion, which is signalled in accordance with ISUP (ISDN User Part) 'Release Cause Codes' (usually achieved by hanging up the receiver or pressing 'end call' or similar on screen)

3.2

conformance test point

test point

point which can be an actual instantiation of equipment performing a conformance test process 'live', using 'live' equipment or may be equipment/systems that simulate behaviour of equipment at the point being tested in order to stimulate or observe the behaviour resultant from the stimulation and note the result of that simulation

3.3

CS eCall

eCall making use of a circuit switched mobile network (e.g. GSM or UMTS)

3.4

data

representations of static or dynamic objects in a formalized manner suitable for communication, interpretation, or processing by humans or by machines

3.5

data concept

concept of a group of *data* structures (i.e. object class, property, value domain, data elements, message, interface dialogue, *association*) referring to abstractions or things in the natural world that can be identified with explicit boundaries and meaning and whose properties and behaviour all follow the same rules

prEN 18052:2024 (E)**3.6****eCall**

emergency call generated either automatically via activation of in-vehicle sensors or manually by the *vehicle occupants*, which, when activated, provides notification and relevant location information to the most appropriate *Public Safety Answering Point*, by means of *mobile wireless communications networks*, carries a defined standardized *Minimum Set of Data* (MSD) notifying that there has been an incident that requires response from the emergency services, and establishes an audio channel between the occupants of the vehicle and the *most appropriate Public Safety Answering Point*

3.7**eCall-capable**

provision of *eCall service* with availability of wireless communication network to undertake other application services

3.8**eCall-only**

provision of *eCall service* without availability of wireless communication network to undertake other application services

3.9**eCall generator**

occupant of a vehicle or equipment within a vehicle that has caused to trigger an *eCall transaction* by automatic or manual means

3.10**eCall service**

end-to-end emergency service to connect occupants of an affected vehicle to the *most appropriate PSAP* via an audio link across a PLMN together with the transfer of a *minimum set of data* to the PSAP

3.11**eCall transaction**

establishment of a *mobile wireless communications session* across a *public wireless communications network* and the transmission of a *minimum set of data* from a vehicle to a *public safety answering point* and the establishment of an audio channel between the vehicle and the PSAP

3.12**emergency call response centre**

term used in ITS Implementation Directive to mean *public safety answering point* (PSAP)

3.13**IMS-eCall**

eCall which makes use of IMS over a packet switched network (e.g. LTE or NR)

3.14**in progress**

taking place

3.15**in-vehicle equipment**

equipment within the vehicle that provides or has access to in-vehicle *data* required for the *minimum set of data* and any other *data* that is to be sent as part of or complementary to the *minimum set of data* to effect the *eCall transaction* via a *public mobile wireless communications network* providing a link between the vehicle and a means of enacting the *eCall service* via a *public mobile wireless communications network*

3.16**in-vehicle system****IVS**

in-vehicle equipment together with the means to trigger, manage and effect the *eCall transaction*

3.17**minimum set of data****MSD**

standardized *data concept* comprising *data* elements of relevant vehicle generated *data* essential for the performance of the *eCall service*

Note 1 to entry: See EN 15722.

3.18**mobile wireless communications network**

wireless communications network with homogeneous handover between *network access points*

3.19**most appropriate PSAP**

PSAP defined beforehand by responsible authorities to cover emergency calls from a certain area or for emergency calls of a certain type

Note 1 to entry: See also PSAP (3.22).

Note 2 to entry: A number of different instantiations of PSAP service are supported within this European Standard. A PSAP can be a Public Authority or a private *service provider* operating on behalf of the responsible authorities.

3.120**network access point**

beacon, antenna or similar source of signal propagation and receipt together with equipment to manage communication sessions with users operating within the operating reach of the *network access point* and provide connectivity for the users within the operating reach of the single *access point* to a wider communications network

Note 1 to entry: A *network access point* may, but does not need to provide homogeneous or heterogeneous handover to another *network access point*.

3.21**public mobile wireless communications network**

mobile wireless communications network with access to a public telecommunications network

prEN 18052:2024 (E)**3.22****public safety answering point****PSAP**

physical location working on behalf of the national authorities where emergency calls are first received under the responsibility of a public authority or a private organization recognized by the national government

Note 1 to entry: See also *most appropriate PSAP*.

Note 2 to entry: A number of different instantiations of PSAP service are supported within this deliverable.

3.23**service provider**

physical and functional component responsible for providing telematics-based services to its subscribers

3.24**TPS-eCall**

eCall provided via a third-party *service provider/operator*

3.25**vehicle manufacturer**

entity which first assembles the vehicle and provides *eCall* equipment as part of its specification and subsequently sells the vehicle directly or via an agent

3.26**vehicle occupant(s)**

person(s) inside the vehicle

3.27**wireless communications network**

network operating using an air-interface capable of bi-directional transfer of *data* and or voice

Note 1 to entry: There are different types of wireless communications such as PAN, LAN, cellular network, etc.

4 Symbols and abbreviations

3G	3 rd Generation
3GPP	Third Generation Partnership Project
5G	5 th Generation
ACK	ACKnowledgement
AL-ACK	Application Layer ACKnowledgement
CLB	CaLL-Back and post eCall
CLI	Calling Line Identity
CLR	CaLL cleaRdown
CS	Circuit Switched
CTP	Conformance Test Procedure