COMMUNICATIONS ALLIANCE LTD

PUBLIC COMMENT DRAFT

DRAFT AUSTRALIAN STANDARD

DR AS/CA S042.1:2021

Requirements for connection to an air interface of a Telecommunications Network—
Part 1: General

Issued: 30 November 2021
Comments close: 11 February 2022

Australian STANDARD

Draft Australian Standard – Requirements for connection to an air interface of a Telecommunications Network— Part 1: General

This Standard was issued in draft form for public comment as DR AS/CA S042.1:2021.

First published as AS/ACIF S042.1:1999
Second edition as AS/ACIF S042.1:2006
Third edition as AS/ACIF S042.1:2008
Fourth edition as AS/CA S042.1:2010
Fifth edition as AS/CA S042.1:2015, published on 14 August 2015
Sixth edition as AS/CA S042.1:2018, published on 12 April 2018
Seventh edition as AS/CA S042.1:2020, published on 15 October 2020

Communications Alliance Ltd (formerly Australian Communications Industry Forum Ltd) was formed in 2006 to provide a unified voice for the Australian communications industry and to lead it into the next generation of converging networks, technologies and services.

Guidance for public comment on DR AS/CA S042.1:2021

This draft Standard is the outcome of the revision of AS/CA S042.1:2020 undertaken by the Communications Alliance WC94 : **WC94 : IMT-2020 Customer Equipment** Working Committee. The two-month public comment phase is a part of the requirements of Communications Alliance Operating Procedures for the development or revision of an AS/CA Standard.

The reader is invited to comment on the requirements for customer equipment scoped within this Standard and on the following proposed recommendations. All submissions received will be made publicly available on the Communications Alliance website unless the submitter requests otherwise.

Please return comments by 11 February 2022 to:
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This draft is available from www.commsalliance.com.au for download.

Background

The AS/CA S042 *Requirements for connection to an air interface of a Telecommunications Network* Standard specifies the general requirements and test methods for CE for use in connection with a PMTS or a Satellite Service in order to meet the regulatory arrangements for such equipment in Australia.

Changes to Part 1: General

With the proposed introduction of the new Part 5 specifying the requirements for IMT-2020 Customer Equipment, the references, acronyms, definitions and requirements of Part 1 have also been updated to maintain alignment.

Specifically, the emergency call service requirements have been updated with device identifiers used by 5G CE. This includes the introduction of the new IMEISV identifier which augments the role of the IMEI identifier by including the software version of the customer equipment. It should be noted that at the time of the anticipated publication of the revised AS/CA S042 Standard, the Australian mobile network operators will not be able to support the use of the IMEISV for law enforcement, AMTA's Mobile Device Security program that includes an IMEI blocking capability and ECP purposes.

Other changes include the updating of the reference to C536 with regards to the programming of the Identity Module ECC field and also reproducing all IMEI and PKC security requirements into Part 1 of the Standard.

Changes to Part 4: IMT-2000 customer equipment

With the proposed introduction of the new Part 5 specifying the requirements for IMT-2020 Customer Equipment, the references and requirements of Part 4 have also been updated to maintain alignment.

The Receiver Total Radiated Sensitivity (TRS) and Total Radiated Power (TRP) test cases have been excluded from the compliance conditions as radiated antenna performance requirements are outside the scope of this Standard.

The Standard that provided the requirements for Cat M1 and NarrowBand IoT has been updated from ETSI TS 136 101 to ETSI EN Harmonised Standard and FCC Part 22.

Other changes include relocating all IMEI and PKC security requirements into Part 1 of the Standard.

The new Part 5 for IMT-2020 customer equipment

The AS/CA S042 Standard is being updated with a new proposed Part 5: ***IMT-2020 Customer Equipment*** providing the technical conditions and requirements for IMT CE that is designed or intended for use in connection with an IMT-2020 public mobile telecommunications service (PMTS).

The new requirements apply to the following 5G NR technologies:

- 5G New Radio

- 5G New Radio and E-UTRA (LTE)

The requirements reflect 3GPP Release 15.

The spectrum bands reflect those identified to be relevant for Australia for use by the mobile carriers.

When EN 301 908-25 ***IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 25: New Radio (NR) User Equipment (UE) Part 25*** is published, anticipated to be late 2022, the compliance arrangements in AS/CA S042.5 Standard will be updated to pick up the new ETSI Harmonised Standard.

Compliance arrangements

This Standard is intended to be enforceable by the ACMA under the ACMA *Telecommunications (Labelling Notice for Customer Equipment and Customer Cabling) Instrument 2015* (TLN) or its replacement. Information on the ACMA TLN is available from the ACMA *Find the right labelling notice* at https://www.acma.gov.au/find-right-labelling-notice.

The intention is to publish the revised AS/CA S042 Parts 1 and 4 and the new AS/CA S042 Part 5 on the same date in Q2 2022. The three Parts will then be forwarded to the ACMA with the recommendation for them to be *made* under the *Telecommunications Act 1997*. The ACMA will then undertake a regulatory consultation process for a minimum of 60 days, to fulfil their regulatory obligations prior to a decision to *make* these three Parts of AS/CA S042. The intention is to have all three Parts to become applicable Standards under the TLN on the same date.

FOREWORD

General

This Standard was prepared by Communications Alliance and most recently revised by the WC94 : *IMT-2020 Customer Equipment* Working Committee. It is one of a series of Telecommunication Standards developed under the Memorandum of Understanding between the Australian Communications Authority (ACA) and the Australian Communications Industry Forum (ACIF).

Note: On 1 July 2005 the ACA became the Australian Communications and Media Authority (ACMA) and the Memorandum of Understanding continues in effect as if the reference to the ACA was a reference to the ACMA.

Communications Alliance was formed in 2006 and continues the functions previously fulfilled by ACIF.

This Standard is a revision of AS/CA S042.1: 2020 *Requirements for connection to an air interface of a Telecommunications Network— Part 1: General*.

This Standard is the result of a consensus among representatives on the Communications Alliance Working Committee to produce it as an Australian Standard.

The requirements in this Standard are consistent with the aims of s376 of the *Telecommunications Act 1997*. Specifically these aims are—

(a)   protecting the integrity of a Telecommunications Network or facility;

(b)   protecting the health and safety of persons;

(c)   ensuring access to an Emergency Call Service (ECS); and

(d)   ensuring interoperability with a Standard Telephone Service (STS).

It should be noted that some Customer Equipment (CE) may also need to comply with requirements in other Standards or other Parts of this Standard.

AS/CA S042 consists of the following Parts under the general title *Requirements for connection to an air interface of a Telecommunications Network*:

- Part 1: General
- Part 2: CDMA (IS-95) (withdrawn)
- Part 3: GSM Customer Equipment (withdrawn)
- Part 4: IMT-2000 and IMT-Advanced Customer Equipment
- Part 5: IMT-2020 Customer Equipment

Applicable electrical safety Standards, EMC, Radiocommunications and EMR Standards may apply under Commonwealth or State/Territory laws, or both.

Intellectual property rights

Equipment which is manufactured to comply with this Standard may require the use of technology which is protected by patent rights in Australia. Questions about the availability of such technology, under licence or otherwise, should be directed to the patent holder or Australian licensee (if known) or through enquiry at IP Australia which incorporates the Patent, Designs and Trade Marks Offices. Further information can be found at www.ipaustralia.gov.au.

Standards revision

Australian Standards (AS/ACIF and AS/CA Standards) developed by Communications Alliance are updated according to the needs of the industry, by amendments or revision. Users of these Standards should make sure that they possess the latest amendments or editions. Representations concerning the need for a change to this AS/CA Standard should be addressed to—

The Project Manager
Customer Equipment and Cable Reference Panel
Communications Alliance
PO Box 444
Milsons Point NSW 1565

Regulatory notice

The 2022 version of AS/CA S042.1 is intended to be mandated by a replacement for the ACMA *Telecommunications (Mobile Equipment Air Interface) Technical Standard 2018* (the 2018 ACMA Standard). Until a replacement for the 2018 ACMA Standard is published, AS/CA S042.1:2020 as mandated by the 2018 ACMA Standard, remains in force.

In the instance that the 2022 version of AS/CA S042.1 is mandated by the ACMA, the transition period for AS/CA S042.1:2020 will be 12 months commencing on the day the 2018 ACMA Standard is replaced.

Details on current compliance arrangements can be obtained from the ACMA website at http://www.acma.gov.au or by contacting the ACMA below at:

Australian Communications and Media Authority
PO Box 13112
Law Courts PO
Melbourne VIC 8010
Australia

Telephone: 1800 850 115 (Australia)
Telephone: +61 3 9963 6800
Facsimile: +61 3 9963 6899
Email: info@acma.gov.au

INTRODUCTION

This introduction for the AS/CA S042.1 ***Requirements for connection to an air interface of a Telecommunications Network— Part 1: General*** Standard is not an authoritative section of this Standard and is only provided as guidance for the user of the Standard to outline its objectives, the factors that have been taken into account in its development and to list the principal differences between the new and the previous edition.

The reader is directed to the clauses of this Standard for the specific requirements and to the Australian Communications and Media Authority (ACMA) for the applicable telecommunications labelling and compliance arrangements.

Note: Further information on the telecommunications labelling and compliance arrangements can be found in the *Telecommunications (Labelling Notice for Customer Equipment and Customer Cabling) Amendment Instrument 2018* (the TLN). The TLN can be obtained from the ACMA website at www.acma.gov.au.

The objective of this Standard is to provide the requirements and test methods for customer equipment for use in connection with a PMTS or a Satellite Service in order to meet the regulatory arrangements for such equipment in Australia. Additional requirements for specific technologies are addressed in other Parts of this Standard.

The primary objective of this revision is to update the Emergency Call Service (ECS) requirements to support 5G Customer Equipment (CE).

The principal differences between this edition of AS/CA S042.1 and the previous edition are—

(i)   updates to the references (Section 3);

(ii)   updating the acronyms and definitions in line with the introduction of the new Part 5 for 5G CE (IMT-2020) requirements;

(iii)   introduction of the term ECS Access Mode to replace the STS Access Mode term;

(iv)   updating the ECS requirements with device identifiers used by 5G CE;

(v)   introduction of the new Permanent Equipment Identifier (PEI) for 5G CE;

(vi)   updating the reference to C536 with regards to the programming of the Identity Module ECC field; and

(vii)   locating of all IMEI and PKC security requirements into Part 1 of the Standard.

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1   INTERPRETATIVE GUIDELINES

1.1   Categories of requirements

This Standard contains mandatory requirements as well as provisions that are recommendatory only. Mandatory requirements are designated by the words '**shall**' or '**shall not'**. All other provisions are voluntary.

1.2   Compliance statements

Compliance statements, in italics, suggest methodologies for demonstrating CE's compliance with the requirements.

1.3   Definitions, expressions and terms

If there is any conflict between the definitions used in this Standard and the definitions used in the *Telecommunications Act 1997*, the definitions in the Act take precedence.

1.4   Notes

Text denoted as 'Note' is for guidance in interpretation and is shown in smaller size type.

1.5   References

(a)   Applicable editions (or versions) of other mandatory documents referred to in this Standard are specified in Section 3: REFERENCES. The bibliography contains information about other publications referred to in this Standard e.g. publications only referred to in notes and informative appendices.

(b)   If a document refers to another document, the other document is a sub-referenced document.

(c)   Where the edition (or version) of the sub-referenced document is uniquely identified in the reference document, then that edition (or version) applies.

(d)   Where the edition (or version) of the sub-referenced document is not uniquely identified in the reference document, then the applicable edition (or version) is that which is current at the date the reference document is legislated under the applicable regulatory framework, or for a non- legislated document, the date upon which the document is published by the relevant standards organisation.

(e)   A number in square brackets '[ ]' refers to a document listed in Section 3: REFERENCES.

1.6   Units and symbols

In this Standard the International System (SI) of units and symbols is used in accordance with Australian Standard AS ISO 1000 [1].

1.7   Parts of Standards

CE scoped by this Standard is to comply with the applicable technology-specific Part(s) of this Standard.

2 SCOPE

2.1   This Standard applies to Customer Equipment (CE) that is designed or intended for connection to—

(a)   a PMTS and is an addressable device; or

(b)   a Satellite Service and is an addressable device;

or both.

Note: In the context of this scope, CE intended for connection to a service includes CE capable of connection to a service.

2.2   This Standard does not apply to CE which is not an addressable device such as GPS terminal and satellite navigation system.

2.3   CE is not excluded from the scope of this Standard by reason only that it is capable of performing functions additional to those described in this Standard.

2.4   For additional technical requirements applying to a particular CE, this Standard should be read in conjunction with those Standards listed in the REFERENCES of this Standard.

3   REFERENCES

For dated references, only the edition cited applies. However, parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below.

For undated references, the latest edition of the referenced document (including any amendments) applies. For ETSI Standards that are issued in Releases, the latest version of the relevant Release applies.

	Publication	Title
	Australian Standards	
[1]	AS ISO 1000-1998	The international System of Unit (SI) and its application.
	AS/CA Standards	
[2]	AS/CA S003.1:2010	Requirements for Customer Access Equipment for connection to a Telecommunications Network Part 1: General http://commsalliance.com.au/Documents/all/Standards/s003_1
[3]	AS/CA S004:2013	Voice performance requirements for Customer Equipment http://commsalliance.com.au/Documents/all/Standards/s004
	Communications Alliance Codes	
[4]	C536:2020	Emergency Call Service Requirements Industry Code (incorporating Amendment No.1/2015)
	Communications Alliance Guidelines	
[5]	G557.6:2019	Location Information for Emergency Calls Part 6: Advanced Mobile Location (AML)
[6]	G616:2013	Acoustic safety for telephone equipment
	IEC Standard	
[7]	IEC 61672-1:2013	Electroacoustics – Sound level meters – Part 1: Specifications

Publication	Title

ITU-R Recommendations

	Publication	Title
[8]	M.1224-1 (03/2012)	Vocabulary of terms for International Mobile Telecommunications (IMT)
[9]	M.1457-14 (01/2019)	Detailed specifications of the terrestrial radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)
[10]	M.2012 2019-11)	Detailed specifications of the terrestrial radio interfaces of International Mobile Telecommunications Advanced (IMT-Advanced)
[11]	M.2083-0 (09/2015)	IMT Vision - "Framework and overall objectives of the future development of IMT for 2020 and beyond"

ITU-T Recommendations

	Publication	Title
[12]	P.57 (12/11)	Artificial ears
[13]	X.509 (10/16)	Information technology - Open Systems Interconnection - The Directory: Public-key and attribute certificate frameworks

ETSI Standards & Reports

	Publication	Title
[14]	ETSI TS 103 465 V15.2.0 (2020-06)	Smart Cards; Smart Secure Platform (SSP); Requirements Specification (Release 15)
[15]	ETSI TS 103 625 V1.1.1 (2019-12)	Emergency Communications (EMTEL); Transporting Handset Location to PSAPs for Emergency Calls - Advanced Mobile Location
[16]	ETSI TR 121 905 V15.1.0 (2019-03)	Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Vocabulary for 3GPP Specifications (3GPP TR 21.905 version 15.1.0 Release 15)
[17]	ETSI TS 122 016 V15.0.0 (2018-07)	Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; International Mobile station Equipment Identities (IMEI) (3GPP TS 22.016 version 15.0.0 Release 15)
[18]	ETSI TS 122 022 V14.0.0 (2017-03)	Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE;

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	Publication	Title
		Personalisation of Mobile Equipment (ME); Mobile functionality specification (3GPP TS 22.022 version 14.0.0 Release 14)
[19]	ETSI TS 122 101 V15.7.0 (2019-07)	Universal Mobile Telecommunications System (UMTS); LTE; Service aspects; Service principles (3GPP TS 22.101 version 15.7.0 Release 15)
[20]	ETSI TS 123 003 V15.10.0 (2020-10)	Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; Numbering, addressing and identification (3GPP TS 23.003 version 15.10.0 Release 15)
[21]	ETSI TS 124 008 V15.9.0 (2020-10)	Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Mobile radio interface Layer 3 specification; Core network protocols; Stage 3 (3GPP TS 24.008 version 15.9.0 Release 15)
[22]	ETSI TS 124 229 V15.11.0 (2020-10)	Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229 version 15.11.0 Release 15)
[23]	ETSI TS 124 301 V15.8.0 (2020-01)	Universal Mobile Telecommunications System (UMTS); LTE; Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3 (3GPP TS 24.301 version 15.8.0 Release 15)
[24]	ETSI TS 124 501 V15.6.0 (2020-01)	5G; Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3 (3GPP TS 24.501 version 15.6.0 Release 15)
[25]	ETSI TS 131 111 V15.10.0 (2020-11)	Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Universal Subscriber Identity Module (USIM) Application Toolkit (USAT) (3GPP TS 31.111 version 15.10.0 Release 15)
[26]	ETSI TS 133 501 V15.10.0 (2020-11)	5G; Security architecture and procedures for 5G System (3GPP TS 33.501 version 15.10.0 Release 15)
[27]	ETSI TS 137 355 V15.0.0 (2020-01)	LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol

Publication	Title
	(LPP) (3GPP TS 37.355 version 15.0.0 Release 15)

4 ABBREVIATIONS AND DEFINITIONS

For the purposes of this Standard, the following abbreviations, acronyms and definitions apply:

4.1 Abbreviations

3G	The third generation of mobile phone technologies covered by the ITU IMT family
3GPP	3rd Generation Partnership Project
4G	The fourth generation of mobile phone technologies covered by the ITU IMT family
5G	The fifth generation of mobile phone technologies covered by the ITU IMT family
5G-GUTI	5G Globally Unique Temporary Identifier
5GC	5G Core Network
5G NR	5G New Radio
ACA	Australian Communications Authority
ACMA	Australian Communications and Media Authority
ACIF	Australian Communications Industry Forum
AML	Advanced Mobile Location
AS	Australian Standard
CDMA	Code Division Multiple Access
CE	Customer Equipment
CSP	Carriage Service Provider
DoC	Declaration of Conformity
DRP	(ear) Drum Reference Point
ECC	Emergency Call Code
ECS	Emergency Call Service
ECID	Enhanced Cell Identification
ECP	Emergency Call Person
EDGE	Enhanced Data rates for GSM Evolution
EMC	Electromagnetic Compatibility
EMR	Electromagnetic Radiation
EPC	Evolved Packet Core
ERP	Ear Reference Point
ESN	Emergency Service Number
eUICC	embedded Universal IC Card
ETSI	European Telecommunications Standard Institute
E-UTRA	Evolved UTRA. Also referred to as LTE.
FDD	Frequency Division Duplexing
GNSS	Global Navigation Satellite System
GPRS	General Packet Radio Service
GPS	Global Positioning System
GSM	Global System for Mobile Communications

GUTI	Globally Unique Temporary Identifier
HPLMN	Home Public Land Mobile Network
IC	Integrated Circuit
IEC	International Electrotechnical Commission
IMEI	International Mobile station Equipment Identity
IMEISV	International Mobile station Equipment Identity and Software Version Number
IMS	IP Multimedia Subsystem
IMSI	International Mobile Subscription Identity
IMT	International Mobile Telecommunications
ISIM	IMS (IP Multimedia Subsystem) Services Identity Module
ISO	International Standards Organization
ITU	International Telecommunications Union
ITU-R	International Telecommunications Union – Radiocommunications Sector
ITU-T	International Telecommunication Union – Telecommunications Standardization Sector
IVR	Interactive Voice Response
LPP	LTE Positioning Protocol
LTE	Long Term Evolution
MS	Mobile Station
MSISDN	Mobile Services Integrated Services Digital Number
NR	New Radio
OFDMA TDD WMAN	Orthogonal Frequency Division Multiple Access TDD Wireless Metropolitan Area Network (also referred to as Mobile WiMAX)
PEI	Permanent Equipment Identifier
PIDF	Presence Information Data Format
PIN	Personal Identification Number
PKC	Public Key Certificate
PLMN	Public Land Mobile Network
PMTS	Public Mobile Telecommunications Service
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RMS	Root Mean Square
RVA	Recorded Voice Announcement
SIM	Subscriber Identity Module
SPL	Sound Pressure Level
SIP	Session Initiation Protocol
SM	Short Message
STS	Standard Telephone Service
SUCI	Subscription Concealed Identifier
TDD	Time Division Duplexing
TLN	Telecommunications Labelling Notice

TMSI	Temporary Mobile Subscriber Identity
TTY	Telephone typewriter/textphone
UICC	Universal IC Card
UMTS	Universal Mobile Telecommunications System
USIM	Universal Subscriber Identity Module
UTRA	Universal Terrestrial Radio Access (also referred to as UMTS)
VPLMN	Visited Public Land Mobile Network
WiMAX	Worldwide Interoperability for Microwave Access

4.2   Definitions

4.2.1   3GPP technologies

3GPP technologies as specified by ETSI and 3GPP.

Note 1: Includes—

(a)   GSM (2G or second generation);

(b)   GPRS and EDGE (commonly referred to as 2.5G);

(c)   IMT-2000 (3G or third generation – UTRA);

(d)   IMT-2000 and IMT-Advanced (4G or fourth generation – E-UTRA (LTE)); and

(e)   IMT-2020 (5G or fifth generation – 5G New Radio (5G NR) or 5G NR and E-UTRA (LTE)).

Note 2: There are a number of IMT technologies under ITU-R Recommendation M.1457-14 [9] which cannot be classified as being 3GPP technologies such as OFDMA TDD WMAN and CDMA TDD.

4.2.2   5G Core Network (5GC)

Fifth Generation core network technology as specified by 3GPP.

Refer to ETSI TR 121 905 [16].

4.2.3   5G New Radio (5G NR)

Fifth generation radio access technology as specified by 3GPP.

Refer to ETSI TR 121 905 [16].

4.2.4   Acoustic shock

Any temporary or permanent disturbance of the functioning of the ear, or of the nervous system, which may be caused to the user of a telephone earphone by a sudden sharp rise in the acoustic pressure produced by it.

Note 1: Acoustic shock may include acoustic trauma, but can occur at sound levels considerably lower than those necessary to cause acoustic trauma.

Note 2: This definition is the one used by ETSI and ITU-T.

4.2.5 Addressable device

An addressable device is CE which can be identified by the Telecommunications Network operator for the purposes of two-way communications with that CE.

4.2.6 Advanced Mobile Location (AML)

Location information derived by Mobile Station Equipment using its built-in positioning methods, including—

(a) assisted GNSS;

(b) GNSS;

(c) Wi-Fi; or

(d) cellular.

Refer to ETSI TS 103 625 [15] and G557.6 [5].

4.2.7 Air interface

A radio frequency (RF) link between CE and a Telecommunications Network.

4.2.8 Carriage Service Provider (CSP)

Refer to s7 of the *Telecommunications Act 1997*.

4.2.9 Carrier

Refer to s7 of the *Telecommunications Act 1997*.

4.2.10 Customer

A person who is contracted to a Carrier or Carriage Service Provider (CSP) for the supply of a Carriage Service in association with a Public Number.

Refer to C536 [4].

4.2.11 Customer Equipment (CE)

Refer to s7 of the *Telecommunications Act 1997*.

4.2.12 Drum Reference Point (DRP)

A point located at the end of the ear canal, corresponding to the ear-drum position.

4.2.13 Ear Reference Point (ERP)

A virtual point for geometric reference located at the entrance to the listener's ear, traditionally used for calculating telephonometric loudness ratings.

4.2.14 Embedded Universal Integrated Circuit Card (eUICC)

A UICC which is not easily accessible or replaceable, is not intended to be removed or replaced in the terminal, and enables the secure changing of subscriptions.

Note: The term originates from 'embedded UICC'.

Refer to ETSI TS 103 465 [14].

4.2.15 Emergency Call

Refer to the *Telecommunications (Emergency Call Service) Determination 2019*.

4.2.16 Emergency Call Person for 000 and 112

The ECP who is the recognised person who operates an ECS for the Emergency Service Numbers 000 and 112.

Note: At the time of registration of C536, the ECP for 000 and 112 was Telstra.

Refer to C536 [4]

4.2.17 Emergency Call Service (ECS)

Refer to s7 of the Telecommunications Act 1997.

4.2.18 Emergency Call Service Access Mode

A CE mode of operation in which a CE is designed to access an ECS via a PMTS or a Satellite Service.

Note: CE designed for initiating calls to a limited set of numbers other than an ESN, e.g. those connecting to an answering point which is not the ECP for 000 and 112, are not considered to be operating in ECS Access Mode. These devices typically store pre-programmed numbers.

4.2.19 Emergency Service Number (ESN)

Refer to Part 3 of the *Telecommunications Numbering Plan 2015*.

4.2.20 Evolved Packet Core (EPC)

Fourth generation core network technology as specified by 3GPP.

Refer to ETSI TR 121 905 [16].

4.2.21 Evolved Universal Terrestrial Radio Access (E-UTRA)

3GPP technologies definition for Evolved Universal Terrestrial Radio Access (E-UTRA) as specified by 3GPP.

Refer to ETSI TR 121 905 [16].

4.2.22 Gateway Device

CE that—

(a) incorporates a Local Port and/or an RF interface; and

(b) does not incorporate any keys for the initiating of an Emergency Call to the ESNs or an acoustic coupler device.

4.2.23 Globally Unique Temporary Identifier (GUTI)

A unique temporary identity to provide an unambiguous identification of the UE without revealing its permanent identity.

Refer to ETSI TS 123 003 [20]

4.2.24 Handset

The part of the CE which is held by the user in conversation mode and has the acoustic transmitter and receiver transducers mounted in it.

4.2.25 Identity module

A Subscriber Identity Module (SIM), a Universal Subscriber Identity Module (USIM) or an IMS (IP Multimedia Subsystem) Services Identity Module (ISIM) or an Embedded Universal Integrated Circuit Card (eUICC) which is used in the authentication procedures and contains the subscriber identity as well as other subscriber data.

Note: eUICC is commonly known as Embedded Subscriber Identity Module or eSIM.

4.2.26 International Mobile station Equipment Identity (IMEI)

A unique number which is allocated to each individual mobile station (MS) equipment in the Public Land Mobile Network (PLMN) and unconditionally implemented by the MS manufacturer at the time of manufacture.

Refer to ETSI TS 122 016 [17].

4.2.27 International Mobile station Equipment Identity and Software Version Number (IMEISV)

A string of decimal digits composing of the IMEI and a software version number identifying software version of the mobile station (MS).

Refer to ETSI TS 123 003 [20]

4.2.28 International Mobile Subscription Identity (IMSI)

A string of decimal digits that identifies a unique mobile terminal or mobile subscriber internationally.

Refer to ETSI TS 123 003 [20].

4.2.29   IMT

Root name that encompasses both IMT-2000, IMT-Advanced and IMT-2020 collectively as specified in ITU-R Recommendation M.1224-1 [8].

Note: The complete specification provides requirements for not only the IMT CE but also includes the infrastructure requirements.

4.2.30   IMT Customer Equipment

CE that is designed or intended for use in connection with an IMT PMTS. IMT CE based upon UTRA FDD, E-UTRA FDD and E-UTRA TDD technologies has either a Subscriber Identity Module (SIM) or a Universal Subscriber Identity Module (USIM). An IMT CE includes all equipment including terminal adapters required for provision of speech teleservices, bearer and supplementary services.

4.2.31   IMT-2000

International Mobile Telecommunications-2000 (IMT-2000) as specified by ITU-R Recommendation M.1457-14 [9].

4.2.32   IMT-2020

International Mobile Telecommunications-2020 (IMT-2020) as specified by ITU-R Recommendation M.2083-0 [11].

4.2.33   IMT-Advanced

International Mobile Telecommunications-Advanced (IMT-Advanced) as specified by ITU-R Recommendation M.2012 [10].

4.2.34   IMS Subscriber Identity Module

An application residing on the UICC that provides access to IP Multimedia Services.

Refer to ETSI TR 121 905 [16].

4.2.35   Local Port

Refer to AS/CA S003.1 [2].

4.2.36   Mobile Carrier

A Carrier that owns or operates a controlled network or controlled facility used to supply a PMTS.

4.2.37   Mobile Station Equipment

The term used in ETSI Publications to describe CE.

4.2.38   Multi-service CE

CE with ECS Access Modes using multiple network interfaces, including, but not limited to, devices with satellite/3GPP or satellite/IMT network interfaces.

4.2.39   Permanent Equipment Identifier (PEI)

The means to identify a 5G CE by the network, comprising of a PEI type and an identifier dependent on the value of the PEI type.

Refer to ETSI TS 123 003 [20] and ETSI TS 124 501 [24]

4.2.40   Public Key Certificate (PKC)

The public key of a user, together with some other information, rendered unforgeable by digital signature with the private key of the certification authority which issued it.

Refer to ITU-T X.509 [13].

4.2.41   Public Mobile Telecommunications Service (PMTS)

Refer to s32 of the *Telecommunications Act 1997*.

Note: An IMS-based voice over Wi-Fi service is included under the PMTS.

4.2.42   Satellite Service

Refer to the *Telecommunications (Emergency Call Service) Determination 2019*.

4.2.43   Standard Telephone Service (STS)

Refer to the *Telecommunications (Consumer Protection and Service Standards) Act 1999*.

4.2.44   Subscriber Identity Module (SIM)

A physically removable module which is used in the authentication procedures and contains the subscriber identity as well as other subscriber data.

4.2.45   Subscription Concealed Identifier (SUCI)

A privacy preserving identifier of a 5G CE subscriber containing the concealed permanent identifier.

Refer to ETSI TS 123 003 [20]

4.2.46   Telecommunications Device Identifier

Refer to s473.1 of the *Criminal Code Act 1995*.

Note 1: Means an IMEI for CE using 3GPP technologies excluding CE for which PEI is the equipment identifier.

Note 2: Means an IMEI or IMEISV as the PEI for CE using 3GPP technologies for which PEI is the equipment identifier.

Note 3: Means a PKC for CE using OFDMA TDD WMAN technologies.

4.2.47 Telecommunications Network (TN)

Refer to s374(1) of the *Telecommunications Act 1997*.

Note: In this Standard, this term means the telecommunications network that is used to supply the PMTS or Satellite Service by a Carrier or CSP.

4.2.48 Universal Integrated Circuit Card (UICC)

A physically secure device, an IC card (or 'smart card'), that can be inserted and removed from the terminal. It may contain one or more applications. One of the applications may be a USIM.

Refer to ETSI TR 121 905 [16].

4.2.49 Universal Subscriber Identity Module (USIM)

An application residing on the UICC used for accessing services provided by mobile networks, which the application is able to register on with the appropriate security.

Refer to ETSI TR 121 905 [16].

4.2.50 Universal Terrestrial Radio Access (UTRA)

3GPP technologies definition for Universal Terrestrial Radio Access (UTRA) as specified by 3GPP.

4.2.51 User Equipment (UE)

The term used in ETSI Publications to describe CE.

5   REQUIREMENTS

5.1   General

5.1.1   Emergency Call Service access

CE designed for voice communications operating in ECS Access Mode **shall** allow the initiating of an Emergency Call when connected to or intended for use in connection to the following carriage services:

Emergency Service Number	PMTS		Satellite Services
	3GPP technologies	OFDMA TDD WMAN technology	
000	Initiate	Initiate	Initiate
112	Initiate	-	-

Note 1: These requirements are specifically in reference to the capability of the CE for the initiating of an Emergency Call to the air interface. It does not place requirements on the network side (i.e. on the Carrier) of the air interface or for successful call completion.

Note 2: These requirements include all means of initiating an Emergency Call including, for example, numeric keys, alphanumeric keys, voice, motion and other non-keyed means. The requirements for manual keying are addressed in Clauses 5.2.2.1(d) and 5.3.2.

Note 3: 000 is the primary ESN in Australia for access from both wireline and wireless services. 106 is a secondary ESN in Australia which can only be accessed from fixed line services by TTYs. It is for the text-based ESN for people who are deaf or have hearing or speech impairment. 112 is a secondary ESN in Australia which can only be accessed from PMTS employing 3GPP technologies. It is also the international standard ESN for PMTS employing 3GPP technologies.

Note 4: Voice communications also includes artificial voice.

Compliance with Clause 5.1.1 should be checked by using the method described in Clause 6.2.

5.1.2   Multi-service CE

Multi-service CE **shall** comply with the requirements applicable to each service.

Note: The requirements described in Clause 5.2 for CE use in connection with a PMTS are not applicable if a multi-service CE is connected to a Satellite Service; and the requirements described in Clause 5.3 for CE use in connection with a Satellite Service are not applicable if a multi-service CE is connected to a PMTS.

Compliance with Clause 5.1.2 of Multi-service CE should be checked using the methods described in Clauses 5.2 and 5.3 for the applicable service.

5.1.3 Gateway Device

CE that functions as a Gateway Device **shall** comply with the requirements of Clauses 5.1.1, 5.1.2 and 5.4.

Note: To initiate a call to ESNs 000 and 106 in ECS Access Mode, a Gateway Device may also require the connection of other equipment, such as a PSTN handset via a Local Port, or a cordless phone via an RF interface.

Compliance with Clause 5.1.3 of Gateway Devices should be checked using the methods described in Clauses 5.1.1, 5.1.2 and 5.4.

5.2 CE used in connection with a PMTS

5.2.1 Application

The requirements of Clause 5.2 are applicable to CE connected to or intended for use in connection with a PMTS and operating in ECS Access Mode.

5.2.2 Emergency Call Service access

5.2.2.1 Emergency Service Number

(a) Firmware

(i) CE using 3GPP technologies **shall** store the ESNs 000 and 112 in its firmware in accordance with ETSI TS 122 101 [19].

(ii) CE using 3GPP technologies **shall not** store the ESN 106 in its firmware.

(iii) Where an Identity Module is not present in the CE, CE using 3GPP technologies **shall** allow the initiating of an Emergency Call to the ESNs 000 and 112 stored in its firmware in accordance with ETSI TS 122 101 [19].

Compliance with Clause 5.2.2.1(a) should be checked using the method described in Clause 6.2.1.

(b) Mobile identity

(i) Where an Identity Module is not present in the CE, CE using 3GPP technologies **shall** send an IMEI/PEI to the Telecommunications Network when it is initiating an Emergency Call to the ESNs 000 and 112 in accordance with ETSI TS 124 008 [21], ETSI TS 124 301 [23] and ETSI TS 124 501 [24].

(ii) Where an Identity Module is present in the CE, CE using 3GPP technologies **shall** send an IMEI/PEI to the Telecommunications Network when it is initiating an Emergency Call to the ESNs 000 and 112 in the following call cases:

(A) Identity Module is blocked as per ETSI TS 124 008 [21], ETSI TS 124 301 [23] and ETSI TS 124 501 [24].

(B)   Identity Module is PIN enabled, waiting for PIN input as per ETSI TS 124 008 [21], ETSI TS 124 301 [23] and ETSI TS 124 501 [24].

(C)   Identity Module is invalidated by the Telecommunications Network as per ETSI TS 124 008 [21], ETSI TS 124 301 [23] and ETSI TS 124 501 [24]

(D)   Incorrect Identity Module inserted as per ETSI TS 122 022 [18].

(E)   Damaged or faulty Identity Module.

(F)   IMS Emergency Call without emergency registration as per ETSI TS 124 229 [22].

(iii) Where an Identity Module is present in the CE, CE using 3GPP technologies **shall** send a TMSI, IMSI, GUTI, SUCI or 5G-GUTI to the Telecommunications Network when it is initiating an Emergency Call to the Emergency Service Numbers 000 and 112 excluding call cases scoped under Clause 5.2.2.1(b)(ii) as per ETSI TS 124 008 [21], ETSI TS 124 229 [22], ETSI TS 124 301 [23] and ETSI TS 124 501 [24].

Note: At time of publication, typical technologies requiring Identity Modules include 3GPP technologies.

Compliance with Clause 5.2.2.1(b) should be demonstrated by way of a manufacturer's DoC to the applicable Emergency Call related mobile identity requirements (refer to Appendix B in this Standard) in ETSI TS 124 008 [21], ETSI TS 124 301[23], ETSI TS 124 501 [24] and ETSI TS 124 229 [22].

(c)   ECC field

Where an Identity Module is present in the CE excluding the call cases scoped under Clause 5.2.2.1(b)(ii) CE **shall**—

(i)   be able to read the ECC field on the Identity Module supplied by a Carrier or CSP; and

(ii)   allow the initiating of an Emergency Call to the ESN 000 stored in the ECC field.

Note: C536 [4] specifies that Carriers and CSPs must ensure that new Identity Modules supplied by Carriers and CSPs to their Customers are correctly programmed with ESN 000 in the ECC field of the Identity Module. There are no requirements in C536 [4] to populate ESNs 112 and 106 in the ECC field of the Identity Module.

Compliance with Clause 5.2.2.1(c) should be checked using the method described in Clause 6.2.1.

(d)   Numeric keys

By the user manually entering the digits at the time the connection is required, CE that incorporates numeric keys for the primary purpose of initiating calls—

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(i) **shall** allow the initiating of an Emergency Call to the ESN 000; and

(ii) for CE using 3GPP technologies, **shall** allow the initiating of an Emergency Call to the ESN 112.

Note 1: Numeric keys include physical buttons and screen-based 'soft' keys found on CE.

Note 2: If numeric keys remain visible under any lock condition (e.g. software or hardware lock) then the requirements of this Clause apply.

Note 3: CE may have means other than numeric keys for call setup, e.g. alphanumeric keys, voice, motion and other non-keyed means. There is no requirement placed on these under Clause 5.2.2.1(d) as these are addressed in Clause 5.1.1.

Compliance with Clause 5.2.2.1(d) should be checked using the method described in Clause 6.2.1.

(e) Emergency Call safeguard

When complying with the requirements for ECS outlined in Clause 5.2.2, CE should be designed in such a manner to minimise the accidental or unintentional initiation of Emergency Calls.

Note: For a dedicated Emergency Call button, this could be achieved by a two stage process requiring a user to confirm their intention to initiate an Emergency Call prior to the Emergency Call actually being initiated.

Compliance with Clause 5.2.2.1(e) should be checked by operation and inspection.

(f) Locks

When the CE is in any lock or unlock condition, including security code, key lock and blocked Identity Module, CE **shall** either—

(i) allow the initiating of an Emergency Call to the ESNs 000 and 112; or

(ii) provide directions for the user to disable the lock where CE prevents initiating of an Emergency Call to the ESNs 000 and 112 when a lock is enabled.

In (f)(ii) the directions for the user to disable the lock **shall** be made available to the user on the CE either before or during an attempt to call the ESNs 000 and 112.

Compliance with Clause 5.2.2.1(f) should be checked using the method described in Clause 6.2.1.

(g)   Location – AML within Australia

Where CE is registered on either its HPLMN or a VPLMN used for the Emergency Call and has an operating system that has been designed to support AML and has GNSS functionality:

    (i)   CE using 3GPP technologies **shall** provide Advanced Mobile Location (AML) information in accordance with AML version 1 in ETSI TS 103 625 [15] except for IMEI and IMSI.

    (ii)   Within 25 seconds after successful initiation of an Emergency Call, CE that incorporates AML functionality **shall** initiate a Short Message (SM) containing AML information to the Australian number 1262612626.

    (iii)   CE that incorporates AML functionality may initiate additional SMs containing AML information to the Australian number 1262612626 for the duration of the Emergency Call.

        Note: Where CE does initiate multiple additional SMs then the CE could do so at intervals of approximately 30 seconds.

    (iv)   CE that incorporates AML functionality should provide IMEI and IMSI in the AML SM.

Compliance with Clause 5.2.2.1(g) should be checked by using the methods described in Clause 6.2.

(h)   Location – AML when roaming outside Australia

CE that incorporates AML functionality **shall not** initiate a SM containing AML information to the Australian number 1262612626 when the CE is roaming outside Australia.

Compliance with Clause 5.2.2.1(h) should be demonstrated by way of a manufacturer's DoC.

(i)   Location – non-AML technologies

    (i)   When initiating an IMS emergency session, CE using 3GPP technologies should conform to the requirements to convey its location information for an Emergency Call, using the Geolocation header field and the PIDF location object in the initial SIP INVITE request, as specified in section 5.1.6.8.2 and section 5.1.6.8.3 of ETSI TS 124 229 [22].

    (ii)   CE using 3GPP technologies that enable support of LTE Positioning Protocol (LPP) should support LPP in accordance with ETSI TS 137 355 [27].

    (iii)   CE using 3GPP technologies that enable support of Enhanced Cell Identification (ECID) positioning method should support ECID signalling in accordance with

ETSI TS 137 355 [27] to provide the CE's location information for an Emergency Call.

Compliance with Clause 5.2.2.1(i) should be demonstrated by way of a manufacturer's DoC.

5.2.2.2   Special flags and special signalling

5.2.2.2.1   Emergency Service Numbers 000 and 112

CE using 3GPP technologies designed for voice communications **shall** activate the Emergency Call procedure for the ESN 000 in the same manner as it would initiate the Emergency Call procedure for the ESN 112.

Note: This requirement may require the CE, when initiating an Emergency Call to ESN 000, to raise special flags or use special signalling protocols as required by ETSI TS 124 008 [21] that defines the procedure for the initiating of an Emergency Call to the ESN 112.

5.2.2.2.2   Emergency Service Number 106

CE using 3GPP technologies **shall not**—

(a)   treat calls to ESN 106 as Emergency Calls; or

(b)   activate the Emergency Call procedure for calls to ESN 106.

Compliance with Clause 5.2.2.2 should be checked by operation and inspection.

5.3   CE used in connection with a Satellite Service

5.3.1   Application

The requirements of Clause 5.3 are applicable to CE connected to or intended for use in connection with a Satellite Service and operating in ECS Access Mode.

5.3.2   Emergency call service access

By the user manually entering the digits at the time the connection is required, CE designed for voice communications that incorporates numeric keys for the primary purpose of initiating calls **shall** allow the initiating of an Emergency Call to the ESN 000.

Note 1:   Numeric keys include physical buttons and screen-based 'soft' keys found on CE.

Note 2:   If numeric keys remain visible under any lock condition (e.g. software or hardware lock), then the requirements of this Clause apply.

Note 3:   CE may have means other than numeric keys for call setup, e.g. alphanumeric keys, voice, motion and other non-keyed means. There is no requirement placed on these under Clause 5.3.2 as these are addressed in Clause 5.1.1.

Compliance with Clause 5.3.2 should be checked using the method described in Clause 6.2.2.

5.4 Provision of power-fail advice

Mains-powered CE designed for voice communications **shall** have a warning notice included in or with the CE documentation, if the CE does not continue to operate for more than 30 minutes after the loss of mains power.

Suggested wording for the warning notice is shown below and should also be placed on the outside surface of the CE's packaging.

> **Warning**
>
> **This equipment may not work when mains power fails**

Compliance with Clause 5.4 may be checked by inspection.

5.5 Acoustic safety

5.5.1 Maximum Sound Pressure Level (SPL)

The maximum RMS Sound Pressure Level (SPL) output for voice communications from the CE **shall** be less than or equal to 120 dBA at the Ear Reference Point (ERP) or the equivalent at the Drum Reference Point (DRP) when any user adjustable receiver volume control is set to maximum and when measured using 'RMS', 'F' or 'Fast' settings of sound level meters as defined in IEC 61672-1 [7] or equivalent short term RMS SPL.

Note 1: The choice of acoustic coupler and artificial ear is to be in accordance with ITU-T Rec. P.57 [12].

Note 2: Conversion between DRP and ERP for narrow band stimuli is to be in accordance with ITU-T Rec. P.57 [12].

Note 3: The requirement in Clause 5.4.1 is based upon the requirements in AS/CA S004 [3]. AS/CA S004 [3] typically applies to CE used for fixed telephony.

Note 4: Refer to ACIF G616 [6] for additional information related to the use of CE for mobile telephony.

5.5.2 Recommended Maximum Sound Pressure Levels (SPLs) (informative)

5.5.2.1 General

The RMS Sound Pressure Level (SPL) output for all audible outputs other than voice communications from the CE should be less than or equal to 120 dBA at the Ear Reference Point (ERP) or the equivalent at the Drum Reference Point (DRP) when any user adjustable volume control is set to maximum and when measured using 'RMS', 'F' or 'Fast' settings of sound level meters as defined in IEC 61672-1 [7] or equivalent short term RMS SPL.

Methods to achieve this could include—

(a)   an adaptation of the SPL output based on information about the proximity of the CE and the user; or

(b)   the use of more than one transducer for production of audible output, with the higher SPL output being produced by a transducer not intended to be placed next to or in an ear.

5.5.2.2   SPL output exceeding 120 dBA

Where the RMS SPL output from the CE exceeds 120 dBA at the ERP or the equivalent at the DRP then there should be control of the initial SPL such as a ramping up of the output so the SPL is—

(a)   initially less than or equal to 120 dBA at the Ear Reference Point (ERP) or the equivalent at the Drum Reference Point (DRP);

(b)   rises in increments no greater than 6 dB;

(c)   rises at a rate not greater than 6 dB/second; and

(d)   rises to a maximum within not less than 6 seconds.

Note 1: The choice of acoustic coupler and artificial ear is to be in accordance with ITU-T Rec. P.57 [12].

Note 2: Conversion between DRP and ERP for narrow band stimuli is to be in accordance with ITU-T Rec. P.57 [12].

Note 3: Refer to G616 [6] for additional information related to the use of CE for mobile telephony.

Note 4: These recommendations arise from a balancing of—

(i) a need to protect users from CE from acoustic shock, particularly when the CE is located close to a user's ear;

(ii) the risk of acoustic shock relative to the level of usage of CE (e.g. mobile phones) by the populations; and

(iii) the utility of CE that can produce high SPLs, particularly in a noisy environment when the CE is not located close to the user.

Note 5: Ramping up of an audible output can provide some protection against the risk of acoustic shock by giving the user the opportunity to move the CE away from their ear before the CE produces its maximum SPL.

Compliance with Clause 5.5 should be checked using the method described in Clause 6.3.

5.6   Telecommunications Device Identifier and security

5.6.2.1   Telecommunications Device Identifier

CE using—

(a)   3GPP technologies; or

(b)   OFDMA TDD WMAN technologies

shall have a Telecommunications Device Identifier.

Compliance with Clause 5.6.2.1 should be demonstrated by way of a manufacturer's DoC and inspection.

5.6.2.2   3GPP Technologies security

CE using 3GPP technologies excluding CE for which PEI is the equipment identifier **shall** comply with IMEI security requirements of ETSI TS 122 016 [17].

CE using 3GPP technologies for which PEI is the equipment identifier **shall** comply with PEI security requirements of ETSI TS 133 501[26] and IMEI security requirements of ETSI TS 122 016 [17].

Compliance with Clause 5.6.2.2 should be demonstrated by way of a manufacturer's DoC.

5.6.2.3   OFDMA TDD WMAN Technologies security

CE using OFDMA TDD WMAN technologies **shall** comply with Public Key Certification (PKC) security requirements of ITU-T Recommendation X.509 [13].

Compliance with Clause 5.6.2.3 should be demonstrated by way of a manufacturer's DoC.

6 TESTING

6.1 Verification of compliance with requirements

Compliance with all mandatory requirements in this AS/CA Standard is to be verified. This may be done by direct measurement, modelling and analysis, operation or inspection.

Methods for demonstrating compliance of CE with the requirements clauses specified in this Standard are described in Clauses 6.2 and 6.3.

Alternative methods of demonstrating compliance to those described may be used if the risk of passing non-compliant CE is not increased because of increased measurement uncertainty.

6.2 Test calls for Emergency Call Service access

6.2.1 Making a test call for CE used in connection with a PMTS

6.2.1.1 Identity modules

Where an Identity Module is present in the CE during testing, the Identity Module should—

(a)   be supplied by a Carrier or CSP;

(b)   be an active Identity Module;

(c)   have the ESN 000 stored in the ECC field; and

(d)   be intended for use to access a PMTS operated by a Mobile Carrier.

6.2.1.2 Test configuration for CE

The CE and test environment should be configured as required for—

(a)   each operating state in Clause 5.2.2 requiring test calls, including the operating state where no Identity Module is present;

(b)   accessing PMTS from each of the Mobile Carriers;

(c)   each technology supported by the CE and PMTS including:

(i)   UTRA connected to 3G Core Network;

(ii) E-UTRA connected to an Evolved Packet Core (EPC);

(iii) E-UTRA (master) and NR (secondary) connected to EPC;

(iv) NR connected to 5G Core Network (5GC); and

(v) a Wi-Fi network connected to EPC/5GC where voice calls can be made; and

(d)   no suitable access technology

Note 1: eUICC with no profile installed or enabled is to be considered the same way as no Identity Module is present.

Note 2: For Items (c)(ii), (c)(iii) and (c)(iv), IMS Emergency Call in normal, as well as camped on a network where only Emergency Calls are possible, are to be tested.

Note 3: The expectation, when there is no suitable access technology, is the ability to initiate an Emergency Call is not prevented.

Note 4: The requirements for testing incorrectly inserted Identity Modules in Clauses 5.2.2.1(b)(ii)(D), and damaged or faulty Identity Modules in Clause 5.2.2.1(b)(ii)(E), do not apply to eUICC identity modules.

6.2.1.3   Test configuration for Gateway Devices

For Gateway Device test calls, the Gateway Device should be configured as required for—

(a)   each operating state in Clause 5.2.2 requiring test calls, including the operating state where no Identity Module is present;

(b)   accessing PMTS from each of the Mobile Carriers;

(c)   each technology supported by the Gateway Device and by the PMTS including:

(i)   UTRA connected to 3G Core Network;

(ii) E-UTRA connected to EPC;

(iii) E-UTRA (master) and NR (secondary) connected to EPC;

(iv) NR connected to 5GC; and

(v) a Wi-Fi network connected to EPC/5GC where voice calls can be made; and

(d)   no suitable access technology

Note 1: eUICC with no profile installed or enabled is to be considered the same way as no Identity Module is present.

Note 2: For Items (c)(ii), (c)(iii) and (c)(iv), IMS Emergency Call in normal, as well as camped on a network where only Emergency Calls are possible, are to be tested.

Note 3: The expectation, when there is no suitable access technology, is the ability to initiate an Emergency Call is not prevented.

Note 4: The requirements for testing incorrectly inserted Identity Modules in Clauses 5.2.2.1(b)(ii)(D), and damaged or faulty Identity Modules in Clause 5.2.2.1(b)(ii)(E), do not apply to eUICC identity modules.

For Gateway Device test calls, the corded or wireless handset connected to CE that functions as a Gateway Device should be configured as required for each operating state in 5.2.2.

6.2.1.4 Information to record prior to test calls

Prior to initiating test calls the tester should check and record information about—

(a) PMTS supported radio access core network technologies availability in the test environment and its suitability for voice calls; and

(b) Wi-Fi availability in the test environment and its suitability for making voice calls connecting via a core network

Test calls only apply to CE operating in ECS Access Mode.

Note: Test calls are those from Carriers/CSPs, CE suppliers, test laboratories and the ACMA verifying compliance of the CE against the applicable requirements of this Standard.

6.2.1.5 Initiating a test call to the ECP for 000 and 112

Test calls for the ESNs should be made to the ECP for 000 and 112 for CE used in connection with a PMTS.

Prior to initiating a test call to an ESN, the tester should record the—

(a) time and date of the Emergency Call(s);

(b) IMSI and IMEI of the CE under test;

(c) MSISDN of the PMTS used by the CE under test; and

(d) for AML compliance information regarding the test location, including:

(i) latitude;

(ii) longitude; and

(iii) service address.

6.2.1.6 Response from the ECP for 000 and 112

If the Emergency Call is supported by the Telecommunications Network supplying the PMTS, successful initiation of an Emergency Call to the ESNs 000 and 112, will be indicated by the connection to either a Recorded Voice Announcement (RVA) or an ECP operator for 000 and 112.

Note: At time of publication, the ECP for 000 and 112 is Telstra Corporation Ltd.

6.2.1.7 Response from network

If—

(a) the Emergency Call is not supported by the Telecommunications Network supplying the PMTS; and

(b)   the Telecommunications Network provides a network response back to the CE, then;

successful initiating of an Emergency Call to the ESN will be indicated by the appropriate network response.

An appropriate network response is one which confirms that the CE was able to deliver the appropriate information to the air interface for the initiating of an Emergency Call to the ESN, e.g. call diverts to a network IVR or RVA or to a network operator in the case of a call to 000 or 112.

6.2.1.8   Test call using SIM with ECC field

Test calls to ESNs should be made to the ECP for 000 and 112 for CE used in connection with a PMTS.

The CE should be in both the locked and unlocked states and exclude call cases listed in Clauses 5.2.2.1(b)(i) and (ii).

Insert an active Identity Module supplied by a CSP and attempt dialling of the ESNs 000 and 112. Verify successful test calls to the ECP for 000 and 112.

While the Identity Module remains inserted, perform a third test call to the numbers 106 and 999. Verify that the Identity Module supplied by a CSP prevents the successful initiation of an Emergency Call, however, a normal call will be initiated.

Test calls only apply to CE operating in ECS Access Mode.

Note 1: Test calls are those from Carriers, CE suppliers, test laboratories and the ACMA verifying compliance of the CE against the applicable requirements of this Standard.

Note 2: Identity Modules supplied by a CSP only contain the ESN 000 in the ECC field in accordance with C536[4] requirements and do not contain any other numbers such as 08, 110, 112, 999, 118 and 119.

6.2.2   Making a test call for CE used in connection with a Satellite Service

6.2.2.1   Test configuration

Test calls for the ESN 000 should be made to the ECP for 000 and 112 for CE used in connection with a particular Satellite Service.

If the CE requires an Identity Module for normal operation, then the test calls should be made with an active test Identity Module fitted.

The CE should be in the unlocked state.

The PSTN handset or wireless phone connected to CE that functions as a Gateway Device should be in the unlocked state.

Test calls should be made from CE operating in ECS Access Mode.

6.2.2.2 Response from the ECP for 000 and 112

If the Emergency Call is supported by the Telecommunications Network supplying the Satellite Service, successful initiation of an Emergency Call to the ESN will be indicated by the connection of the Emergency Call to either a ECP RVA for 000 and 112 or an ECP operator for 000 and 112 in the case of a call to the ESN 000.

6.2.2.3 Response from network

If the Emergency Call is not supported by the Telecommunications Network supplying the particular Satellite Service and where the Telecommunications Network provides a network response back to the CE, successful initiation of an Emergency Call to the ESN will be indicated by the connection to the appropriate network response. This confirms that the CE was able to deliver the appropriate information to the air interface for the initiation of an Emergency Call to the ESN, e.g. call diverts to a network IVR or network operator in the case of a call to ESN 000.

6.2.3 Test call identification

Either—

(a) "This is [Your Name and Company name] making a Triple Zero test call" or

(b) "This is [Your Name and Company name] making a Triple Zero test call; please confirm the phone number displayed is 0XXXXXXXXX?"

announcement should accompany a test call if the call is taken by an operator at the ECP for 000 and 112.

Note 1: The ECP agent for 000 and 112 will follow their procedure to direct the test call to a Test Call Recorded Voice Announcement (RVA).

Note 2: The Test Call RVA will then be played back in a loop for a total duration of 2 minutes, this will allow multiple AML SMs to be sent where supported.

6.2.4 AML test call verification

To confirm whether AML data was received by the ECP for 000 and 112 for the successful Emergency Calls from a PMTS, the CE Supplier, Test House or Carrier/CSP should email the ECP for 000 and 112 (esap@team.telstra.com) with the—

(a) phone number/s of the test service used; and

(b) time/date of Emergency Calls.

The ECP for 000 and 112 will confirm back via email the following to the tester—

(a) whether AML data was received via SMS for the Emergency Calls; and

(b)   the AML data received from the CE.

6.2.5   Test call notice

If more than 50 test calls are planned to be made to the ECP for 000 and 112 within a 24-hour period, then the ECP for 000 and 112 is to be notified in advance of the initiation of the test calls.

Note: Notification to the ECP for 000 and 112 can be via esap@team.telstra.com.

6.3   Acoustic Safety

6.3.1   Maximum RMS output

The maximum RMS output SPL should be measured using the circuit shown in Figure 1.

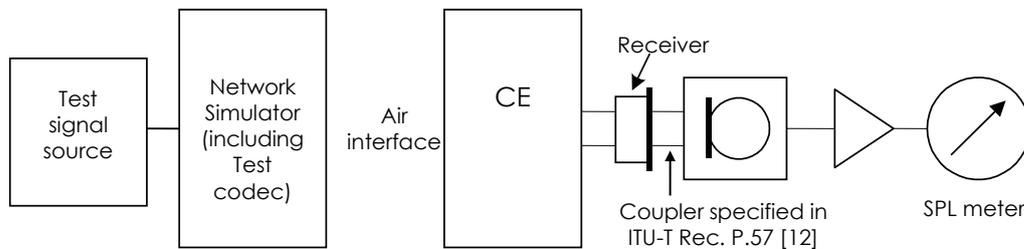Note: There is no test required for instantaneous output levels.

Figure 1
Test circuit for Sound Pressure Level tests

6.3.2   Volume control

If a volume control can be used with the equipment under test, the volume control should be set to maximum for the tests.

6.3.3   Step test parameters

Measurements over the frequency range and subsequent signal level range should be performed as a series of step tests. The recommended step test parameters as specified in Appendix A are—

(a)   Frequency steps to be in one-third octave intervals over the frequency range from 400 Hz to 900 Hz and in one-sixth octave intervals over the frequency range from 900 Hz to 4 kHz

(b)   Tone duration: 500 ms

(c)   Tone off time between steps: 3 seconds

(d)   Level step size: 2 dB

(e)   Number of levels: 7

6.3.4   Maximum digital code

The test signals should be applied so that the peaks of the highest level test signals produce the maximum digital code in the network simulator.

APPENDIX

A STEPPED PULSED STIMULI FOR TIME DEPENDENT LIMITING TEST

A1 Introduction

This Appendix defines the test parameters required to meet the requirements of the pulsed tone measurement method specified in Clause 6.3.3.

A series of tone pulses is provided at specific frequencies beginning at a relative low level and increasing over a number of steps up to the maximum level required for the product.

This sequence is repeated at each of seventeen specified test frequencies over the voice band.

Note: Note: A separate compact disc (CD) has been produced to assist in providing the stepped pulse stimuli in order to ensure repeatable test procedures. The CD is available for purchase as a standalone item (as AS/ACIF S004 Supplement 1:2004) and it is provided free of additional charge with printed hardcopies of AS/ACIF S004 [3]. The CD and/or a printed hardcopy of AS/ACIF S004 [3] may be obtained from SAI Global, GPO Box 5420, Sydney NSW 2001 or via http://www.saiglobal.com

The CD contains three test sequences. The test sequence to use for this Standard is the one to suit the requirements of a digital product e.g. a mobile telephone. (Tracks 21 to 40 on the CD correspond to this test sequence.) A series of tone pulses is provided at specific frequencies beginning at a relative low level and increasing over a number of steps up to the maximum level required for the product.

The CD is recorded as a two channel recording. The test sequence is recorded on channel 1. The voice announcements are on channel 2 to advise and prompt the test officer as to which test is being run.

When performing the test, channel 1 is to be connected to a power amplifier capable of generating the required output level as a test signal source (refer to Figure 1) while channel 2 is to be connected to a monitor amplifier and speaker (or headphone) at a suitable listening level.

A sixty second alignment tone is provided at the beginning of the test sequence to set up the amplifier gain to the correct level. This is followed by ten seconds of silence before the test sequence continues beginning at the minimum level.

A2 Test frequency list

The frequency list in Table A1 is considered to adequately test a product over the voice band, particularly covering the frequencies where an acoustic shock is most likely to be induced, i.e. greater than 1 kHz.

Table A1
Test frequency list

Test group	Frequency (Hz)	Test group	Frequency (Hz)
1	410	10	1728
2	516	11	1939
3	649	12	2175
4	818	13	2441
5	972	14	2738
6	1090	15	3073
7	1223	16	3447
8	1372	17	3868
9	1540		

A3 Telephone product tracks

The test sequence for digital products is listed in Table A3, with the alignment tone for the test sequence specified in Table A2 below.

The maximum SPL (A weighted) during each of the sequences is to be recorded.

Table A2
Alignment tones

Products track	Frequency (Hz)	Duration (s)	Voice prompt	Action
Digital	1040	60	'Alignment tone'	Adjust for +3.0 dBm0 at test codec

Note: The 'Products track' and 'Voice prompt' columns in Table A2 apply to the separate CD referred to in the Note to Appendix A1 (i.e. AS/ACIF S004 Supplement 1:2013).

Table A3
Digital products track test

Test Group 1			Test Groups 2 to16					Test Group 17		
Level	Duration (s)	Voice announcement	Group	Level	Duration (s)	Voice announcement		Level	Duration (s)	Voice announcement
0 V	10	'410 Hz –9 dBm0'		0 V	3	'516 Hz –9 dBm0'		0 V	3	'3868 Hz –9 dBm0'
–9 dB	0.5			–9 dB	0.5			–9 dB	0.5	
0 V	3	'410 Hz –7 dBm0'		This sequence repeated for				0 V	3	'3868 Hz –7 dBm0'
–7 dB	0.5							–7 dB	0.5	
0 V	3	'410 Hz –5 dBm0'						0 V	3	'3868 Hz –5 dBm0'
–5 dB	0.5		2, 3	516 Hz,		649 Hz		–5 dB	0.5	
0 V	3	'410 Hz –3 dBm0'	4, 5	818 Hz,		972 Hz		0 V	3	'3868 Hz –3 dBm0'
–3 dB	0.5		6, 7	1090 Hz,		1223 Hz		–3 dB	0.5	
0 V	3	'410 Hz –1 dBm0'	8, 9	1372 Hz,		1540 Hz		0 V	3	'3868 Hz –1 dBm0'
–1 dB	0.5		10, 11	1728 Hz,		1939 Hz		–1 dB	0.5	
0 V	3	'410 Hz +1 dBm0'	12, 13	2175 Hz,		2441 Hz		0 V	3	'3868 Hz +1 dBm0'
+1 dB	0.5		14, 15	2738 Hz,		3073 Hz		+1 dB	0.5	
0 V	3	'410 Hz +3 dBm0'	16	3447 Hz				0 V	3	'3868 Hz +3 dBm0'
+3 dB	0.5							+3 dB	0.5	
0 V	3	'410 Hz +10 dBm0'		0 V	3	'3447 Hz +10 dBm0'		0 V	3	'3868 Hz +10 dBm0'
+10 dB	0.5			+10 dB	0.5			+10 dB	0.5	

Note: The +10 dBm0 signal is provided to ensure that the codec is overloaded and will clip the signal so that it is close to a square wave which will provide more energy than a sine wave.

APPENDIX

B   ETSI STANDARD REFERENCE (INFORMATIVE)

B1   Introduction

The following table provides the ETSI Technical Standard clause references to each of the ESN requirements in this Standard. These references have been provided to assist the reader in identifying the source and its relationship to each of the requirements in this Standard.

Table B4
ETSI Technical Standard clause references

AS/CA S042.1 requirement		ETSI Standard requirement
5.2.2.1		**Emergency Service Number**
5.2.2.1(a)	Firmware	The storage of '000' as the ESN in the CE is specified as a **'shall'** requirement in clause 10.1.1 of ETSI TS 122 101 [19].
		Identification of '000' as the ESN in the case of the identity module not being present is specified as a **'shall'** requirement in clause 10.1.1 of ETSI TS 122 101 [19].
5.2.2.1(b)	Mobile Identity	The use of the IMEI/PEI as a mobile identity during the initiation of an Emergency Call in the case of the Identity Module not being present is specified as a **'shall'** requirement in ETSI TS 124 008 [21] (for GSM and UTRA) clause 5.5.1.2.2 of ETSI TS 124 301 [23] (for E-UTRA) and clause 5.5.1.2.2 of ETSI TS 124 501 [24] (for 5G NR).
		The use of the IMEI/PEI as a mobile identity during the initiation of an Emergency Call in the case of the Identity Module being blocked and/or invalidated is specified as a **'shall'** requirement in clause 4.5.1.1 of ETSI TS 124 008 [21] (for GSM and UTRA), clause 5.5.1.2.2 of ETSI TS 124 301 [23] (for E-UTRA) and clause 5.5.1.2.2 of ETSI TS 124 501 [24] (for 5G NR).
		The use of the IMEI/PEI as a mobile identity during the initiation of an Emergency Call in the case of IMS Emergency session set up without emergency registration is specified as a **'shall'** requirement in clause 5.1.6.8.2 of ETSI TS 124 229 [22].

AS/CA S042.1 requirement		ETSI Standard requirement
		The use of IMSI/TMSI as a mobile identity during the initiation of an Emergency Call in the case of the Identity Module being present is specified as a **'shall'** requirement in clause 4.5.1.1 of ETSI TS 124 008 [21] (for GSM and UTRA). The use of IMSI/GUTI as a mobile identity during the initiation of an Emergency Call in the case of the Identity Module being present is specified as a 'shall' requirement in clause 5.5.1.2.2 of ETSI TS 124 301 [23] (for E-UTRA). The use of SUCI/5G-GUTI as a mobile identity during the initiation of an Emergency Call in the case of the Identity Module being present is specified as a 'shall' requirement in clause 5.5.1.2.2 of ETSI TS 124 501 [24] (for 5G NR). The use of IMSI/SUCI as a mobile identity during the initiation of an Emergency Call in the case of the Identity Module being present (IMS Emergency session set up within an emergency or non- emergency registration) is specified as a **'shall'** requirement in clauses 5.1.6.8.3 and 5.1.6.8.4 of ETSI TS 124 229 [22].
5.2.2.1(c)	ECC field	The requirement to read the ECC field on the identity module and apply '000' (if stored in the ECC field) as an Emergency Service Number is specified as a **'shall'** requirement in clause 10.1.1 of ETSI TS 122 101 [19] and clause 7.3.1.1 of ETSI TS 131 111 [25].
5.2.2.1(d)	Numeric keys	User input mechanisms to initiate Emergency Call is outside the scope of the 3GPP/ETSI Standards.
5.2.2.1(e)	Emergency Call safeguard	User input mechanisms to initiate Emergency Call is outside the scope of the 3GPP/ETSI Standards.
5.2.2.1(f)	Locks	The initiation of an Emergency Call is specified as a **'shall'** requirement in clause 10.1 of ETSI TS 122 101 [19], independent of the CE state.
5.2.2.2	**Special flags and special signalling**	
5.2.2.2.1	ESNs 000 and 112	The identification of '000' as an ESN in the case of the Identity Module not being present or stored as an ESN in the ECC field is specified as a **'shall'** requirement in clause 10.1.1 of ETSI TS 122 101 [19]. In the above case, calls to '000' must be initiated as an Emergency Call, specified as a **'shall'** requirement in clause 4.5.1.1 of ETSI TS 124 008 [21] (for GSM and UTRA) and clause 5.5.1.1 of ETSI TS 124 301 [23] (for E-UTRA).

BIBLIOGRAPHY

This bibliography contains information about documents referred to in notes and informative appendices in the Standard. Further information on the listed documents, including how to obtain copies, can be found on the following internet sites:

www.iec.ch
www.saiglobal.com
www.standards.org.au

PARTICIPANTS

The Working Committee responsible for the revisions made to this Standard consisted of the following organisations:

Organisation	Membership
ACMA	Non-Voting
Apple	Voting
Certification Body Australia	Voting
Comtest Laboratories	Voting
HMD Global	Voting
Motorola Mobility Australia	Voting
nbn	Voting
Samsung	Voting
Singtel Optus	Voting
Telstra	Voting

This Working Committee was chaired by Steve Vodicka of Telstra. Mike Johns of Communications Alliance Ltd provided project management support.

NOTES

Communications Alliance was formed in 2006 to provide a unified voice for the Australian communications industry and to lead it into the next generation of converging networks, technologies and services.

In pursuing its goals, Communications Alliance offers a forum for the industry to make coherent and constructive contributions to policy development and debate.

Communications Alliance seeks to facilitate open, effective and ethical competition between service providers while ensuring efficient, safe operation of networks, the provision of innovative services and the enhancement of consumer outcomes.

It is committed to the achievement of the policy objective of the *Telecommunications Act 1997* - the greatest practicable use of industry self-regulation without imposing undue financial and administrative burdens on industry.