

**COMMUNICATIONS
ALLIANCE LTD**



AUSTRALIAN STANDARD

AS/CA S042.1:2010

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

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

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FOREWORD

General

This Standard has been prepared by the CECRP/WC10 *Addressable Devices Working Committee* and most recently revised by the WC19 *Mobile CE – General and IMT 2000 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 were a reference to ACMA.

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This Standard is a revision of AS/ACIF S042.1: 2008 *Requirements for connection to an air interface of a Telecommunications Network— Part 1: General*. It 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 emergency services; and
- (d) ensuring interoperability with a standard telephone service (STS).

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- *Part 2: CDMA (IS-95) (withdrawn)*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*
- *Part 4: IMT-2000 Customer Equipment*

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

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

Regulatory notice

This document will be submitted to the ACMA, for making as a technical standard under s376 of the *Telecommunications Act 1997*. Until it is made by the ACMA compliance with this Standard is voluntary.

The Standard as made by the ACMA will commence on the day after it registered under the *Legislative Instruments Act 2003* (LIA) and it will be a disallowable instrument within the meaning of s46A of the *Acts Interpretation Act 1901*.

The ACMA is a Commonwealth authority with statutory powers to impose requirements concerning telecommunications Customer Equipment and Customer Cabling.

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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: +61 3 9963 6800
Facsimile: +61 3 9963 6899
TTY: +61 3 9963 6948

INTRODUCTION

This introduction for the AS/CA S042.1:2010 **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 Part 1 for the specific requirements and to the 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 (Customer Equipment and Customer Cabling) Notice* (the TLN). The TLN can be obtained from the ACMA website at www.acma.gov.au.

The objective of Part 1 is to specify the general requirements and test methods for CE for use in connection with a PMTS and 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 AS/CA S042.

The objectives of this revision are to—

- (a) review requirements for screen displays during emergency call-only calls;
- (b) take into account any changes to the *Telecommunications (emergency call Services) Determination 2002*, incorporating *Amendment Determination 2007 (No. 1)*, particularly in reference to the blocking of SIM-less calls;
- (c) review the consistency of operation of a dual mode handset while in either PMTS or Satellite Service modes;
- (d) rationalise the requirements for CE used with a PMTS in light of the newly introduced requirements for CE used with a Satellite Service in AS/ACIF S042.1:2008;
- (e) rationalise the 'Addressable device' and 'Addressable satellite device' definitions (in relation to 'two-way communications' and 'identifiers');
- (f) consider a clarifying note for identity modules/numbers. Identification may be in relation to the handset or to the service;
- (g) consider the inclusion of common requirements for IMT-2000 CE; and
- (h) consider CE compliance with respect to the introduction of GSM picocells base stations in commercial aircraft and cruise ships.

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

- (a) replacing the term 'dialling' by 'initiating of an emergency call';

- (b) replacing the term 'screen displays' by 'user indicators';
- (c) replacing the term 'Multi-mode CE' by 'Multi-service CE';
- (d) introducing the terms 'STS Access mode', 'Telecommunications device identifier', 'Local port', 'Non-STS access mode', 'Multi-service CE' and 'Public Key Certificate';
- (e) defining the terms 'Multi-service CE' and 'Gateway device';
- (f) replacing the term 'Addressable satellite device' by the rationalised term 'Addressable device'; and
- (g) aligning the testing requirements in Section 6 for CE used with a PMTS with the requirements for CE used with a Satellite Service.

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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 documents referred to in this Standard are specified in Section 3: REFERENCES.
- (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 CE that is designed or intended for use in connection with—
 - (a) a PMTS and is an addressable device; or
 - (b) a Satellite Service and is an addressable device;or both.
- 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

	Publication	Title
Australian Standards		
[1]	AS ISO 1000-1998	The International System of Unit (SI) and its application.
AS/ACIF and AS/CA Standards		
[2]	AS/CA S003:2010	Customer Access Equipment for connection to a Telecommunications Network
[3]	AS/ACIF S004:2008	Voice frequency performance requirements for Customer Equipment
ACIF Guidelines		
[4]	ACIF G616:2006	Acoustic safety for telephone equipment Guideline
IEC Standard		
[5]	IEC 61672-1 Ed. 1.0 (2002)	Electroacoustics – Sound level meters – Part 1: Specifications
ITU-R Recommendation		
[6]	M.1457-7	Detailed specifications of the radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)
ITU-T Recommendation		
[7]	P.57 (07/02)	Artificial ear
[8]	X.509 (11/08)	Information technology - Open Systems Interconnection - The Directory: Public-key and attribute certificate frameworks
ETSI Publications		
[9]	ETSI TR 102 300-5 V1.2.1 (2003-01)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Designers' guide Part 5: Guidance on numbering and addressing
[10]	ETSI TS 122 016 V3.3.0 (2002-06)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); International Mobile Equipment Identities (IMEI) (3GPP TS 22.016 version 3.3.0 Release 1999)
[11]	ETSI TS 122 101 V9.3.0 (2009-03)	Universal Mobile Telecommunications System (UMTS); LTE; Service aspects; Service principles (3GPP TS 22.101 version 9.3.0 Release 9)
[12]	ETSI TR 121 905 V3.3.0 (2001-10)	Universal Mobile Telecommunications System (UMTS); Vocabulary for 3GPP Specifications (3GPP TR 21.905 version 3.3.0 Release 1999)

	Publication	Title
[13]	ETSI TS 124 008 V8.5.0 (2009-03)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Mobile radio interface Layer 3 specification; Core network protocols; Stage 3 (3GPP TS 24.008 version 8.5.0 Release 8)
[14]	ETSI TS 122 022 V8.0.0 (2009-01)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Personalisation of Mobile Equipment (ME); Mobile functionality specification (3GPP TS 22.022 version 8.0.0 Release 8)
[15]	ETSI TS 123 122 V8.7.0 (2009-10)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode (3GPP TS 23.122 version 8.7.0 Release 8)

4 ABBREVIATIONS AND DEFINITIONS

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

4.1 Abbreviations

3G	The third generation of mobile phone technologies covered by the ITU IMT-2000 family
3GPP	3rd Generation Partnership Project
ACA	Australian Communications Authority
ACE	Australian Communications Exchange
ACMA	Australian Communications and Media Authority
ACIF	Australian Communications Industry Forum
AS	Australian Standard
CDMA	Code Division Multiple Access
CE	Customer Equipment
DoC	Declaration of Conformity
DRP	(ear) Drum Reference Point
ECC	Emergency Call Code
ECP	Emergency Call Person
EDGE	Enhanced Data rates for GSM Evolution
EMC	Electromagnetic Compatibility
EMR	Electromagnetic Radiation
ERP	Ear Reference Point
ETSI	European Telecommunications Standard Institute
E-UTRA	Evolved UTRA. Also referred to as LTE.
FDD	Frequency Division Duplexing
GPRS	General Packet Radio Service
GPS	Global Positioning System
GSM	Global System for Mobile Communications
GSMA	GSM Association
IC	Integrated Circuit
IEC	International Electrotechnical Commission
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IMT	International Mobile Telecommunications
IMT-2000	Global standard for 3G wireless communications, defined by a set of interdependent ITU Recommendations
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
LTE	Long Term Evolution
MS	Mobile Station
OFDMA TDD	Orthogonal Frequency Division Multiple Access TDD
WMAN	Wireless Metropolitan Area Network (also referred to as Mobile WiMAX)
PDA	Personal Digital Assistant
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
STS	Standard Telephone Service
TDD	Time Division Duplexing
TLN	Telecommunications Labelling Notice
TMSI	Temporary Mobile Subscriber Identity
TS	Technical Standard
UICC	Universal IC Card
UMTS	Universal Mobile Telecommunications System
USIM	Universal Subscriber Identity Module
UTRA	Universal Terrestrial Radio Access (also referred to as UMTS)
WiMAX	Worldwide Interoperability for Microwave Access

4.2 Definitions

4.2.1 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.

- 4.2.2 Addressable device
An addressable device is CE used by the Telecommunications Network operator for the purposes of identification for two-way communications on the same PMTS or Satellite Service.
- 4.2.3 Air interface
A radio frequency (RF) link between CE and a Telecommunications Network.
- 4.2.4 Carrier
Refer to s7 of the *Telecommunications Act 1997*.
- 4.2.5 Customer Equipment (CE)
Refer to s7 of the *Telecommunications Act 1997*.
- 4.2.6 Drum Reference Point (DRP)
A point located at the end of the ear canal, corresponding to the ear-drum position.
- 4.2.7 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.
- 4.2.8 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 emergency service numbers or an acoustic coupler device.
- 4.2.9 GSM and GSM derived technologies
GSM and GSM derived technologies as specified by ETSI and 3GPP.

Note 1: Includes GSM (2G or second generation), GPRS and EDGE (commonly referred to as 2.5G) and GSM based IMT-2000 (3G or third generation) technologies such as UTRA FDD and E-UTRA FDD.

Note 2: There are a number of IMT-2000 technologies under ITU-R Recommendation M.1457-7 [6] which cannot be classified as being GSM and GSM derived technologies such as OFDMA TDD WMAN and CDMA TDD.

- 4.2.10 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.
- 4.2.11 Identity module
Has the same meaning as a subscriber identity module (SIM) or a universal subscriber identity module (USIM).
- 4.2.12 International Mobile Equipment Identity (IMEI)
Is a unique number which is allocated to each individual mobile station (MS) equipment in the PLMN and unconditionally implemented by the MS manufacturer at the time of manufacture.
Refer to ETSI TS 122 016 [10].
- 4.2.13 International Mobile Subscriber Identity (IMSI)
Is a string of decimal digits that identifies a unique mobile terminal or mobile subscriber internationally.
Refer to ETSI TR 102 300 [9].
- 4.2.14 IMT-2000
International Mobile Telecommunications-2000 (IMT-2000) as specified by ITU-R Recommendation M.1457-7 [6].

Note: The complete specification provides requirements for not only the IMT-2000 CE but also includes the infrastructure requirements.
- 4.2.15 Local Port
Refer to AS/CA S003 [2].
- 4.2.16 Mobile Station Equipment
Is the term used in ETSI Publications to describe Customer Equipment (CE).
- 4.2.17 Multi-service CE
CE with STS Access Modes using multiple network interfaces, including, but not limited to, devices with satellite/GSM or satellite/IMT-2000 network interfaces.

- 4.2.18 Non-STS access Mode
A CE mode of operation other than an STS Access Mode. Non-STS Access Modes typically include standby mode, or screen save mode, games controller mode, camera mode, music player mode, email or messaging mode, or flight mode.
- 4.2.19 Public Key Certificate (PKC)
Means 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 [8]
- 4.2.20 Public Mobile Telecommunications Service (PMTS)
Refer to s32 of the *Telecommunications Act 1997*.
- 4.2.21 Satellite Service
Refer to the *ACMA Telecommunications (Emergency Call Service) Determination 2002 (as amended)* and means a carriage service where CE used in connection with the supply of the service communicates directly with a satellite-based facility.
- 4.2.22 Standard Telephone Service (STS)
Refer to the *Telecommunications (Consumer Protection and Service Standards) Act 1999*.
- 4.2.23 Standard Telephone Service (STS) Access Mode
Means a CE mode of operation in which—
(a) a CE is connected to the Telecommunications Network;
(b) a CE is able to access either a PMTS or a Satellite Service; and
(c) the STS access function of the CE is enabled, such that calls can be initiated for the purposes of voice communications.
- 4.2.24 Subscriber Identity Module (SIM)
Means a physically removable module which is used in the authentication procedures and contains the subscriber identity as well as other subscriber data.
- 4.2.25 Telecommunications Device Identifier
Refer to s473.1 of the *Criminal Code Act 1995*.
Note 1: Means an IMEI for CE using GSM and GSM derived technologies.

Note 2: Means a PKC for CE using OFDMA TDD WMAN technologies.

4.2.26 Telecommunications Network

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

4.2.27 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 [12].

4.2.28 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 [12].

4.2.29 User Equipment

Is the term used in ETSI Publications to describe Customer Equipment (CE).

5 REQUIREMENTS

5.1 General

5.1.1 Emergency service access

CE designed for voice communications **shall** allow the initiating of an emergency call to the emergency service numbers 000 and 106.

Note 1: This requirement is 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: Successful communication with the 106 operator may require connection of an additional piece of CE.

Note 3: This requirement includes 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 Clause 5.2.2.1(d) and 5.3.2.

Note 4: The requirement for special flags and special signaling for 106 calls are addressed in Clause 5.2.2.2.2.

Note 5: 000 is the primary emergency call service number in Australia. 106 is a secondary emergency call service number in Australia. It is for the text-based emergency call service for people who are deaf or have hearing or speech impairment. 112 is a secondary emergency call service number in Australia. It is the international standard emergency number for PMTS employing GSM or GSM derived technologies.

Compliance with Clause 5.1.1 should be checked 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 Clause 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 emergency service numbers 000 and 106 in STS 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 Clause 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 a STS Access Mode.

5.2.2 Emergency service access

5.2.2.1 Emergency number 000

(a) Firmware

- (i) CE using GSM and GSM derived technologies **shall** store the emergency service number 000 in its firmware in accordance with ETSI TS 122 101 [11].
- (ii) Where an identity module is not present in the CE, CE **shall** allow the initiating of an emergency call to the emergency service number 000 stored in its firmware.

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 GSM and GSM derived technologies **shall** send an IMEI to the Telecommunications Network when it is initiating an emergency call to the emergency service number 000.
- (ii) Where an identity module is present in the CE, CE **shall** send an IMEI to the Telecommunications Network when it is initiating an emergency call to the emergency service number 000 in the following call cases:
 - (A) Identity module is blocked.
 - (B) Identity module is PIN enabled, waiting for PIN input.
 - (C) Identity module is invalidated by the Telecommunications Network as per ETSI TS 124 008 [13].

- (D) Incorrect identity module inserted as per ETSI TS 122 022 [14].
- (E) Damaged or faulty identity module.
- (iii) Where an identity module is present in the CE, CE **shall** send a TMSI/IMSI to the Telecommunications Network when it is initiating an emergency call to the emergency service number 000 excluding call cases scoped under Clause 5.2.2.1 (b) (ii).

Note: At time of publication, typical technologies requiring identity modules include GSM and GSM derived technologies.

Compliance with Clause 5.2.2.1 (b) should be demonstrated by way of a manufacturer's DoC to Clause 10.5 of ETSI TS 124 008 [13].

(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; and
- (ii) allow the initiating of an emergency call to the emergency service number 000 stored in the ECC field.

Note : It is current industry practice to supply identity modules with emergency service number 000 stored in the ECC field. However, the CE may not be able to initiate an emergency call to the emergency service number 000 if there is no emergency service number 000 stored in the ECC field on 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—

- (i) **shall** allow the initiating of an emergency call to the emergency service number 000; and
- (ii) for CE using GSM and GSM derived technologies, **shall** allow the initiating of an emergency call to emergency service number 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 emergency service access 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 buffer, 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.

(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 emergency service number 000; or
- (ii) provide directions for the user to disable the lock where CE prevents initiating of an emergency call to the emergency service number 000 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 emergency number 000.

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

5.2.2.2 Special flags and special signalling

5.2.2.2.1 Emergency service numbers 000 and 112

CE using GSM and GSM derived technologies designed for voice communications **shall** activate the emergency call procedure for the emergency service number 000 in the same manner as it would initiate the emergency call procedure for the emergency service number 112.

Note: This requirement may require the CE, when initiating an emergency call to 000, to raise special flags or use special signalling protocols as required by ETSI TS 124 008 [13] that defines the procedure for the initiating of an emergency call to the emergency service number 112.

5.2.2.2.2 Emergency service number 106

CE using GSM and GSM derived technologies designed for voice communications **shall not** activate the emergency call procedure for calls to the emergency service number 106 in the same manner as for emergency service numbers 000 and/or 112.

Note: CE using GSM and GSM derived technologies are required to treat 106 calls as normal calls.

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

5.2.3 User indicators

5.2.3.1 During Call setup

During call setup to emergency service numbers 000 and 112 (if using GSM or GSM derived technologies), CE designed for voice communications should indicate to the user that an emergency call is in progress.

Note: Screen display is a type of user indicator.

5.2.3.2 No Telecommunications Network access

CE designed for voice communications—

- (a) used in connection with a particular PMTS that is capable of indicating that the Telecommunications Network supplying the PMTS is accessible; and
- (b) which is not in the coverage area of either that particular Telecommunications Network or any other compatible Telecommunications Network,

should indicate to the user that a Telecommunications Network is not available for any calls, including emergency calls.

Note: For CE with a screen display and with such display not in battery save or screen save mode, the preferred wording for the warning message to be displayed should be:

No network access

5.2.3.3 Emergency calls to 000 and 112 for GSM and GSM derived technologies

CE using GSM and GSM derived technologies designed for voice communications, **shall**, when unable to provide network access other than to make emergency calls to 000 and 112, indicate to the user that emergency calls are possible, e.g. via the CE's idle screen for CE with a screen display.

Note 1: For CE with a screen display and with such display not in battery save or screen save mode, the preferred wording of the warning message to be displayed should be:

000 emergency calls only

Note 2: Other examples of warning messages include icons and images.

Note 3: This requirement is in the context of CE entering a 'limited service state' as per Clause 3.5 of ETSI TS 123 122 [15] in which it can only attempt to make emergency calls.

Note 4: This requirement is in the context of the user indicator of CE in a 'limited service state' prior to the CE's initiating of an emergency call to the emergency service numbers 000 and 112.

Compliance with Clause 5.2.3.1 should be checked by operation and inspection.

Compliance with Clause 5.2.3.2 and 5.2.3.3 should be demonstrated by way of a manufacturer's DoC.

5.2.4 Telecommunications Device Identifier

CE using—

- (a) GSM and GSM derived technologies; or
- (b) OFDMA TDD WMAN technologies

shall have a telecommunications device identifier.

Compliance with Clause 5.2.4 should be demonstrated by way of a manufacturer's DoC 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 a STS Access Mode.

5.3.2 Emergency 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 emergency service number 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.

5.3.3 User indicators

5.3.3.1 During Call setup

During call setup to emergency service numbers 000, CE designed for voice communications should indicate to the user that an emergency call is in progress.

Note: Screen display is a type of user indicator.

5.3.3.2 No Telecommunications Network access

CE designed for voice communications used in connection with a particular Satellite Service that is capable of indicating that the Telecommunications Network supplying the Satellite Service is accessible, should indicate to the user that a Telecommunications Network is not available for any calls, including emergency calls.

Compliance with Clause 5.3.3 should be checked by operation and inspection.

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.

<p style="text-align: center;">Warning</p> <p style="text-align: center;">This equipment may not work when mains power fails</p>
--

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 [5] 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 [7].

Note 2: Conversion between DRP and ERP for narrow band stimuli is to be in accordance with ITU-T Rec. P.57 [7].

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

Note 4: Refer to ACIF G616 [4] 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 [5] 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 [7].

Note 2: Conversion between DRP and ERP for narrow band stimuli is to be in accordance with ITU-T Rec. P.57 [7].

Note 3: Refer to ACIF G616 [4] 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.

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 service access

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

6.2.1.1 Test configuration

Test calls for the emergency service numbers should be made to the Emergency Call Person (ECP) for CE used in connection with a PMTS.

Where an identity module is present in the CE during testing, the identity module should have the emergency service number 000 stored in the ECC field.

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 a STS Access Mode.

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

6.2.1.2 Response from ECP

If the emergency call is supported by the Telecommunications Network supplying the PMTS, successful initiating of an emergency call to the emergency service number will be indicated by—

- (a) the connection to either a Recorded Voice Announcement (RVA) or an ECP operator in the case of a call to the ECP for 000 and 112; or
- (b) a modem tone in the case of a call to the ECP for 106.

Note: At time of publication, the ECP for 000 and 112 is *Telstra Corporation Ltd.* and the ECP for 106 service is the *Australian Communication Exchange (ACE)*.

6.2.1.3 Response from network

If the emergency call is not supported by the Telecommunications Network supplying the PMTS and where the Telecommunications Network provides a network response back to the CE, successful initiating of an emergency call to the emergency service number will be indicated by the connection to the appropriate network response 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 emergency service number, e.g. call diverts to a network IVR or network operator in the case of a call to 000, 112 and 106.

6.2.1.4 No response from network

If the emergency call is not supported by the Telecommunications Network supplying the PMTS and where the Telecommunications Network does not provide any network response back to the CE, the CE should indicate the successful initiating of an emergency call to the emergency service numbers 000, 112 and 106 via other means, e.g. such as the user indicators in Clause 5.2.3.

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 emergency service numbers should be made to the ECP 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 a 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 a STS Access Mode.

6.2.2.2 Response from ECP

If the emergency call is supported by the Telecommunications Network supplying the Satellite Service, successful initiating of an emergency call to the emergency service number will be indicated by—

- (a) the connection to either a ECP RVA or an ECP operator in the case of a call to the ECP for 000; or

(b) a modem tone in the case of a call to the ECP for 106.

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 initiating of an emergency call to the emergency service number will be indicated by the connection to the appropriate network response 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 emergency service number, e.g. call diverts to a network IVR or network operator in the case of a call to 000 and 106.

6.2.2.4 No response from network

If the emergency call is not supported by the Telecommunications Network supplying the particular Satellite Service and where the Telecommunications Network does not provide any network response back to the CE, the CE should indicate the successful initiating of an emergency call to the emergency service numbers 000 and 106 via other means, e.g. such as user indicators in Clause 5.3.3.

6.2.3 Test call identification

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

6.2.4 Test call notice

If more than 50 test calls are planned to be made to the ECP for 000 and 112 within one working day, then the ECP 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.

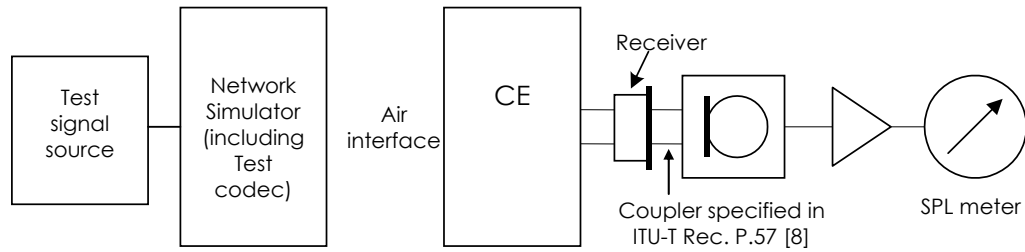


Figure 1
Test circuit for Sound Pressure Level tests

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: 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 products 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 1:2004).

Table A3
Digital products track test

Test Group 1		
Level	Duration (s)	Voice announcement
0 V	10	'410 Hz -9 dBm0'
-9 dB	0.5	
0 V	3	'410 Hz -7 dBm0'
-7 dB	0.5	
0 V	3	'410 Hz -5 dBm0'
-5 dB	0.5	
0 V	3	'410 Hz -3 dBm0'
-3 dB	0.5	
0 V	3	'410 Hz -1 dBm0'
-1 dB	0.5	
0 V	3	'410 Hz +1 dBm0'
+1 dB	0.5	
0 V	3	'410 Hz +3 dBm0'
+3 dB	0.5	
0 V	3	'410 Hz +10 dBm0'
+10 dB	0.5	

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

Test Group 17		
Level	Duration (s)	Voice announcement
0 V	3	'3868 Hz -9 dBm0'
-9 dB	0.5	
0 V	3	'3868 Hz -7 dBm0'
-7 dB	0.5	
0 V	3	'3868 Hz -5 dBm0'
-5 dB	0.5	
0 V	3	'3868 Hz -3 dBm0'
-3 dB	0.5	
0 V	3	'3868 Hz -1 dBm0'
-1 dB	0.5	
0 V	3	'3868 Hz +1 dBm0'
+1 dB	0.5	
0 V	3	'3868 Hz +3 dBm0'
+3 dB	0.5	
0 V	3	'3868 Hz +10 dBm0'
+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.

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

Organisation	Membership
ACMA	Non-Voting
Cisco Systems	Voting
Fujitsu	Voting
Motorola	Voting
Nokia	Voting
Optus	Voting
Pivotel	Voting
Telstra	Voting
Testing & Certification Australia	Voting
Vodafone Hutchison Australia	Voting

This Working Committee was chaired by Eliana Kurashima and Kidnapillai Selvarajah. Mike Johns of Communications Alliance 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.



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ALLIANCE LTD**

**Level 9
32 Walker Street
North Sydney
NSW 2060 Australia**

**Correspondence
PO Box 444
Milsons Point
NSW 1565**

**T 61 2 9959 9111
F 61 2 9954 6136
TTY 61 2 9923 1911
E info@commsalliance.com.au
www.commsalliance.com.au
ABN 56 078 026 507**

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