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**AS/ACIF S031:2001**

AUSTRALIAN COMMUNICATIONS INDUSTRY FORUM

**Australian Standard**

**Requirements for ISDN Basic Access  
Interface**

**For adoption for  
regulatory purposes**



Australian  
Communications  
Authority



Standards Australia

Australian Standard — *Requirements for ISDN Basic Access Interface*

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## FOREWORD

### General

This Standard was prepared by the ACIF Working Committee CECRP/WC6 on Digital Standards for Customer Equipment. It is one of a series of Telecommunication Standards developed under the Memorandum of Understanding between the Australian Communications Authority and the Australian Communications Industry Forum.

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

This Standard is based on the Australian Communications Authority ACA TS 031 — 1997 *Requirements for ISDN Basic Access Interface*.

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.

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### Standards revision

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

The Project Manager  
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### Regulatory notice

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The ACA is a Federal Government body with statutory powers to impose requirements concerning telecommunications Customer Equipment and Customer Cabling.

The ACA requires Australian manufacturers and importers of specified items of Customer Equipment and Customer Cabling to establish compliance with Standards such as this. Items are required to be labelled to the applicable labelling notices.

Details on current compliance arrangements can be obtained from the ACA website at <http://www.aca.gov.au> or by contacting the ACA below at:

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**PARTICIPANTS**

The ACIF Working Committee that developed this Standard consisted of the following organisations:

<b>Organisation</b>	<b>Membership</b>
Australian Communications Authority	Non-voting
Alcatel	Voting
Australian Telecommunications Industry Association	Voting
Comtest Laboratories	Voting
Envision Communications	Voting
Ericsson	Voting
Lucent Technologies	Voting
NEC Australia	Voting
Nortel	Voting
Siemens	Voting
Telstra	Voting

Mike Johns of ACIF provided project management support.





## 1 INTERPRETATION

### 1.1 Categories of requirements

This Standard contains mandatory requirements as well as provisions that are recommended 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

1.5.1 Applicable editions (or versions) of other documents referred to in this Standard are referenced documents and are specified in Section 3: REFERENCES.

1.5.2 If a referenced document refers to another document, the other document is a sub-referenced document.

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

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

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

1.5.6 In the event of a discrepancy between this Standard and a referenced or sub-referenced document, this Standard **shall** take precedence.

### 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 [3].



## 2 SCOPE

- 2.1 This Standard specifies the technical conditions and performance requirements for certain Customer Equipment (CE) at the Physical, Data Link and Network Layers (Layers 1, 2 and 3) when connected to an Integrated Services Digital Network (ISDN) Basic Access interface at the S/T reference point.
- 2.2 The equipment covered by this Standard is all CE that is intended for connection to an Integrated Services Digital Network (ISDN) Basic Access for the purpose of receiving information from, or transmitting information to, the ISDN.
- 2.3 This Standard applies to the following types of ISDN:
- (a) ETSI Standards based ISDN Basic Access.
  - (b) AUSTEL Technical Standard 013 [1][2] based ISDN Basic Access.
- 2.4 CE is not excluded from the scope of this Standard by reason only that it is capable of performing functions additional to those listed above.
- 2.5 For additional technical requirements applying to a CE, this Standard should be read in conjunction with those ACA Technical Standards and other documents listed in Clause 3: REFERENCES of this Standard.



## 3 REFERENCES

	Publication	Title
<b>AUSTEL Technical Standards</b>		
[1]	Technical Standard 013.1–1990	General Requirements for Customer Equipment Connected to ISDN Basic Rate Access Vol. I: Customer Equipment Access Interface Specifications
[2]	Technical Standard 013.2–1990	General Requirements for Customer Equipment Connected to ISDN Basic Rate Access Vol. II: Conformance Testing Specifications
<b>Australian Standards</b>		
[3]	AS ISO 1000—1998	The International System of Units (SI) and its application
<b>ITU–T Recommendations</b>		
[4]	X.200:1994	Information technology - Open Systems Interconnection - Basic reference model
<b>European Commission</b>		
[5]	CTR003 (Am1)	98/515/EC, Commission Decision of 17 June 1998 on a common technical Regulation for the pan-European Integrated Services Digital Network (ISDN) Basic Access (Amendment 1)
<b>European Telecommunications Standards Institute (ETSI)</b>		
[6]	ETSI EN 300 089:1992	Integrated Services Digital Network (ISDN); Calling Line Identification Presentation (CLIP) supplementary service—Service description
[7]	ETSI EN 300 090:2000	Integrated Services Digital Network (ISDN); Calling Line Identification Restriction (CLIR) supplementary service—Service description
[8]	ETSI EN 300 092-1:2001	Integrated Services Digital Network (ISDN); Calling Line Identification Presentation (CLIP) supplementary service Digital Subscriber Signalling System No. one (DSS 1) protocol
[9]	ETSI EN 300 093-1:1998	Integrated Services Digital Network (ISDN); Calling Line Identification Restriction (CLIR) supplementary service Digital Subscriber Signalling System No. one (DSS 1) protocol
[10]	ETSI EN 300 128:1992	Integrated Services Digital Network (ISDN); Malicious Call Identification (MCID) supplementary service—Service description
[11]	ETSI EN 300 130-1:1998	Integrated Services Digital Network (ISDN); Malicious Call Identification (MCID) supplementary service Digital Subscriber Signalling System No. one (DSS 1) protocol , Part 1: Protocol specification

[12]	ETSI EN 300 130-3:1998	Integrated Services Digital Network (ISDN); Malicious Call Identification (MCID) supplementary service Digital Subscriber Signalling System No. one (DSS 1) protocol, Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the user
[13]	ETSI EN 300 403-1:1999	Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]

**ISDN Approval Advisory Board (ITAAB)**

[14]	Advisory Note 048	Handling of glitches when performing tests B.2.4 and B.2.6.1 of TBR 003 [42]
[15]	Advisory Note 053	TTCN description of preamble PRE_F3_CP
[16]	Advisory Note 055:1998	Value of the state used in STATUS message
[17]	Advisory Note 060	Testing to be performed for Basic Access layer 1, including variations of Power Sources to be applied during testing of Electrical Characteristics
[18]	Advisory Note 061	Problem with performing the electrical characteristics tests at Basic Access Layer 1 for TEs with an unstable state F3
[19]	Advisory Note 066	Test case selection to be performed for Basic Access and for Primary Rate Access for layers 2 and 3
[20]	Advisory Note 069	Basic Access Layer 1 tests with problems for unstable S4 at layer 2
[21]	Advisory Note 071:1998	Requirements to EURO-ISDN basic access terminal equipment capable of handling only incoming or only outgoing calls
[22]	Advisory Note 076	Problem with performing the functional characteristics tests at Basic Access Layer 1 for TEs with an unstable state F3
[23]	Advisory Note 080	Use of preferred/exclusive bit in the RESTART ACK PDU in TC19003
[24]	Advisory Note 083	Layer 3 default DF69901
[25]	Advisory Note 085	Information element checking in layer 3 TC20002
[26]	Advisory Note 086	Layer 2 test case TC27031
[27]	Advisory Note 087:1998	Handling of IUT's supporting En-bloc sending without using the Sending Complete IE, or supporting more than one dialling mode
[28]	Advisory Note 088	Postamble CHECK_F1
[29]	Advisory Note 094	Timer TWAIT in the S <sub>0</sub> Layer 1 Testsuite

[30]	Advisory Note 096:1999	Categorising of ISDN Terminals based on the possible physical configuration/operation and data link operation
[31]	Advisory Note 098	System states for power feeding tests
[32]	Advisory Note 102	Power consumption of Terminal Equipments
[33]	Advisory Note 110	Incidental non-compliances and unexpected PDUs
[34]	Advisory Note 114	Clarification of the term “Mains Powered“, used in the TBR-RT’s for selection of Protection tests
[35]	Advisory Note 116:1999	Definition of timers T_APPLI1 and T_APPLI2
[36]	Advisory Note 118	Error in TBR 3 test cases TIF4info2 and TIF4info4
[37]	Advisory Note 120:1999	TBR3 Test Cases TIF7COMPDEACT1 and TIF8COMPDEACT1
[38]	Advisory Note 123	Problems in layer 2 preambles for terminal equipment unstable in state 4
[39]	Advisory Note 125	Correction of test case references
[40]	Advisory Note 126:2000	Power consumption of locally powered TE which draw power from the basic rate interface
<b>Telstra Specifications</b>		
[41]	TPH 2001	Telecom ISDN Technical Reference
<b>Additional References</b>		
[42]	TBR 003	Technical Basis for Regulation TBR 003 November 1995, Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access
[43]	TBR 003/A1	Technical Basis for Regulation TBR 003/A1 December 1997, Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access. Amendment A1





## 4 ABBREVIATIONS AND DEFINITIONS

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

### 4.1 Abbreviations

ACA	Australian Communications Authority
ACIF	Australian Communications Industry Forum
AS	Australian Standard
AUSTEL	Australian Telecommunications Authority
BA	Basic Access
CE	Customer Equipment
CLI	Calling Line Identification
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CTR	Common Technical Regulations
DSS 1	Digital Subscriber Signalling No. 1
DUT	Device Under Test
EC	European Commission
EMC	Electromagnetic Compatibility
ETSI	European Telecommunications Standards Institute
IA5	International Alphabet No. 5
IE	Information Element
ISDN	Integrated Services Digital Network
ITAAB	ISDN Type Approval Advisory Board
MCID	Malicious Call IDentification
OSI	Open Systems Interconnection
SI	International System
TN	Telecommunications Network
TTCN	Tree and Tabular Combined Notation

### 4.2 Definitions

#### 4.2.1 Customer Equipment (CE)

Refer to the *Telecommunications Act 1997*.

#### 4.2.2 Data Link Layer (Layer 2)

Layer 2 refers to the Data Link Layer as defined by the OSI Reference Model specified in ITU-T Rec. X.200 [4].

Note: The term 'Data Link Layer' is used to represent 'Layer 2'. These terms are used interchangeably.

#### 4.2.3 Facility

Refer to Section 374(2) of the *Telecommunications Act 1997*.

**4.2.4 Integrated Services Digital Network (ISDN)**

Integrated Services Digital Network means a digital network in which the same digital switches and digital paths are used to establish connections for different services, for example, telephony, data.

**4.2.5 Network Layer (Layer 3)**

Layer 3 refers to the Network Layer as defined by the OSI Reference Model specified in ITU-T Rec. X.200 [4].

Note: The term 'Network Layer' is used to represent 'Layer 3'. These terms are used interchangeably.

**4.2.6 Physical Layer (Layer 1)**

Layer 1 refers to the Physical Layer as defined by the OSI Reference Model specified in ITU-T Rec. X.200 [4].

Note: The term 'Physical Layer' is used to represent 'Layer 1'. These terms are used interchangeably.

**4.2.7 Telecommunications Network**

Refer to Section 374(1) of the *Telecommunications Act 1997*.

## 5 REQUIREMENTS

### 5.1 General

If CE is intended for connection to an ETSI standards based ISDN Basic Access interface ('ETSI interface') only, Clauses 5.1 to 5.4 apply to the CE.

If CE is intended for connection to an AUSTEL Technical Standard 013 based ISDN Basic Access interface ('AUSTEL interface') only, or to both an ETSI interface an AUSTEL interface, Clauses 5.1 to 5.5 apply to the CE.

Note: The AUSTEL Technical Standard 013 based ISDN Basic Access service has only a limited life and migration to a service based on ETSI standards is envisaged.

#### 5.1.1 Fail-safe operation

5.1.1.1 CE **shall not** cause harm or damage to a Telecommunications Network or Facility if any of the following events, or a consequential event, occurs:

- (a) Failure of any single mechanical or electrical component in the CE.
- (b) Failure of any power supply (including a.c. mains voltage and local battery) to the CE.
- (c) Incorrect manual operation of the CE.

5.1.1.2 CE should not cause harm or damage to a Telecommunications Network or Facility when CE is operated outside the range of operating voltage and environmental conditions specified by the manufacturer.

5.1.1.3 When the battery voltage of battery-powered CE varies, the CE **shall** fail safe before causing any harm to a Telecommunications Network or a Facility.

Note: This Clause is intended to preclude out-of-specification operation, due to battery discharge, when such operation threatens network integrity.

*Compliance with Clause 5.1.1 should be checked by using the methods described in Clause 6.3.*

#### 5.1.2 Emergency services access

5.1.2.1 CE capable of establishing speech circuits **shall** support emergency number '000' and '106' dialling.

5.1.2.2 CE capable of establishing speech circuits should not support barring of access to emergency number '000' and '106'.

5.1.2.3 Mains powered CE capable of establishing speech circuits should continue to support emergency number '000' and '106' dialling for at least 30 minutes following loss of mains power.

Note: CE that does not continue to support emergency dialling after loss of mains power, should include in the accompanying documentation a warning notice. A suggested wording for such a warning notice is as follows:

Warning

This equipment will be inoperable when mains power fails

*Compliance with Clause 5.1.2 should be checked by using the methods described in Clause 6.4.*

## 5.2 Physical Layer (Layer 1)

### 5.2.1 General

5.2.1.1 CE **shall** comply with the Layer 1 requirements of the Common Technical Regulation CTR003 (Am1) [5].

Note: CTR003 (Am1) [5] references ETSI Technical Basis for Regulation TBR 003 [42] as amended by TBR 003/A1 [43] for requirements and testing.

*Compliance with Clause 5.2.1 should be checked by using the methods described in Clause 6.5.1.*

### 5.2.2 Variations or additions

#### 5.2.2.1 Terminating resistors

5.2.2.1.1 CE intended to work in a point-to-point wiring configuration may include terminating resistors. Where such resistors are included, the CE **shall** allow for disconnection/reconnection of the resistors for conformance testing purposes.

5.2.2.1.2 CE intended to work in a point-to-multipoint wiring configuration may include terminating resistors. Where such resistors are included, the CE **shall** allow for disconnection/reconnection of the resistors for conformance testing and installation purposes.

Note: For point-to-multipoint wiring configurations, terminating resistors will be connected across the conductors of each transmission pair at each end of the S-bus. These resistors may be installed in the permanent S-bus wiring, externally at the CE sockets using adaptors, or within the CE.

*Compliance with Clause 5.2.2.1 should be checked by using the methods described in Clause 6.5.2.1.*

#### 5.2.2.2 ITAAB Advisory Notes

Where applicable, the CE **shall** comply with the requirements specified in ITAAB Advisory Notes 071 [21], 096 [30], 102 [32], 116 [35] and 126 [40].

*Compliance with Clause 5.2.2.2 should be checked by using the methods described in Clause 6.5.*

## 5.3 Data Link Layer (Layer 2)

### 5.3.1 General

CE **shall** comply with the Layer 2 requirements of the Common Technical Regulation CTR003 (Am1) [5].

Note: CTR003 (Am1) [5] references ETSI Technical Basis for Regulation TBR 003 [42] as amended by TBR 003/A1 [43] for requirements and testing.

*Compliance with Clause 5.3.1 should be checked by using the methods described in Clause 6.6.*

### 5.3.2 ITAAB Advisory Notes

Where applicable, the CE **shall** comply with the requirements specified in ITAAB Advisory Notes 071 [21] and 096 [30].

*Compliance with Clause 5.3.2 should be checked by using the methods described in Clause 6.6.*

## 5.4 Network Layer (Layer 3)

### 5.4.1 General

CE **shall** comply with the Layer 3 requirements of the Common Technical Regulation CTR003 (Am1) [5].

Note: CTR003 (Am1) [5] references ETSI Technical Basis for Regulation TBR 003 [42] as amended by TBR 003/A1 [43] for requirements and testing.

*Compliance with Clause 5.4.1 should be checked by using the methods described in Clause 6.7.1*

### 5.4.2 Variation/additional requirements

Variations or additions to the requirements specified in Clause 5.4.1 are set out in Clauses 5.4.2.1 to 5.4.2.5..

#### 5.4.2.1 Malicious Call IDentification (MCID)

5.4.2.1.1 The capability of supporting the Malicious Call IDentification (MCID) supplementary service for speech and 3.1 kHz audio bearer services is optional.

5.4.2.1.2 If the MCID supplementary service is supported, the CE **shall** comply with the ETSI Malicious Call Identification (MCID) functional procedures specified in EN 300 128 [10] and EN 300 130-1 [11].

Note 1: ETSI Functional Procedures are subject to carrier availability.

Note 2: Alternate carrier specific provisions may be used to identify a malicious call.

*Compliance with Clause 5.4.2.1 should be checked by using the methods described in Clause 6.7.2.2.*

#### 5.4.2.2 Calling Line Identification Restriction (CLIR)

5.4.2.2.1 Calling Line Identification Restriction (CLIR) procedures provide the Calling Party with the ability to restrict presentation of the Calling Party's ISDN number and subaddress to the called party.

5.4.2.2.2 CLIR is supported as two user subscription options in the carrier networks. These options are 'Normally Present' and 'Normally Restrict'. Both options can be controlled on a call by call basis, overriding the network default. ETSI define these modes as the following:

(a) 'Temporary Mode with default of presentation not restricted' (Temporary Mode 1).

(b) 'Temporary Mode with default of presentation restricted' (Temporary Mode 2).

5.4.2.2.3 The capability of supporting CLIR supplementary service is optional, however if supported, the CE **shall** support either Temporary Mode 1 or 2, or both variants, as described below:

(a) Temporary Mode 1

Upon invocation of CLIR, CE **shall** send an indication to the network, advising the network to restrict presentation on a per call basis (i.e. CE action is required for each call to invoke the service).

(b) Temporary Mode 2

Upon invocation of CLIR, CE **shall** send an indication to the network, advising the network to allow presentation on a per call basis (i.e. CE action is required for each call to invoke the service).

5.4.2.2.4 If either Temporary Mode 1 or Temporary Mode 2 is supported by CE, then the CE **shall** provide Functional procedures to allow restriction of CLI on a per call basis in accordance with the following ETSI specifications:

- (a) EN 300 090 [7] (Stage 1).
- (b) EN 300 093-1 [9] (Stage 3).

*Compliance with Clause 5.4.2.2 should be checked by using the methods described in Clause 6.7.2.3.*

**5.4.2.3 Calling Line Identification Presentation (CLIP)**

5.4.2.3.1 Calling Line Identification Presentation (CLIP) procedures provide the called party with the possibility of receiving the Calling Party identity.

5.4.2.3.2 Where CE is capable of supporting CLIP, CE **shall** comply with CLIP requirements specified in following ETSI specifications:

- (a) EN 300 089 [6] (Stage 1).
- (b) EN 300 092-1 [8] (Stage 3).

Note 1: Some Network Carriers may not support the CLIP supplementary service.

Note 2: If the Calling Party number is not available at the destination interface or only partial CLI is available, the 'Not Available due to Interworking' codepoint will be sent in the Calling Party Number IE, without any address digits.

Note 3: If the CLI is restricted from presentation (e.g. Calling Party activates CLIR or Calling Party is connected to an exchange or network which does not have CLIR capability) then the 'Presentation Restricted' codepoint will be sent in the Calling Party Number IE.

Note 4: The number formats will be in accordance with the individual carrier specifications.

*Compliance with Clause 5.4.2.3 should be checked by using the methods described in Clause 6.7.2.4.*

**5.4.2.4 ITAAB Advisory Notes**

Where applicable, the CE **shall** comply with the requirements specified in ITAAB Advisory Notes 055 [16], 071 [21], 087 [27] and 096 [30].

*Compliance with Clause 5.4.2.4 should be checked by using the methods described in Clause 6.7.*

**5.4.2.5 Initiation of automatic repeated outgoing call attempts**

5.4.2.5.1 CE **shall** provide a minimum off-line period of 2 seconds between successive automatically initiated calls from any channel(s) on the interface to the required number.

5.4.2.5.2 In any 30 minute period, a CE **shall not** automatically initiate more than ten calls from any channel(s) on the interface to any single called party number, unless a call is successful (i.e. a CONNECT message is received), in which case a new 30 minute period will commence when the next automatically initiated call attempt is made from any channel(s) on the interface to the same required number.

*Compliance with Clause 5.4.2. should be checked by using the methods described in Clause 6.7.2.5.*

## 5.5 Additional requirements for CE intended for connection to an AUSTEL TS 013 based ISDN BA Interface

### 5.5.1 General

If CE is intended for connection to an AUSTEL Technical Standard 013 based ISDN Basic Access interface, it **shall** comply with the requirements specified in Clause 5.5.2.

### 5.5.2 Requirements

#### 5.5.2.1 Item 1: Sending Complete IE

The CE **shall not** include the Sending Complete IE in the SETUP or Information Messages sent to the network. Refer to Clauses 4.5.27, 5.1.1 and 5.1.3 of EN 300 403-1 [13].

*Compliance with Clause 5.5.2.1 should be checked by using the method described in Clause 6.8.1.*

#### 5.5.2.2 Item 2: Progress Indicator IE

The CE **shall not** send the Progress Indicator IE with 'Private Network Serving Remote User' as the Location codepoints to the network. Refer to Clause 4.5.23 of EN 300 403-1 [13].

*Compliance with Clause 5.5.2.2 should be checked by using the method described in Clause 6.8.2.*

#### 5.5.2.3 Item 3: Bearer Capacity IE

The CE **shall not** send Bearer Capacity IE codepoints which are not defined in AUSTEL TS 013 [1][2] to the network. Refer to Clause 4.5.5 of EN 300 403-1 [13].

*Compliance with Clause 5.5.2.3 should be checked by using the method described in Clause 6.8.3.*

#### 5.5.2.4 Item 4: Cause IE

The CE **shall not** send the Cause IE with 'Private Network Serving Remote User' as a Location codepoint, to the network. Refer to Clause 4.5.12 of EN 300 403-1 [13].

*Compliance with Clause 5.5.2.4 should be checked by using the method described in Clause 6.8.4.*

#### 5.5.2.5 Item 5: Cause IE Octet 3a

The CE **shall not** send octet 3a of the Cause IE to the network. Refer to Clause 4.5.12 of EN 300 403-1 [13].

*Compliance with Clause 5.5.2.5 should be checked by using the method described in Clause 6.8.5.*

#### 5.5.2.6 Item 6: AUSTEL TS 013 cause values

The CE **shall not** send cause values which are not defined in AUSTEL TS 013 [1][2] to the network. Refer to Clause 4.5.12 of EN 300 403-1 [13].

The following Table lists the cause values which are not supported by AUSTEL TS 013 [1][2]:

<b>Cause value</b>	<b>Description</b>
2	No route to specified transit network
3	No route to destination
7	Call awarded and being delivered in an established channel
19	No answer from user (user alerted)
29	Facility rejected
49	Quality of service not available
50	Requested facility not subscribed
69	Requested facility not implemented
83	A suspended call exists but this call identity does not
84	Call identity in use
85	No call suspended
86	Call having the requested call identity has been cleared
91	Invalid transit network selection

*Compliance with Clause 5.5.2.6 should be checked by using the method described in Clause 6.8.6.*

**5.5.2.7 Item 7: High Layer Compatibility IE Octet 4a**

If the CE sends octet 4a of the High Layer Compatibility IE, the maximum length of the High Layer Compatibility IE specified in AUSTEL TS 013 [1][2] **shall not** be exceeded. Refer to Clause 4.5.17 of EN 300 403-1 [13].

*Compliance with Clause 5.5.2.7 should be checked by using the method described in Clause 6.8.7.*

**5.5.2.8 Item 8: Modem codepoints**

If the CE sends Modem codepoints specified in ETSI for Low Layer compatibility IE, these may not be supported by other CE connected to AUSTEL TS 013 [1][2] networks. The CE **shall** support the exclusion of such codepoints. Refer to Clause 4.5.19 of EN 300 403-1 [13].

*Compliance with Clause 5.5.2.8 should be checked by using the method described in Clause 6.8.8.*

**5.5.2.9 Item 9: Called Party Number IE (Number Plan)**

The CE **shall** use Number Plan E.164 in the Called Party Number IE. Refer to Clause 4.5.8 to EN 300 403-1 [13].

*Compliance with Clause 5.5.2.9 should be checked by using the method described in Clause 6.8.9.*

**5.5.2.10 Item 10: Calling Party Number IE (Number Plan)**

The CE **shall** use Number Plan E.164 in the Calling Party Number IE. Refer to Clause 4.5.10 of EN 300 403-1 [13].

*Compliance with Clause 5.5.2.10 should be checked by using the method described in Clause 6.8.10.*

**5.5.2.11 Item 11: Calling Party Number IE (Type of Number)**

The CE should not set the Type of Number (TON) 'Unknown' in the Calling Party Number IE. Refer to Clause 4.5.10 of EN 300 403-1 [13].



Note: For some networks supporting the TS013 based ISDN BA Interface, use of TON = 'Unknown' in the Calling Party Number IE will result in the network replacing the CLI with the default CLI for the access.

#### 5.5.2.12 Item 12: Broadcast SETUP Message

5.5.2.12.1 The CE **shall** respond to a Broadcast SETUP Message according to applicable procedures (i.e. Point to Point procedures are not supported).

5.5.2.12.2 Restarts **shall not** be initiated. Refer to Clause 5.2 of EN 300 403-1 [13].

*Compliance with Clause 5.5.2.12 should be checked by using the method described in Clause 6.8.11.*

#### 5.5.2.13 Item 13: Multiple diagnostics

The CE should not send multiple diagnostics in a Cause IE. Refer to Clause 4.5.12 of EN 300 403-1 [13].

*Compliance with Clause 5.5.2.13 should be checked by using the method described in Clause 6.8.12.*

#### 5.5.2.14 Item 14: Length of Cause IE

The CE **shall not** send a Cause IE exceeding 6 octets. Refer to Clause 4.5.12 of EN 300 403-1 [13].

*Compliance with Clause 5.5.2.14 should be checked by using the method described in Clause 6.8.13.*

#### 5.5.2.15 Item 15: CLIR

5.5.2.15.1 If the CE supports CLIR, it **shall** use procedures as defined in Sub-section 7.3, Part C of TPH 2001 [41], when connected to a TS 013 interface.

5.5.2.15.2 These procedures **shall not** be used when connected to ETSI based interfaces.

*Compliance with Clause 5.5.2.15 should be checked by using the method described in Clause 6.8.14.*

#### 5.5.2.16 Item 16: ETSI supplementary service requests

The CE **shall not** send ETSI supplementary service requests to the network that are not supported in the carrier documentation. Refer to Part C of TPH 2001 [41].

*Compliance with Clause 5.5.2.16 should be checked by using the method described in Clause 6.8.15.*



## 6 TESTING

### 6.1 General

- 6.1.1 Compliance with all mandatory requirements applicable to the CE as specified in the Requirements Clauses is to be verified. This verification may be through direct measurements, modelling and analysis, or inspection.
- 6.1.2 Methods for demonstrating compliance of CE with Requirements Clauses specified in this Standard are described in Clauses 6.2 to 6.8. Other methods may be used if the risk of passing non-compliant CE is not increased because of increased measurement uncertainty.

### 6.2 Standard test conditions

- 6.2.1 Unless this Standard provides otherwise, testing for compliance with this Standard should be conducted at the nominal supply voltage of the CE and within the following ranges of atmospheric conditions:
- (a) An ambient temperature in the range of 15°C to 25°C inclusive.
  - (b) A relative humidity in the range of 30% to 75% inclusive.
  - (c) An air pressure in the range of 86 kPa to 106 kPa inclusive.
- 6.2.2 Where elements in a test circuit are variable, the test should be carried out over the indicated range for that element.
- 6.2.3 Unless indicated elsewhere within this Standard, the accuracy level of all measurements should be better than  $\pm 2\%$  for voltage and current,  $\pm 0.25\%$  for frequency and  $\pm 0.5\%$  for time.
- 6.2.4 Unless indicated elsewhere within this Standard for an individual test, all component values in the test configuration should have a tolerance of—
- (a) 1% for resistance;
  - (b)  $\pm 1\%$  for capacitance; and
  - (c)  $-0\%$ ,  $+25\%$  for inductors.

### 6.3 Fail-safe operation

Compliance with the requirements of fail-safe operation specified in Clause 5.1.1 should be checked by operation and inspection.

### 6.4 Emergency calling

Compliance with the Emergency Calling requirements specified in Clause 5.1.2 should be checked by operation and inspection.

### 6.5 Physical Layer (Layer 1)

#### 6.5.1 General

- 6.5.1.1 Compliance with the requirements of Physical Layer (Layer 1) specified in Clause 5.2 should be demonstrated in accordance with the testing requirements specified in the Common Technical Regulation CTR003 (Am1) [5] and the testing requirements specified in ITAAB Advisory Notes 048 [14], 053 [15], 060 [17], 061 [18], 069 [20], 071 [21], 076 [22], 088 [28], 094 [29], 096 [30], 098 [31], 102 [32], 110 [33], 114 [34], 116 [35], 118 [36], 120 [37] and 126 [40].

Note: CTR003 (Am1) [5] references ETSI Technical Basis for Regulation TBR 003 [42] as amended by TBR 003/A1 [43] for requirements and testing.

6.5.1.2 Any variations or additional testing requirements specified in Clause 6.5.2 should be complied with.

6.5.2 Variation/additional tests

6.5.2.1 Terminating resistors

Compliance with the requirements of Terminating Resistors specified in Clause 5.2.2.1 should be demonstrated by inspection or operation.

## **6.6 Data Link Layer (Layer 2)**

Compliance with the requirements of Data Link Layer (Layer 2) specified in Clause 5.3 should be demonstrated in accordance with the testing requirements specified in the Common Technical Regulation CTR003 (Am1) [5] and the testing requirements specified in ITAAB Advisory Notes 066 [19], 071 [21], 086 [26], 096 [30], 110 [33], 123 [38] and 125 [39].

Note: CTR003 (Am1) [5] references ETSI Technical Basis for Regulation TBR 003 [42] as amended by TBR 003/A1 [43] for requirements and testing.

## **6.7 Network Layer (Layer 3)**

6.7.1 General

6.7.1.1 Compliance with the requirements of Network Layer (Layer 3) specified in Clause 5.4 should be demonstrated in accordance with the testing requirements specified in the Common Technical Regulation CTR003 (Am1) [5] and the testing requirements specified in ITAAB Advisory Notes 055 [16], 066 [19], 071 [21], 080 [23], 083 [24], 085 [25], 087 [27], 096 [30] and 110 [33].

Note: CTR003 (Am1) [5] references ETSI Technical Basis for Regulation TBR 003 [42] as amended by TBR 003/A1 [43] for requirements and testing.

6.7.1.2 Any variations or additional testing requirements specified in Clause 6.7.2 should be complied with.

6.7.2 Variation/additional tests

6.7.2.1 General

In addition to the tests specified in Clause 6.7.1, the CE should comply with the test requirements specified in Clauses 6.7.2.2, 6.7.2.3, 6.7.2.4 and 6.7.2.5.

6.7.2.2 Malicious Call Identification (MCID) testing

If supported, compliance with the requirements of Malicious Call Identification (MCID) using functional procedures as specified in EN 300 128 [10] and EN 300 130-1 [11] should be demonstrated in accordance with test methods specified in EN 300 130-3 [12].

6.7.2.3 Calling Line Identification Restriction (CLIR) testing

6.7.2.3.1 If supported, compliance with the requirements of Calling Line Identification Restriction (CLIR) specified in Clause 5.4.2.2 should be demonstrated in accordance with the procedures in Clauses 6.7.2.3.2 and 6.7.2.3.3.

6.7.2.3.2 CE should be tested to confirm CLIR supplementary service requirements by conducting the following procedure:

- (a) From the Device Under Test (DUT) initiate a call to the test equipment with the CLIR Temporary Mode 1 service invoked for that call.
- (b) Clear the call attempt down.
- (c) Initiate a second call to the test equipment, this time without attempting to restrict CLI presentation.
- (d) Clear the call attempt down.
- (e) From the DUT, initiate a call to the test equipment with the CLIR Temporary Mode 2 service invoked for that call.

6.7.2.3.3 Verify the following:

- (a) A SETUP message with a Calling Party Number IE with the Presentation Indicator set to 'Presentation Restricted' is initiated by the procedure described in Clause 6.7.2.3.2 (a).
- (b) In accordance with the procedure described in Clause 6.7.2.3.2 (c), a SETUP message is initiated with any of the following:
  - (i) No Calling Party Number IE.
  - (ii) A Calling Party Number IE with the Presentation Indicator set to 'Presentation Allowed'.
  - (iii) A Calling Party Number IE without optional octet 3a included.
- (c) In accordance with procedures described in Clause 6.7.2.3.2 (e), a SETUP message is initiated and includes a Calling Party Number IE with the Presentation Indicator set to 'Presentation allowed'.

6.7.2.4 Calling Line Identification Presentation (CLIP) testing

Compliance with the requirements of Calling Line Identification Presentation (CLIP) specified in Clause 5.4.2.3 should be demonstrated in accordance with the testing requirements specified in the Common Technical Regulation CTR003 (Am1) [5].

6.7.2.5 Initiation of repeated outgoing call attempts

Compliance with the requirements of Initiation of Repeated Outgoing Call Attempts specified in Clause 5.4.2.5 should be checked by operation and inspection.

## 6.8 Demonstration of compliance for CE intended for connection to an AUSTEL TS 013 based ISDN BA Interface

6.8.1 Item 1: Sending Complete IE

The exclusion of the Sending Complete IE in the SETUP or Information Messages sent to the network should be verified by monitoring SETUP and INFORMATION messages during CTR003 (Am1) testing.

6.8.2 Item 2: Progress Indicator IE

The sending of the Progress Indicator IE without 'Private Network Serving Remote User' as the Location codepoint to the network should be verified by the following method:

- (a) Initiate PROGRESS message from DUT.
- (b) Verify by monitoring PROGRESS messages.

- 6.8.3 **Item 3: Bearer Capacity IE**  
 The sending the Bearer Capacity IE without codepoints which are not defined in AUSTEL TS 013 [1][2] should be verified by checking that the device does not support Video or 7kHz Audio within the Bearer Capability IE of a SETUP message.
- 6.8.4 **Item 4: Cause IE**  
 The sending of the Cause IE without ‘Private Network Serving Remote User’ as a Location codepoint to the network should be verified by monitoring DISCONNECT, RELEASE, RELEASE COMPLETE or STATUS messages during CTR003 (Am1) testing.
- 6.8.5 **Item 5: Cause IE Octet 3a**  
 The omission of octet 3a of the Cause IE in messages to the network should be verified by monitoring DISCONNECT messages during CTR003 (Am1) testing.
- 6.8.6 **Item 6: AUSTEL TS 013 cause values**  
 The sending of Cause IE values which are not defined in AUSTEL TS 013 [1][2] should be verified by observation.  
 Note: All cause codes defined in Clause 5.5.2.6 are normally generated by networks and not by CE.
- 6.8.7 **Item 7: High Layer Compatibility IE Octet 4a**  
 The maximum length of the High Layer Compatibility IE specified in AUSTEL TS 013 [1][2] should be verified by the following method:  
 (a) Verify by monitoring High Layer Compatibility IE of a SETUP messages during CTR003 (Am1) testing (the High Layer Compatibility IE is optional).  
 (b) Ensure that the maximum length of the High Layer Compatibility IE is 4 octets.
- 6.8.8 **Item 8: Modem codepoints**  
 The exclusion of Modem codepoints specified in ETSI for Low Layer compatibility IE should be verified by checking that the optional octet 5d of the Low Layer compatibility IE in the SETUP message is not used.
- 6.8.9 **Item 9: Called Party Number IE (Number Plan)**  
 The use of the Number Plan E.164 in the Called Party Number IE should be verified by monitoring SETUP and/or INFORMATION messages sent to the network emulator during CTR003 (Am1) testing.
- 6.8.10 **Item 10: Calling Party Number IE (Number Plan)**  
 The use of the Number Plan E.164 in the Calling Party Number IE should be verified by monitoring SETUP messages sent to the network emulator during CTR003 (Am1) testing.
- 6.8.11 **Item 12: Broadcast SETUP Message**  
 The prevention of initiation of restarts should be verified by checking that the device supports point to multipoint connections during CTR003 (Am1) testing. The use of TEI = 0 should not be excluded.
- 6.8.12 **Item 13: Multiple diagnostics**  
 The omission of multiple diagnostics in a Cause IE should be verified by monitoring STATUS messages sent to the network emulator during CTR003 (Am1) testing.

**6.8.13 Item 14: Length of Cause IE**

The length of the Cause IE should be verified by monitoring STATUS messages sent to the network emulator during CTR003 (Am1) testing.

**6.8.14 Item 15: CLIR**

The procedures used as defined in Sub-section 7.3, Part C of TPH 2001 [41] should be verified by the following method:

- (a) Initiate a SETUP message, with the CLIR service invoked, from the device under test to the network emulator.
- (b) Verify that a Keypad IE is included in the SETUP message and contains ' \*CLIR\*01#' or '\*CLIR#' or '\*31#' or '\*31\*01#'.
- (c) Clear down the call attempt.
- (d) Where CE is intended for connection to an ETSI Standard as well as an AUSTEL Technical Standard 013 based ISDN Basic Access Telecommunications Network interface, repeat the above test, when configured for the ETSI mode of operation, and confirm that for item 2, the Keypad IE is not sent.

**6.8.15 Item 16: ETSI supplementary service requests**

TS 013 networks support neither the FACILITY message nor the Facility IE that ETSI networks utilise to request services from the network. The omission of the FACILITY message and the Facility IE within a SETUP message by the DUT when activating or requesting network services should be verified by observation.





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