

**COMMUNICATIONS
ALLIANCE LTD**



DRAFT INDUSTRY GUIDELINE

DR G642:2009

DIGITAL BROADCAST INTERFACES

PUBLIC COMMENT DRAFT

Comments due 5 p.m. Friday 29 January 2010

Draft Industry Guideline – Digital Broadcast Interfaces

This Guideline was issued in draft form for public comment as DR G642:2009.

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Guidance for public comment on DR G642:2009

This draft Guideline is the outcome of the review of ACA TS 024-1997 *Broadcast Interface Standard* and ACA TS 015-1997 *General Requirements for Analogue Video Customer Equipment Connected to a Telecommunications Network Standard* undertaken by the Communications Alliance WC18 : **Digital Broadcast Interface** Working Committee.

The Guideline is being released for comment for a minimum of thirty days seeking input from Broadcasters, Broadcast Service Providers, Broadcaster cabling providers and Carriers/Carriage Service Providers (C/CSPs). This is consistent with s18 of the *Legislative Instruments Act 2003* for appropriate consultation on incorporation of such a Guideline in subordinate legislation made by the ACMA.

The reader is invited to comment on the requirements for customer equipment and customer cabling scoped within this Guideline and on the following proposed recommendations.

On publication, it is intended to submit the Digital Broadcast Interfaces Guideline to the ACMA with a recommendation for incorporation into the [Telecommunications \(Types of Cabling Work\) Declaration 1997](#) ('the Cabling Work Declaration') made under subsection 419(1) of the *Telecommunications Act 1997*. The effect of this will be that cabling work conducted in accordance with this Guideline will be exempt from the requirement to comply with the Cabling Provider Rules specified in s421 of the *Telecommunications Act 1997*.

As part of this submission a recommendation will be made to the ACMA to amend the Cabling Work Declaration. This amendment will incorporate this Guideline at Clause 1 of Schedule 1 to provide that cabling work is exempt from the Cabling Provider Rules where that cabling work is used by broadcasters or narrowcasters, has been appropriately labelled and is connected to a telecommunications network in accordance with the Digital Broadcast Interfaces Guideline.

On publication, this Guideline will remain a voluntary Guideline until such time the ACMA incorporates the Guideline by reference into the Cabling Work Declaration in accordance with the *Telecommunications Act 1997*.

Please return comments by 29 January 2010 to:
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This draft is available from www.commsalliance.com.au for download.

FOREWORD

General

This Guideline was prepared by the Communications Alliance WC18: **Digital Broadcast Interface** Working Committee.

The *Telecommunications Labelling (Customer Equipment and Customer Cabling) Notice 2001* currently makes provision for two means of interfacing analogue video Customer Equipment (CE) to analogue Telecommunications Networks operated by Carriers/Carriage Service Providers (C/CSPs):

- (a) directly, without a TS 024 broadcaster Line Isolation Unit (LIU), if the CE complies with ACA TS 015–1997 [12] and AS/NZS 60950.1 [9]; or
- (b) indirectly, via a Broadcaster LIU that complies with ACA TS 024–1997 [13] and AS/NZS 60950.1 [9].

Under Schedule 1 of the *Telecommunications (Types of Cabling Work) Declaration 1997* as amended ('the Cabling Work Declaration'), broadcaster cabling providers performing cabling work are exempt from the requirements of the *Telecommunications Cabling Provider Rules 2000* as amended ('the Cabling Provider Rules') providing they install an ACA TS 024–1997 broadcaster LIU as the interface to the network of a C/CSP.

With the introduction of digital video and audio broadcasting, the development of new standards was considered to allow the current exemption for broadcaster cabling providers to continue, if appropriate for this technology. However, a review carried out by the Communications Alliance CECRP/WG29 Working Group concluded that new standards were not required and that a Guideline would be sufficient for the purpose of the exemption.

In coming to this conclusion the Working Group considered the following issues:

- (a) Current industry practices generally take into account broadcast interface requirements (such as the necessary minimum mandatory requirements for audio/video interfaces e.g. impedance balance, plugs and sockets) in contracts between the C/CSPs and the broadcasters/broadcast service providers where network termination equipment is supplied by the C/CSP to suit the particular customer equipment.
- (b) The use of Line Isolation Units (LIUs) and the location and access to broadcast equipment (for example whether the equipment is in secure locations or in locations with public access).
- (c) The types of broadcasters and broadcast service providers and the competence of the broadcaster cabling providers.
- (d) Safety and integrity of C/CSP networks.
- (e) The different needs pertaining to permanent services compared to itinerant services.

It was concluded that the introduction of a mandatory Standard similar to ACA TS 024-1997 [13] based on an LIU interface is no longer appropriate. A Guideline that requires conformance to a recognised Cabling Standard covers any network integrity and safety concerns of installation practices.

This Guideline complements and is based on Free TV Australia Engineering Guideline 08 [14].

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

Guideline revision

Industry Guidelines developed by Communications Alliance are updated according to the needs of the industry, by amendments or revision. Users of these Guidelines should make sure that they possess the latest amendments or editions. Representations concerning the need for a change to this Guideline should be addressed to:

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

Regulatory notice

Attention is drawn to the fact that the installation and repair of customer cabling is subject to the Cabling Provider Rules , which require customer cabling work to be performed or supervised by a person with the appropriate cabling provider registration and to be installed in accordance with AS/ACIF S009 [11]. This requirement is determined by legislation and subordinate regulatory instruments administered by the Australian Communications and Media Authority (the ACMA).

However, the Cabling Work Declaration, which calls up this Guideline in Schedule 1, exempts broadcaster cabling providers from the requirements to comply with the Cabling Provider Rules, except the requirement to comply with AS/ACIF S009 [11], provided the requirements of this Guideline have been met. Where the requirements of this Guideline have not been complied with in full, broadcaster cabling providers must comply with all the Cabling Provider Rules.

The ACMA is a Commonwealth Statutory Authority with powers under the Act to impose requirements on cabling providers concerning customer cabling.

Details on cabling regulations can be obtained from the ACMA website at <http://www.acma.gov.au> or by contacting ACMA below at:

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

Telephone: +61 3 9963 6800
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1 GENERAL

1.1 Introduction

- 1.1.1 This document is intended to be a Guideline for digital broadcast interfaces used with Broadcast Equipment intended for connection to the C/CSP's Network Boundary.
- 1.1.2 The requirements in this Guideline seek to provide recommendations which are consistent with the aims of AS/ACIF S008 [10]. Specifically these aims are to:
 - (a) protect the integrity of a Telecommunications Network or facility; and
 - (b) protect the health and safety of persons.
- 1.1.3 This Guideline is not device specific.

1.2 Referenced by the ACMA

- 1.2.1 This Guideline will be referenced by the ACMA in relation to connection of digital broadcast interfaces used in connection with Broadcast Equipment connected to the C/CSP's Network Boundary by customer cabling. The ACMA references this Guideline, its specifications and procedures toward maintaining integrity of the C/CSP's Telecommunications Network and health and safety of persons.
- 1.2.2 Broadcast cabling providers will be exempt from the requirements of the Cabling Provider Rules, except the requirement to comply with AS/ACIF S009, provided they meet the requirements of this Guideline when carrying out cabling work in relation to connection of digital broadcast interfaces used with Broadcast Equipment connected to a C/CSPs Network Boundary.

1.3 Referenced by C/CSPs

- 1.3.1 Any service agreement for digital broadcast carriage services between a C/CSP and a Broadcast Service Provider should reference this Guideline.

1.4 Scope of the Guideline

- 1.4.1 This Guideline describes the digital broadcast interface requirements in relation to the connection between:
 - (a) a C/CSP's Telecommunications Network ; and
 - (b) Broadcast Equipment or Broadcast Cabling.
- 1.4.2 In respect of Broadcast Equipment, a requirement for connection of its digital broadcast interface to a C/CSP's Telecommunications Network is that:

(a) either :

- (i) it is the first item of Broadcast Equipment on the broadcast service side of the digital broadcast interface; and
- (ii) the Broadcast Equipment has interfaces that comply with digital broadcast interfaces listed in this Guideline under Section 3;

(b) or :

- (i) it is the first item of Broadcast Equipment on the broadcast service side of the digital broadcast interface; and
- (ii) it has digital broadcast interfaces other than those listed in this Guideline under Section 3 for which the C/CSP has provided written consent to connect to its Telecommunications Network.

1.4.3 In respect of Broadcast Cabling, a requirement for connection of Broadcast Cabling to a C/CSP's Telecommunications Network is that:

(a) either it is connected via the input or output interfaces of Broadcast Equipment; and

- (i) it is the first item of Broadcast Equipment on the broadcast service side of the digital broadcast interface; and
- (ii) the Broadcast Equipment has interfaces that comply with digital broadcast interfaces listed in this Guideline under Section 3 ; or

(b) or it is connected via the input or output interfaces of Broadcast Equipment, and

- (i) it is the first item of Broadcast Equipment on the broadcast service side of the digital broadcast interface; and
- (ii) it has digital broadcast interfaces other than those listed in this Guideline under Section 3 for which the C/CSP has provided written consent to connect to its Telecommunications Network.

1.4.4 'Significant Events' are recognised by the ACMA as out of scope to the applications specified in this Guideline. A number of exemptions have been introduced by the ACMA to the telecommunications and radiocommunications regulatory arrangements for the purposes of allowing international visitors to be exempt from these requirements while attending a 'Significant Event' in Australia. Refer for more information to <http://www.acma.gov.au/significantevents>.

1.5 Electrical safety of Broadcast Equipment

- 1.5.1 Communications Alliance on behalf of the ACMA has identified and endorsed the need for the continued utilisation of technical standards about CE and recognises that they are fundamental to the compliance and labelling regime as defined in the current *Telecommunications Labelling (Customer Equipment and Customer Cabling) Notice 2001* ('the TLN').
- 1.5.2 The ACMA adopts AS/NZS 60950.1 [9] as amended or reviewed from time to time. This ensures that requirements under section 376 of the *Telecommunications Act 1997* are met especially with regard to the health and safety of persons who operate, work on, use services supplied by means of, or are otherwise reasonably likely to be affected by the operation of the telecommunications network or facility.
- 1.5.3 For the purpose of health and safety, Broadcast Equipment must comply with an appropriate safety Standard for its particular design and application. If there is any doubt then AS/NZS 60950.1 [9] (as amended or reviewed from time to time) should be used as the appropriate Standard.

1.6 Health and safety issues associated with Customer Cabling, including optical fibre and coaxial based Broadcast Cabling

- 1.6.1 Installation of all Customer Cabling, including optical fibre and coaxial systems, must be in conformance with appropriate safety Standards associated with customer cabling. The Standards that cover safety issues associated with Customer Cabling based Broadcast Cabling installations are AS/ACIF S009 [11], AS/NZS 2211 [3] to [7], DR AS/NZS 2967 [8] and AS/NZS 1367 [1].

2 ACRONYMS AND DEFINITIONS

2.1 Acronyms

For the purposes of the Guideline:

ACA

means Australian Communications Authority

ACMA

means Australian Communications and Media Authority

AES

means Audio Engineering Society

CE

means Customer Equipment

CSP

means Carriage Service Provider

C/CSP

means Carrier/Carriage Service Provider

ETSI

means European Telecommunications Standards Institute

IEC

means International Electrotechnical Commission

IRE

means Institute Radio Engineers

ITU-R

means International Telecommunications Union – Radiocommunications

ITU-T

means International Telecommunications Union – Telecommunications

LIU

means Line Isolation Unit

SMPTE

means Society of Motion Picture and Television Engineers

SI

means International System

XLR

means the 'Canon X' series, subsequent versions added a Latch ('Canon XL') and then a Rubber compound surrounding the contacts, which led to the abbreviation XLR.

2.2 Definitions

For the purposes of the Guideline:

Broadcast Cabling

means Customer Cabling used in producing or supplying a broadcast service e.g. audio, data and video cabling for carriage of component signals or digital audio/visual bitstreams.

Broadcaster cabling provider

means an individual who performs broadcast cabling work.

Broadcast Equipment

means Customer Equipment used principally as specialist facilities by a Broadcast Service Provider, but does not include general purpose Customer Equipment such as:

- (a) telephones; or
- (b) facsimile machines.

Broadcaster

means:

- (a) the Australian Broadcasting Corporation;
- (b) the Special Broadcasting Service;
- (c) a person holding a licence under the *Broadcasting Act 1942*; or
- (d) a person holding a licence under Parts 4, 6, 7 or 8 of the *Broadcasting Services Act 1992*.

Broadcast Service Provider

means an organisation which provides a third party service for the carriage of component signals or digital audio/visual bitstreams to the broadcast and other audio visual industry sectors and in the course of providing this service, provides Broadcast Cabling to connect Broadcast Equipment to a C/CSP's Telecommunications Network .

Cabling work

has the meaning given by s418 of the *Telecommunications Act 1997* as a reference to:

- (a) the installation of customer cabling for connection to a telecommunications network or to a facility;
- (b) the connection of customer cabling to a telecommunications network or to a facility; or
- (c) the maintenance of customer cabling connected to a telecommunications network or to a facility.

Carrier

has the meaning given by s7 of the *Telecommunications Act 1997* and means the holder of a carrier licence.

Carriage Service Provider

has the meaning given by s87 of the *Telecommunications Act 1997* as follows:

Basic definition

- (1) For the purposes of this Act, if a person supplies, or proposes to supply, a listed carriage service to the public using:
 - (a) a network unit owned by one or more carriers; or
 - (b) a network unit in relation to which a nominated carrier declaration is in force;the person is a carriage service provider.

Customer Cabling

has the meaning given by s20 of the *Telecommunications Act 1997* as follows:

- (1) For the purposes of this Act, customer cabling means a line that, under the regulations, is treated as customer cabling.
- (2) Regulations made for the purposes of subsection (1) may deal with a matter by reference to the boundary of a telecommunications network.

Note: Boundary of a telecommunications network is defined by section 22.

- (3) Subsection (2) does not, by implication, limit subsection (1).
- (4) If no regulations are in force for the purposes of subsection (1), then, for the purposes of this Act, customer cabling means a line that is used, installed ready for use or intended for use on the customer side of the boundary of a telecommunications network.

Note: Boundary of a telecommunications network is defined by section 22 Customer cabling and customer

equipment-boundary of a telecommunications network'

[Refer to AS/ACIF S009 [11]]

Customer Equipment

has the meaning given by s21 of the *Telecommunications Act 1997* as follows:

- (1) For the purposes of this Act, customer equipment means:
 - (a) any equipment, apparatus, tower, mast, antenna or other structure or thing; or
 - (b) any system (whether software-based or otherwise); that:
 - (c) is used, installed ready for use or intended for use in connection with a carriage service; and
 - (d) under the regulations, is treated as customer equipment; but does not include a line.

Network Boundary

means a point which is the boundary of a C/CSP's Telecommunications Network for determining whether cabling or equipment is 'Customer Cabling' or 'Customer Equipment' for the purpose of technical regulation under Part 21 of the *Telecommunications Act 1997*.

Note: In the context of this Guideline, the Network Boundary will usually be an agreed point between the C/CSP and the Broadcast Service Provider.

Telecommunications Network

has the meaning given by s7 of the *Telecommunications Act 1997* as follows:

A system or a series of systems, that carries, or is capable of carrying, communications by means of guided and/or unguided electromagnetic energy.

Types of Cabling Work

has the meaning given by s419 (1) of the *Telecommunications Act 1997* and the Cabling Work Declaration made pursuant to that subsection.

3 DIGITAL BROADCAST INTERFACES

- 3.1 Several digital broadcast formats and other related standards such as MPEG2 and MPEG4 are currently used by Broadcast Service Providers.
- 3.2 As standards and new technologies can evolve rapidly in the broadcasting environment, the set of video and audio formats expected to be delivered via the C/CSP's Telecommunication Networks into the Broadcast Service Provider's network environment is also rapidly evolving.
- 3.3 These standards are thorough and also define the video resolution for MPEG-4 and MPEG-2, coding characteristics, data formats, electrical and mechanical characteristic of the interface, error rate and characteristic of the optical fibre Broadcast Equipment for which the Broadcast Equipment, as operated by the Broadcast Service Provider, complies.
- 3.4 The digital broadcast interfaces required at the connection point on the boundary of the C/CSP's Telecommunications Network are contained within the service agreements for digital broadcast carriage services between the individual C/CSP and the individual Broadcast Service Provider.
- 3.5 The specifications of the digital broadcast interfaces are the following:
 - (a) ITU-R BT.656 Interface for digital component video signals in 525-line and 625-line television systems operating at the 4:2:2 level of Recommendation ITU-R BT.601 [15]
 - (b) ITU-R BT.1120 Digital interfaces for HDTV studio signals [16]
 - (c) AES-3id-2001 (r2006) AES information document for Digital audio engineering - Transmission of AES3 formatted data by unbalanced coaxial cable (Revision of AES-3id-1995) [17]
 - (d) SMPTE 276M-1995 Transmission of AES-EBU Digital Audio Signals Over Coaxial Cable [18]
 - (e) SMPTE 259M-2008 SDTV Digital Signal/Data – Serial Digital Interface[19]
 - (f) SMPTE 292M-2008 1.5 Gb/s Signal / Data Serial Interface [20]
 - (g) SMPTE 297M-2006 Serial Digital Fiber Transmission System for SMPTE 259M, SMPTE 344M, SMPTE 292 and SMPTE 424M Signals [21]
 - (h) SMPTE 372M-2009 Dual Link 1.5 Gb/s Digital Interface for 1920 x 1080 and 2048 x 1080 Picture Formats[22]
 - (i) SMPTE 424M-2006 3 Gb/s Signal/Data Serial Interface [23]
 - (j) SMPTE 435-1-2009 10 Gb/s Serial Signal/Data Interface – Part 1: Basic Stream Distribution [24]
 - (k) SMPTE 435-2-2009 10 Gb/s Serial Signal/Data Interface – Part 2: 10.692 Gb/s Stream – Basic Stream Data Mapping [25]

- (l) SMPTE 435-3-2009 10 Gb/s Serial Signal/Data Interface – Part 3:
10.692 Gb/s Optical Fiber Interface [26]

4 REFERENCES

	Publication	Title
Australian Standards		
[1]	AS/NZS 1367:2007	Coaxial cable and optical fibre systems for RF distribution of analog and digital television and sound signals in single and multiple dwelling installations
[2]	DR AS/NZS 2967: 2009	Optical fibre communications cabling systems safety
	AS/NZS 2211	Safety of laser products
[3]	AS/NZS 2211.1: 2006	Part 1: Equipment classification, requirements and user's guide
[4]	AS/NZS 2211.2: 2006	Part 2: Safety of optical fibre communication systems
[5]	AS/NZS 2211.9: 2006	Part 9: Compilation of maximum permissible exposure to incoherent optical radiation
[6]	AS/NZS 2211.10: 2006	Part 10: Application guidelines and explanatory notes to AS/NZS 2211.1
[7]	AS/NZS 2211.12: 2006	Part 12: Safety of free space optical communication systems used for transmission of information
[8]	DR AS/NZS 2967:2009*	Optical fibre communication systems safety
[9]	AS/NZS 60950.1:2003	Safety of information technology equipment (as reviewed or amended from time to time)
AS/ACIF Standards		
[10]	AS/ACIF S008:2006	Requirements for customer cabling products
[11]	AS/ACIF S009:2006	Installation requirements for Customer Cabling (Wiring Rules)
ACA Standards		
[12]	TS 015	Telecommunications Technical Standard (General Requirements for Analogue Video Customer Equipment Connected to a Telecommunications Network – ACA TS015 – 1997)
[13]	TS 024	Telecommunications Technical Standard (Broadcast Interface Standard – ACA TS024 – 1997)

	Publication	Title
	Industry Guidelines	
[14]	Free TV Australia Engineering Guideline 08	Broadcaster Network Digital Boundary Interface
	ITU-T Recommendations	
[15]	ITU-R BT.656	Interface for digital component video signals in 525-line and 625-line television systems operating at the 4:2:2 level of Recommendation ITU-R BT.601
[16]	ITU-R BT.1120	Digital interfaces for HDTV studio signals
	Other international Standards	
[17]	AES-3id-2001 (r2006)	AES information document for Digital audio engineering - Transmission of AES3 formatted data by unbalanced coaxial cable (Revision of AES-3id-1995)
[18]	SMPTE 276M-1995	Transmission of AES-EBU Digital Audio Signals Over Coaxial Cable
[19]	SMPTE 259M-2008	SDTV Digital Signal/Data – Serial Digital Interface
[20]	SMPTE 292M-2008	1.5 Gb/s Signal / Data Serial Interface
[21]	SMPTE 297M - 2006	Serial Digital Fiber Transmission System for SMPTE 259M, SMPTE 344M, SMPTE 292 and SMPTE 424M Signals
[22]	SMPTE 372M-2009	Dual Link 1.5 Gb/s Digital Interface for 1920 x 1080 and 2048 x 1080 Picture Formats
[23]	SMPTE 424M-2006	3 Gb/s Signal/Data Serial Interface
[24]	SMPTE 435-1-2009	10 Gb/s Serial Signal/Data Interface – Part 1: Basic Stream Distribution
[25]	SMPTE 435-2-2009	10 Gb/s Serial Signal/Data Interface – Part 2: 10.692 Gb/s Stream – Basic Stream Data Mapping
[26]	SMPTE 435-3-2009	10 Gb/s Serial Signal/Data Interface – Part 3: 10.692 Gb/s Optical Fiber Interface

* At the time of publication AS/NZS 2967 was being revised.

PARTICIPANTS

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

Organisation	Membership	Representative
Australian Broadcasting Corporation	Voting	Benny Xiang
Australian Communications and Media Authority (ACMA)	Non-Voting	Nick McKillop
Australian Subscription Television and Radio Association	Voting	Casey Kop
Commercial Radio Australia	Voting	Robert Greeney
Community Broadcasting Association of Australia	Voting	David Sice
Free TV Australia	Voting	Roger Bunch
Global Television Jands	Voting	Terry Manley
Jeff McKenzie	Voting	Jeff McKenzie
Network TEN Australia	Voting	Glenn Carrick
Nine Network Australia	Voting	Tony Anthony
Seven Network Australia	Voting	David Watts
SingTel Optus	Voting	Sam Mangar
Special Broadcasting Service	Voting	Colin Elston
Syntec	Voting	Robert Sloss
Telstra	Voting	Peter Jones

This Working Committee was chaired by Roger Bunch, Free TV Australia. Mike Johns of Communications Alliance provided project management support.

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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