

AUSTRALIAN
COMMUNICATIONS
INDUSTRY FORUM



INDUSTRY GUIDELINE

ACIF G572:2007

UNCONDITIONED LOCAL LOOP SERVICE - FAULT
MANAGEMENT

ACIF G572:2007 Unconditioned Local Loop Service – Fault Management

First published as ACIF G572:2001

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EXPLANATORY STATEMENT

This is the Explanatory Statement for the ACIF G572:2007 **Unconditioned Local Loop Service – Fault Management** Industry Guideline.

This Explanatory Statement outlines the purpose of this Industry Guideline (the Guideline) and the factors that have been taken into account in its development.

The Code replaces the ACIF G572:2001 **Unconditioned Local Loop Service – Fault Management** Industry Guideline published by ACIF in 2001.

Background

One of the objects of the *Telecommunications Act 1997* is that telecommunications is regulated in a manner that promotes the greatest practicable use of industry self-regulation and does not impose undue financial and administrative burdens on industry participants. The Act provides that bodies and associations that represent sections of the telecommunications industry may develop industry codes.

Since 1 July 1997 when Australia's communications industry became self regulated, the Australian Communications Industry Forum (ACIF) was established to develop and administer industry technical and operational arrangements that promote both the long-term interests of end-users and the efficiency and international competitiveness of the Australian communications industry.

The ACIF OCRP/WC16 – *Fault Reporting and Restoration of Services relating to Unconditioned Local Loop Service (ULLS)* Working Committee assisted in the development of this Guideline in 2001. ULLS was declared by the Australian Competition and Consumer Commission (ACCC) on the 23 July 1999. The ULLS Fault management processes were developed to address ULLS Faults and interference.

What the Guideline is Intended to Accomplish

From the consumers' perspective, this Guideline is intended to ensure that C/CSPs have a process to manage faults that traverse network boundaries and therefore minimise the time taken to restore services.

This Guideline sets minimum acceptable practices including where feasible measurable requirements which do not necessarily limit industry's ability to improve on the minimum level.

This Guideline will not constrain two or more individual industry participants agreeing to different arrangements provided that those arrangements meet the minimum acceptable practices of the Guideline and that those arrangements do not impact on the ability of other industry participants to inter work with parties to those arrangements in accordance with the minimum acceptable practices.

Anticipated Benefits to Telecommunications Consumers

The Guideline is expected to provide benefits to consumers and the industry, which are derived from the implementation of standard industry practices in relation to ULLS Fault Management.

Uniform ULLS Fault management procedures will ultimately lead to a streamlined, seamless service to the consumer in the repair and resolution of faults experienced with a ULLS telecommunications service.

Benefits to Industry

This Guideline is expected to provide benefits to industry derived from the implementation of standard industry practices. Standard industry practices in the management of ULL related faults are intended to allow for faster resolution of faults exchanged between C/CSPs. To achieve this, this Guideline has been structured to include uniform fault clearance and symptom codes which provide a common understanding in the exchange of data as well as uniform methods in the exchange of information.

Public Interest Issues Raised or Addressed by the Guideline

This Guideline addresses the requirements for ULLS Fault rectification for both residential and business Customers. The desirable outcome will be one of consumer confidence in the performance of ULLS which is an issue of public interest.

Estimated Costs to Telecommunications Businesses of Complying with Guideline Provisions

While there are costs associated with operating in a multi carrier environment, it is expected that these costs may be minimised by the implementation of this Guideline supporting a structured practice. There are costs associated with the establishment and ongoing maintenance of the systems required to support implementation of the Guideline. All industry participants are expected to bear their own costs in the development of these systems. It is envisaged that these costs will be outweighed by the benefits, which will be derived from the implementation of a standard industry approach to ULLS fault management.

2007 Revision

A limited revision of the Guideline was undertaken in 2007 to include ULLS reliability standards that were recommended by the ORP/WC40 Priority Assistance Working Committee from the revision of the ACIF C609:2006 **Priority Assistance for Life Threatening Medical Conditions** Industry Code.

WC06 – ULLS Fault Management Revision Working Committee

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1 SCOPE

- 1.1 This Guideline applies to Carriers and Carriage Service Providers (C/CSPs) in relation to the management of **Unconditioned Local Loop Service (ULLS) Faults and Unconditioned Local Loop Service Interference problems across Telecommunication Networks**.
- 1.2 This Guideline does not cover the management of faults between the Customer and the C/CSP to whom a fault is reported.
- 1.3 This Guideline applies to wiring problems on the Network side of the Boundary Point.

2 OBJECTIVES

The objectives of the Guideline are to:

- (a) outline the process of recording, reporting, managing and resolving ULLS Faults between C/CSPs;
- (b) allocate responsibility for the recording, reporting, managing and resolving of ULLS Faults to the appropriate C/CSP in accordance with the *Trade Practices Act 1974* (Commonwealth); and
- (c) be consistent with the principles set out in the *Trade Practices Act 1974* (Commonwealth) and, in particular, the Standard Access Obligations.

3 ACRONYMS AND DEFINITIONS

3.1 Acronyms

For the purposes of the Guideline, the following acronyms apply:

ACMA	Australian Communications and Media Authority
ACCC	Australian Competition and Consumer Commission
ACIF	Australian Communications Industry Forum
AP	Access Provider
AS	Access Seeker
CAN	Customer Access Network
C/CSP	Carrier and Carriage Service Provider
CE	Customer Equipment
DC	Direct Current
FRC	Fault Reporting Centre
ULLS	Unconditioned Local Loop Service
URS	ULLS Reliability Standard

3.2 Definitions

For the purposes of the Guideline, the following definitions apply:

Access Provider

has the same meaning as set out in s.152AR(2) of the *Trade Practices Act 1974 (Cth)*.

Access Seeker

has the same meaning as set out in s.152AG(2) of the *Trade Practices Act 1974 (Cth)*.

Business Day

means a day commencing at 8.00 am and ending at 5.00 pm, other than:

- (a) a Saturday or Sunday; or
- (b) a day which is a public holiday in the place where work is required to rectify a ULLS Fault.

Carriage Service

has the same meaning as set out in section 7 of the *Telecommunications Act 1997*, and may include content services as defined in section 15 of the Act.

Carriage Service Provider

has the same meaning as section 7 of the *Telecommunications Act 1997 (Cth)*.

Carrier

has the same meaning as set out in section 7 of the *Telecommunications Act 1997 (Cth)*.

Compliant System

is a system which when installed and operating over the ULLS complies with ACIF C559 Network Deployment Rules Code.

Customer

means the end user or the end user's authorised agent or representative, in whose name the account is established or will be established, with the Access Seeker for the supply of Carriage Services for which the Access Seeker requires the ULLS. To avoid doubt, the Access Seeker may supply the ULLS or Carriage Services to a wholesale customer of the Access Seeker provided that the wholesale customer is an authorised agent or representative of an end user.

Communications Wire

means a copper or aluminium based wire, forming part of a public switched telephone network. For the avoidance of doubt, Communications Wire generally means a copper or aluminium cable pair.

Eligible Service

has the same meaning as set out in Listed Carriage Service in Section 16 of the *Telecommunications Act 1997 (Cth)*.

Fault Escalation

means the process of requesting immediate or priority attention for faults that have not been resolved within the timeframes or processes outlined in the Guideline.

Fault Reconciliation

means the process of ensuring that all Fault Reports that have been sent by the Reporting C/CSP have been received by the intended Receiving C/CSP.

Fault Report

means a record which contains, as a minimum, time and date of fault occurred and description of symptom or ULLS Symptom Code, for use in reporting faults.

Fault Reporting Centre (FRC)

means a single point of contact for a C/CSP for the reporting and management of ULLS Faults.

Hard Cabled Legacy Systems

means systems operated in accordance with the following Deployment Classes of the Network Deployment Rules Code:

- (a) Deployment Class 1(a) provided that the system is permanently cabled into housings in the CAN (i.e., not jumpered); and
- (b) Deployment Class 1(b).

Network Deployment Class

has the meaning as specified in ACIF C559 Network Deployment Rules Code.

Network Deployment Rule

has the meaning as specified in ACIF C559 Network Deployment Rules Code.

Non Compliant System

is a system that is not a Compliant System.

Party

means a participant in the section(s) of the Telecommunications Industry to which the Guideline applies.

Receiving C/CSP

means a C/CSP who has been sent a Fault Report by another C/CSP.

Reporting C/CSP

means a C/CSP who sends the Fault Report to another C/CSP.

Sequence Number

means an identifier from a series of numbers which is used to uniquely identify Fault Reports. (Please note: some C/CSPs may use alpha characters as a prefix or suffix to the Sequence Number.)

Sectionalisation

means a process undertaken by a C/CSP to determine if a fault lies in their Telecommunications Network or another C/CSPs Telecommunications Network.

Telecommunications Network

has the same meaning as set out in section 7 of the *Telecommunications Act 1997 (Cth)*.

ULLS Clearance Code

means an abbreviated code used to describe the resolution of faults as set out in Appendix B.

ULLS Fault

means physical damage to, or degradation of, the Communications Wire. For the avoidance of doubt, this does not include any disturbance to carriage or content services supplied using the ULLS caused by the operation of other systems.

Unconditioned Local Loop Service

means the use of unconditioned Communications Wire between the boundary of a telecommunications network at an end user's premises and a point on a telecommunications network that is a potential Point of Interconnection located at or associated with a Customer Access Module and located on the end user side of the Customer Access Module.

ULLS Identifier

means a ten digit unique number exchanged to identify the ULLS between the AP and the AS.

ULLS Service Identifier

means a unique set of characters that is used by a C/CSP to identify a particular Carriage Service supplied to a Customer.

ULLS Symptom Code

means an abbreviated code used to describe each fault as set out in Appendix A.

xDSL

refers to different variations of a family of Digital Subscriber Line (DSL) technologies, such as ADSL, HDSL, SDSL, VDSL and similar technologies that provide a high-bandwidth digital connection over Communications Wire.

4 ULLS FAULT MANAGEMENT PROCESS OVERVIEW

Dependent on the nature of the fault, ULLS fault management is a process that will incorporate some, or all, of the following steps:

- (a) Fault recording;
- (b) Fault categorisation;
- (c) Specification of fault symptoms;
- (d) Fault sectionalisation;
- (e) Fault reporting;
- (f) Communications between C/CSP's;
- (g) Cooperative testing;
- (h) Fault rectification and clearance;
- (i) Fault Escalation;
- (j) Fault Reconciliation; and
- (k) Reliability standard.

5 GUIDELINE RULES – ULLS FAULT MANAGEMENT

5.1 ULLS Fault Management Principles

- 5.1.1 AS must take all reasonable steps to ensure that Customer's report ULLS Faults to their AS or to their C/CSP where the relevant AS has no direct relationship with the Customer.
- 5.1.2 An AS who receives a ULLS Fault Report must seek to rectify the ULLS Fault unless the AS determines that the source of the ULLS Fault is outside of the AS's control.
- 5.1.3 When an AS determines that the ULLS fault/interference problem is within the Telecommunications Network owned or operated by another C/CSP then the AS must immediately advise the other C/CSP of the ULLS Fault details as set out in Clause 5.2.4.3.
- 5.1.4 If a C/CSP receives a Fault Report from a Customer for which that C/CSP is not the AS that C/CSP is obliged to inform the Customer to contact their AS.
- 5.1.5 ULLS Fault details as set out in Clause 5.2.1 must be recorded by the Customer's AS.
- 5.1.6 It is the intention of industry that where an AS operates a non compliant system over a ULLS that interferes with another AS's service the AS will meet to discuss the impact on the affected AS's service and where possible agree appropriate ramifications, which may include compensation.
- 5.1.7 The AS must perform initial ULLS Fault analysis and Sectionalisation to determine the category of the ULLS Fault.
- 5.1.8 The AS must monitor the ULLS Fault status and keep the Customer informed.
- 5.1.9 The AS will be responsible for the identification and reporting of a ULLS that exceeds the ULLS reliability standard, as per Clause 5.3.
- 5.1.10 The AP must keep the AS informed of the progress of the ULLS Fault rectification until the ULLS Fault is rectified.
- 5.1.11 ULLS Symptom Codes and ULLS Clearance Codes must be used in the exchange of ULLS Fault details (refer Appendix A and B).
- 5.1.12 The AP must ensure that all ULLS Faults are repaired in a manner consistent with the standard access obligations set out in the Trade Practices Act.
- 5.1.13 In communications between AS and their Customer's regarding ULLS Faults, where appropriate, the AS may indicate the causes of ULLS Faults but must not identify particular networks or their operators.
- 5.1.14 In accordance with the Guideline, the AP must temporarily disconnect a non-compliant ULLS system until such time that the

non-compliance is addressed by the AS in accordance with the Guideline.

- 5.1.15 To the extent that there is any inconsistency between this Guideline and the CSG, the CSG, as amended from time to time, will prevail for CSG Eligible Services on ULLS.
- 5.1.16 For ULLS, where practicable CSG rectification timeframes must be used as a guide in the rectification of ULLS Faults. Issues referenced in Clause 5.4.6.1 give an example of where the AS and AP may agree to a timeframe that may be extended by the time necessary to investigate and rectify the fault or perform Co-operative testing.

5.2 ULLS Fault Report Management

5.2.1 ULLS Fault Recording

ULLS Fault recording is the process of an AS obtaining each of the following kinds of information from a Customer for the purpose of ULLS Fault rectification:

- (a) ULLS Service Identifier;
- (b) ULLS service address;
- (c) Customer's name;
- (d) Customer's contact telephone number;
- (e) ULLS Fault description;
- (f) results of any tests undertaken by the Customer;
- (g) date and time problem first encountered;
- (h) date and time first reported to AS by the Customer;
- (i) results of any tests undertaken by any other AS;
- (j) any other relevant information.

5.2.2 ULLS Fault Report Categories

ULLS Fault Reports may be broadly categorised as follows, based on the Fault Report symptoms:

- (a) Loss of Service

The loss of service category covers those Fault Reports that report symptoms of either no transmission, or transmission that is degraded so far as to effectively cause no service to be delivered.

A service on a ULLS that has symptoms of either degraded transmission or no transmission would be categorised as a loss of service.

The AS may need agreed co-operation with the Customer as appropriate to resolve.

If it is established that a Fault Report has resulted from an actual fault (i.e., outside ULLS specification) within the AP's CAN, the AS will pass the fault to the AP for repair.

The AP must rectify an actual fault in the ULLS to the Unconditioned Communications Wire DC and Low Band Specification as outlined in Appendix C, together with any additional requirements, such as for line balance, as specified within bilateral agreements. The fault rectification must be reported using the ULLS Clearance Codes as outlined in Appendix B.

A ULLS Fault Report categorised as a Loss of Service may also be attributed to excessive interference and will be rectified as outlined in (b) below.

(b) Interference

Interference can occur on any ULLS, even when all other systems in the cable are compliant with Network Deployment Rules Code.

ULLS interference problems are generally, technically complex and in the majority of cases may need agreed co-operation between AS's and AP's with the involvement of the Customer as appropriate to resolve.

5.2.3 ULLS Fault Report Symptoms

AS's must use the ULLS Symptom Codes provided in Appendix A to describe the ULLS Fault. They may include further indicators to signify whether the ULLS Fault is intermittent or frequent, ULLS interference indicators are set out in Section 5.4.2.

5.2.4 ULLS Fault Reporting (AS reports to AP)

5.2.4.1 The initial advice of a ULLS Fault shall be sent to the AP's FRC by facsimile unless otherwise specified in bilateral agreements.

5.2.4.2 ULLS Fault Report details must be provided on a sequenced ULLS Fault Report and must use the agreed ULLS Symptom Codes.

Refer to Sections 5.2.2 for ULLS Fault Categories and Appendix A for ULLS Symptom Codes.

5.2.4.3 ULLS Fault Reports must include the following information:

- (a) Reporting AS Sequence Number;
- (b) Date and Time when the Fault Report was sent to AP;

- (c) ULLS Identifier;
- (d) Date and Time that the Customer reported the ULLS Fault Report to the AS;
- (e) Customer's name;
- (f) ULLS address and AS contact telephone number;
- (g) Description of the ULLS Fault using the ULLS Fault Report Categories set out in Clause 5.2.2 and the ULLS Symptom Codes;
- (h) Results of tests undertaken by the Customer, AS or any C/CSP; and
- (i) Any other relevant information.

5.2.4.4 ULLS Fault Reports should be typed.

5.2.4.5 Each ULLS Identifier should be on a separate Fault Report. Where a group of Customer associated Service Identifiers are affected then these may be included in a single Fault Report.

5.2.4.6 The AP must, as soon as practicable, advise the reporting AS of the time the AP will begin work on the fault.

5.2.4.7 The AP accepting the ULLS Fault Report will provide their own Sequence Number to the AS.

5.2.5 **ULLS Fault Rectification and Clearance**

5.2.5.1 Where the fault is suspected to be located in the tie cable, parties will commence co-operative testing to resolve the fault.

5.2.5.2 Following the rectification of the ULLS Faults, the AP or the Receiving C/CSP must advise the Reporting C/CSP using the agreed ULLS Clearance Codes. Information on the daily resolution of the ULLS Faults must be cleared back to the Reporting C/CSP and the following should be sent back in a daily clearance report:

- (a) AP Sequence Number;
- (b) ULLS Identifier;
- (c) date and time ULLS Fault received by the AP from the AS;
- (d) date and time ULLS Fault cleared by the AP;
- (e) ULLS Symptom Code (refer to Appendix A);
- (f) ULLS Clearance Code (refer to Appendix B).

- 5.2.5.3 Where a reported ULLS Fault proves to be due to an interference problem, the AP will work to rectify the interference as per Section 5.4.

5.3 ULLS Reliability Standard

- 5.3.1 A ULLS will not meet the reliability standard if in the previous 90 day period four or more faults are confirmed to have occurred on the ULL path as per ULLS Clearance Codes where the line specifications do not meet the Unconditioned Communications Wire DC specifications as defined in Appendix D of ACIF C569:2005 **Unconditioned Local Loop Service - Ordering, Provisioning and Customer Transfer** Industry Code.
- 5.3.2 Faults that are confirmed to have occurred as a result of circumstances beyond an AP's control are excluded from the reliability standard threshold.
- 5.3.3 If the AS determines that a ULLS is not meeting the ULLS reliability standard then they shall notify the AP using the URS Symptom Code and provide the applicable fault creation dates and clearance codes.
- 5.3.4 The AP should provide advice back to the AS of the acceptance or rejection of the URS within 3 Business Days and if a field visit is required, the AP should endeavour to schedule this date within 10 Business Days of the receipt of the URS.
- 5.3.5 Upon notification from the AS, the AP must take reasonable steps to identify and rectify the underlying conditions contributing to the reduced reliability, unless there are circumstances beyond the AP's control.
- 5.3.6 Following rectification, the AP must notify the AS in accordance with Clause 5.2.5.2.
- 5.3.7 For the purposes of the Guideline, circumstances beyond the control of an AP, may include, but are not limited to:
- (a) damage to a facility or interruption to services of the AP that is not caused by the AP, e.g. power outage;
 - (b) natural disasters or extreme weather conditions;
 - (c) a law of the Commonwealth, or of a State or Territory, that prevents the AP from complying with this Guideline; and
 - (d) the AP is prevented from connecting a STS or rectifying a fault or service difficulty because the AP is unable to obtain lawful access to land or a facility.

5.4 ULLS Interference Management

5.4.1 Introduction

5.4.1.1 Interference to ULLS based services can originate either from within the Telecommunications Network or externally. Possible external interference noise sources include:

- (a) all forms of industrial scientific and medical equipment;
- (b) information technology equipment;
- (c) electrical traction and power supply systems;
- (d) radio frequency transmitters.

Possible internal sources include other Telecommunications Network equipment that may be producing excessive noise either through malfunctioning itself, or because of impairments in associated earthing, shielding or line plant components.

5.4.1.2 It is also possible that even when services on ULLS are functioning normally, ULLS based services sharing cable units may be responsible for interference in the form of excessive crosstalk between respective cable pairs. This type of situation can arise because of the random (statistical) nature of pair-to-pair crosstalk coupling throughout the CAN.

5.4.1.3 However, the ACIF C559 Network Deployment Rules Code for ULLS based services has been specifically developed to ensure good mutual spectral compatibility between systems by taking account of the statistical crosstalk characteristics.

5.4.1.4 Consequently, although this last mentioned form of interference is possible, it should be encountered only rarely provided all ASs design their xDSL system in accordance with the Network Deployment Rules Code. It should be noted that not all classes of the ACIF C559 Network Deployment Rules Code have been tested in the field.

5.4.1.5 In the event of an interference problem arising, when the ULLS is within specification and all relevant AS's are compliant with the Network Deployment Rules Code, then the affected AS will have to decide whether they wish to either change Network Deployment Class or request another ULLS.

5.4.1.6 With all forms of interference, the rectification process necessarily commences with an assessment conducted by the affected AS. In the first instance this should be aimed at determining whether the interference is arising within those parts of the ULLS for which the AP is responsible, or whether it is being

caused by Network / CE that is the responsibility of the AS or Customer. This initial sectionalisation of the problem then provides the direction and responsibilities for the further investigation and rectification procedures as set down below.

5.4.2 **Identify Interference Problem**

- 5.4.2.1 An AS must first determine whether a performance problem with a service using the ULLS is the result of interference from:
- (a) within the AS's network, or Customer's premises internal wiring; or
 - (b) from another source (interference problem).
- 5.4.2.2 To assist the AS in identifying an interference problem there are some broad indicators that can be used.
- 5.4.2.3 These indicators may be dependent on the capability of the AS management system and the capability of the CE. The definition of "excessive" in the context below may be dependent on the type of service being provided on the ULLS by the AS and it is not possible to provide any definite value to the above parameters. The AS must use its own indicators to monitor any interference problems and reasonably assess whether it is excessive. The same applies at the Customer's end. Although a lot of the indicators may be subjective, they should be assessed against what a reasonable AS or Customer would expect from the service.
- 5.4.2.4 Broad indicators of interference problems can be:
- (a) AS Management system:
 - Broadband modem fails to train;
 - Modem produces excessive errors; and / or
 - Modem produces excessive Burst errors.
 - (b) Customer's Equipment:
 - Long delays and low throughput;
 - Poor Voice quality; and / or
 - Poor Video quality.

5.4.3 **Categorise Interference Problem**

- 5.4.3.1 An AS must perform diagnosis to identify the source of the interference.
- 5.4.3.2 Occurrences of ULLS interference can be sectionalised into the following four categories:

- (a) Excessive noise originating from sources within or electromagnetically coupled to the AP's ULLS.
- (b) Excessive noise originating from sources within or electromagnetically coupled to, either the CE or AS's facilities.
- (c) Inadequate balance of cable within the AP's ULLS.
- (d) Inadequate balance of cabling or equipment within either the CE or AS's facilities.

5.4.3.3 The AS is responsible for categories (b) and (d) where rectification of the problem does not involve the AP's network. The AP is responsible for categories (a) and (c).

5.4.3.4 The AS needs to determine whether the interference is a result of inadequate balance. This is because while interference can be caused by excessive noise alone, it may also result from a combination of poor balance in the presence of otherwise acceptable noise sources.

5.4.4 **Report the Interference Problem to AP**

If the diagnosis indicates that the interference is occurring in the ULLS, the AS will report the problem to the AP. The report must include testing carried out so far which may assist the AP.

Details required are outlined in Clause 5.2.4.3.

Interference Symptom Codes are listed in Appendix A.

The AP will record the interference report.

5.4.5 **Investigate Interference Problem**

5.4.5.1 The AP may carry out further tests and diagnoses to identify the interference problem and the source of that interference. This may include verification testing of the ULLS and of the surrounding pairs in the cable against the minimum ULLS specifications in Appendix C and for compliance with the Network Deployment Rules Code.

5.4.5.2 The AP may contact an AS to discuss potential interference issues and the AS will assist and cooperate with the AP and provide further particulars as required.

5.4.5.3 Depending upon the outcome of the AP's investigation of the interference, the AP will take the following steps:

- (a) The AP must take steps to resolve the interference issue when the cause is in the ULLS.

- (b) When the interference is caused by another AS's service in the same cable bundle, the AP must either refer the problem on to the AS causing the problem for investigation and resolution or take action to rectify the problem as per Section 5.4.6.
- (c) Where specific action is required, the AP must notify the AS of the details of the interference issue and action requested. The notice must be by facsimile to that AS's designated FRC unless otherwise specified in bilateral agreement.
- (d) The AP must refer the issue back to the reporting AS if no interference can be found or if the interference problem cannot be fixed in the ULLS network. The AP will provide results of tests, or reasons, if any which lead it to believe that a Compliant system is the cause of the interference or the cause cannot be identified, using the ULLS Clearance Codes in Appendix B.

5.4.6 **Rectify Interference Issues**

5.4.6.1 **Complex Interference Issues**

- 5.4.6.1.1 Some interference problems may be the result of interference between services in the same cable bundle. If the ULLS is being used in accordance with the Network Deployment Rules Code, the resolution of the interference problem may require changes to some of the ULLS in the same cable bundle. If this is not possible then some ULLS may need to be disconnected to allow the remaining ULLS to operate without interference.
- 5.4.6.1.2 The AP may use the noise mask (as specified in the ACIF C559 Network Deployment Rules Code) to test for noise outside the specified limit. This noise mask is only an indicator. If the noise measured is within mask the AS may still request the AP to undertake further investigation on their behalf.

5.4.6.2 **Non Compliant System on the ULLS**

- 5.4.6.2.1 Where a service is determined to be a Non Compliant System and it is identified by the AP as a potential cause of interference to a Compliant System, the following steps will be taken:
 - 1. The ULLS will be disconnected as per the steps below:

- (a) Where a source of interference is determined to be a Non Compliant System the AP will temporarily disconnect the ULLS upon notice to the operator of the Non Compliant System of the test results which show the system as Non Compliant; and
- (b) Where a Non Compliant System is discovered, but there is no evidence of the Non Compliant System affecting the performance of other systems, AP will advise the operator of the Non Compliant System that the ULLS should be temporarily disconnected and if the operator of the Non Compliant System does not agree to the temporary disconnection, AP will refer the matter to the ACMA and/or Communications Alliance to take action as they consider relevant over the breach of the - *ACIF C559 Network Deployment Rules Code*.

- 2. If during this period the Non Compliant System affects the performance of other systems, Clause 5.4.6.2.1.1 (a) will take effect.

NOTE: Whilst the Non Compliant System remains connected and non compliant, the Compliant System(s) being interfered with, may remain degraded or unworkable, for which the offending party is responsible.

- 3. If the ULLS is temporarily disconnected, the AS must respond to the AP with advice that the ULLS is now Compliant or to request permanent disconnection of the ULLS.

5.4.6.2.2 This approach of disconnecting Non Compliant ULLS has been adopted because in practice it is extremely difficult to identify all sources of interference and a ULLS pair may be failing because of multiple sources and types of noise. Therefore, once any Non Compliant System sources of interference are eliminated, remaining failures are best fixed by moving the interfered with pair

subject to AS agreement, or
accommodating the degradation.

5.4.6.3 **Compliant Systems on the ULLS**

Where an Access Seeker's Compliant System fails due to interference from other Compliant System(s), (and the AP can establish the source of the interference) acknowledging in practice it may be very difficult to identify a Compliant System causing the interference problem, the following steps will be taken:

A) Where another Compliant System is the cause of the interference:

1. The AP may recommend that the interfering AS check that it's ULLS is still compliant.
2. The AP may recommend that the interfering AS reduce the transmit power of its system where possible or change Network Deployment Class.
3. Where steps 1 and 2 have not resolved the interference problem, the affected AS and the interfering AS may request the AP to determine if any suitable alternative ULLS are available for relocation.
4. When the above steps fail to correct the interference problem then the affected AS either accepts the interference problem and the degraded service or may request disconnection of its ULLS.

B) Where the cause of the interference can not be identified

Where there are Compliant Systems and the source of interference cannot be identified, the following steps must be taken.

1. The AP may recommend to the affected AS to check its system design to establish that the observed performance is worse than would be expected in the worst case noise environment.
2. The AP may recommend to the affected AS, where possible, to change Network Deployment Class of its ULLS.
3. Where steps 1 and 2 have not resolved the interference problem the affected AS may request the AP to determine if there are any suitable alternative ULLS(s) available for relocation.

4. When the above steps fail to correct the interference problem then the affected AS either accepts the interference problem and the degraded service or may request disconnection of their ULLS.

C) Hard Cabled Legacy Systems (Network Deployment Rules Code – Deployment Classes 1 (a) and 1 (b))

Where the AP or AS operates a Hard Cabled Legacy System that fails due to interference from other Compliant System(s), the AP and AS will use their best efforts to co-operatively determine if a solution may be identified in the circumstances within a reasonable period of time. When the AP becomes aware that suitable alternative ULLS are unlikely to be available, it will inform the AS.

If a solution cannot be identified in accordance with (C):

- (a) If the Hard Cabled Legacy System has been in operation prior to the publication date of the Network Deployment Rules Code, the operator of the Compliant System(s) will seek suitable alternative ULLS from the AP or request disconnection of its ULLS; or
- (b) If the Hard Cabled Legacy System has not been in operation prior to the publication date of the Network Deployment Rules Code, the AP will seek suitable alternative ULLS or accept the interference.

5.4.7 Safety Issues

When the AP has reason to believe the line voltage and currents exceed the limits of a telecommunication network voltage circuit as specified in AS/NZS 3260, the AP may temporarily disconnect a ULLS immediately.

5.4.8 Interference Clearance Report (AP to AS)

Once the AP concludes their investigation and rectification activity, the AP must report the details of the action back to the AS.

This report must include information set out in Clause 5.2.5 and use the ULLS Clearance Codes listed in Appendix B.

5.4.9 Interference Dispute Resolution

Disputes relating to interference on a ULLS must be dealt with in the first instance in accordance with the dispute resolution process in place between the AS and the AP pursuant to any bilateral agreement with respect to ULLS between the parties. If there is no such bilateral agreement in place, or if the parties

have exhausted the bilateral dispute resolution process and the dispute remains unresolved, where the dispute involves a Network Deployment Rules Code signatory it must be dealt with in accordance with the ACIF dispute resolution procedures.

5.4.10 **Non Compliant System**

When there is a non compliant system on a ULLS, the AP must notify the relevant AS to correct or remove the system. Where the AS will not comply, the issue may be treated in this dispute resolution process and advice must be given to other affected AS's that their services may experience the same interference problems.

6 TERM

6.1 Commencement of Industry Guideline

This Guideline commences on the date of publication.

6.2 Review

Review of the Guideline will be conducted after 2 years of the Guideline being published.

7 ULLS BILATERAL AGREEMENTS

- 7.1 The Guideline contains the minimum requirements with respect to ULLS Fault Management and Interference problems for Unconditioned Local Loop Services on Communications Wire. Whilst parties may enter into bilateral agreements in respect of matters covered by the Guideline, such agreements must not diminish requirements contained in the Guideline.
- 7.2 Parties to the Guideline recognise that they will enter into bilateral agreements regarding but not limited to the following matters:
- (a) the charges and costs directly relating to ULLS Fault Management and ULLS interference management for Unconditioned Local Loop Services on Communication Wire; and
 - (b) indemnities and limitations of liability; and
 - (c) operational arrangements; and
 - (d) exceptional circumstances; and
 - (e) rectification timeframes.

8 REFERENCES

Publication	Title
Industry Codes	
ACIF C559:2006	Unconditioned Local Loop Service – Network Deployment Rules
ACIF C569:2005	Unconditioned Local Loop Service – Ordering, Provisioning and Customer Transfer
ACIF C609:2006	Priority Assistance for Life Threatening Medical Conditions
Legislation	
<i>Telecommunications (Customer Service Guarantee) Standard 2000</i>	
<i>Telecommunications Act 1997 (Cth)</i>	
<i>Telecommunications (Consumer Protection and Service Standards) Act 1999 (Cth)</i>	
<i>Trade Practices Act 1974 (Cth)</i>	
<i>ACCC Declaration of Local Telecommunications Services 1999</i>	

APPENDIX

A ULLS SYMPTOM CODES

Symptom Code	Description	Scratchpad Entry
<i>ULLS Fault Symptom Codes</i>		
NTX	No transmission	Intermittent or Frequent
DTP	Data Transmission Problems	Intermittent or Frequent
<i>ULLS Interference Codes</i>		
ULI	Interference Describes what is the end user experiencing Long delays and low throughput Poor Voice quality Poor Video quality	Intermittent or Frequent
ULT	No transmission Broadband modem fails to train	Intermittent or Frequent
ULN	Noisy. Excessive noise on the line. Broadband modem fails to train. Modem produces excessive errors. Modem produces excessive Burst errors.	Intermittent or Frequent
<i>ULLS Reliability Code</i>		
URS	ULLS Reliability Standard	

APPENDIX

B ULLS CLEARANCE CODES

Fault Clearance Codes	Description	Scratchpad Entry
NFF	No ULLS Fault Found – No technical fault could be found	Based on fault information provided, no technical fault could be found and charges to apply.
ULLS	Unconditioned Local Loop Fault Repaired	Fault has been found in the ULLS.
<i>ULLS Interference Investigation Response Codes</i>		
ULM	Interference level on ULLS marginal or inclusive	Interference level in accordance with Network Deployment Classes as specified in the Network Deployment Code.
ULB	Clearly an interference problem in ULLS	Caused by poor balance of ULLS pair (suggest use another pair with better balance)
ULP	Clearly an interference problem in ULLS	Caused by high source power or crosstalk level outside 1% limit (suggest use another pair)
ULC	Interference source located and cleared (based on defined priorities)	
ULN	Interference source located, but has a higher priority (suggest use another pair)	
ULU	Interference source unknown (suggest use another pair)	

APPENDIX

C UNCONDITIONED COMMUNICATIONS WIRE DC AND LOW BAND SPECIFICATION

C1 Introduction

This appendix contains the electrical specifications that shall be met by unconditioned Communications Wires employed for Unconditioned Local Loop Services.

C2 Conductor Insulation Resistance

C.2.1 Insulation resistance specification

- (a) The transverse insulation resistance between the two conductors of the unconditioned Communications Wire shall be greater than or equal to 1 Megohm.
- (b) The insulation resistance to ground of each conductor of the unconditioned Communications Wire shall be greater than or equal to 1 Megohm.

C.2.2 Insulation resistance measurement

The conductor insulation resistance shall be measured with a test instrument complying with the following requirements:

- (a) Voltage across 1 Megohm resistive termination \geq 180 Volts DC
- (b) Short circuit current \leq 30 mA DC
- (c) Open circuit voltage \leq 600 Volts DC (Note 1)
- (d) Measurement period \geq 15 seconds

NOTE 1. If an unconditioned Communications Wire has surge protectors fitted a lower maximum open circuit voltage may be necessary. The lower maximum for such cases may be established under bilateral agreement.

C3 Low Band Noise

C.3.1 Low band noise specification

The psophometrically weighted noise level must be less than -55 dBm0p.

C.3.2 Low band noise measurement

The low band noise level shall be performed with a psophometer in accordance with ITU T Recommendation O.41. The unconditioned Communications Wire shall be terminated with impedances of 600 ohms at each end, with the conductors electrically isolated from all other equipment.

C4 DC Loop Resistance

C.4.1 DC loop resistance specification

The DC loop resistance of the unconditioned Communications Wire shall not exceed 3000 Ohms (see Note 1 below).

C.4.2 DC loop resistance measurement

The DC loop resistance shall be measured with a DC resistance meter or a DC resistance bridge.

NOTE 1: The specified maximum loop resistance has been set to encompass all CAN lines, including the small minority having very long lengths such as would require VF amplification for conventional telephony services.

PARTICIPANTS

The Working Committee that revised this Guideline consisted of the following organisations and their representatives:

Voting Participants	Organisation
Annie McCall	CTN
Tracey Mason	Optus
John Wedding	Primus
Gordon Watters	Telstra

Margaret Fleming of Communications Alliance supplied 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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