AS/NZS IEC 61935.1:2012

Australian/New Zealand Standard™

# Specification for the testing of balanced and coaxial information technology cabling

## Part 1: Installed balanced cabling as specified in ISO/IEC 11801 and related standards (IEC 61935-1, Ed.3.0 (2009) MOD)



STANDARDS Australia

STANDARDS NEW ZEALAND PAEREWA AOTEAROA

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee CT-001, Communications Cabling. It was approved on behalf of the Council of Standards Australia on 30 May 2012 and on behalf of the Council of Standards New Zealand on 27 August 2012.
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The following are represented on Committee CT-001:

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Australian Telecommunications Users Group
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# PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CT-001, Communications Cabling to supersede AS/NZS IEC 61935.1:2006, *Testing of balanced communication cabling in accordance with ISO/IEC 11801*, Part 1: *Installed cabling*.

The objective of this Standard is to provide information about the test equipment and methodology for in-field testing of cabling systems in accordance with AS/NZS 3080, *Telecommunications installations—Generic cabling for customer premises (ISO/IEC 11801, Ed.2.2 (2011) MOD)**. This edition differs from the previous edition in that it includes test methods for exogenous (alien) crosstalk. It also includes a new annex for uncertainty and variability of field test results. Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

This Standard is an adoption with national modifications and has been reproduced from IEC 61935-1, Ed. 3.0 (2009), *Specification for the testing of balanced and coaxial information technology cabling—Part 1: Installed balanced cabling as specified in ISO/IEC 11801 and related standards* and has been varied to take account of Australian/New Zealand conditions.

Variations to IEC 61935-1 are listed in Appendix ZZ.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text 'this part of IEC 61935' should read 'this Australian/New Zealand Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

| *Reference to International Standard* | | *Australian/New Zealand Standard* | |
|---|---|---|---|
| ISO/IEC 11801 | Information technology—Generic cabling for customer premises | AS/NZS 3080 | Telecommunications installations—Generic cabling for customer premises (ISO/IEC 11801, Ed.2.2 (2011) MOD)* |

Only international references that have been adopted as Australian/Australian/New Zealand Standards have been listed.

Variations made to IEC 61935-1, Ed. 3.0 (2009) form the Australian/New Zealand variations for the purposes of the CB scheme for recognition of testing to standards for safety of electrical equipment. They are listed in Appendix ZZ.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the annex and appendix to which they apply. A 'normative' annex and appendix is an integral part of a Standard, whereas an 'informative' annex and appendix is only for information and guidance.

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# INTRODUCTION

Telecommunication cabling, once specified uniquely by each telecommunications application, has evolved into a generic cabling system. Telecommunications applications now use the ISO/IEC 11801 cabling standard to meet their cabling requirements. Formerly, connectivity tests and visual inspection were deemed sufficient to verify a cabling installation. Now users need more comprehensive testing in order to ensure that the link will support telecommunications applications that are designed to operate on the generic cabling system. This part of IEC 61935 addresses reference laboratory and field test methods and provides a comparison of these methods.

Transmission performance depends on cable characteristics, connecting hardware, patch cords and cross-connect cabling, the total number of connections, and the care with which they are installed and maintained. This standard provides test methods for installed cabling and pre-fabricated cable assemblies. These test methods, where appropriate, are based on those used for components of the cable assembly.

This Part 1 contains the test methods required for installed cabling. Part 2 contains the test methods required for patch cords and work area cables.

AUSTRALIAN/NEW ZEALAND STANDARD

# Specification for the testing of balanced and coaxial information technology cabling

## Part 1:
## Installed balanced cabling as specified in ISO/IEC 11801 and related standards (IEC 61935-1, Ed.3.0 (2009) MOD)

### 1 Scope

This part of IEC 61935 specifies reference measurement procedures for cabling parameters and the requirements for field tester accuracy to measure cabling parameters identified in ISO/IEC 11801. References in this standard to ISO/IEC 11801 mean ISO/IEC 11801 or equivalent cabling standards.

This International Standard applies when the cable assemblies are constructed of cables complying with the IEC 61156 family of standards, and connecting hardware as specified in IEC 60603-7 family of standards or IEC 61076-3-104 and IEC 61076-3-110. In the case where cables and/or connectors do not comply with these standards, then additional tests may be required.

This standard is organized as follows:

- reference laboratory measurement procedures on cabling topologies are specified in Clause 4. In some cases, these procedures may be used in the field;
- descriptions and requirements for measurements in the field are specified in Clause 5;
- performance requirements for field testers and procedures to verify performance are specified in Clause 6.

NOTE 1 This standard does not include tests that are normally performed on the cables and connectors separately. These tests are described in IEC 61156-1 and IEC 60603-7 or IEC 61076-3-104 and IEC 61076-3-110 respectively.

NOTE 2 Wherever possible, cables and connectors used in cable assemblies, even if they are not described in IEC 61156 or IEC 60603-7, IEC 61076-3-104 or IEC 61076-3-110, are tested separately according to the tests given in the relevant generic specification. In this case, most of the environmental and mechanical tests described in this standard may be omitted.

NOTE 3 Users of this standard are advised to consult with applications standards, equipment manufacturers and system integrators to determine the suitability of these requirements for specific networking applications.

This standard relates to performance with respect to 100 Ω cabling. For 120 Ω or 150 Ω cabling, the same principles apply but the measurement system should correspond to the nominal impedance level.

Field tester types include certification, qualification and verification. Certification testing is performed for the rigorous needs of commercial/industrial buildings to this standard. Qualification testing is described in IEC 61935-3. Qualification testing determines whether the cabling will support certain network technologies (e.g., 1000BASE-T, 100BASE-TX, IEEE 1394b[1)]). Qualification testers do not have traceable accuracy to national standards and provide confidence that specific applications will work. Verification testers only verify connectivity.

Throughout this document, 4-pair cabling is assumed. The test procedures described in this standard may also be used to evaluate 2-pair balanced cabling. However, 2-pair cabling links that share the same sheath with other links are tested as 4-pair cabling.

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1) IEEE 1394b: 2002, *High Performance Serial Bus (High Speed Supplement)*