



Australian Government

Assessment Requirements for ICTTEN316

Conduct basic tests and analyses of telecommunications copper cabling

Release: 1

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Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- select, set-up and operate test instruments for three different cable types from the following list:
 - structured cabling verification/qualification tester
 - wire mapper
 - oscillator and probe
 - spectrum analyser
 - DVB-T/S2 analyser
 - multimeter – analog and digital
 - time-domain reflectometer (TDR)
 - asymmetric digital subscriber line (ADSL)/very-high-bit-rate digital subscriber line (VDSL) test instruments
- select appropriate instrument test cables and adaptors to suit test equipment for three different cable types and:
 - determine safety of cables to be tested (i.e. live or inactive)
 - identify calibration status of selected devices
 - confirm test results are within acceptable operational parameters.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- relevant legislation, regulations, codes, standards, rules, guidance notes and other formal agreements that impact on work, in particular:

- AS/CA S008:2010 Requirements for customer cabling products
- AS/CA S009:2013 Installation requirements for customer cabling (Wiring Rules)
- AS/NZS 1367:2016 Coaxial cable and optical fibre systems for the RF distribution of digital television, radio and in-house analog television signals in single and multiple dwelling installations
- AS/NZS 3000:2018 Electrical installations known as the Australian/New Zealand Wiring Rules
- AS/NZS 3080:2013 Information technology - Generic cabling for customer premises (ISO/IEC 11801:2011, MOD)
- AS/NZS 3084:2017 Telecommunications installations – Telecommunications pathways and spaces for commercial buildings
- National Construction Code
- work health and safety (WHS) regulations pertaining to electrical and electromagnetic telecommunications systems including energy supply sources
- different copper cable types utilised to match transmitted and received signals
- testing concepts and parameters used by test instruments including:
 - impedance, resistance, mismatches, crosstalk, reflections, ACR, spectrum, bandwidth, modulation depth, intermodulation, signal delay, group delay, normalisation, linearity, TDR, clock, jitter, latency, ping, signal to noise ratio (SNR), simplified Fourier analysis concepts, eye patterns, PAM4 or SDI, QAM patterns/constellations, MER, BER, FEC, signal losses, noise, interference, data rates, traffic, upload/download testing, signal levels, dBs, dBm, dBμ, dBr, dBμV
- testing acronyms including expansion and meaning
- common tests utilised with each copper cable telecommunication system
- telecommunications systems utilised in the telecommunications industry including:
 - telephone/voice over internet protocol (VoIP) systems
 - mobile phones, security systems
 - closed-circuit television (CCTV) systems
 - fire protection systems
 - structured cabling systems
 - local area network (LAN) equipment, telemetry
 - equipment control and monitoring systems
 - automation control systems
 - entertainment and control systems
 - radio communications
 - wi-fi
 - radio links
 - satellite and digital television reception
 - private automatic branch exchange (PABX)
- technical standards as applicable to copper cable systems
- test devices as applicable to copper cables in each transmission medium
- purpose and use of test results

- solid core cable versus stranded core.
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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- safety procedures signage and personal protective equipment (PPE) for testing cable
- cabling products and cable used in telecommunications systems
- operating conditions that may be present within local industry and regional contexts
- test equipment to test cable and identify test results, including:
 - wire mapper
 - oscillator and probe
 - spectrum analyser (available in DVB analyser)
 - DVB-T/S2 analyser
 - multimeter
 - TDR (available in SC certifiers)
 - ADSL/VDSL test instruments
- typical cable types including:
 - Cat 6 UTP cable
 - Cat 6/7 STP cable
 - RG6 coaxial cable (quad shielded)
 - RG11 coaxial cable (quad shielded)
 - copper conductor ribbon cable
 - solid core cable
 - stranded core cable
- appropriate connectors for testing cables
- appropriate adaptors and test leads for test instruments and cables to be tested
- backup energy sources, including power supplies and uninterrupted power supply/source (UPS) equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>