COMPLIANCE TESTING REPORT FOR AUSTRALIAN COMMUNICATIONS INDUSTRY FORUM (ACIF) AUSTRALIAN STANDARD AS/ACIFS008:2006

(Including relevant clauses of IEC 60603-7)*

Client:	
Address:	
Report Number:	0602NINUTPCAT6_S08
Date of Testing:	18 May to 02 June 2011
File Number:	HAN110225
Equipment Name:	LAN Cable & Patch Cord
Equipment Model No:	UTP CAT6/CAT6A
Equipment Description:	LAN Cable & Patch Cord
Result:	**COMPLIES**
Compiled by:	Venu Pothineni Testing Engineer
Approved by:	Shee-Chuen Chen Approved Signatory
Date of Issue	02 June 2011

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*** REFER TO SUMMARY PAGE FOR CLARIFICATION**

SUMMARY OF COMPLIANCE WITH AUSTRALIAN/NEW ZEALAND STANDARD AS/ACIFS008: 2006 (Including relevant clauses of IEC 60603-7)*

The Equipment Under Test (EUT), Lan Cable & Patch Cord, Model No. UTP CAT6/CAT6A was supplied for AS/ACIFS008:2006 testing by

The EUT consisted of a length of cordage with RJ45 plugs fitted to both ends. The cordage was unshielded twisted 4 pair (UTP) construction. The cordage was constructed with a PVC jacket, HDPE insulation, an internal PVC spreader and nylon ripcord. The conductors were solid copper with 0.55mm diameter. The EUT was supplied with the complete cord and RJ45 or 8P8C plugs were fitted with a moulded strain relief. A 100m length of cordage was also supplied for the insulation resistance, conductor composition and flammability tests.

The EUT was tested for compliance with the requirements for indoor use only. The requirements for labelling cable and cable products are specified in the ACMA Telecommunications Cabling (Customer Equipment and Customer Cabling) Notice.

The LAN Cable & Patch Cord, Model No. UTP CAT6/CAT6A **COMPLIES** with the tested clauses of AS/ACIFS008:2006.

Possible Test Case Verdicts:
- test case does not apply to the test object ..... N(.A)
- test object does meet the requirements ..... P(ass)
- test object does not meet the requirements ..... F(ail)
- testing was not performed ..... NT
- noted ..... ND

	AS/ACIFS008: 2006		
Clause	Requirement - Test	Result - Remark	Verdict

5.	REQUIREMENTS		ND
5.1	GENERAL Cabling products shall be physically distinguishable from products used for distribution or connection of AC mains supply.		P
5.2	MARKINGS		ND
5.2.1	Labelling Notice		ND
5.2.2	Inappropriate markings Cabling products intended solely for telecommunications use shall not bear markings indicating hazardous services.		P
5.2.3	Additional markings (excluding cable markings)		ND
5.2.3.1	International protection (IP) rating		N
5.2.3.2	Multidiscipline telecommunications connecting hardware		N
5.3	UNDERGROUND CONDUIT		N
5.3.1	Colour		N
5.3.2	Underground conduit properties Underground conduit shall meet the following minimum classifications in accordance with clause 5 of AS/NZS 2053.1 [7]: 5.1 Any of the listed types of material; 5.2 Threadable or non-threadable; 5.3 Medium mechanical stresses (medium duty'); 5.4 Rigid or flexible; 5.8.1 & 5.8.2 Rated to IP66; and 5.8.5 Non-hygroscopic.		N
5.3.3	Underground conduit markings		N
5.3.3.1	General		N
5.3.3.2	Marking durability		N
5.4	CABLE DISTRIBUTION DEVICES		N

	AS/ACIFS008: 2006		
Clause	Requirement - Test	Result - Remark	Verdict
5.4.1	Common requirements		N
5.4.1.1	Cable entry		N
5.4.1.2.	Conductive enclosure		N
5.4.1.2.1	Enclosure, frame and backmount earthing		N
5.4.1.2.2	Insulation		N
5.4.1.3	Enclosure requirements		N
5.4.1.3.1	Openings Clause 4.6 of AS/NZS 60950.1		N
5.4.1.3.2	Sharp edges		N
5.4.1.3.3	Outdoor enclosures Minimum degree of protection of IPX3 in accordance with AS 60529		N
5.4.1.3.4	Shared enclosures (a) requirements for locating conductors and terminations of a customer cable within the same enclosure as the uninsulated and single-insulated conductors and terminations of an LV power cable.		N
	(b) The conductors and terminations of a customer cable shall be separated from the uninsulated and single-insulated conductors and terminations of an LV power cable by either a minimum distance of 150mm or by means of a permanent, rigidly-fixed barrier of durable insulating material or metal that is capable of being earthed in accordance with clause 5.4.1.3.4 (c), unless conditions (i), (ii), (iii) are met.		N
	(c) Where the barrier referred to in clause 5.4.1.3.4 (b) is of metallic construction, provision shall be made for connecting the barrier to a protective earth by a minimum 2.5mm^2 conductor.		N
	(d) Conductors and terminations of telecommunications cables shall not be located within the dame enclosure as those of HV cables.		N
5.4.1.4	Earthing or bonding bars and terminals		N
5.4.1.4.1	Insulation		N

	AS/ACIFS008: 2006		
Clause	Requirement - Test	Result - Remark	Verdict
5.4.1.4.2	Earthing or bonding conductor connections An earthing/bonding bar or terminal intended for connection of earthing or bonding conductors shall comply with the requirements of AS/ACIF S009.		N
5.4.1.5	Surge suppression devices Requirements of AS/NZS4117		N
5.4.2	Main distribution frame (MDF)		N
5.4.2.1	Flame propagation		N
	(a) a resistance to heat to 120^0C in accordance with AS/NZS 2053.1		N
	(b) Non-flame propagating in accordance with AS/NZS 2053.1 and		N
	(c) If made of insulating material, the glow wire test of AS/NZS 60695.2.13		N
5.4.2.2	Security		N
5.4.2.3	Terminations		N
5.4.2.4	Space for surge suppression devices		N
5.5	OPTICAL FIBRE DISTRIBUTION DEVICES AND ENCLOSURES Optical fire distribution devices and splice enclosures shall comply with AS/NZS 2211.1		N

	AS/ACIFS008: 2006		
Clause	Requirement - Test	Result - Remark	Verdict

5.6	CABLES		ND
5.6.1	General A customer cable shall meet the requirements of Clauses 5.6.2 to 5.6.9 where specified in Clauses 5.6.10 to 5.6.18 of this Standard.		N
5.6.2	Conductor and optical fibre identification Shall use a system of identification such that all conductors, coaxial tubes or optical fibres within the cable are readily distinguishable visually form one another.	blue and blue/white orange and orange/white green and green/white brown and brown/white (4 twisted pairs)	P
5.6.3	Insulation and sheath material	Refer to Appendix C	NT
	(a) shall use insulation and sheath materials suitable for telecommunications purposes;		NT
	(b) Where PVC insulation or sheath materials are used, they shall comply with the requirements of Table 1 or 2, as applicable: and		NT
	Table 1 - PVC Insulation Requirements Tensile strength (unaged): 18 MPa Elongation (unaged): 100% Elongation (Aged): 50% of initial after 100C at 120h Volatile Loss: 20 g/m2 after 80C aging for 120h Volume Resistivity: 400GΩ m at 23C, 0.4GΩ m at 60C		N
	Table 2 - PVC Sheath Requirements Tensile strength (unaged): 12 MPa Elongation (Unaged): 100% Elongation (Aged): 50% of initial after 100C at 120h Volatile Loss: 20 g/m2 after 80C aging for 120h		NT
	(c) Where non-PVC insulation or sheath materials are used, they shall comply with the requirements of AS 1049 for-		NT
	(i) Tensile Strength Test (Aged/Unaged);		NT
	(ii) Elongation Test (Aged/Unaged); and		NT
	(iii) Shrinkback Tests for that particular type of insulation and sheath.		NT

	AS/ACIFS008: 2006		
Clause	Requirement - Test	Result - Remark	Verdict
5.6.4	Flammability A cable that is required to comply with this Clause shall pass the combustion propagation test of Method 5.6 including Appendix A and B of AS 1660.5.6.	Refer to table in Appendix.	P
5.6.5	UV resistance Requirements of AS 1049 for cables exposed to UV radiation.		N
5.6.6	Metallic conductors		P
5.6.6.1	Conductor composition Any metallic conductors, other than copper-clad steel used as an inner conductor in coaxial cable- (a) shall be either plain or plated copper; (b) may be either a single, solid conductor or multi-stranded; (c) the DC resistance shall be less than the values given in Table 3; and (d) the conductor finish should be plain or tinned	Requirement: 79.33 Ω/km max. Measured: 79.03 Ω/km Solid plain copper Nominal diam = 0.55 mm All pairs measured and average calculated.	P
5.6.6.2	Electrical withstand voltage	Refer to Appendix.	P
5.6.6.3	Mutual capacitance (a) The maximum mutual capacitance between the two wires forming a pair measured at any frequency in the range 800 Hz to 1000 Hz shall not exceed the relevant value given in table 5. (b) The measurement, referred to in Clause 5.6.6.3 (a) shall be performed on a minimum cable length of 100m (c) The mutual capacitance shall be corrected to a length of 1000m	Maximum: 80.0 nF/km Measured: 35.58 nF/km	P

	AS/ACIFS008: 2006		
Clause	Requirement - Test	Result - Remark	Verdict
5.6.6.4	Capacitance unbalance (a) The maximum capacitance unbalance between pairs measured at any frequency in the range 800 Hz to 1000 Hz shall not exceed the relevant value given in Table 5. (b) During the measurement referred to in Clause 5.6.6.4 (a), all conductors, other than those under test and the metallic shield (where applicable) shall be connected to earth. (c) The measurement shall be performed on a minimum cable length of 100m. (d) The capacitance unbalance between two pairs of wires with one pair designated 'A' and 'B' and the second pair designated 'C' and 'D'. (e) The capacitance unbalance shall be corrected to a length of 500m.	Maximum: 300 pF/500m Measured: <300 pF/500m	P
5.6.6.5	Insulation resistance (a) shall not be less than the relevant value given in Table 5; (b) the measurement shall be made on a minimum length of 100m of cable or cordage at a potential of 500Vd.c. ±50Vd.c. and the reading taken after the application of the voltage for 60s; and (c) the insulation resistance shall be corrected to a length of 1000m.	Requirement: 100 MΩ.km min Measured: >100 MΩ.km All pairs tested	P
5.6.7	Metallic shield (a) any shield provided in the cable shall be electrically continuous; and (b) Where a foil shield is employed, a drain wire shall be placed in continuous contact with the metallic surface of the shield.	No metallic sheild	N
5.6.8	Water penetration test Water Penetration specified in Clause 25, Method-F5B of IEC 60794-1-2.		N
5.6.9	Integral bearer or strengthener		N
5.6.10.	Cable with specific attributes		N
5.6.11	Metallic paired cable		ND

	AS/ACIFS008: 2006		
Clause	Requirement - Test	Result - Remark	Verdict
5.6.11.1	General requirements Metallic paired cable, other than cordage, a cord or a special application cable, shall comply with the following Clauses: 5.6.2, 5.6.3, 5.6.4, 5.6.5, 5.6.6.1, 5.6.6.2, 5.6.6.3, 5.6.6.4, 5.6.6.5, 5.6.7, 5.6.8 and 5.6.9.	Cordage and cord requirements apply	N
5.6.11.2	Construction A cable intended to carry a frequency of 300 Hz or greater shall be shielded or of twisted pair construction.		P
5.6.12	Cordage with metallic conductors		ND
5.6.12.1	General requirements Cordage with metallic conductors shall comply with the following Clauses: 5.6.2, 5.6.3, 5.6.4, 5.6.5, 5.6.6.1, 5.6.6.2, 5.6.6.3, 5.6.6.4, 5.6.6.5 and 5.6.7.		P
5.6.12.2	Conductor composition Conductors in metallic cordage should be of stranded or tinsel conductor construction when frequent movement of the cordage is anticipated.		ND
5.6.13	Cords with metallic conductors		ND
5.6.13.1	General requirements A cord with metallic conductor shall comply with the following Clauses: 5.6.2, 5.6.4, 5.6.5, 5.6.6.1, 5.6.6.2, 5.6.6.5 and 5.6.7		P
5.6.13.2	Cords exceeding a length of 10m A cord with metallic conductors that exceeds a length of 10m shall comply with Clause 5.6.13.1 and the following Clauses: 5.6.3, 5.6.6.3 and 5.6.6.4.		P
5.6.13.3	Cord anchorage or strain relief A cord with metallic conductors- (a) shall be secured in any plug or socket connected to a cord by an appropriate anchorage or strain relief; and (b) When subjected to a force of 45 N gradually applied between the cord and the plug or socket for a period of 60s, the cord shall not be longitudinally displaced by more than 2mm, nor show any appreciable strain at the connection.	No longitudinal displacement of cord	P

	AS/ACIFS008: 2006		
Clause	Requirement - Test	Result - Remark	Verdict
5.6.14	Metallic jumper wire and jumper cable		N
5.6.14.1	General requirements Metallic jumper wire and jumper cable shall comply with the following Clauses: 5.6.2, 5.6.3, 5.6.4, 5.6.6.1, 5.6.6.2, 5.6.6.5 and 5.6.7.		N
5.6.14.2	Twist rate		N
5.6.15	Coaxial cable		N
5.6.15.1	General requirements Coaxial cable shall comply with the following clauses: 5.6.2, 5.6.3, 5.6.4, 5.6.5, 5.6.6.1, 5.6.6.2, 5.6.6.5, 5.6.7 and 5.6.9.		N
5.6.15.2	Velocity ratio		N
5.6.15.3	Characteristic impedance		N
5.6.15.4	Attenuation		N
5.6.16	Optical fibre cable		N
5.6.16.1	General requirements Optical fibre cable, other than a blown fibre tube system, shall comply with the following Clauses: 5.6.2, 5.6.3, 5.6.4, 5.6.5, 5.6.8 and 5.6.9.		N
5.6.16.2	Fibre requirements		N
5.6.16.3	Mechanical and environmental performance		N
5.6.16.4	Optical fibre cords		N
5.6.17	Blown fibre tube systems		N
5.6.17.1	General requirements A blown fibre tube system shall comply with the following Clauses: 5.6.2, 5.6.3, 5.6.4, 5.6.5 and 5.6.9		N
5.6.17.2	Outer tube or sheath		N
5.6.18	Special application cables	The cord tested is not intended for special applications.	N

	AS/ACIFS008: 2006		
Clause	Requirement - Test	Result - Remark	Verdict
5.6.18.1	Compliance		N
5.6.18.2	General requirement A special application cable installed within a building shall comply with clause 5.6.4.		N
5.6.18.3	Cable with metallic conductors A special application cable with metallic conductors- (a) shall comply with the testing requirements of the relevant Standard as listed by way of example in Table 6, to meet the requirements for its intended use; or (b) where Clause 5.6.18.3 (a) is not applicable- (i) the cable should comply with the following Clauses of this Standard: 5.6.6.1, 5.6.6.2, 5.6.6.5 and 5.6.7. (ii) where the cable is intended to be used as a telephone cable, it shall comply with the following Clauses of this Standard: 5.6.6.3 and 5.6.6.4.		N

	AS/ACIFS008: 2006		
Clause	Requirement - Test	Result - Remark	Verdict
5.7	CONNECTING HARDWARE, INCLUDING PLUGS AND SOCKETS OF ALL DESIGNS		ND
5.7.1	General		ND
5.7.1.1	Insulation resistance The insulation resistance between any two points which are required to be electrically insulated shall be a minimum of 100 MΩ. The insulation resistance measurement is to be made after 500V ± 50 V d.c. has been applied for a period of 60 s	Measured:>999MΩ all adjacent contacts tested	P
5.7.1.2	Contact resistance		N
5.7.1.2.1	Insulation Displacement contacts The contact resistance in connecting hardware other than the types of plugs and sockets covered in Clauses 5.7.2, 5.7.3 and 5.7.4 shall comply with the requirements of IEC 62352-4 Clause 12.3.1.		N
5.7.1.2.2	Plug and socket connection For connectors using a plug and socket, other than the types of plugs and sockets described in Clauses 5.7.2, 5.7.3 and 5.7.4, the interface resistance of the overall mated connection or shield connection shall not exceed 50mΩ using the test method described in Clause 12.3.1 of IEC 60352-4.		N
5.7.1.3	Electric strength Electrically conductive elements normally at telecommunications network voltage (TNV) shall comply with Clause 6.2.2 (Voltage proof) of IEC 60603-7.	Refer to Appendix.	P
5.7.1.4.	Protection against contact with exposed circuits Connectors, plugs and sockets with metallic conductors and shields shall comply with the probe test of Clause 6.2.1 (b) (Separation requirements) of AS/NZS 60950.1.		P
5.7.1.5	Weather resistance Plugs and sockets exposed to weather and damp areas shall have a minimum degree of protection of IPX3 against the ingress of water when tested in accordance with AS 60529.		N

	AS/ACIFS008: 2006		
Clause	Requirement - Test	Result - Remark	Verdict
5.7.2	Eight (8) position modular plugs and sockets In addition to the general requirements of Clause 5.7.1, eight (8) position modular plugs and sockets shall comply with the following Clauses of IEC 60603 7: 6.2.3 Current carrying capacity 6.2.4 Initial contact resistance 6.3.1 Mechanical operation (Cycle) 6.3.2 Effective ness of a connector coupling device	Refer to Appendix.	P
5.7.3	Six (6) position modular plugs and sockets Six (6) position modular plugs and sockets shall- (a) be mechanically designed according to CFR FCC 47.500 (A) and (B) ; and (b) In addition to the general requirements of Clause 5.7.1, shall comply with the following Clauses of IEC 60603-7: 6.2.3 Current carrying capacity 6.2.4 Initial contact resistance 6.3.1 Mechanical operation (Cycle) 6.3.2 Effectiveness of a connector coupling device.		N
5.7.4	600 series plugs and sockets		N
5.8	CABLING PRODUCTS FOR UNDERGROUND AND AERIAL INSTALLATIONS		N
5.8.1	Pits		N
5.8.2	Underground joint/termination enclosures		N
5.8.3	Underground and aerial cable terminations		N
5.8.4	Pillars and cabinets		N
5.8.5	Aerial joint/termination enclosures		N

***** END OF REPORT BODY *****

Appendix A – Additional Test Data
Appendix B – Photographic Record of Sample
Appendix C – Information Supplied by Client

Appendix A	Additional Test Data		
Clause	Requirement - Test	Result - Remark	Verdict

5.6.4	TABLE: Flammability Test								P
No	Object	Duration of application of flame (S)	Time object remained alight after removal of flame (S)	Time until ignition of tissue paper (S)	Time until ignition of particle board (S)	Ignition of tissue paper	Particle board scorching	Extent of burning (mm)	Result
1	Cord	60	5 seconds	NI	NI	NI	NI	40	P

LEGEND

P	Pass
F	Does not comply
NA	Not applicable
NI	No ignition

NOTE:
INDIVIDUAL ITEMS OF THIS TEST REPORT SHOULD NOT BE QUOTED IN ISOLATION AS PROOF OF PRODUCT ACCEPTABILITY NOR APPLIED TO DIRECTLY ASSESS PERFORMANCE UNDER CONDITIONS OTHER THAN AS ENVISAGED BY THE REFERENCE SPECIFICATION, E.G. INDIVIDUAL FIRE TESTS TO PROVE AN OVERALL ACCEPTABLE FIRE HAZARD LEVEL.

Appendix A	Additional Test Data		
Clause	Requirement - Test	Result - Remark	Verdict

5.6.6.2	TABLE: Cable - Electric strength measurements at operating temperature		P
Test voltage applied between:		test voltage (V)	breakdown Yes / No
Blue wire to all other conductors		700 V a.c 60 seconds	No
Blue/white wire to all other conductors		700 V a.c 60 seconds	No
Orange wire to all other conductors		700 V a.c 60 seconds	No
Orange/white wire to all other conductors		700 V a.c 60 seconds	No
Brown wire to all other conductors		700 V a.c 60 seconds	No
Brown/white wire to all other conductors		700 V a.c 60 seconds	No
Green wire to all other conductors		700 V a.c 60 seconds	No
Green/white wire to all other conductors		700 V a.c 60 seconds	No
All conductors to sheath		700 V a.c 60 seconds	No

5.6.6.5	TABLE: Insulation Resistance		P
test voltage applied between:		test voltage (V)	Insulation Resistance (MΩ.km)
Wires forming a pair		500Vdc	>100 MΩ.km All pairs tested

Appendix A	Additional Test Data		
Clause	Requirement - Test	Result - Remark	Verdict

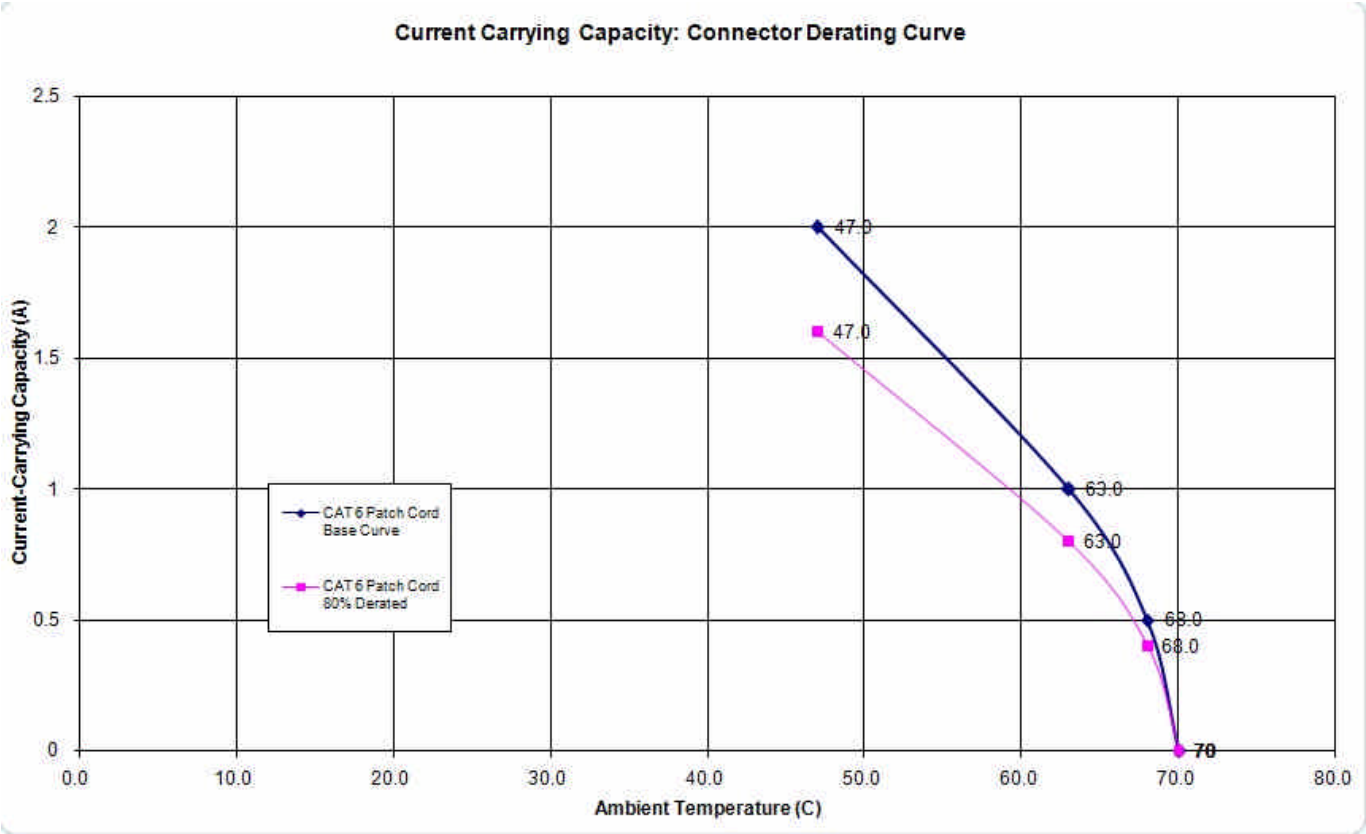
IEC 60603-7 Clauses of Section 5.7 Connecting hardware, including plugs and sockets of all designs

5.7.1.3	IEC 60603-7 Clause 6.4.2 Voltage proof		P
	IEC 512-2, Test 4a Standard atmospheric conditions. Mated connectors. 1000 VDC or AC peak, contact to contact.	All contacts tested	P
	Test method used (A, B or C) and details to be specified. Tested each contact to all other contacts Entire patch cord was tested	Method = A Duration = 60 seconds See also below.	P

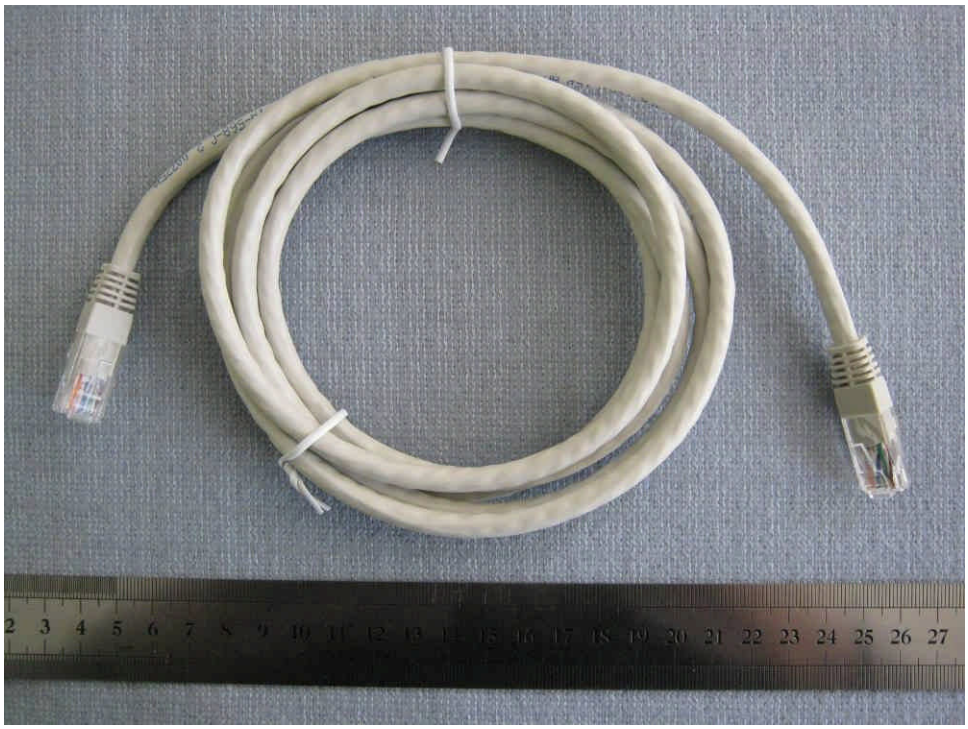
test voltage applied between:	test voltage (V)	breakdown Yes / No
Each contact to all other contacts	1000 V a.c. peak	No

Appendix A	Additional Test Data		
Clause	Requirement - Test	Result - Remark	Verdict

5.7.2 & 5.7.3	IEC 60603-7 Clause 6.4.3 Current-carrying capacity		P
	IEC 512-3, Test 5b Standard atmospheric conditions. All contacts.	Plug temperature measured at the end and middle of plug, just above contacts. 2 samples tested	P



Appendix A	Additional Test Data		
Clause	Requirement - Test	Result - Remark	Verdict
5.7.2 & 5.7.3	IEC 60603-7 Clause 6.4.4 Initial contact resistance		P
	IEC 512-2, Test 2a Standard atmospheric conditions Mated connectors. Connection points as specified in IEC603-7 figure 27. Requirement = 20mΩ max	Test current <100mA DC, emf of test circuit <20mV DC. Both polarities. Measured: 10.65 mΩ Measurements averaged	P
5.7.2 & 5.7.3	IEC 60603-7 Clause 6.6.1 Mechanical operation (Cycle)		P
	IEC 512-5, Test 9a Speed 10mm/s max. Rest: 1s min. (unmated) 2500 operations.	Compliance is checked by visual inspection, contact resistance, insulation resistance and voltage tests.	P
5.7.2 & 5.7.3	IEC 60603-7 Clause 6.6.2 Effectiveness of connector coupling devices		P
	IEC 512-8, Test 15f All types: 50 N for 60 ± 5 s. Requirement: Connectors shall remain fully engaged and there shall be no loss of electrical continuity. Latching and unlatching of coupling locks shall be operational and certain.		P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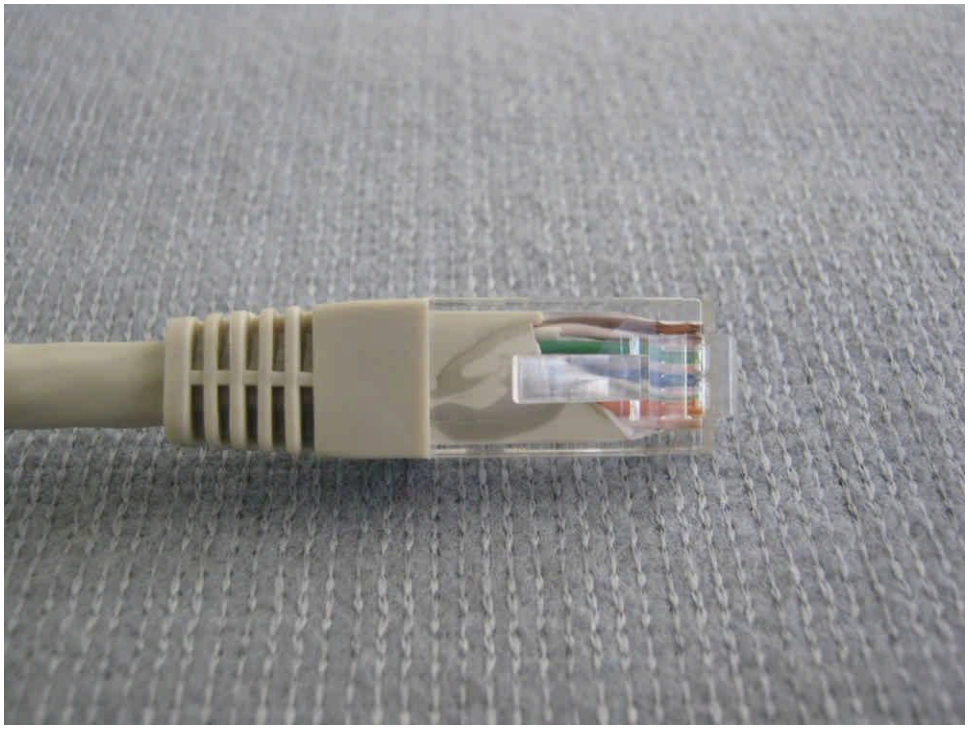
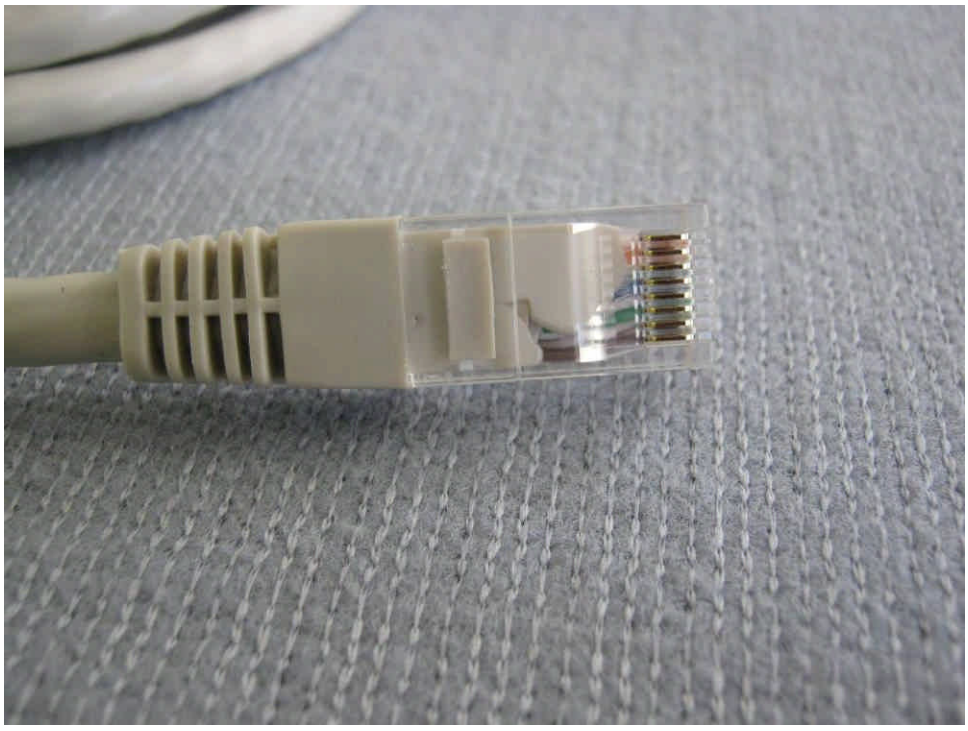
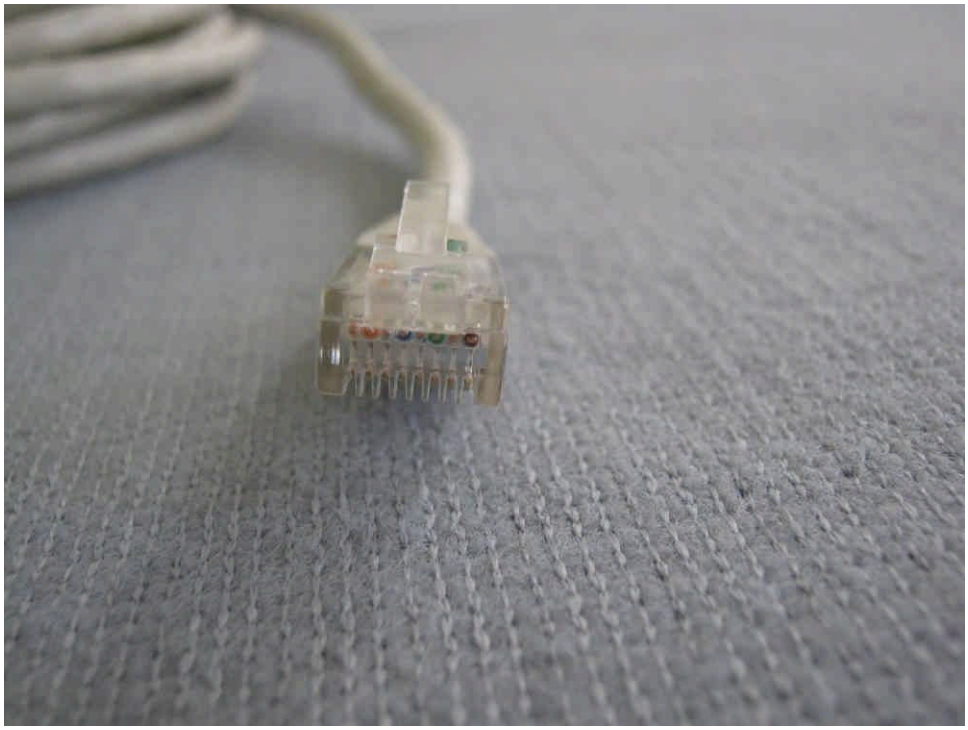
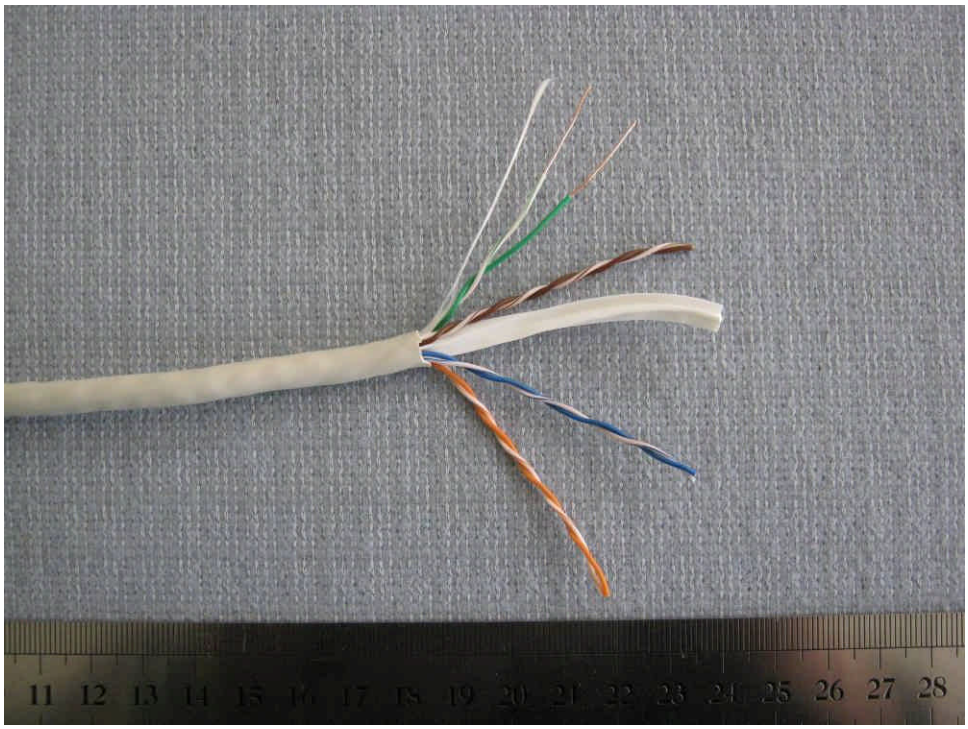
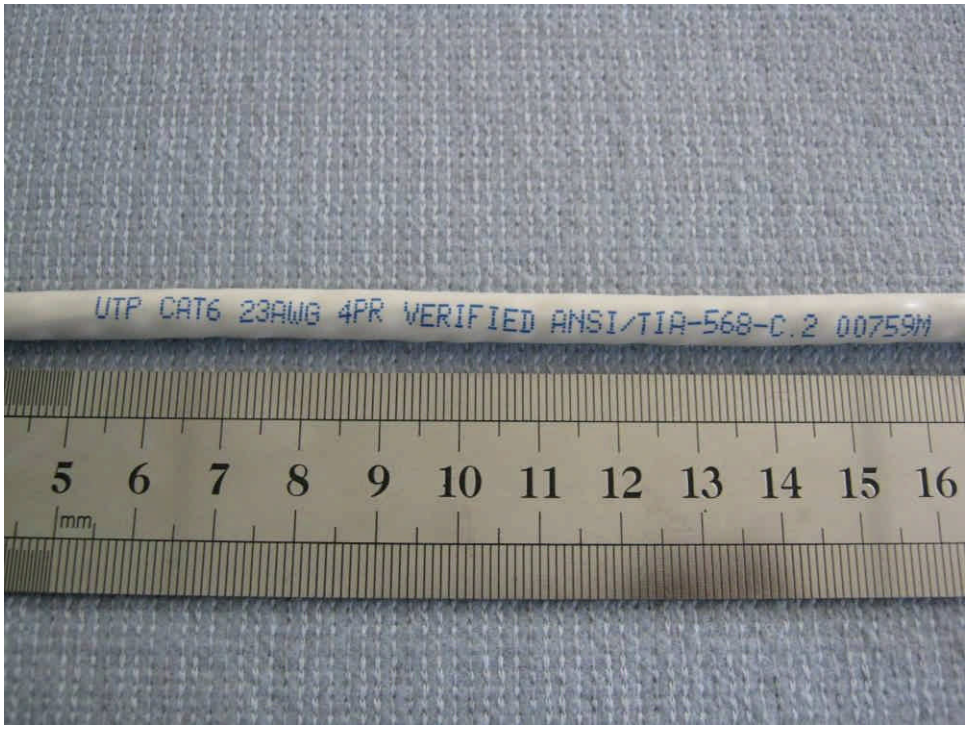






Appendix B	Photographic Record of Sample





Material information

HDPE insulation requirements

Tensile Strength
22.1 MPa (minimum) Unaged, AS1049 Appendix E : 3407 1bf / in^2

Elongation at Break
100% (minimum) Unaged AS1049 Appendix E : 540%

Elongation at Break after aging
50% (minimum) of initial After aging, at 100℃ for 120h AS1049 Appendix E :90%

Volatile loss
20 g/m2 (maximum) After aging, at 80℃ for 120h AS1049 Appendix R:10 g/m2
Volume resistivity 400 GΩ m(minimum) 0.4 GΩ m(minimum) at 23℃, at 60℃ AS1049

Appendix AA:700GΩ m

PVC sheath requirements

Tensile Strength
16 Mpa (minimum) Unaged ,AS1049 Appendix E:3313 1bf / in^2

Elongation at Break 100% (minimum) Unaged AS1049 Appendix E:268%

Elongation at break after aging
50% (minimum) of initial after aging ,at 100℃ for 120h AS1049 Appendix E:75%

Volatile loss
20 g/m2 (maximum) after aging, at 80℃ for 120h AS1049 Appendix R :8 g/m2

Nominal conductor diameter for the cordage used

0.574mm