



RCM

Customer Cabling Products

Test Report

Under :
AS/CA S008:2010+A1/2014
Requirements for Customer Cabling Products
☒ CAT6 Patch Cable ☒ Indoor

Prepared For :
SFM Solutions Pty Ltd.
4/39-41 Corporation Cct, Tweed Heads South, NSW 2486

EUT: CAT6 U/UTP 23AWG PVC Horizontal (solid) Cable
Model: VK6U23GCM305BU
November 9, 2020 Issue Date:
Original Report Report Type:
 Test Engineer: Jacky Huang
 Review By: Apollo Liu / Manager



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Table of Contents

1. General Information	4
1. 1 Notes	4
1. 2 Testing Laboratory.....	4
1. 3 Details of Applicant.....	4
1. 4 Application Details	4
1. 5 Details of Manufacturer	4
1. 6 Test Item	4
2. Technical Test	5
2. 1 Summary of Test Results.....	5
3. Requirements for Customer Cabling Products.....	6
Clause 5 - General.....	6
Appendix A – Additional Test Data	17
Appendix B – Photo of Sample.....	19

Report Revision History

Report #	Version	Description	Issued Date
KSZ2020100901RCM01	Rev.01	Initial issue of report	November 9, 2020

1. General Information

1.1 Notes

The test results of this report relate exclusively to the test item specified in 1.6. The KMO Lab does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the KMO Lab.

1.2 Testing Laboratory

Test Firm Name:	Ke Mei Ou Lab Co., Ltd.
Test Firm Address:	2013-2016, 20th Floor, Business Center, Jiahui Xin Cheng, No 3027, Shen Nan Road, Fu Tian, Shen Zhen, Guang Dong, P. R. China
NATA Recognized Testing Authority:	AT-1532
Internet:	www.kmolab.com
Email:	kmo@kmolab.com
ANSI-ASQ National Accreditation Board/ANAB ISO/IEC 17025 Accredited Lab for telecommunication standards. The Registration Number is AT-1532. The testing quality system meets with ISO/IEC-17025 requirements. This approval results is accepted by MRA of ILAC.	

1.3 Details of Applicant

Name: SFM Solutions Pty Ltd.
Address: 4/39-41 Corporation Cct, Tweed Heads South, NSW 2486

1.4 Application Details

Date of Receipt of Application: October 9, 2020
 Date of Receipt of Test Item: October 29, 2020
 Date of Test: October 30 ~ November 9, 2020

1.5 Details of Manufacturer

Name: TELEPHONE EQUIPMENT (HK) LTD
Address: Unit 12, 9/F, Technology Park, No. 18 On Lai Street Shatin, New Territories, Hong Kong

1.6 Test Item

EUT Feature	
EUT Description:	CAT6 U/UTP 23AWG PVC Horizontal (solid) Cable
Brand Name:	Vectorkom, Golinx, SCHNEIDER, LEGRAND
Model Name (Base):	VK6U23GCM305BU main model number, indicates CAT6 U/UTP 23AWG PVC Horizontal (solid) Cable in Blue.
Model Name (Extension):	VK6U23GCMxxxxyy similar with VK6U23GCM305BU except with different color and length (yy indicates color, WE for white, GR for green, BU for blue, RED or RD for Red, YL for Yellow, OR for orange, GY for grey, PL for purple, PK for pink, etc. xxx indicates length, 100 for 100 meters, 200 for 200 meters, 305 for 305meters, 500 for 500 meters, etc)
	PC6U23GCMxxxxyy similar with VK6U23GCMxxxxyy except with a different model number determination for GOLINX brand.
EUT Stage:	<input checked="" type="checkbox"/> Identical Prototype <input type="checkbox"/> Production
Note: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	

Additional Information

The EUT consisted of a length of CAT6 U/UTP 23AWG PVC Horizontal (solid) Cable. The cable was 4 pair construction with pairs individually twisted. The 4 pairs were separated by an X cross slot. The conductors were solid copper. The nominal diameter of conductor pair was 0.55 mm. The conductors were insulated with High Density Polyethylene (DHPE). Each conductor has an PVC insulation layer, approx 0.17mm thick.

Vectorkom category 6 unshielded horizontal solid LAN cable (U/UTP) allows for data transmission between patch panels, outlets and/or IT equipment installed in data center or terminal users buildings. Backwards compatible with Cat5e application. Cable is supplied on a reel inside the carton, for ease of installation.

The EUT had the following sheath markings:

VECTORKOM CAT 6 UTP CABLE VK6U23GCM305BU NVP 69% 4PR 23AWG PVC 75°C AS/NZS 3080 CAT 6 39W/2020 001M

The requirements for labelling cable and cable products are specified in the ACMA Telecommunications Cabling (Customer Equipment and Customer Cabling) Notice.

2. Technical Test

2.1 Summary of Test Results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
AS/CA S008:2010+A1:2014 Requirements for Customer Cabling Products	Safety Testing	PASS	Meets the Standard

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

2.2 Reference Documents

Document Type	Document No.	Issued by	Date
<input checked="" type="checkbox"/> Customer Declaration	C6 UUTP 23AWG PVC LAN Cable Difference declaration 20201029	SFM Solutions Pty Ltd.	2020-10-29
<input checked="" type="checkbox"/> Technical Documents	VK VK6U23GCMxxx-yy Cat6 UTP PVC LAN Cable datasheet 20201028-s	SFM Solutions Pty Ltd.	2020-10-28

3. Requirements for Customer Cabling Products

Clause 5 - General

AS/CA S008:2010+A1:2014			
Clause	Requirement - Test	Result-Remark	Verdict
5.	REQUIREMENTS		P
5.1	GENERAL Cabling products shall be physically distinguishable from products used for distribution or connection of AC mains supply.		P
5.2	MARKINGS		P
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)		N
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

AS/CA S008:2010+A1:2014			
	Requirement - Test	Result-Remark	Verdict
5.4	CABLE DISTRIBUTION DEVICES		N
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 same 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
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

AS/CA S008:2010+A1:2014			
Clause	Requirement - Test	Result-Remark	Verdict
5.4.2.1	Flame propagation		N
	(a) a resistance to heat to 120°C 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

AS/CA S008:2010+A1:2014			
Clause	Requirement - Test	Result-Remark	Verdict
5.5	OPTICAL FIBRE DISTRIBUTION DEVICES AND ENCLOSURES Optical fire distribution devices and splice enclosures shall comply with AS/NZS 2211.1		N
5.6	CABLES		P
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.		P
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 from one another.	4 twisted pairs. Pairs are identified as: Blue, orange, green and brown. The matching mate in the twisted pair is white insulation with a matching colored stripe.	P
5.6.3	Insulation and sheath material		NT
	(a) shall use insulation and sheath materials suitable for telecommunications purposes;	PE insulation PVC sheath	ND
	(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): 13 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/CA S008:2010+A1:2014			
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, or copper-clad aluminium with a centre conductor greater than 2mm used as an inner conductor in coaxial cable- (1) shall be either plain or plated copper; (2) may be either a single, solid conductor or multi-stranded; (3) the DC resistance shall be less than the values given in Table 3; and (4) the conductor finish should be plain or tinned	Requirement: 76.531 Ω /km max. Measured: 73.2 Ω /km Stranded copper diam. = 0.56mm All pairs measured and average calculated.	P
5.6.6.2	Electrical withstand voltage A multi-conductor cable that is required to comply with this Clause by any of Clauses 5.6.10 to 5.6.18 of this Standard, when tested at a frequency of 50 Hz on at least 1 m length; (a) shall be able to withstand the appropriate AC voltage levels and test method listed in Table 4, without breakdown for a period of 60 s or a period of 2s as stated; and (b) for Test 2 and 3, all cables/cordages shall comply to the Table 4 limits using the test specified in AS/NZS 3191 Table 2.1, test number 8(a), and using test method referred in Clause 3.5.1 of AS/NZS 1660.3.	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	Requirement: 80 nF/km max. Measured: 24.264 nF/km	P

AS/CA S008:2010+A1:2014			
Clause	Requirement - Test	Result-Remark	Verdict
5.6.6.4	<p>Capacitance unbalance</p> <p>(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.</p> <p>(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.</p> <p>(c) The measurement shall be performed on a minimum cable length of 100m.</p> <p>(d) The capacitance unbalance between two pairs of wires with one pair designated 'A' and 'B' and the second pair designated 'C' and 'D'.</p> <p>(e) The capacitance unbalance shall be corrected to a length of 500m.</p>	<p>Requirement: 300 pF per 500m max.</p> <p>Measured: 30 pF</p>	P
5.6.6.5	<p>Insulation resistance</p> <p>(a) shall not be less than the relevant value given in Table 5;</p> <p>(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</p> <p>(c) the insulation resistance shall be corrected to a length of 1000m.</p>	<p>Requirement: 1000MΩ/km min</p> <p>Measured: > 1000MΩ/km</p> <p>Refer to Appendix A.</p>	P

AS/CA S008:2010+A1:2014			
Clause	Requirement - Test	Result-Remark	Verdict
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.		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 Where a cable is claimed to have specific attributes, such as rodent or termite resistance or armouring strength, evidentiary documentation shall be made available on request to support the claim.		N
5.6.11	Metallic paired cable		P
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.		P
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		N
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.		N
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.		N
5.6.13	Cords with metallic conductors		N
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		N
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.		N
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.		N

AS/CA S008:2010+A1:2014			
Clause	Requirement - Test	Result-Remark	Verdict
5.6.14	Metallic jumper wire and jumper cable		N
5.6.15	Coaxial cable		N
5.6.16	Optical fibre cable		N
5.6.17	Blown fibre tube systems		N
5.6.18	Special application cables		N

AS/CA S008:2010+A1:2014			
Clause	Requirement - Test	Result-Remark	Verdict
5.7	CONNECTING HARDWARE, INCLUDING PLUGS AND SOCKETS OF ALL DESIGNS		N
5.7.1	General		N
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		N
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 60352-4 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 6.4.2 (Voltage proof) of IEC 60603-7.		N
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.		N
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
5.7.1.6	Access to cable terminations All telecommunications terminations shall be enclosed or located to prevent unintentional contact with voltages other than SELV by a person who is not doing cabling work (e.g. an end-user).		N
5.7.1.7	Prohibited arrangements A connecting device's faceplate for telecommunications wiring shall not incorporate a low voltage fixed socket-outlet or switch.		N

AS/CA S008:2010+A1:2014			
Clause	Requirement - Test	Result-Remark	Verdict
5.7.2	<p>Eight (8) position modular plugs and sockets</p> <p>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 606037:</p> <p>6.4.2 Voltage proof</p> <p>6.4.3 Current - temperature derating</p> <p>6.4.4 Initial contact resistance</p> <p>6.6.1 Mechanical operation (Cycle)</p> <p>6.6.2 Effectiveness of a connector coupling device</p>		N
5.7.3	<p>Six (6) position modular plugs and sockets</p> <p>Six (6) position modular plugs and sockets shall-</p> <p>(a) be mechanically designed according to CFR FCC 68.500 (a) and (b) ; and</p> <p>(b) In addition to the general requirements of Clause 5.7.1, shall comply with the following Clauses of IEC 60603-7:</p> <p>6.4.2 Voltage proof</p> <p>6.4.3 Current - temperature derating</p> <p>6.4.4 Initial contact resistance</p> <p>6.6.1 Mechanical operation (Cycle)</p> <p>6.6.2 Effectiveness of a connector coupling device</p>		N
5.7.4	600 series plugs and sockets		N

AS/CA S008:2010+A1:2014			
Clause	Requirement - Test	Result-Remark	Verdict
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

Appendix A – Additional Test Data

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 upwards (mm)* (>50mm)	Extent of burning downwards (mm)* (<540mm)	Result
1	UTP	60 sec	36 sec	NI	NI	NI	None	335mm	215mm	Pass

Note: Measured from lower edge of upper clamp. Start of burn was 475 mm from upper clamp (clause 3.3.4.1 of AS 1660.5.6). Limit for upward burn is > 50 mm and limit for downward burn is <540 mm from upper clamp (Appendix A of AS 1660.5.6).

5.6.6.2	TABLE: Cable - Electric strength measurements at operating temperature		P
Test voltage applied between:	Test voltage (V)	breakdown Yes / No	
Pin 1 to all other conductors	1500 V a.c. 2 seconds	No	
Pin 2 to all other conductors	1500 V a.c. 2 seconds	No	
Pin 3 to all other conductors	1500 V a.c. 2 seconds	No	
Pin 4 to all other conductors	1500 V a.c. 2 seconds	No	
Pin 5 to all other conductors	1500 V a.c. 2 seconds	No	
Pin 6 to all other conductors	1500 V a.c. 2 seconds	No	
Pin 7 to all other conductors	1500 V a.c. 2 seconds	No	
Pin 8 to all other conductors	1500 V a.c. 2 seconds	No	
All conductors to sheath	3000 V a.c. 2 seconds	No	
-	-	-	

5.6.6.5	TABLE: Insulation Resistance		Pass
Test voltage applied between:	Test voltage (V)	Insulation Resistance (M Ω /km)	
Wires forming a pair	500Vdc	> 1000	
-			

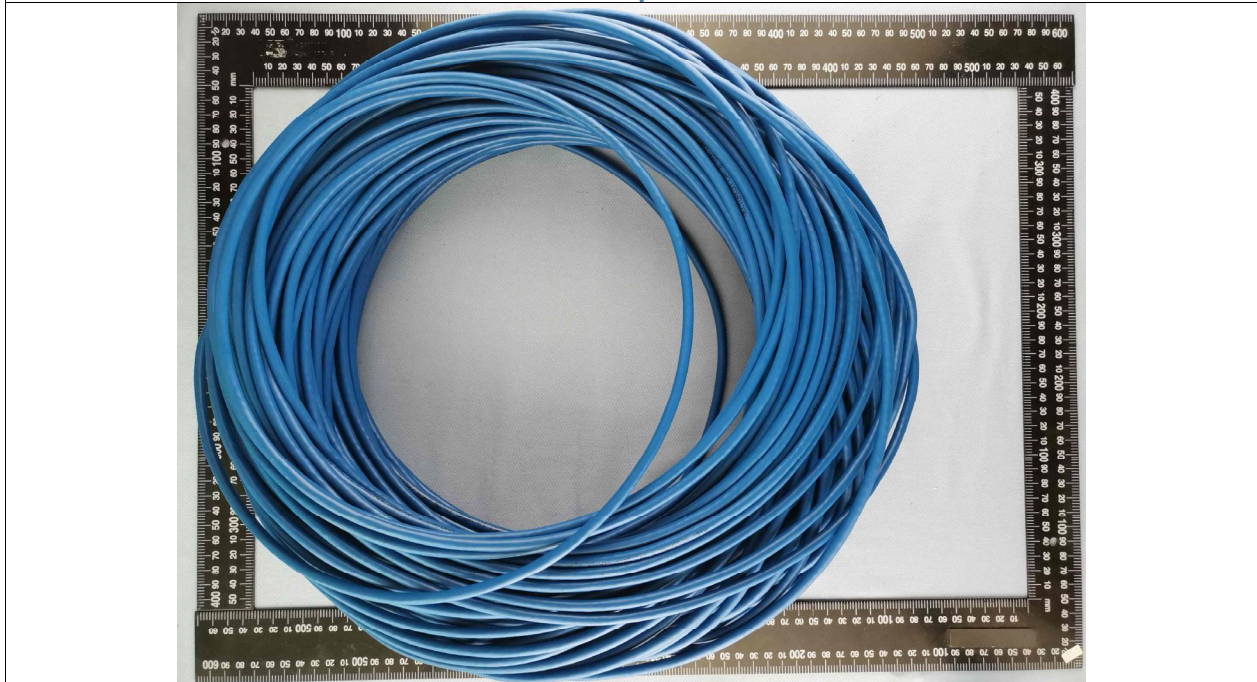
Appendix B – Photo of Sample

Refer to Exhibits_EUT Photos.

-----End of Report -----

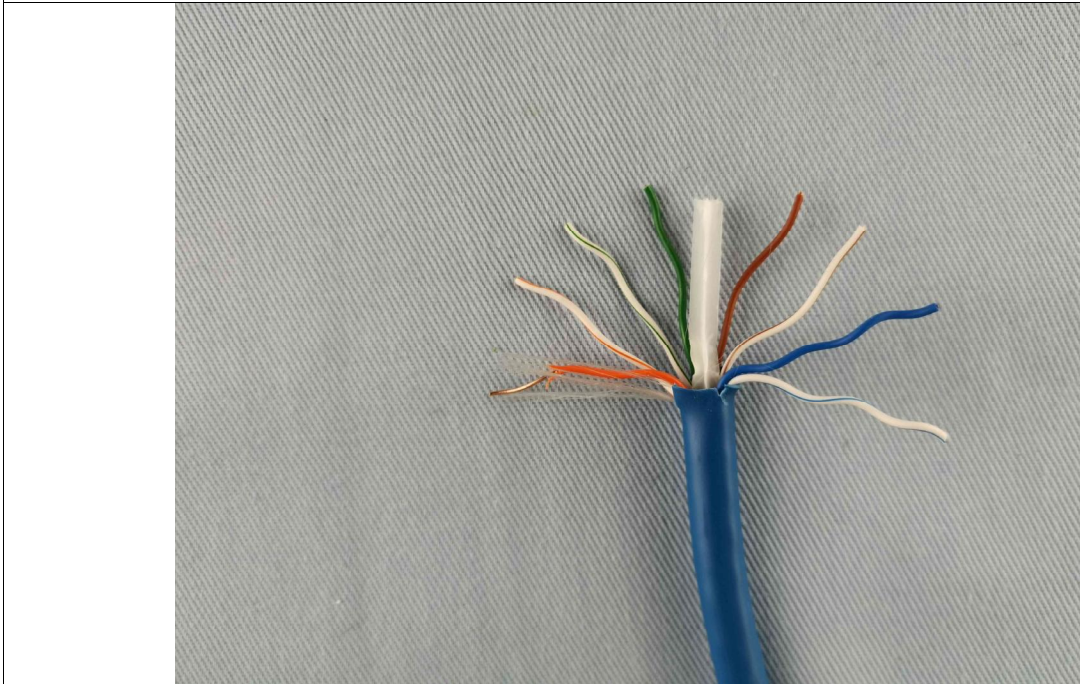
KSZ2020100901RCM01_Exhibits_EUT Photos

EUT top view



KSZ2020100901RCM01_Exhibits_EUT Photos

EUT conductor view



EUT sheath marking view

