COMPLIANCE TESTING REPORT FOR AUSTRALIAN STANDARD AS/CA S008:2020 REQUIREMENTS FOR CUSTOMER CABLING PRODUCTS

Client:	4Cabling Pty Ltd
Address:	4/201 Parramatta Road, Homebush West, NSW 2140
Report Number:	12084CAC6AUUTP_S008
Date of Testing:	05 December to 08 December 2023
File Number:	4CA231101
Product Name:	CAT 6A Building wire
Brand Name	4CABLING
Product Model No.s:	SLD.C6AUUTP.BLACK, SLD.C6AUUTP.BLUE, SLD.C6AUUTP.GREEN, SLD.C6AUUTP.WHITE and SLD.C6AUUTP.YELLOW
Product Description:	Cat 6A U/UTP Cable Roll 305m : 23AWGx4P, PVC Jacket | Supplied on Plastic Reel
Result:	**Complies***
Compiled by:	Philip Hitchcock Test Engineer
Reviewed by:	Nina Rodoreda Test Engineer
Date of Issue	08 December 2023

* **Refer to summary page for any conditions.**

SUMMARY OF COMPLIANCE WITH AUSTRALIAN STANDARD AS/CA S008:2020

The CAT 6A Building wire was supplied for AS/CA S008:2020 testing by 4Cabling Pty Ltd of 4/201 Parramatta Road, Homebush West, NSW 2140, Australia.

The Equipment Under Test (EUT) consisted of CAT 6A Building wire with Black, Blue, Green, White and Yellow sheaths. The datasheet supplied by the client showed that the cable was twisted 4 pair construction with a Rip Cord and High Density Polyethylene (HDPE) Cross Member, High Density Polyethylene (HDPE) insulation, Polyvinyl Chloride (PVC) sheath with Bare Solid Copper conductors and a temperature rating of at least 60°C. The client advised that the conductor diameter was 0.56mm. Please also refer to the photos of the samples tested in Appendix B and the datasheet supplied by the client in Appendix C, at the rear of the report.

The EUT had the following sheath markings:
E502490 (UL) C (UL) 4Cabling CAT6A U/UTP 4PR CMR 23AWG #4099329 07/23 “Made in China” xxxM

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

The CAT 6A Building wire **COMPLIES** with the tested clauses of AS/CA S008:2020.

SPECIAL CONDITIONS FOR COMPLIANCE:
The Cable must comply with Clause 5.6.3 requirements for insulation and sheath materials.

The Cabling Product must comply with Clause 5.1.2 and be fit for purpose for its intended use.

This Cable is compliant for indoor use only.

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/CA S008:2020			
Clause	Requirement - Test	Result - Remark	Verdict
5.	REQUIREMENTS		P
5.1	GENERAL		P
5.1.1	Physically distinguishable Cabling products, other than pits and access holes, shall be physically distinguishable from products used for distribution or connection of Mains Supply.		P
5.1.2	Fitness for purpose A Cabling Product shall be fit for purpose for its intended use, e.g. a Category 6 Cord that meets its performance requirements.		NT
5.1.3	Twisted pair and quad For the purposes of this Standard, a quad is deemed to satisfy a requirement for which a twisted pair has been specified.		N
5.2	MARKINGS		P
5.2.1	Labelling Instrument		ND
5.2.2	Inappropriate markings Cabling products intended solely for ES1 or ES2 telecommunications circuits 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
5.2.3.3	Marking durability		N
5.3	UNDERGROUND CONDUIT		N
5.4	CABLE DISTRIBUTION DEVICES		N
5.5	THIS CLAUSE IS DELETED		ND

AS/CA S008:2020			
Clause	Requirement - Test	Result - Remark	Verdict
5.6	CABLES		P
5.6.1	General A customer Cable shall meet the requirements of Clauses 5.6.2 to 5.6.10 where specified in Clauses 5.6.11 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 coloured stripe.	P
5.6.3	Insulation and sheath material		NT
	(a) shall use insulation and sheath materials suitable for telecommunications purposes;	HDPE insulation PVC sheath	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
	(c) Where non-PVC insulation or sheath materials are used, they shall comply with the requirements of AS 1049 for- (i) Tensile Strength Test (Aged/Unaged); (ii) Elongation Test (Aged/Unaged); and (iii) Shrinkback Tests for that particular type of insulation and sheath.		NT
5.6.4	Flammability A Cable that is required to comply with this Clause shall pass both – (a) the resistance to vertical flame propagation test as specified in AS/NZS IEC 60332.1.2 including Annex A; and (b) the falling flaming droplets/particles test as specified in AS/NZS IEC 60332.1.3 including Annex A.	Refer to table in Appendix A.	P
5.6.5	UV resistance Requirements of AS 1049 for Cables exposed to UV radiation.		N
5.6.6	Metallic conductors		P

AS/CA S008:2020			
Clause	Requirement - Test	Result - Remark	Verdict
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: 76.53 Ω/km max. Measured: 72.01 Ω/km Solid plain 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 2 s 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.		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: 52.53 nF/km	P

AS/CA S008:2020			
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.	Requirement: 300 pF per 500m max. Measured: 0.00 pF per 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: 1000 MΩ/km min Measured: > 1000 MΩ/km	P
5.6.7	Continuous metallic shield (a) any continuous metallic shield provided in the Cable shall be electrically conductive; and (b) Where a continuous 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 5, Method-F5B or F5C of IEC 60794-1-22:2017.		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

AS/CA S008:2020			
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, 5.6.9 and 5.6.10.		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
5.6.11.3	Operating Temperature A Cable shall have a minimum continuous operating temperature rating of 60 ºC	Refer to Appendix C – Datasheet Supplied by the Client	P
5.6.12	Cordage with metallic conductors		N
5.6.13	Cords with metallic conductors		N
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
5.6.19	ES3 generic cable		N
5.7	CONNECTING HARDWARE, INCLUDING PLUGS AND SOCKETS OF ALL DESIGNS		N
5.8	CABLING PRODUCTS FOR UNDERGROUND AND AERIAL INSTALLATIONS		N

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

Appendix A – Additional Test Data
Appendix B – Photographic Record of Samples
Appendix C – Datasheet Supplied by the Client

Appendix A – Additional Test Data

5.6.4	TABLE: Flammability Test	P

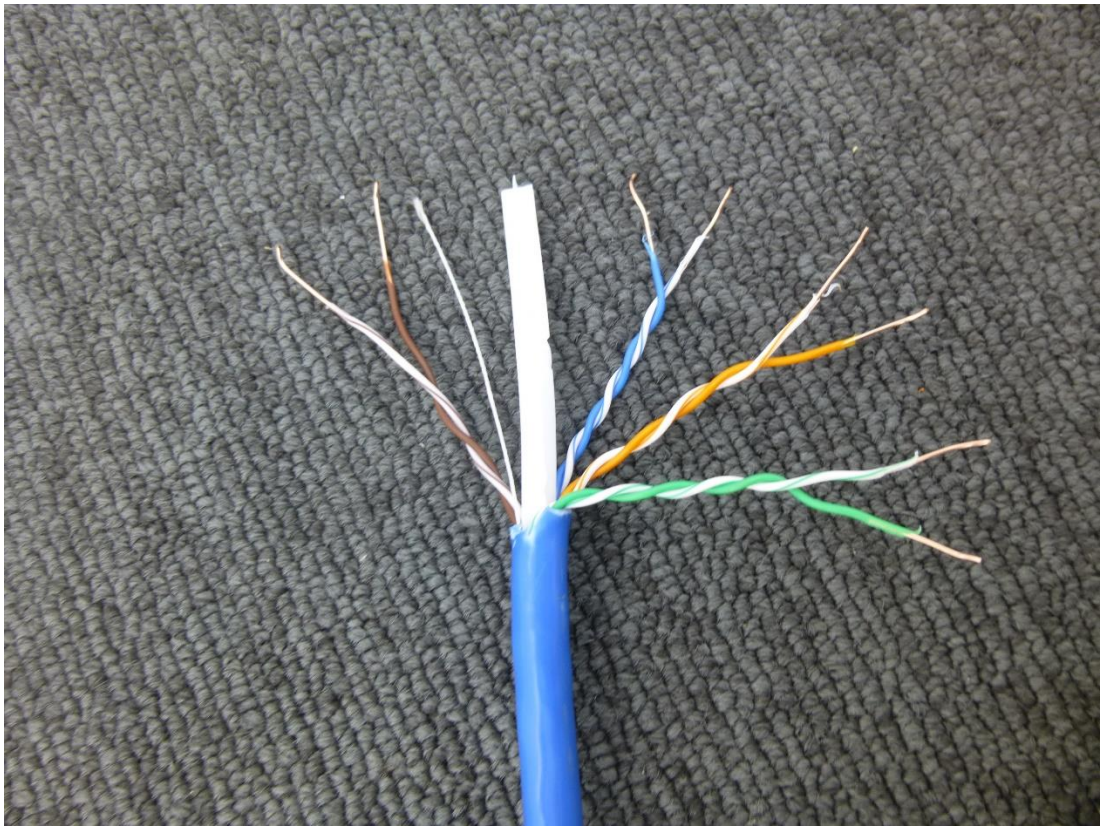
No	Object	Duration of application of flame (S)	Time object remained alight after removal of flame (S)	Time until ignition of tissue paper (S)	Time until ignition of particle board (S)	Ignition of tissue paper	Particle board scorching	Extent of burning upwards (mm)*	Extent of burning downwards (mm)*	Result
1	BLUE CAT6A	60 sec	39 sec	NI	NI	NI	NI	425 mm	515 mm	Pass
2	GREEN CAT6A	60 sec	31 sec	NI	NI	NI	NI	420 mm	510 mm	Pass
3	WHITE CAT6A	60 sec	66 sec	NI	NI	NI	NI	390mm	505mm	Pass
4	BLACK CAT6A	60 sec	64 sec	NI	NI	NI	NI	390mm	510mm	Pass
4	YELLOW CAT6A	60 sec	28 sec	NI	NI	NI	NI	415mm	505mm	Pass

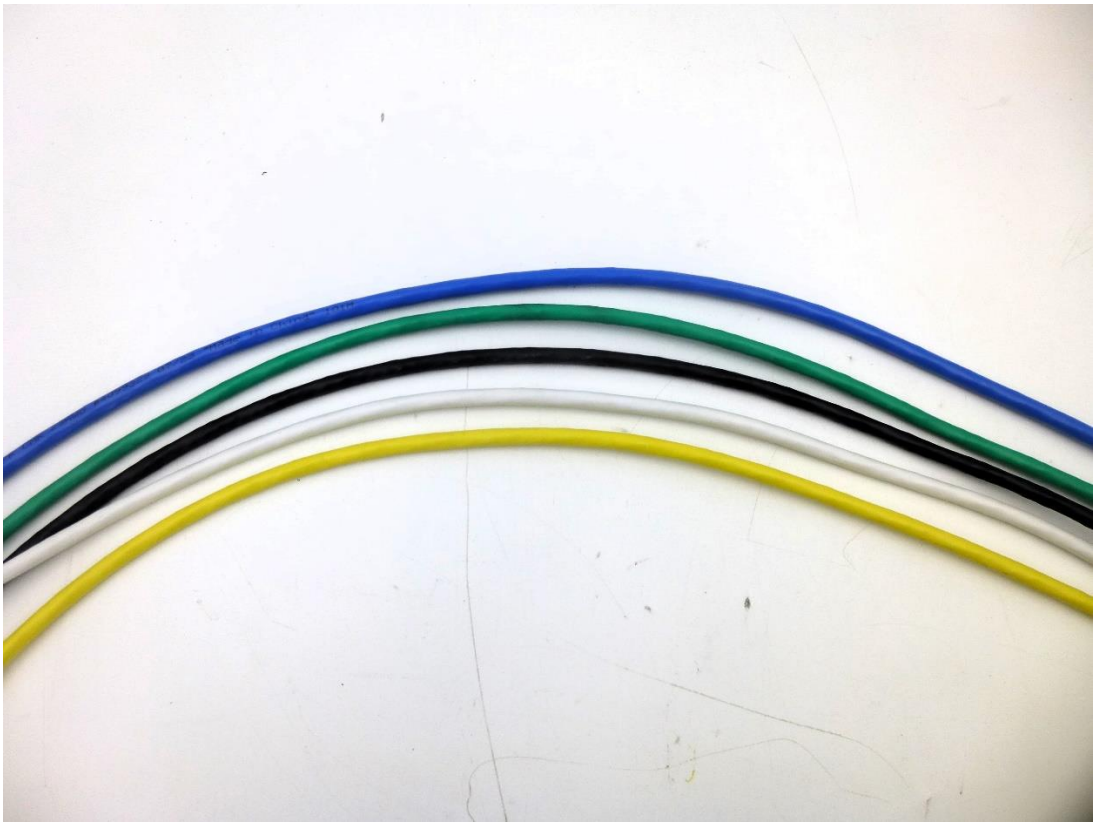
* Measured from lower edge of upper clamp. Start of burn was 475 mm from upper clamp. Limit for upward burn is > 50 mm and limit for downward burn is <540 mm from upper clamp (AS/NZS IEC 60332.1.2 and AS/NZS IEC 60332.1.3).

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 B – Photographic Record of Sample

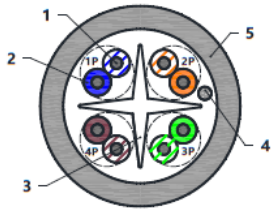




Appendix C – Datasheet Supplied by the Client

Cable Specification

Product Name: Cat6A U/UTP 4X2X23AWG (CMR)

Schema


Product Description	
❶	Inner Conductor
❷	Insulation
❸	Cross Member
❹	Ripcord
❺	Jacket

Construction Item Description			
Conductor	Construction	AWG	23 AWG
	Material	/	Bare Solid Copper
Insulation	Material	/	HDPE 8303
	Proportion	g/cm³	0.97
	Outside Diameter	mm	1.01 ± 0.01
	Average Thickness	mm	0.22
	Color	/	1p: blue stripe + white + blue stripe & blue
			2p: orange stripe + white + orange stripe & orange
			3p: green stripe + white + green stripe & green
			4p: brown stripe + white + brown stripe & brown
Pair Twist	Lay & Direction	/	1p: S=18.5 mm (26%)
			2p: S=15.5 mm (21%)
			3p: S=20.5 mm (30%)
			4p: S=14.0 mm (19%)
Inner Assemble	Lay & Direction	/	S=90 ± 5 mm
Filler	Ripcord	/	300D
	Cross Member	/	HDPE
Outside Shield	Shield	/	/
	Construction	mm	/
	Material	/	/
	Coverage	%	/
Jacket	Material	/	PVC , Rated 60 or 75℃
	Hardness	A	81 ± 3
	Outside Diameter	mm	6.0 ± 0.2
	Average Thickness	mm	0.55 ~ 0.60
	Color	/	according to the customer's requirements
	Marking Color	/	according to the customer's requirements
Marking	Jacket	/	E502490 UL C(UL) CMR 4PR …

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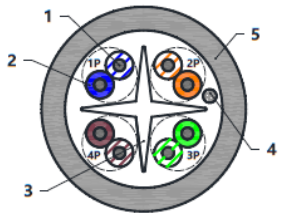


Product Description	
❶ Inner Conductor	Composition : Solid Bare Copper (BC)
	Diameter : See table below
❷ Insulation	Composition : High density Polyethylene (HDPE)
	Diameter : See table below
❸ Filler	Type of filler : Cross-Member
	Composition : High density Polyethylene (HDPE)
❹ Filler	Type of filler : Ripcord
	Composition : Polyester
❺ Jacket	Composition : PVC, Rated 60 or 75℃
	Dimensions : See table below
	color : according to the customer's requirements

Dimensional Table					
Nb pairs	*Section (AWG)*	*Diameter of inner conductor (mm)*	*Diameter of insulated conductor (mm)*	*Minimal thickness of jacket (mm)*	*Diameter of outer jacket (mm)*
4	23	NA	1.01 ± 0.01	0.55 ~ 0.60	6.0 ± 0.2
Diameters of inner conductor and insulated conductor must be designed in order to reach the electrical and transmission properties of CAT6.					

Color Table		
Pair No.	**Conductor 1**	**Conductor 2**
1	blue stripe + white + blue stripe	Blue
2	orange stripe + white + orange stripe	Orange
3	green stripe + white + green stripe	Green
4	brown stripe + white + brown stripe	Brown

Reference Standard								
Materials		**Fire performance**	**Electrical performance**	**Low**	**Zero Halogen (ZH)**		Reach regulation	RoHs Directive
Insulation	**Jacket**			Smoke Density during combustion	Amount of Halogen acid gas during combustion	Degree of acidity (corrosivity) of gases for materials during combustion		
UL444 CSA C22.2 No. 214	UL444 CSA C22.2 No. 214	UL 1666 (RISER CABLE FLAME TEST)	ANSI/TIA-568.2-D ISO/IEC 11801 EN 50173 IEC 61156-5	NA	NA	NA	NA	

Mechanical Properties			
Test Method	According to		
	In Standard	UL444 & CSA C22.2 No. 214	
	Lo=200mm, speed =100mm/min	*Lo=20mm, speed =250mm/min (or 25mm/min for PE&PP insulation)*	
	INNER CONDUCTOR	**INSULATION**	**JACKET**
Tensile Strength (MPa)	-	≥ 10.5 MPa	≥ 13.5 MPa
Elongation (%)	9%~24%	≥ 150 %	≥ 150 %

Thermal Properties	
Operating Temperature Range (°C)	Rated 60 or 75℃

Appendix C – Datasheet Supplied by the Client

Product Name: Cat6A U/UTP 4X2X23AWG (CMR)

Electrical Properties		
Conductor Resistance at 20°C	UL 444 & CSA C22.2 No. 214	≤ 9.5 Ω / 100m
Resistance unbalance within a pair		≤ 2%
Dielectric Strength *Test Voltage (cd/cd): 1.00KV DC or 0.7 KV AC for 1 min* *Test Voltage (cd/screen): 1.00KV DC or 0.7 KV AC for 1 min*		No breakdown
Insulation Resistance at 20°C after 2min of electrification under a DC voltage between 100 & 500V		>1500 MΩ / 100m
Mutual capacitance		5600pF / 100m MAX
Capacitance unbalance pair to ground at 800Hz or 1 kHz		≤ 160 pF / 100m
Characteristic impedance at 100MHz		100 ± 15 Ω
Spark Test		2000 ± 250VOC

Transmission Properties

CAT6A U/UTP

No.	Frequency	Attenuation (Max)	Propagation Delay (Max)	Propagation Delay Skew (Max)	Return Loss (Min)	NEXT (Min)	PS NEXT (Min)	EL-FEXT (Min)	PS EL-FEXT (Min)
	MHz	*dB/100m*	*ns/100m*	*ns/100m*	dB(on 100m)	dB(on 100m)	dB(on 100m)	dB(on 100m)	dB(on 100m)
1	4	3.8	552	45	23.01	66.27	63.27	55.96	52.96
2	8	5.31	546.73	45	24.52	61.75	58.75	49.94	46.94
3	10	5.93	545.38	45	25	60.3	57.3	48	45
4	16	7.49	543	45	25	57.24	54.24	43.92	40.92
5	20	8.38	542.05	45	25	55.78	52.78	41.98	38.98
6	25	9.38	541.2	45	24.32	54.33	51.33	40.04	37.04
7	31.25	10.5	540.44	45	23.64	52.88	49.88	38.1	35.1
8	50	13.36	539.09	45	22.21	49.82	46.82	34.02	31.02
9	62.5	14.99	538.55	45	21.54	48.36	45.36	32.08	29.08
10	100	19.13	537.6	45	20.11	45.3	42.3	28	25
11	125	21.51	537.22	45	19.43	43.85	40.85	26.06	23.06
12	200	27.58	536.55	45	18	40.78	37.78	21.98	18.98
13	250	31.07	536.28	45	17.32	39.33	36.33	20.04	17.04
14	300	34.27	536.08	45	17.3	38.14	35.14	18.46	15.46
15	350	37.25	535.92	45	17.3	37.14	34.14	17.12	14.12
16	400	40.05	535.8	45	17.3	36.27	33.27	15.96	12.96
17	450	42.71	535.7	45	17.3	35.5	32.5	14.94	11.94
18	500	45.26	535.61	45	17.3	34.82	31.82	14.02	11.02

Application
The cable must support class E applications and must be compatible POE, POE+ and UPOE.

Marking	
Type	ink
Color	*According to the customer's requirements*
Text	E502490 UL C(UL) CMR 4PR …

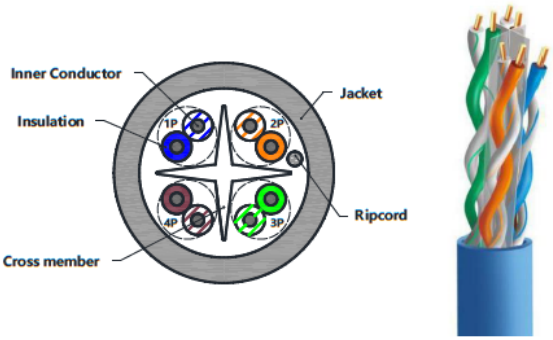
Packing					
Type of Packing	Dimension (mm)	Qt of per Packing (m)	Label Type	Cut Allowed	Tolerance Length (%)
Inner Box	395 X 395 X 230	305	UL 0444 Standard Label	No	0
Master Carton	480 X 410 X 415	305		No	0

Appendix C – Datasheet Supplied by the Client

Cable Specification

Product Name: Cat6A U/UTP 4X2X23AWG (CMR)

Product Design Card					
Product Description: Cat6A U/UTP 4 X 2 X 23AWG (CMR)					
Rev.: A	ECN Description:				
Construction Item Description			**Electrical Property**		
Conductor	Material	Bare Solid Copper (elongation: 19-24%)	Conductor Resistance at 20°C		≤ 9.5 Ω / 100m
	OD	23 AWG	Resistance unbalance within a pair		≤ 5%
Insulation	Material	HDPE 8303	Insulation Resistance at 20°C after 2min of electrification under a DC voltage between 100 & 500V		>1500 MΩ / 100m
	OD	1.01 ± 0.01 mm	Mutual capacitance		5600 pF / 100m MAX
	Average THK	0.22 mm	Capacitance unbalance pair to ground at 800Hz or 1 kHz		≤ 160 pF / 100m
	Color	1p: white + 2 blue stripes & blue	Characteristic impedance at 100MHz		100 ±15 Ω
		2p: white + 2 orange stripes & orange	Dielectric Strength Test Voltage (cd/cd,cd/screen): 1.00KV DC or 0.7 KV AC for 1 min		No breakdown
		3p: white + 2 green stripes & green	**Mechanical Property**		
		4p: white + 2 brown stripes & brown	insulation	elongation before aging	≥ 300%
Pair Twist	Lay & Direction	1p: S=18.5 mm (26%)		tensile strength before aging	≥12 MPa
		2p: S=15.5 mm (21%)		elongation after aging	≥ 150 %
		3p: S=20.5 mm (30%)		tensile strength after aging	≥10.5 MPa
		4p: S=14.0 mm (19%)	jacket	elongation before aging	≥ 150 %
	OD	/		tensile strength before aging	≥ 13.5 MPa
Inner Assemble	Lay	S=90±5 mm		elongation after aging	≥ 125 %
	Direction	according to the drawing		tensile strength after aging	≥ 12.5 MPa
	Filler	cross member 4.8X4.8X0.5mmT	**Packing**		
	OD	/	Inner Box + UL 0444 Standard Label		395 X 395 X 230mm
Filler	Material	Ripcord	Master Carton		480 X 410 X 415mm
	Construction	300D			
Outside Shield	Shield	/			
	Construction	/			
	Material	/			
	Coverage	/			
Jacket	Material	PVC, Rated 60 or 75℃			
	Hardness	81 ±3			
	OD	6.0 ± 0.2			
	Average THK	0.55~0.60			
	Color	according to the customer's requirements			
	Marking Color	according to the customer's requirements			
Marking		E502490 UL C(UL) CMR 4PR...			



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