

PRODUCT SPECIFICATION

Part No: BERK-TEK5ECMR			DESC: Hyper+5e, CAT5E, CMR, UTP, XXXX				Drawn by		Approved	
REV	ECN	Date	Revision							
K	3763	0822012	2.5, 3.4, 3.5, 3.6, 3.8, 3.12, 5.0				DSCO\HHEL		ELAW	

1.0 Description:

Installation Environment:

- May be installed as general building or riser wiring in accordance with the National Electrical Code (NFPA 70) and the National Building Code of Canada
- C(ETL)US listed as NEC Type CMR 75C

Standard Compliance:

- ANSI/TIA-568-C.2 Category 5e
- ISO/IEC 11801 Category 5
- Meets UL 444 & C22.2 No.214-02.
- EU Directive 2002/95/EC (RoHS)

2.0 Construction Details:

- 2.1 Primary - 24 AWG, bare copper, 0.020" nominal diameter;
HD Polyethylene insulation, 0.008" nominal wall, 0.035" nominal diameter.
- 2.2 Twisted Pair - Two primaries shall be twisted together with varying lays to reduce crosstalk.
- 2.3 Color Code - Wht/Blu // Blu, Wht/Org // Org, Wht/Grn // Grn, Wht/Brn // Brn.
- 2.4 Core - The four pairs shall be cabled together.
- 2.5 Jacket: Flame-Retardant Polyvinyl Chloride, 0.187" nominal jacket diameter.
Ripcord provided under Jacket. See Chart on last page for jacket colors & Berk-Tek P/Ns.

3.0 Electrical Details @ 20° C [F is the frequency in MHz]: Table Values are provided for reference only.

3.1 Minimum Return Loss (dB):

Frequency Range from	1 to 10 MHz	10 to 20 MHz	20 to 100 MHz
Return Loss (dB) - Min.	20 + 5 Log(F)	25	25 - 7 Log(F/20)

Frequency (MHz)	1	4	8	10	16	20	25	31.25	62.5	100	150	200	250
RL (dB) minimum	20.0	23.0	24.5	25			24.3	23.6	21.5	20.1	18.9	18.0	17.3

3.2 Input Impedance (Ohms):

Frequency Range (MHz)	1-100 MHz
Input Impedance (Ohms)	100 Ω ±15%

Frequency (MHz)	1	4	8	10	16	20	25	31.25	62.5	100
Input Impedance (Ohms) min.	85									
Input Impedance (Ohms) max.	115									

The Input Impedance values specified above are based on swept frequency cable measurements as per the requirements of ISO/IEC 11801. No curve fitting or smoothing functions are used to enhance the measured values.

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3.3 Maximum Attenuation (dB/100 m):

Maximum Attenuation (dB/100 m) from 1 to 100 MHz	$1.967\sqrt{F} + 0.023F + \frac{0.050}{\sqrt{F}}$
Frequency (MHz)	1 4 8 10 16 20 25 31.25 62.5 100 150 200 250
Attenuation (dB/100 m) max.	2.0 4.1 5.8 6.5 8.2 9.3 10.4 11.7 17.0 22.0 27.5 32.4 36.9

3.4 Minimum Near-end Crosstalk (NEXT) and Power Sum Near End Crosstalk (PS-NEXT) Loss of Pair Combination (dB):

Minimum NEXT (dB) from 1 to 100 MHz	36.3 - 15 Log (F/100)
Minimum PS-NEXT (dB) from 1 to 100 MHz	32.3 - 15 Log (F/100)

Frequency (MHz)	1	4	8	10	16	20	25	31.25	62.5	100	150	200	250
NEXT (dB) min.	66.3	57.3	52.8	51.3	48.3	46.8	45.3	43.9	39.4	36.3	33.7	31.8	30.3
PS-NEXT (dB) min.	62.3	53.3	48.8	47.3	44.3	42.8	41.3	39.9	35.4	32.3	29.7	27.8	26.3

3.5 Minimum Attenuation-to- Crosstalk Ratio (ACR) and Minimum Attenuation to Power Sum Crosstalk Ratio (PS-ACR) (dB):

Minimum ACR(dB) from 1 to 100 MHz	$36.3 - 15 \text{ Log } (F/100) - [1.967\sqrt{F} + 0.023F + \frac{0.050}{\sqrt{F}}]$
Minimum PS-ACR(dB) from 1 to 100 MHz	$32.3 - 15 \text{ Log } (F/100) - [1.967\sqrt{F} + 0.023F + \frac{0.050}{\sqrt{F}}]$

Frequency (MHz)	1	4	8	10	16	25	31.25	62.5	100	165	195
ACR (dB) minimum @ 100 m	64.3	53.2	47.0	44.8	40.0	34.9	32.2	22.4	14.3	4.0	0
PS-ACR (dB) minimum @ 100 m	60.3	49.2	43.0	40.8	36.0	30.9	28.2	18.4	10.3	0	-

3.6 Minimum Attenuation to Crosstalk ratio, far-end (ACRF) and Power Sum Attenuation to Crosstalk ratio, far-end (PSACRF) Loss of any Pair Combination (dB at 100 m):

Minimum ACRF (dB) from 1 to 100 MHz	23.8 - 20 Log (F/100)
Minimum PS-ACRF (dB) from 1 to 100 MHz	20.8 - 20 Log (F/100)

Frequency (MHz)	1	4	8	10	16	20	25	31.25	62.5	100	150	200	250
ACRF (dB) minimum	63.8	51.7	45.7	43.8	39.7	37.7	35.8	33.9	27.8	23.8	20.2	17.7	15.8
PS-ACRF (dB) minimum	60.8	48.7	42.7	40.8	36.7	34.7	32.8	30.9	24.8	20.8	17.2	14.7	12.8

3.7 Maximum Propagation Delay (ns at 100 m):

Maximum Propagation Delay from 1 to 100 MHz	$534 + \frac{36}{\sqrt{F}}$
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Frequency (MHz)	1	4	8	10	16	20	25	31.25	62.5	100	150	200	250
Propagation Delay (ns) maximum	570	552	547	545	543	542	541	540	539	538	537	537	536

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Rev. **K**

- 3.8 Nominal Mutual Capacitance: 4.9 nF/100 m at 1 kHz.
- 3.9 Maximum Capacitance Unbalance (Pair-to-Ground) at 1 kHz: 330 pF/100 m.
- 3.10 Maximum Conductor DC Resistance: 9.38 Ω /100 m.
- 3.11 DC Resistance Unbalance of a Pair: 5% Maximum, 1% Nominal.
- 3.12 Nominal pair velocity of propagation: 70% nominal.
- 3.13 Time Delay Skew: 25-nsec/100 m maximum

4.0 Legend:

"BERK-TEK HYPER-PLUS 24 AWG CMR 75C C(ETL)US MEETS UL 444 ETL
VERIFIED TIA-568-C.2 CAT 5E & ISO/IEC 11801 CAT 5 [datecode] (sequential#) FT"

5.0 Finished Cable Weight:

17.8 pounds per 1,000 feet nominal.

6.0 Mechanical Details:

Minimum Bend Radius: 1.00"

7.0 Product List:

COLOR	BT P/N	DESCRIPTION	COLOR	BT P/N	DESCRIPTION
GRAY	10032508	Hyper+5e, CAT5E, CMR, UTP, GRRB	BLUE	10032526	Hyper+5e, CAT5E, CMR, UTP, BLRB
GRAY	10032509	Hyper+5e, CAT5E, CMR, UTP, GRRL	BLUE	10032527	Hyper+5e, CAT5E, CMR, UTP, BLRL
GRAY	10032510	Hyper+5e, CAT5E, CMR, UTP, GRTP	BLUE	10032528	Hyper+5e, CAT5E, CMR, UTP, BLTP
WHITE	10032533	Hyper+5e, CAT5E, CMR, UTP, WHRB	VIOLET		Hyper+5e, CAT5E, CMR, UTP, VIRB
WHITE	10032534	Hyper+5e, CAT5E, CMR, UTP, WHRL	VIOLET	10068825	Hyper+5e, CAT5E, CMR, UTP, VIRL
WHITE	10032535	Hyper+5e, CAT5E, CMR, UTP, WHTP	VIOLET	10044832	Hyper+5e, CAT5E, CMR, UTP, VITP
BLACK	10163324	Hyper+5e, CAT5E, CMR, UTP, BKRB	ORANGE		Hyper+5e, CAT5E, CMR, UTP, ORRB
BLACK	10044105	Hyper+5e, CAT5E, CMR, UTP, BKRL	ORANGE	10073294	Hyper+5e, CAT5E, CMR, UTP, ORRL
BLACK	10032536	Hyper+5e, CAT5E, CMR, UTP, BKTP	ORANGE	10033808	Hyper+5e, CAT5E, CMR, UTP, ORTP
RED	10163325	Hyper+5e, CAT5E, CMR, UTP, RDRB	PINK	10043082	Hyper+5e, CAT5E, CMR, UTP, PKRB
RED	10034515	Hyper+5e, CAT5E, CMR, UTP, RDRL	PINK	10116980	Hyper+5e, CAT5E, CMR, UTP, PKRL
RED	10033584	Hyper+5e, CAT5E, CMR, UTP, RDTP	PINK	10032532	Hyper+5e, CAT5E, CMR, UTP, PKTP
GREEN	10032537	Hyper+5e, CAT5E, CMR, UTP, GNRB	YELLOW	10032529	Hyper+5e, CAT5E, CMR, UTP, YLRB
GREEN	10032538	Hyper+5e, CAT5E, CMR, UTP, GNRL	YELLOW	10032530	Hyper+5e, CAT5E, CMR, UTP, YLRL
GREEN	10032539	Hyper+5e, CAT5E, CMR, UTP, GNTP	YELLOW	10032531	Hyper+5e, CAT5E, CMR, UTP, YLTP
BROWN		Hyper+5e, CAT5E, CMR, UTP, BRRB			
BROWN	10116981	Hyper+5e, CAT5E, CMR, UTP, BRRL			
BROWN	10104234	Hyper+5e, CAT5E, CMR, UTP, BRTP			