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February 12, 2010

Test report number 100026692CRT-001d
Project number 100026692-311

Nexans Inc. dba Berk-Tek
132 White Oak Road
New Holland, PA 17557

TEST:

Final qualification testing of a 100 Ω, 4 Pair telecommunication cable electrical performance to the requirements of ANSI/TIA-568-C.2 for Category 6A cable and to the client's custom enhanced specification.

STANDARDS USED:

Berk-Tek LANmark 10G2 Custom Specification, Revision 4.0, Dated June 30, 2009

ANSI/TIA-568-C.2 Balanced Twisted-Pair Telecommunications Cabling and Components Standards, dated August 2009

SECTIONS:

6.4: Horizontal cable transmission performance (6.4.1 to 6.4.27) of ANSI/TIA-568-C.2

AUTHORIZATION:

The project was authorized by Mr. Joel Fasnacht, representing the client, Nexans Inc. dba Berk-Tek, with signed quotation number 500199340.

SAMPLE DESCRIPTION:

An Intertek representative randomly selected 800 meters of a Category 6A, 4-Pair, 23 AWG, UTP, Non-Plenum Riser, Horizontal (solid) cable, identified as part number 10137700. The cable was bundled in a 6 around 1 configuration. The sample was received on January 14, 2009 and was in good condition.

EQUIPMENT LIST:

The following equipment was employed in conducting the tests.

<u>Equipment used</u>	<u>Model number</u>	<u>Control number</u>	<u>Calibration date</u>	<u>Calibration due date</u>
HP Automatic Cable Test System	46152A	E307	2/27/2009	2/27/2010

DATE OF TEST:

January 15, 2010

TEST REPORT REVISION HISTORY:

First Issue: February 12, 2010 Original Document



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RESULTS: See appendix A for the test results

CONCLUSION:

The 100 Ω , 4 Pair telecommunication cable, as previously described and randomly selected by an Intertek representative, was tested in accordance with the standards referred to on page 1, and did comply with the indicated applicable transmission requirements. The testing was performed at Intertek located in Cortland, New York.

The procedures and requirements were taken from the standard referred to on page 1.

Reviewed and Approved By:

Antoine Pelletier
Engineer
Global Cabling Products Testing

John Cash
Technician
Global Cabling Products Testing



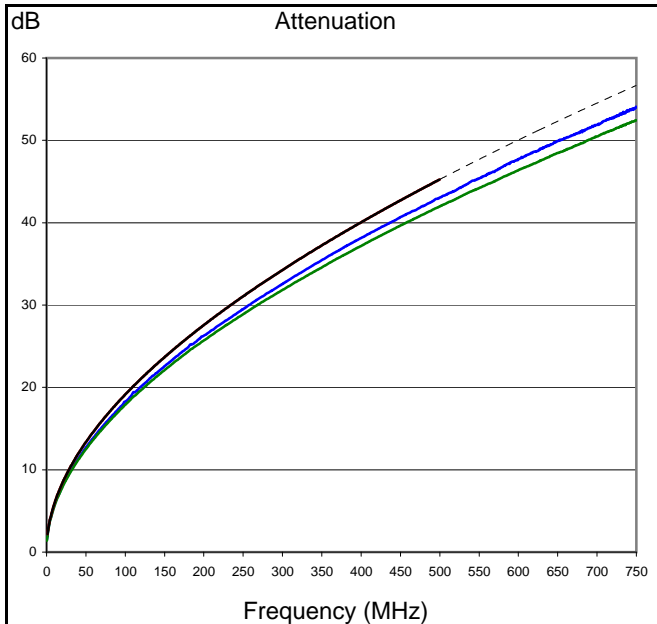
Appendix A
Summary test results

This appendix contains 7 pages.

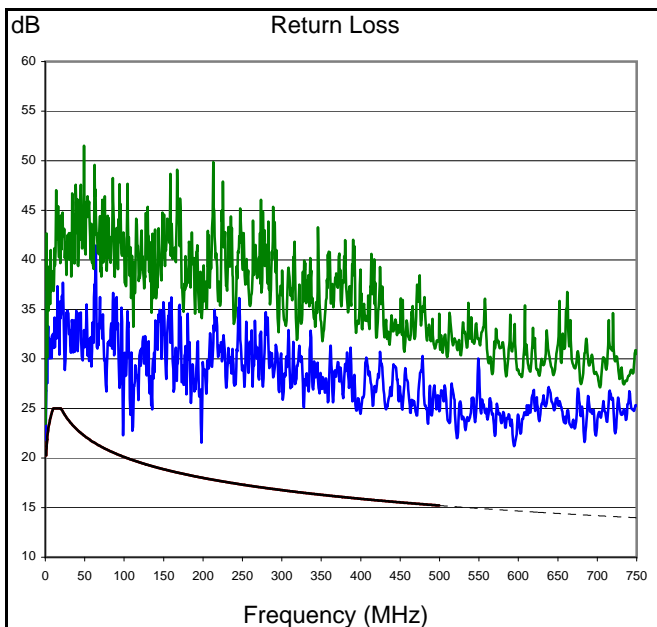
Summary

Client Nexans, INC, DBA Berk-Tek
Specifications Berk-Tek LANmark-10G2 CMR
 ANSI/TIA-568-C.2, Category 6A
Part number 10137700
Description **Berk-Tek LANmark-10G2 CMR**
 4X23 UTP-CMR-Solid

Test Started 1/15/2010 10:16
Technician John Cash
Report No. 100026692CRT-001d
Length (m) 100.00
Temperature 20 °C
Test Status **PASS**



Attenuation				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	2.0	1.9	2.2	2.2
4	3.8	3.7	3.9	3.9
8	5.1	5.0	5.3	5.3
10	5.7	5.6	5.9	5.9
16	7.2	7.0	7.5	7.5
20	7.9	7.8	8.3	8.3
25	8.9	8.8	9.4	9.4
31.25	9.3	9.2	9.8	9.8
62.5	14.2	14.0	15.0	15.0
100	18.3	17.9	19.1	19.1
250	29.5	28.9	31.1	31.1
500	43.0	42.0	45.2	45.2
600	47.8	46.4		
750	54.1	52.5		
Limit Margin (dB) :			0.12	0.12
Frequency (MHz) :			3.62	3.62



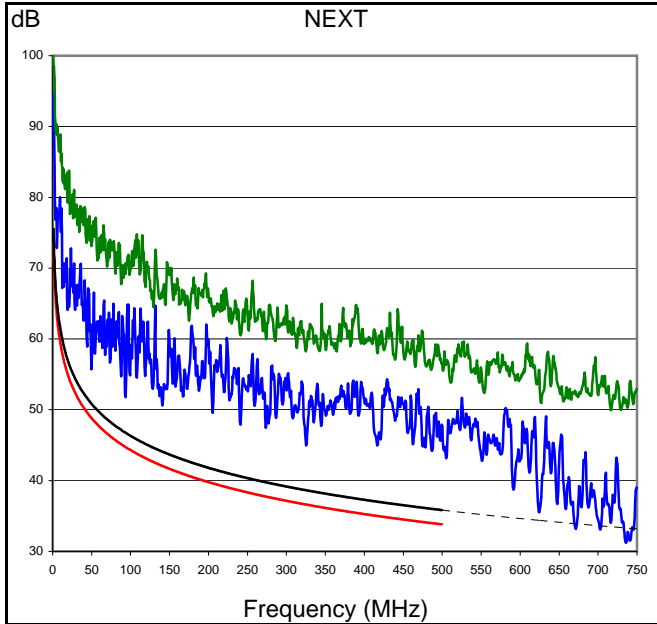
Return Loss				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	26.8	28.5	20.3	20.3
4	30.3	34.8	23.1	23.1
8	30.1	38.1	24.5	24.5
10	32.5	38.9	25.0	25.0
16	34.3	45.4	25.0	25.0
20	34.5	44.5	25.0	25.0
25	28.9	40.2	24.3	24.3
31.25	33.5	39.9	24.0	24.0
62.5	37.5	49.6	21.5	21.5
100	28.3	42.1	20.1	20.1
250	28.8	40.1	17.3	17.3
500	24.7	34.6	15.2	15.2
600	24.3	28.9		
750	25.3	30.5		
Limit Margin (dB) :			2.13	2.13
Frequency (MHz) :			98.58	98.58

Legend : Blue - Worst Case; Green - Average; Red - TIA Specification; Black - LANmark Specification

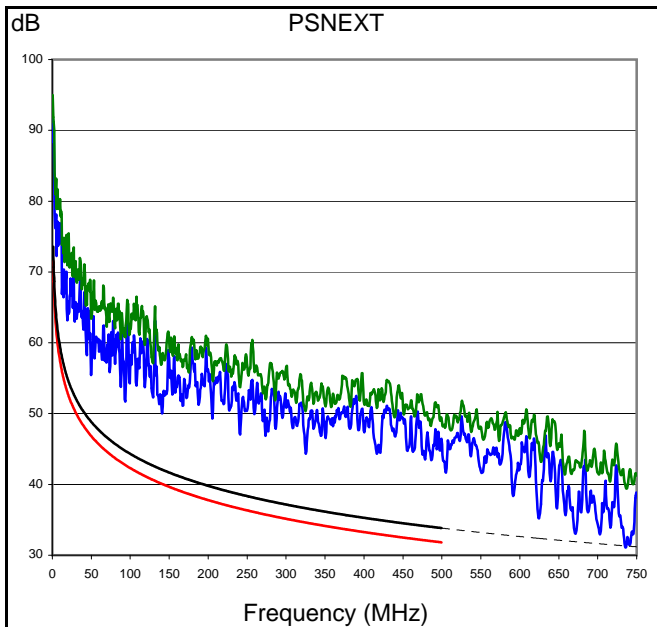
Summary

Client Nexans, INC, DBA Berk-Tek
Specifications Berk-Tek LANmark-10G2 CMR
 ANSI/TIA-568-C.2, Category 6A
Part number 10137700
Description **Berk-Tek LANmark-10G2 CMR**
 4X23 UTP-CMR-Solid

Test Started 1/15/2010 10:16
Technician John Cash
Report No. 100026692CRT-001d
Length (m) 100.00
Temperature 20 °C
Test Status **PASS**



NEXT				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	89.6	98.6	75.5	73.5
4	77.1	89.4	66.9	64.9
8	77.8	86.5	62.8	60.8
10	77.3	88.9	61.4	59.4
16	70.6	81.2	58.2	56.2
20	66.8	82.8	56.8	54.8
25	68.2	79.0	55.4	53.4
31.25	70.7	81.1	54.8	52.7
62.5	61.6	72.6	49.4	47.4
100	56.5	70.3	46.3	44.3
250	53.1	64.1	40.4	38.3
500	47.9	56.6	35.8	33.8
600	43.1	54.4		
750	39.0	52.9		
Limit Margin (dB) :			4.87	6.88
Frequency (MHz) :			49.85	49.85



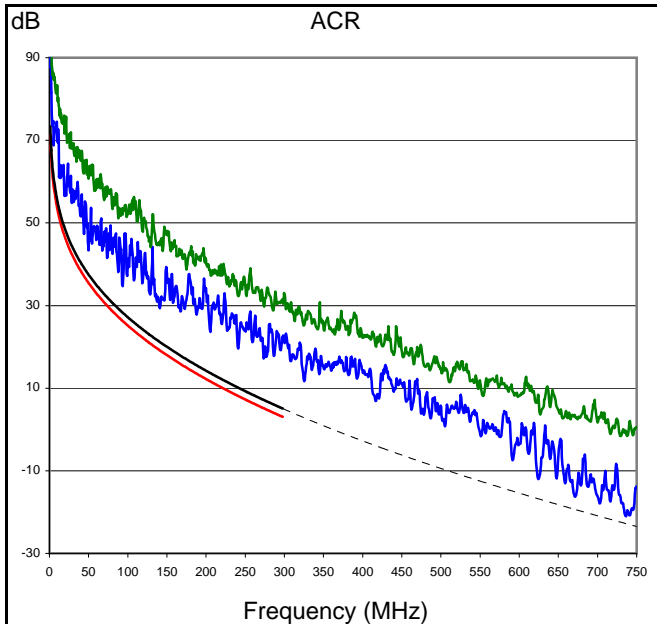
PSNEXT				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	88.3	91.9	73.5	71.5
4	76.4	80.9	64.9	62.9
8	74.8	79.5	60.8	58.8
10	76.5	80.3	59.4	57.4
16	69.3	74.3	56.2	54.2
20	65.9	73.4	54.8	52.8
25	67.6	72.7	53.4	51.4
31.25	69.5	73.5	52.8	50.7
62.5	59.5	64.7	47.4	45.4
100	56.1	62.0	44.3	42.3
250	50.4	57.1	38.4	36.3
500	46.4	49.3	33.8	31.8
600	42.7	48.0		
750	38.8	41.2		
Limit Margin (dB) :			6.60	8.61
Frequency (MHz) :			49.85	49.85

Legend : Blue - Worst Case; Green - Average; Red - TIA Specification; Black - LANmark Specification

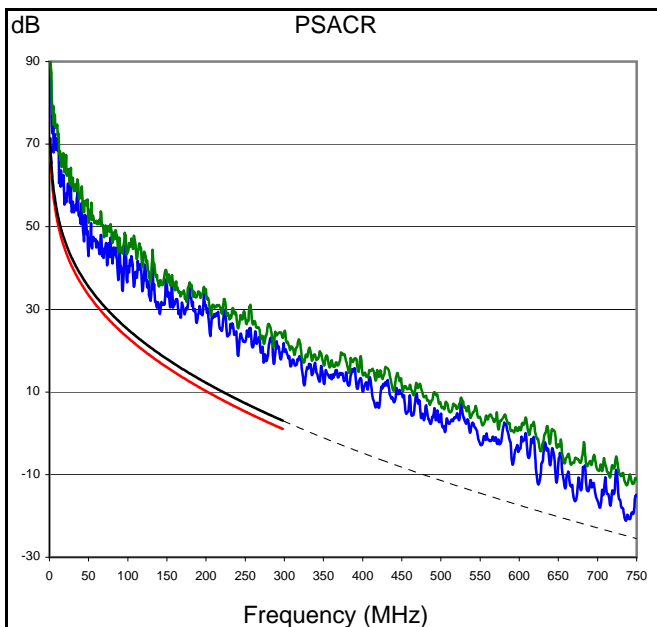
Summary

Client Nexans, INC, DBA Berk-Tek
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 ANSI/TIA-568-C.2, Category 6A
Part number 10137700
Description **Berk-Tek LANmark-10G2 CMR**
 4X23 UTP-CMR-Solid

Test Started 1/15/2010 10:16
Technician John Cash
Report No. 100026692CRT-001d
Length (m) 100.00
Temperature 20 °C
Test Status **PASS**



ACR				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	87.7	96.7	73.4	71.4
4	73.5	85.7	63.0	61.0
8	72.7	81.5	57.5	55.4
10	71.8	83.4	55.5	53.5
16	63.6	74.2	50.7	48.7
20	59.1	75.0	48.5	46.5
25	59.5	70.3	46.0	44.0
31.25	61.4	72.0	44.9	42.9
62.5	47.7	58.7	34.4	32.4
100	38.8	52.6	27.2	25.2
250	24.3	35.3	9.3	7.3
500	5.8	14.8		
600	-3.5	8.2		
750	-13.8	0.6		
Limit Margin (dB) :			5.86	7.88
Frequency (MHz) :			49.85	49.85



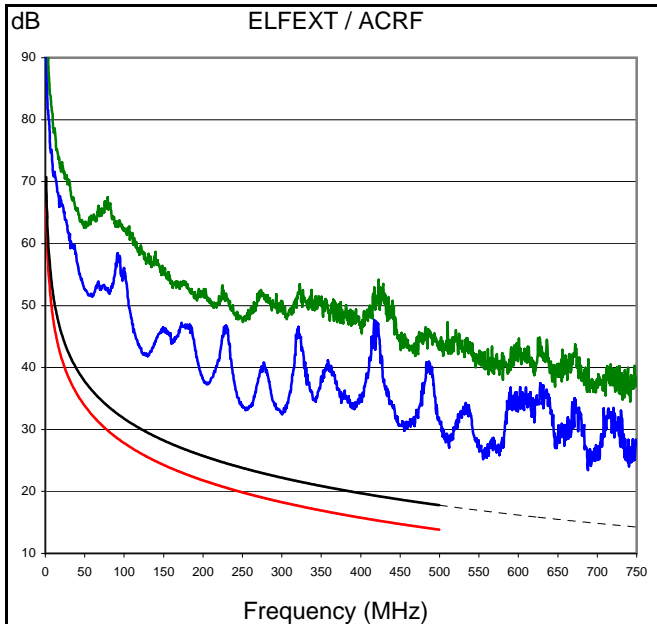
PSACR				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	86.3	89.9	71.4	69.4
4	72.6	77.2	61.0	59.0
8	69.7	74.5	55.5	53.4
10	70.9	74.7	53.5	51.5
16	62.2	67.3	48.7	46.7
20	58.0	65.6	46.5	44.5
25	58.7	63.9	44.0	42.0
31.25	60.4	64.3	42.9	40.9
62.5	45.5	50.7	32.4	30.4
100	38.4	44.1	25.2	23.2
250	22.1	28.2	7.3	5.3
500	4.4	7.3		
600	-3.9	1.6		
750	-14.9	-11.2		
Limit Margin (dB) :			7.41	9.43
Frequency (MHz) :			49.85	49.85

Legend : Blue - Worst Case; Green - Average; Red - TIA Specification; Black - LANmark Specification

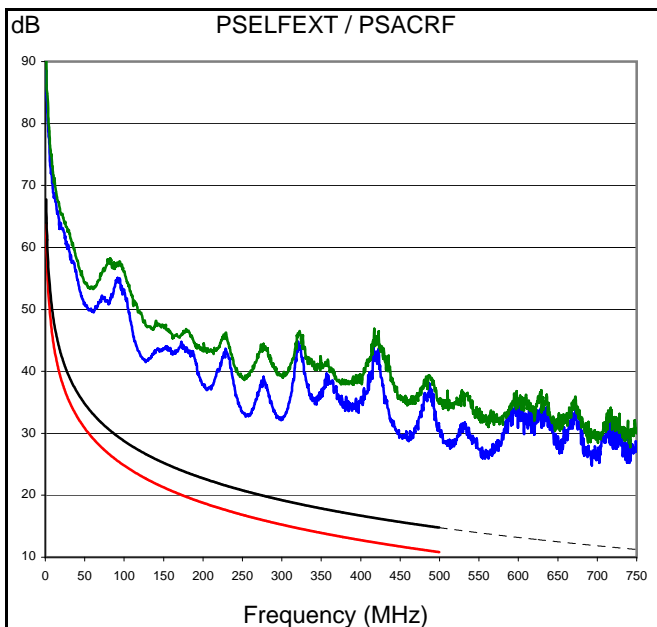
Summary

Client Nexans, INC, DBA Berk-Tek
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 ANSI/TIA-568-C.2, Category 6A
Part number 10137700
Description **Berk-Tek LANmark-10G2 CMR**
 4X23 UTP-CMR-Solid

Test Started 1/15/2010 10:16
Technician John Cash
Report No. 100026692CRT-001d
Length (m) 100.00
Temperature 20 °C
Test Status **PASS**



ELFEXT / ACRF				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	91.0	99.2	70.7	66.8
4	80.4	88.2	59.2	55.2
8	75.1	81.6	53.7	49.7
10	71.5	78.9	51.9	47.9
16	68.2	74.2	47.6	43.7
20	67.0	71.7	45.8	41.8
25	63.9	70.5	43.8	39.9
31.25	63.1	71.0	43.0	39.1
62.5	52.1	63.8	35.9	31.9
100	56.1	62.0	31.8	27.8
250	33.7	47.9	23.8	19.8
500	31.5	43.9	17.8	13.8
600	34.5	42.7		
750	27.5	38.5		
Limit Margin (dB) :		9.41	13.37	
Frequency (MHz) :		254.12	254.12	



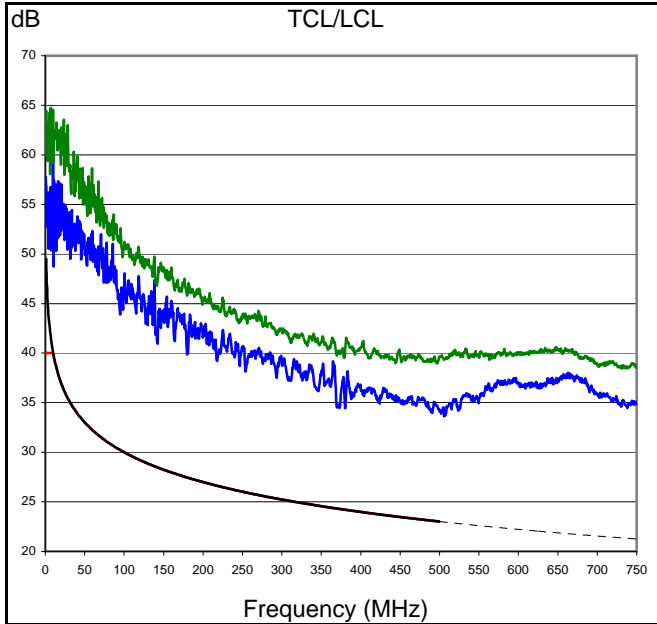
PSELFEXT / PSACRF				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	88.5	93.5	67.7	63.8
4	78.1	80.3	56.2	52.2
8	72.4	75.0	50.7	46.7
10	69.0	71.9	48.9	44.9
16	65.6	67.4	44.6	40.7
20	63.8	65.4	42.8	38.8
25	61.5	63.9	40.8	36.9
31.25	60.4	63.3	40.0	36.1
62.5	49.9	53.7	32.9	28.9
100	53.2	56.1	28.8	24.8
250	33.4	39.1	20.8	16.8
500	30.9	35.3	14.8	10.8
600	33.8	35.3		
750	27.1	30.0		
Limit Margin (dB) :		12.02	15.97	
Frequency (MHz) :		254.12	254.12	

Legend : Blue - Worst Case; Green - Average; Red - TIA Specification; Black - LANmark Specification

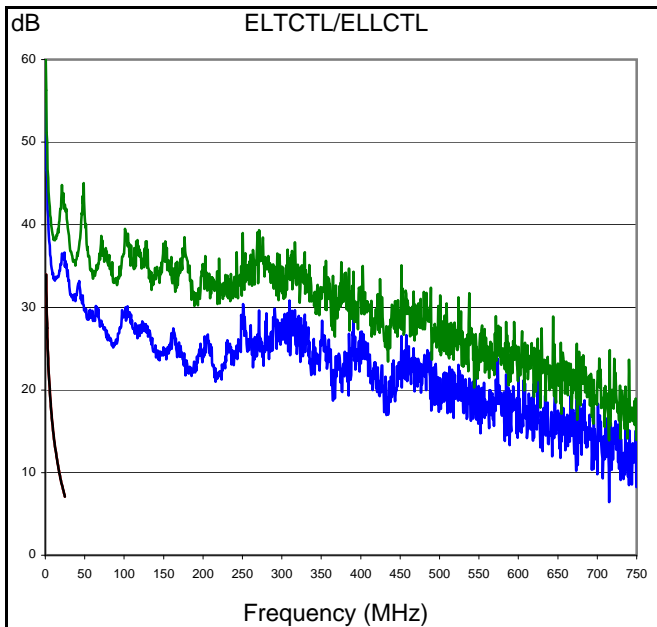
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Part number 10137700
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 4X23 UTP-CMR-Solid

Test Started 1/15/2010 10:16
Technician John Cash
Report No. 100026692CRT-001d
Length (m) 100.00
Temperature 20 °C
Test Status **PASS**



TCL/LCL				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	56.7	64.4	49.5	40.0
4	50.5	61.3	43.7	40.0
8	53.5	59.3	41.0	40.0
10	60.4	64.6	40.1	40.0
16	57.4	60.7	37.9	37.9
20	52.3	59.0	37.0	37.0
25	53.9	62.1	36.0	36.0
31.25	53.6	58.9	35.6	35.6
62.5	49.5	56.0	32.1	32.1
100	46.3	50.7	30.0	30.0
250	40.6	43.8	26.0	26.0
500	34.3	39.7	23.0	23.0
600	36.9	40.0		
750	35.1	38.6		
Limit Margin (dB) :			6.82	8.94
Frequency (MHz) :			4.25	10.50



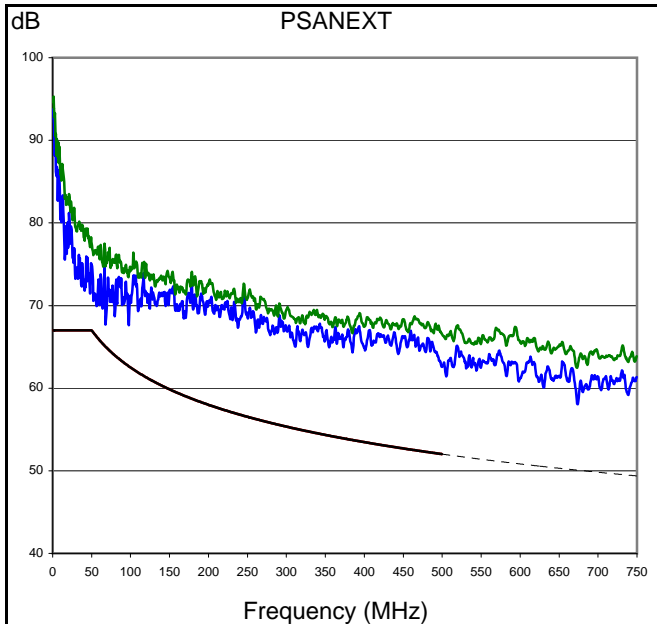
ELTCTL/ELLCTL				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	50.4	56.3	34.0	34.0
4	39.4	44.1	22.4	22.4
8	34.7	39.6	16.9	16.9
10	34.2	38.7	15.1	15.1
16	33.7	39.5	10.9	10.9
20	35.2	41.9	9.0	9.0
25	35.0	42.5	7.1	7.1
31.25	34.6	40.7		
62.5	28.9	34.0		
100	28.9	36.5		
250	28.5	34.8		
500	20.1	27.4		
600	21.7	25.2		
750	8.2	14.0		
Limit Margin (dB) :			16.41	16.41
Frequency (MHz) :			3.00	3.00

Legend : Blue - Worst Case; Green - Average; Red - TIA Specification; Black - LANmark Specification

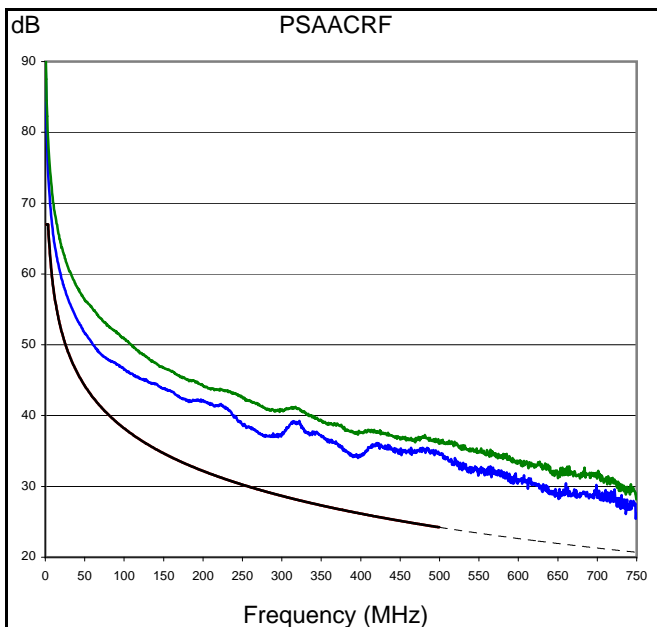
Summary

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 ANSI/TIA-568-C.2, Category 6A
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 4X23 UTP-CMR-Solid

Test Started 1/15/2010 10:16
Technician John Cash
Report No. 100026692CRT-001d
Length (m) 100.00
Temperature 20 °C
Test Status **PASS**



PSANEXT				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	92.6	95.3	67.0	67.0
4	86.2	90.8	67.0	67.0
8	86.4	87.2	67.0	67.0
10	80.4	85.9	67.0	67.0
16	76.2	83.3	67.0	67.0
20	77.0	82.3	67.0	67.0
25	77.3	80.8	67.0	67.0
31.25	76.9	81.8	67.0	67.0
62.5	73.2	76.6	65.6	65.6
100	70.5	74.2	62.5	62.5
250	68.7	70.8	56.5	56.5
500	62.6	66.6	52.0	52.0
600	61.2	65.5		
750	61.4	63.9		
Limit Margin (dB) :			2.70	2.70
Frequency (MHz) :			67.97	67.97

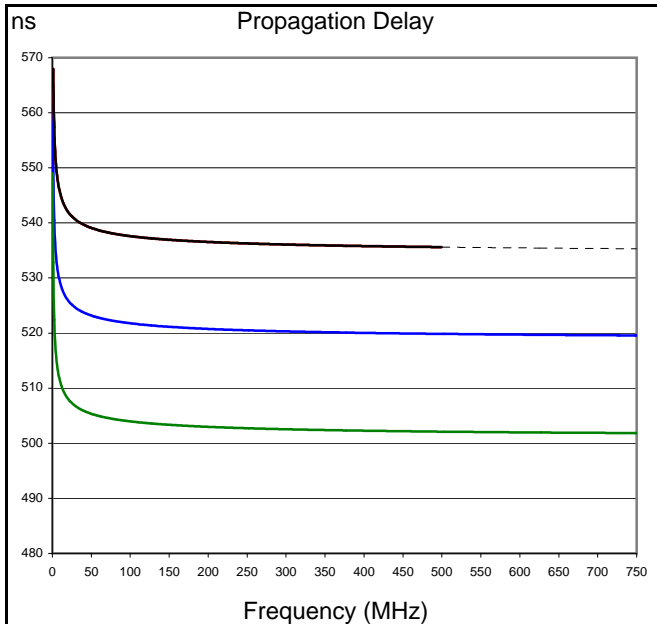


PSAACRF				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	84.4	87.5	67.0	67.0
4	73.3	77.8	65.6	65.6
8	67.5	72.3	60.1	60.1
10	65.6	70.2	58.3	58.3
16	61.5	65.9	54.1	54.1
20	59.7	64.2	52.2	52.2
25	57.8	62.2	50.3	50.3
31.25	57.0	61.5	49.5	49.5
62.5	49.8	54.9	42.3	42.3
100	46.5	50.8	38.2	38.2
250	38.8	42.7	30.2	30.2
500	34.6	36.2	24.2	24.2
600	31.0	33.6		
750	26.2	28.2		
Limit Margin (dB) :			7.01	7.01
Frequency (MHz) :			3.62	3.62

Legend : Blue - Worst Case; Green - Average; Red - TIA Specification; Black - LANmark Specification

Summary

Client	Nexans, INC, DBA Berk-Tek	Test Started	1/15/2010 10:16
Specifications	Berk-Tek LANmark-10G2 CMR ANSI/TIA-568-C.2, Category 6A	Technician	John Cash
Part number	10137700	Report No.	100026692CRT-001d
Description	Berk-Tek LANmark-10G2 CMR 4X23 UTP-CMR-Solid	Length (m)	100.00
		Temperature	20 °C
		Test Status	PASS



Propagation Delay				
Freq. MHz	Worst Case	Average	LANmark Spec	TIA Spec
1	550.8	532.8	567.9	567.9
4	534.9	516.9	551.5	551.5
8	530.4	512.4	546.7	546.7
10	529.2	511.3	545.5	545.5
16	526.8	508.9	543.0	543.0
20	526.0	508.1	542.1	542.1
25	525.2	507.3	541.2	541.2
31.25	524.9	507.0	540.9	540.9
62.5	522.7	504.9	538.6	538.6
100	521.8	504.0	537.6	537.6
250	520.5	502.7	536.3	536.3
500	519.9	502.1	535.6	535.6
600	519.7	502.0		
750	519.6	501.8		
Limit Margin (dB) :			15.75	15.75
Frequency (MHz) :			493.38	493.38

Delay Skew			
Freq. MHz	Worst case	LANmark Spec	TIA Spec
1-500	29.60	45	45

Low frequency measurements						
Parameter	Worst Case	Average	LANmark		TIA	
			Spec	Margin	Spec	Margin
Mutual capacitance (nF/100m)	4.54	4.28	5.60	1.06	5.60	1.06
Maximum Capacitance Unbalance Pair-to-Ground (pF/100m)	122.10	61.38	330.00	207.90	330.00	207.90
Conductor DC resistance (Ω)	7.95	7.12	9.38	1.43	9.38	1.43
DC Resistance Unbalance within a pair (%) using IEC calculation method	0.26%	0.13%	1.50%	1.24%	2.00%	1.74%

Legend : Blue - Worst Case; Green - Average; Red - TIA Specification; Black - LANmark Specification