



# REPORT INTERTEK / ETL SEMKO

3933 US ROUTE 11, CORTLAND, NEW YORK 13045  
Phone Number: 1-800-345-3851 Fax Number: 607-758-3648

ORDER NO.: 3022866-311

DATE: July 25, 2005

REPORT NO.: 3022866-037

## RENDERED TO:

Hubbell Premise Wiring  
14 Lord's Hill Road  
Stonington, CT 06378

**TEST:** Performance testing of the cabling configurations as defined in, and to the requirements of, TIA/EIA – TSB-155, Additional Guidelines for Category 6 Cabling for 10GBASE-T applications.

**STATEMENT OF LIMITATIONS:** At the client's request, the purpose of this report is to provide electrical performance data on the test sample. It is not valid to use this report for any other purpose.

## STANDARDS USED:

ASTM D4566-98, dated December 10, 1998, Standard Test Methods for Electrical Performance Properties of Insulations and Jackets for Telecommunications Wire and Cable

TIA/EIA-568-B.2-1, Addendum 1: Transmission Performance Specifications for 4 Pair, 100  $\Omega$  Category 6 Cabling dated June 2002.

TIA/EIA-TSB-155 dated June 1, 2004-Draft1.0, Additional Guidelines for Category 6 Cabling for 10GBASE-T applications.

**AUTHORIZATION:** The project was authorized by, Dr. Shadi AbuGhazleh, representing the client, Hubbell Premise Wiring.

**DATE OF TEST:** 04/05/2005

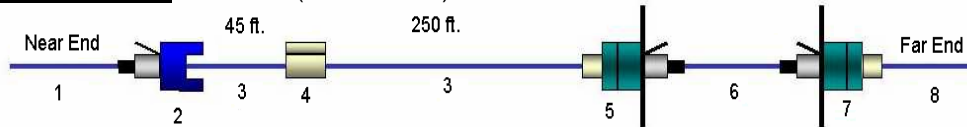
Page 1 of 2

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An independent organization testing for safety, performance, and certification.

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**SAMPLE DESCRIPTION:** Channel (4 Connector)



<u>Component ID</u>	<u>Manufacturer</u>	<u>Part Number</u>	<u>Description</u>
3	Hubbell Premise Wiring	C6RPGY	Horizontal Cable
5,7	Hubbell Premise Wiring	P6E**U	Patch Panel
1,8	Hubbell Premise Wiring	PCX6GY10	Equipment Cord
6	Hubbell Premise Wiring	PCX6GY10	Cross Connect
4	Hubbell Premise Wiring	NS6-110	110 Block
2	Hubbell Premise Wiring	HXJ6	Wall Outlet

The sample was received on and was in condition. All samples were supplied by the client.

**EQUIPMENT LIST:** The following equipment was employed in conducting the tests.

<u>Equipment Used</u>	<u>Model Number</u>	<u>Serial Number</u>	<u>Control Number</u>	<u>Calibration Date</u>
Hewlett Packard Automatic Cable Test System	HP46152A	87CT10L	N/A	11/02/04

**Equipment**

The testing was performed using a Hewlett Packard 46152A Automatic Cable Test System. The system was calibrated using a full 2 port calibration with 801 linearly spaced data points, 300 Hz I/F bandwidth and a 5-second sweep time.

**Measurements**

For the cabling configurations previously described, Attenuation, Near End Cross Talk, Far End Cross Talk and Return Loss were measured in accordance with ASTM D4566. These tests were performed on three separate channels.

**Requirements**

Attenuation, Near End Cross Talk, Power Sum NEXT, Equal Level Far End Cross Talk (ELFEXT), Power Sum ELFEXT and Return Loss were tested to the requirements of TIA/EIA-TSB-155, Cat. 6.

**Results**

The results for the 1 channel test are shown in graphs 1-8. In each plot, the worst case and average readings are compared with the appropriate limits from the category 6 cabling specification.

**Conclusion:**

The channels, as previously described and supplied by the client, were tested in accordance with the procedures contained herein, and did comply with the indicated applicable transmission requirements. The testing was performed at Intertek ETL SEMKO located in Cortland, New York.

These procedures and requirements were taken from the standards referred to on page 1.

Reviewed and Approved By:

Stephen R. Comer  
 Laboratory Supervisor  
 Global Cabling Products Testing

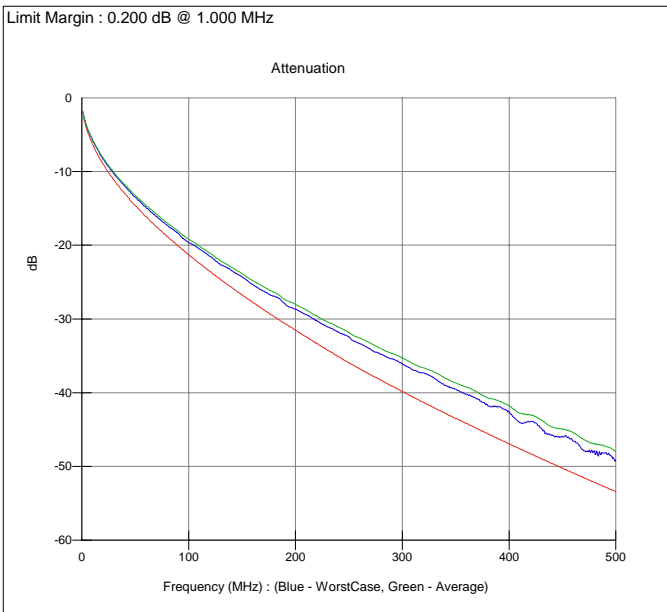
**APPENDIX A**

Test Results

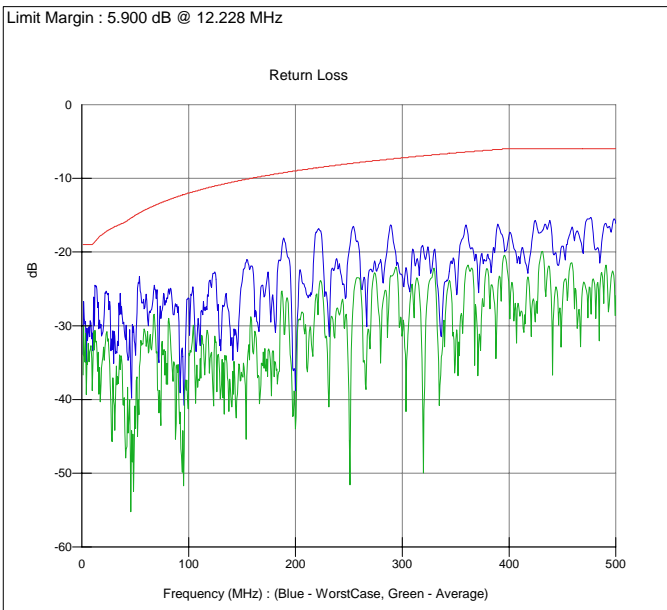
Any data reported above 250 MHz is for indication only.

## Summary

<b>Client</b>	Hubbell Premise Wiring	<b>Report No</b>	3022866-037
<b>Specification</b>	4Conn-C6 500 MHz TSB155 Channel		
<b>Part No</b>	TR485x1d (4CC) HUBB C6	<b>Length</b>	100
<b>Test Started</b>	4/5/2005 2:23:46 PM	<b>Temperature</b>	21.66 °C
<b>Description</b>	Hubbell Premise Wiring-HUBB NEXTSPEED Category 6 UTP 4CC, Test 1		
<b>Technician</b>	S. Schultz	<b>Test Status:</b>	Complies



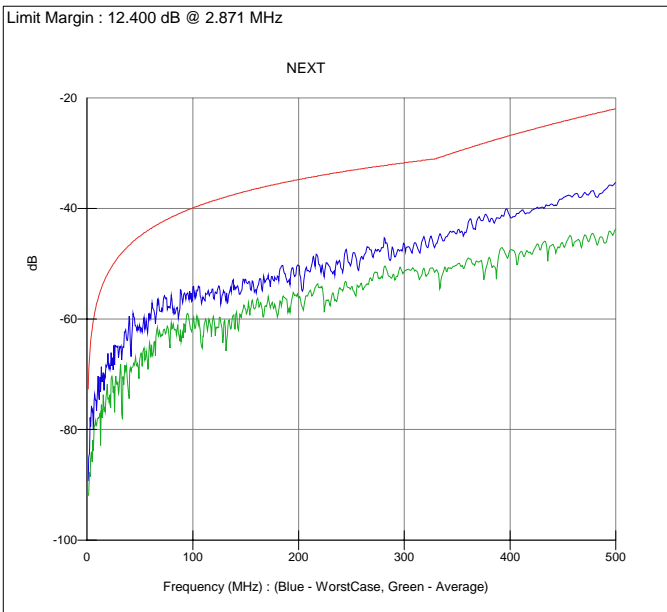
Attenuation			
Freq	Worst Case	Average	Spec
1.	1.9	1.9	2.1
4.	3.6	3.6	4.0
8.	5.1	5.0	5.6
10.	5.8	5.7	6.3
16.	7.3	7.2	8.0
20.	8.3	8.2	9.0
25.	9.3	9.2	10.1
31.25	10.5	10.3	11.3
62.5	15.2	14.9	16.5
100.	19.7	19.2	21.3
200.	28.7	28.0	31.5
250.	32.4	31.8	35.9
350.	39.5	38.7	43.5
400.	42.6	41.7	46.9
500.	49.1	48.0	53.4



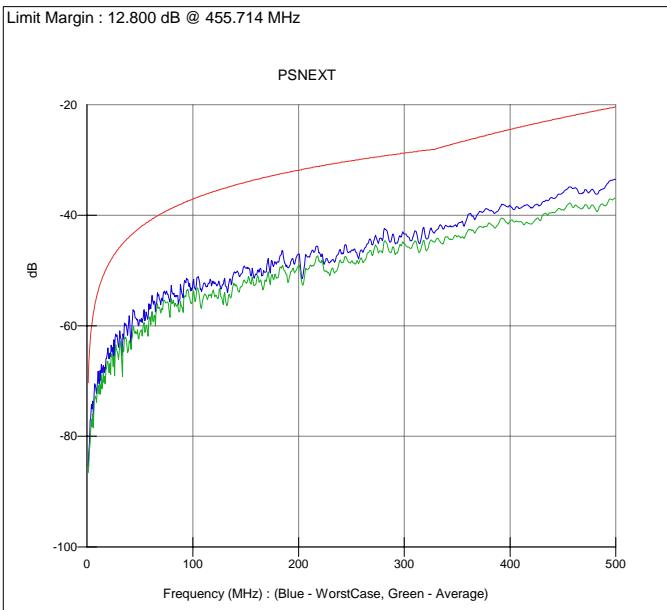
Return Loss			
Freq	Worst Case	Average	Spec
1.	33.9	36.7	19.0
4.	34.2	37.7	19.0
8.	30.1	33.2	19.0
10.	32.0	37.3	19.0
16.	30.4	39.1	18.0
20.	30.4	33.6	17.5
25.	26.6	32.5	17.0
31.25	32.6	41.7	16.5
62.5	29.1	33.6	14.0
100.	26.3	35.9	12.0
200.	39.2	43.9	9.0
250.	20.0	40.4	8.0
350.	23.6	33.5	6.6
400.	17.7	25.3	6.0
500.	16.1	25.9	6.0

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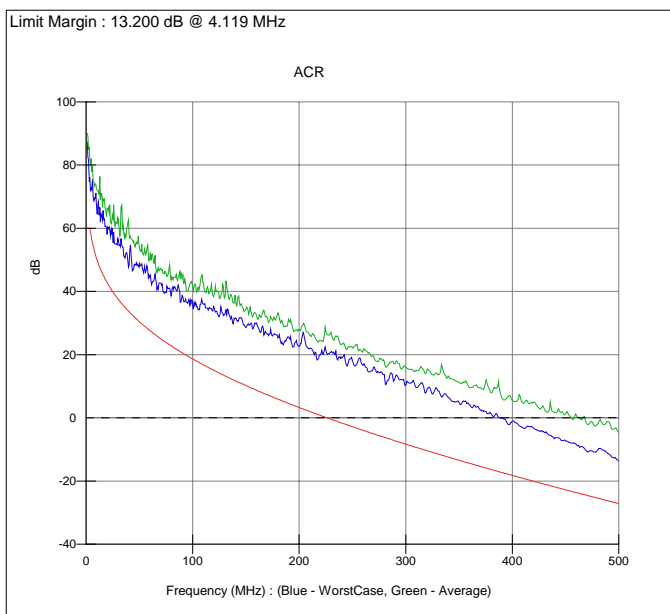
NEXT			
Freq	Worst Case	Average	Spec
1.	89.3	92.0	72.7
4.	77.6	84.3	63.0
8.	74.8	78.6	58.2
10.	73.8	78.0	56.6
16.	72.8	76.5	53.2
20.	67.4	74.4	51.6
25.	68.9	72.8	50.0
31.25	65.5	69.3	48.4
62.5	58.2	66.1	43.3
100.	54.9	60.7	39.9
200.	50.3	56.2	34.8
250.	49.7	54.2	33.1
350.	44.3	50.2	29.7
400.	41.5	47.6	26.8
500.	35.3	43.6	22.0



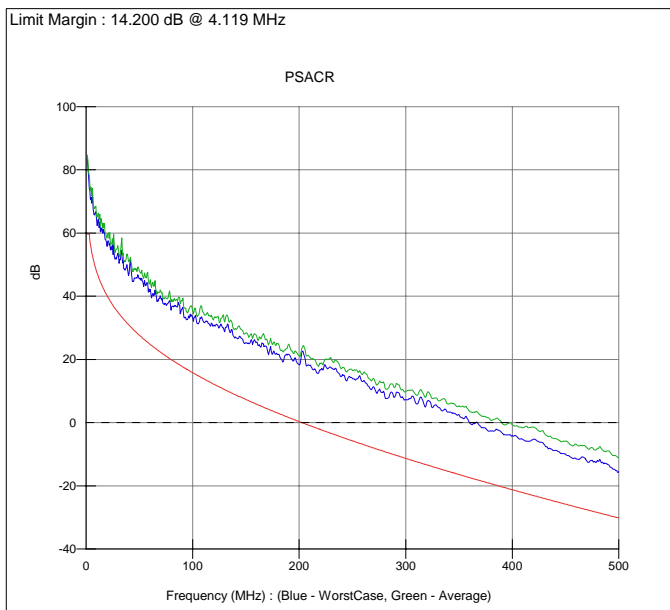
PSNEXT			
Freq	Worst Case	Average	Spec
1.	85.5	86.6	70.3
4.	75.6	77.4	60.5
8.	71.0	72.8	55.6
10.	69.7	71.1	54.0
16.	68.5	70.2	50.6
20.	64.8	67.2	49.0
25.	64.1	66.4	47.3
31.25	61.8	63.1	45.7
62.5	55.9	59.2	40.6
100.	52.6	54.6	37.1
200.	47.0	49.1	31.9
250.	46.4	48.3	30.2
350.	41.9	43.9	26.9
400.	38.3	41.1	24.5
500.	33.5	36.9	20.4

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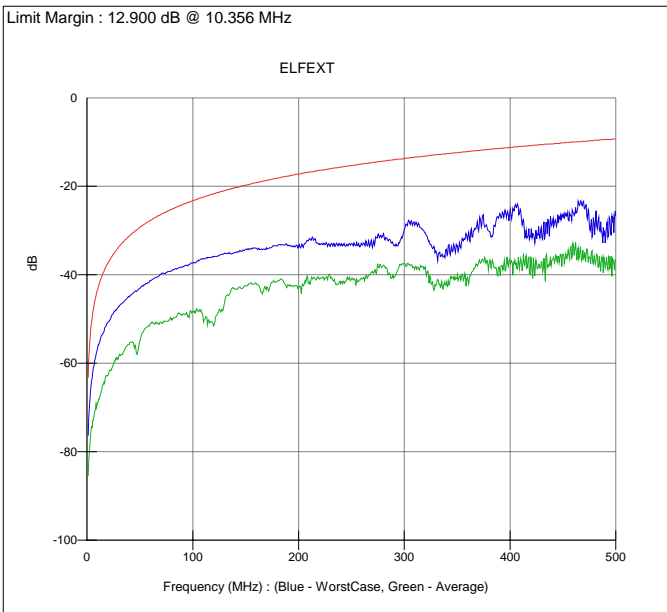
ACR			
Freq	Worst Case	Average	Spec
1.	87.4	90.1	60.0
4.	74.0	80.7	59.0
8.	69.6	73.5	52.5
10.	68.2	72.3	50.2
16.	65.5	69.2	45.2
20.	59.1	66.2	42.6
25.	59.6	63.5	39.9
31.25	54.9	58.9	37.1
62.5	43.1	51.2	26.9
100.	35.4	41.4	18.6
200.	22.7	28.0	3.3
250.	18.1	22.1	-2.8
350.	4.8	11.2	-13.5
400.	-1.1	5.6	-18.3
500.	-13.8	-4.8	-27.1



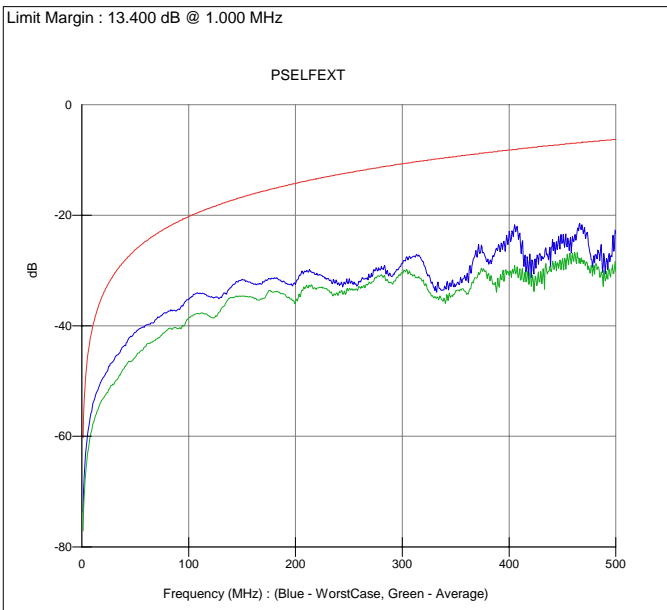
PSACR			
Freq	Worst Case	Average	Spec
1.	83.7	84.7	59.7
4.	71.9	73.8	56.6
8.	65.9	67.8	49.9
10.	64.0	65.5	47.6
16.	61.1	63.0	42.6
20.	56.5	59.0	39.9
25.	54.8	57.3	37.2
31.25	51.3	52.8	34.4
62.5	40.8	44.3	24.1
100.	33.1	35.4	15.8
200.	18.3	21.1	0.3
250.	14.0	16.5	-5.8
350.	2.4	5.2	-16.5
400.	-4.2	-0.7	-21.3
500.	-15.5	-11.1	-30.2

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ELFEXT			
Freq	Worst Case	Average	Spec
1.	76.4	85.5	63.3
4.	64.5	74.7	51.3
8.	58.6	70.3	45.2
10.	56.5	68.9	43.3
16.	52.8	64.2	39.2
20.	50.6	62.5	37.3
25.	48.6	60.1	35.3
31.25	46.8	58.1	33.4
62.5	40.9	50.9	27.3
100.	37.3	48.3	23.2
200.	33.6	43.0	17.2
250.	33.0	40.9	15.3
350.	33.5	40.4	12.4
400.	25.5	37.2	11.2
500.	26.8	37.1	9.3



PSELFEXT			
Freq	Worst Case	Average	Spec
1.	73.7	77.1	60.3
4.	62.1	65.6	48.3
8.	56.4	60.0	42.2
10.	54.5	58.1	40.3
16.	51.1	54.7	36.2
20.	49.4	53.1	34.3
25.	47.5	51.6	32.3
31.25	45.7	50.1	30.4
62.5	39.7	43.2	24.3
100.	35.2	38.6	20.2
200.	32.6	35.7	14.2
250.	31.7	33.5	12.3
350.	33.0	33.8	9.4
400.	23.3	30.8	8.2
500.	23.3	30.2	6.3