



REPORT INTERTEK TESTING SERVICES, INC.

3933 US ROUTE 11, CORTLAND, NEW YORK 13045

ORDER NO.: 3042688-406

DATE: May 16, 2003

REPORT NO.: 3042688-004

RENDERED TO:

Hellermann Tyton
7930 North Faulkner Rd.
Milwaukee, WI 53224

TEST: Performance of the cabling configurations as defined in, and to the requirements of, TIA/EIA 568-B.2-1 for Category 6 Cabling Systems.

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 Ω Category 6 Cabling dated June 2002.

AUTHORIZATION: The tests were authorized by, Mr. Gary Bernstein, representing the client, Hellermann Tyton, Purchase Order No. 35413.

DATE OF TEST: May 13, 2003

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

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SAMPLE DESCRIPTION:

<u>Component ID</u>	<u>Manufacturer</u>	<u>Part Number</u>	<u>Description</u>
1,8	Hellermann Tyton	PC6GRY 10	Equipment Cord
2	Hellermann Tyton	RJ45FC6	Wall Outlet
3	Hitachi Hi- Net Plus	30024-008	Horizontal Cable Cat. 6 CMR
4	Hellermann Tyton	T110KIT964	110 Block
5,7	Hellermann Tyton	PP110C624	Patch Panel
6	Hellermann Tyton	PC6GRY 10	Cross Connect

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	3903U01003	N/A	03/13/03

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. The swept frequency measurements were performed from 0.5 MHz to 400 MHz.

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-568-B.2-1, Cat. 6.

Results

The results for the 3 channel tests 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.

These Procedures and Requirements were taken from the Standards referred to on Page 1.

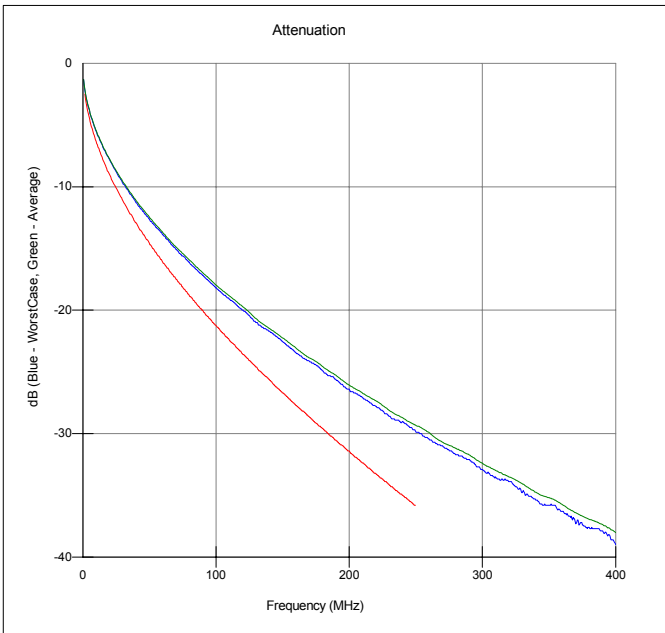
Reviewed and Approved By:

Robert Southworth
Laboratory Supervisor
Communications Products

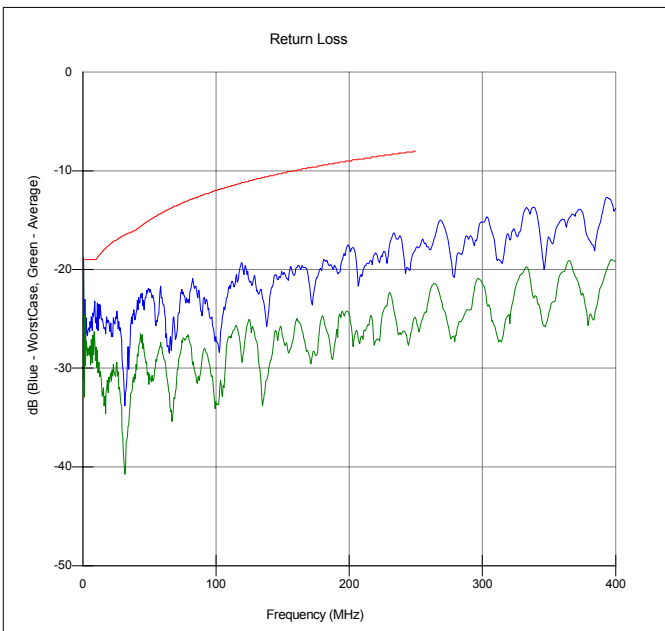
Dean Beverley
Technician
Communications

Summary

Client	Hellermann Tyton	Report No	3042688-004
Specification	TIA 568B2-1 - Cat 6 Chan Swept400 Limits250MHz		
Part No	H-HT-CMR-1-3	Length	100
Test Started	5/14/03 8:32:26 AM	Temperature	20 °C
Comments	Hellermann with Hitachi CMR Test # 1-3		
Technician	Dean Beverley	Test Status:	PASS



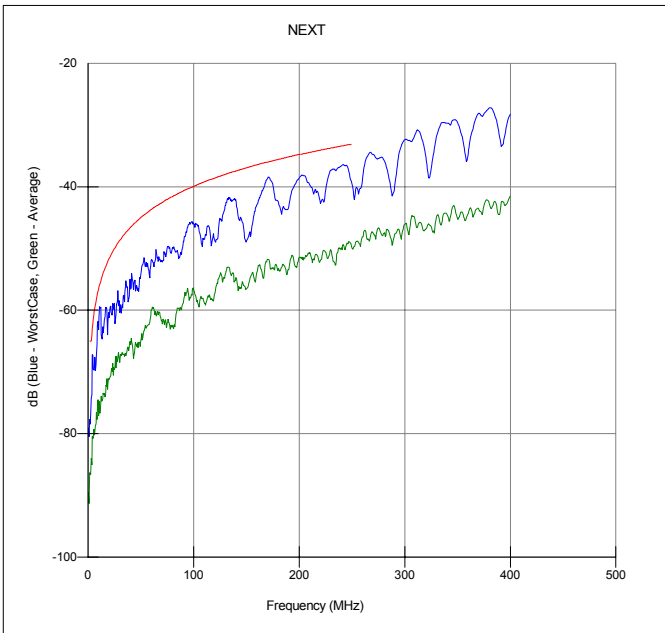
Attenuation			
Freq	Worst Case	Average	Spec
1.	1.8	1.7	2.1
4.	3.5	3.4	4.0
8.	4.9	4.8	5.7
10.	5.5	5.4	6.3
16.	7.0	6.9	8.0
20.	7.8	7.7	9.0
25.	8.8	8.7	10.1
31.25	9.9	9.8	11.4
62.5	14.2	14.0	16.4
100.	18.2	18.0	21.2
200.	26.4	26.1	31.4
250.	29.9	29.3	35.8



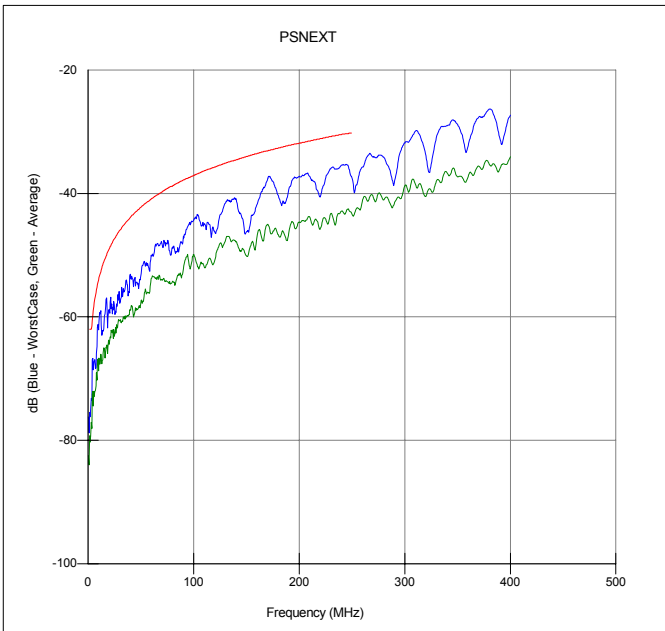
Return Loss			
Freq	Worst Case	Average	Spec
1.	31.2	32.9	19.0
4.	26.1	28.0	19.0
8.	24.8	28.6	19.0
10.	25.0	27.9	19.0
16.	26.0	33.8	18.0
20.	25.9	31.4	17.5
25.	25.0	29.7	17.0
31.25	32.9	40.2	16.5
62.5	26.8	30.1	14.0
100.	27.0	33.5	12.0
200.	17.8	24.6	9.0
250.	17.9	25.0	8.0

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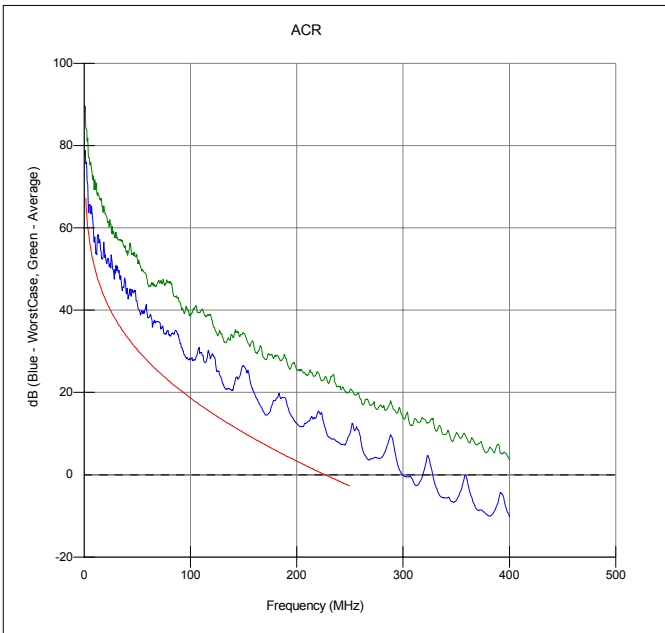
NEXT			
Freq	Worst Case	Average	Spec
1.	80.5	91.3	65.0
4.	67.2	80.4	63.0
8.	67.3	76.6	58.2
10.	63.2	77.1	56.6
16.	61.0	74.1	53.2
20.	61.3	71.2	51.6
25.	59.1	69.7	50.0
31.25	60.6	67.3	48.4
62.5	52.9	59.9	43.4
100.	45.9	56.5	39.9
200.	38.6	51.6	34.8
250.	39.4	49.8	33.1



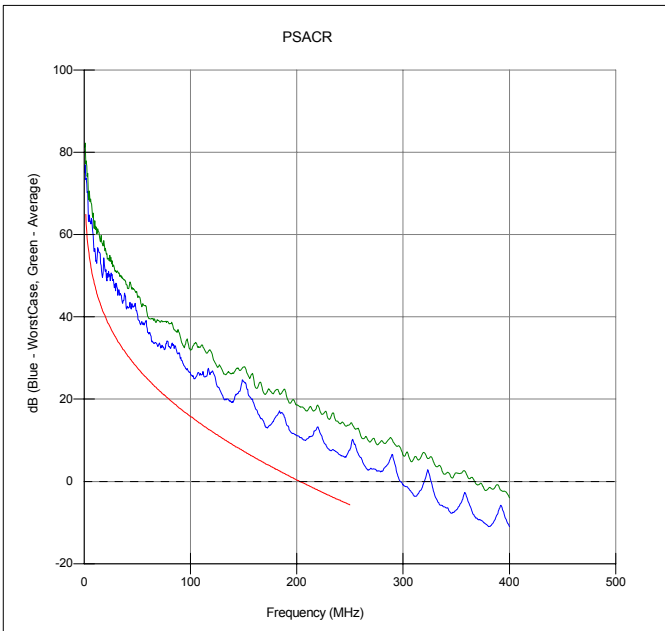
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Freq	Worst Case	Average	Spec
1.	78.8	84.0	62.0
4.	66.9	72.5	60.6
8.	66.0	69.1	55.6
10.	62.1	68.7	54.0
16.	59.5	66.6	50.6
20.	58.8	64.4	49.0
25.	58.2	63.1	47.4
31.25	56.9	60.9	45.7
62.5	49.7	53.5	40.6
100.	44.5	49.9	37.1
200.	37.3	44.7	31.9
250.	37.4	43.3	30.2

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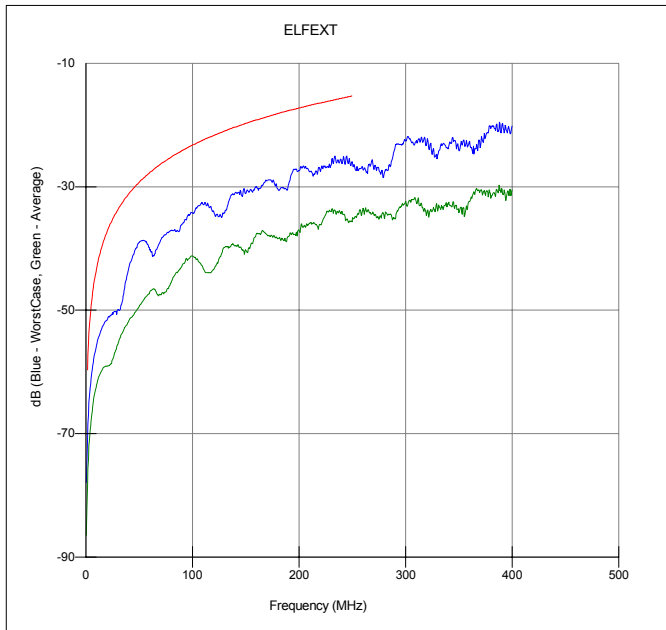
ACR			
Freq	Worst Case	Average	Spec
1.	78.8	89.6	69.6
4.	63.8	77.0	59.0
8.	62.5	71.8	52.5
10.	57.8	71.7	50.3
16.	54.1	67.2	45.2
20.	53.5	63.5	42.6
25.	50.4	61.0	39.9
31.25	50.8	57.6	37.1
62.5	39.0	46.0	27.0
100.	28.0	38.6	18.7
200.	12.5	25.6	3.3
250.	10.0	20.6	-2.7



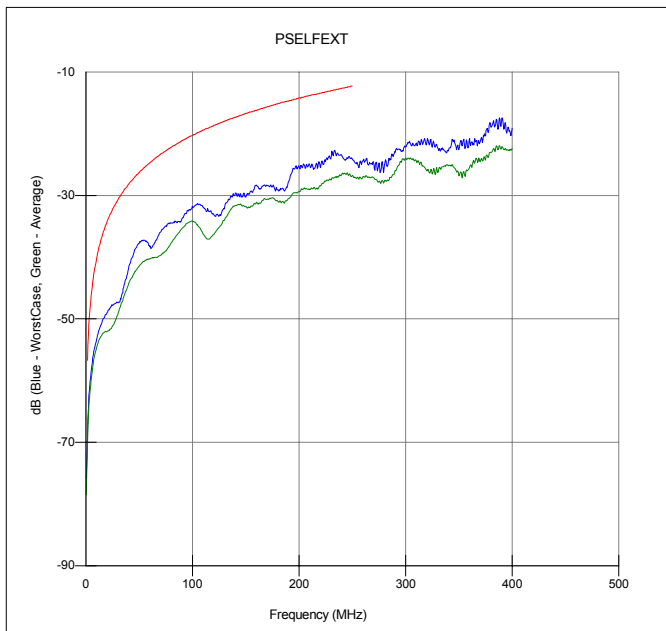
PSACR			
Freq	Worst Case	Average	Spec
1.	77.0	82.2	67.3
4.	63.5	69.1	56.5
8.	61.2	64.3	50.0
10.	56.6	63.3	47.7
16.	52.4	59.7	42.6
20.	51.0	56.6	40.0
25.	49.4	54.4	37.2
31.25	47.1	51.2	34.3
62.5	35.6	39.5	24.2
100.	26.5	31.9	15.8
200.	11.2	18.6	0.4
250.	7.8	13.9	-5.7

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Technician	Dean Beverley	Test Status:	PASS



ELFEXT			
Freq	Worst Case	Average	Spec
1.	74.6	82.1	62.2
4.	62.6	69.6	51.2
8.	57.3	63.8	45.2
10.	55.7	62.1	43.3
16.	52.6	59.4	39.2
20.	51.6	59.1	37.2
25.	50.4	58.0	35.3
31.25	50.1	54.9	33.3
62.5	41.4	46.6	27.4
100.	34.2	41.2	23.3
200.	27.3	37.1	17.2
250.	26.1	35.3	15.3



PSELFEXT			
Freq	Worst Case	Average	Spec
1.	72.7	73.7	59.2
4.	60.1	61.6	48.2
8.	54.9	56.2	42.2
10.	53.4	54.7	40.3
16.	50.1	52.3	36.2
20.	49.0	52.1	34.2
25.	47.8	51.2	32.3
31.25	47.3	48.6	30.3
62.5	38.3	40.1	24.4
100.	31.8	34.1	20.3
200.	25.3	29.4	14.2
250.	24.1	26.7	12.3