



3933 US ROUTE 11, CORTLAND, NEW YORK 13045

Phone Number: 1-800-345-3851 Fax Number: 607-758-3648

PROJECT NO.: 3161280-311

DATE: September 18, 2008

TEST REPORT NO.: 3161280-CRT-002

RENDERED TO:

Hellermann Tyton Corporation
7930 North Faulkner Road
Milwaukee, WI 53224

TEST:

Performance testing of the cabling configurations as defined in and to the requirements of ANSI/TIA-568-B.2-10, Transmission Performance Specification for 4 Pair 100 Ω Augmented Category 6 Cabling dated March 28, 2008.

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

TIA/EIA-568-B.2-10 draft 10.0, Transmission Performance Specifications for 4 Pair, 100 Ω Augmented Category 6 Cabling, dated December 17, 2007

AUTHORIZATION:

The project was authorized by, Ms. Jennifer Moczynski, representing the client, Hellermann Tyton Corporation, Purchase Order No. 28941.

DATE OF TEST:

September 18, 2008 through September 19, 2008

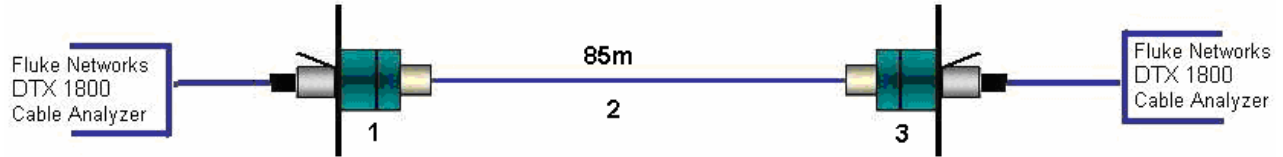
This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

TEST REPORT REVISION HISTORY:

First Issue: September 18, 2008 Original Document

SAMPLE DESCRIPTION:

(2 Connectors permanent link, bundled in a 6 around 1 configuration)



<u>Component ID</u>	<u>Manufacturer</u>	<u>Part Number</u>	<u>Description</u>
1, 3	Hellermann Tyton	RJ45FC6AS	Wall Outlet
1, 3	Hellermann Tyton	PP24MOD6AS	Patch Panel
2	Hitachi	30233-8	Horizontal Cable

The samples were received on September 17, 2008 and were in good condition. All samples were supplied by the client.

RESULTS: See appendixes A and B for the test results.

CONCLUSION:

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

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

Reviewed and Approved By:

Antoine Pelletier
 Antoine Pelletier
 Engineer
 Global Cabling Products Testing

John Cash
 John Cash
 Technician
 Global Cabling Products Testing

Kathy Heath
 Kathy Heath
 Project Coordinator
 Global Cabling Products Testing

Appendix A
Internals Test Results

Any data reported above 500 MHz is for indication only.

This Appendix contains 7 pages.



Cable ID: 3161280CRT-002-1

Test Summary: PASS

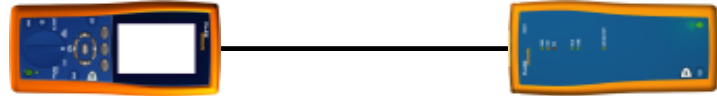
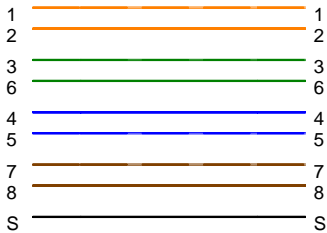
Date / Time: 09/18/2008 04:31:33am
 Headroom: 5.3 dB (NEXT 36-78)
 Test Limit: TIA Cat 6A PL Perm. Link
 Cable Type: Cat 6 FTP

Operator: JOHN CASH
 Software Version: 2.0600
 Limits Version: 1.26P
 NVP: 70.0%

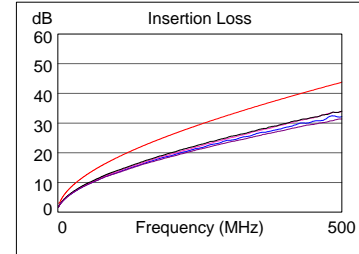
Model: DTX-1800
 Main S/N: 9385159
 Remote S/N: 9385160
 Main Adapter: DTX-PLA002
 Remote Adapter: DTX-PLA002

Wire Map (T568B)

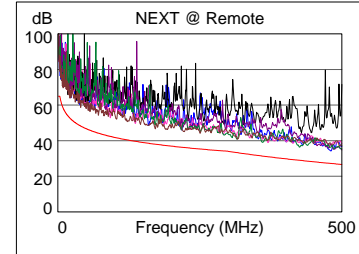
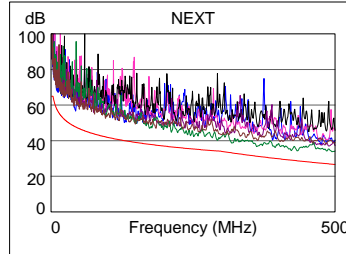
PASS



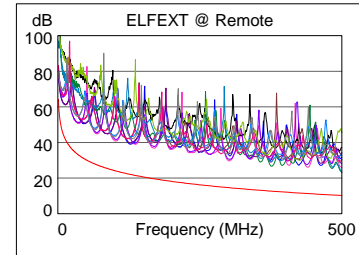
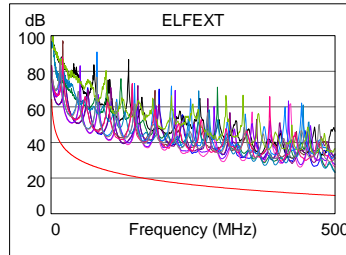
Length (ft), Limit 295	[Pair 78]	246
Prop. Delay (ns), Limit 498	[Pair 45]	388
Delay Skew (ns), Limit 44	[Pair 45]	31
Resistance (ohms)	[Pair 78]	11.8
Insertion Loss Margin (dB)	[Pair 36]	9.8
Frequency (MHz)	[Pair 36]	500.0
Limit (dB)	[Pair 36]	43.8



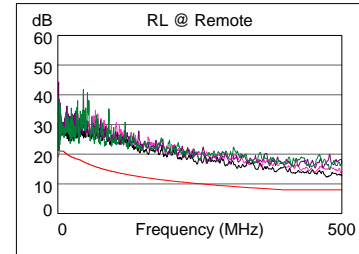
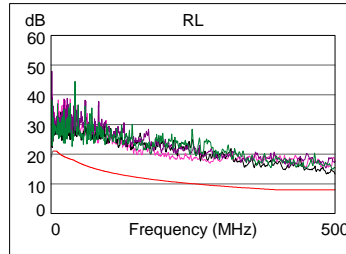
	Worst Case Margin		Worst Case Value	
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	36-78	12-36	36-78	12-36
NEXT (dB)	5.3	7.0	7.0	7.0
Freq. (MHz)	423.0	481.0	495.0	481.0
Limit (dB)	29.1	27.2	26.8	27.2
Worst Pair	78	36	36	36
PSNEXT (dB)	6.5	6.6	7.9	7.0
Freq. (MHz)	363.0	477.0	500.0	500.0
Limit (dB)	28.5	24.5	23.8	23.8



	Worst Case Margin		Worst Case Value	
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	45-36	36-45	45-36	36-45
ELFEXT (dB)	13.0	13.0	13.0	13.0
Freq. (MHz)	500.0	500.0	500.0	500.0
Limit (dB)	10.2	10.2	10.2	10.2
Worst Pair	45	45	45	45
PSELFEXT (dB)	14.0	14.4	14.0	14.4
Freq. (MHz)	500.0	500.0	500.0	500.0
Limit (dB)	7.2	7.2	7.2	7.2



	Worst Case Margin		Worst Case Value	
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	78	36	36	36
RL (dB)	4.4	4.3	5.3	4.3
Freq. (MHz)	21.9	473.0	485.0	473.0
Limit (dB)	19.3	8.0	8.0	8.0





Cable ID: 3161280CRT-002-2

Test Summary: PASS

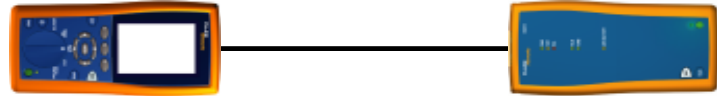
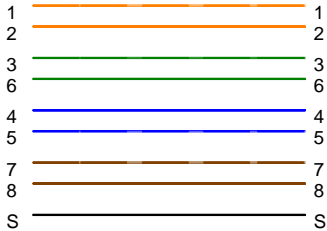
Date / Time: 09/18/2008 04:34:39am
 Headroom: 5.1 dB (NEXT 12-45)
 Test Limit: TIA Cat 6A PL Perm. Link
 Cable Type: Cat 6 FTP

Operator: JOHN CASH
 Software Version: 2.0600
 Limits Version: 1.26P
 NVP: 70.0%

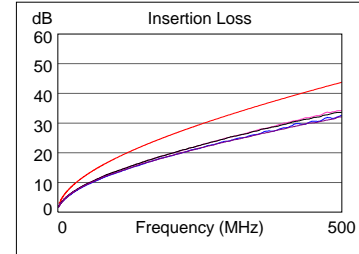
Model: DTX-1800
 Main S/N: 9385159
 Remote S/N: 9385160
 Main Adapter: DTX-PLA002
 Remote Adapter: DTX-PLA002

Wire Map (T568B)

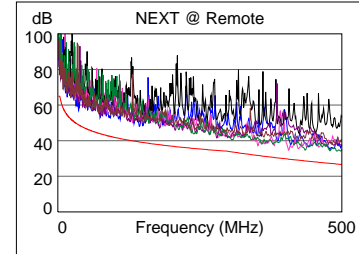
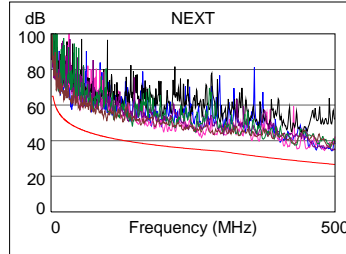
PASS



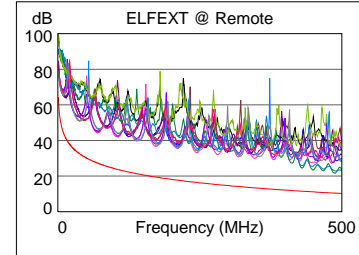
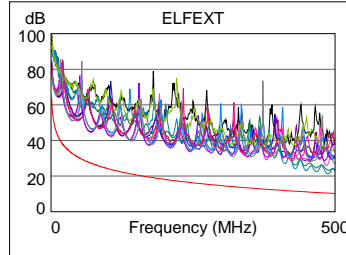
Length (ft), Limit 295	[Pair 12]	247
Prop. Delay (ns), Limit 498	[Pair 45]	389
Delay Skew (ns), Limit 44	[Pair 45]	30
Resistance (ohms)	[Pair 78]	11.8
Insertion Loss Margin (dB)	[Pair 36]	9.6
Frequency (MHz)	[Pair 36]	500.0
Limit (dB)	[Pair 36]	43.8



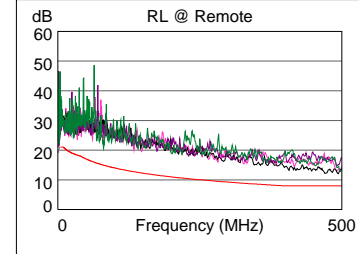
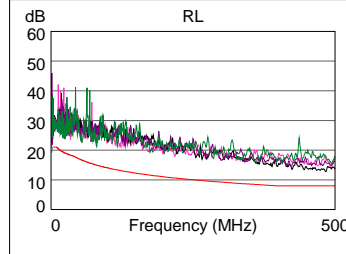
	Worst Case Margin		Worst Case Value	
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	12-45	12-45	12-36	36-78
NEXT (dB)	6.7	5.1	7.5	7.2
Freq. (MHz)	433.0	406.0	494.0	491.0
Limit (dB)	28.7	29.6	26.8	26.9
Worst Pair	36	36	36	36
PSNEXT (dB)	6.8	6.5	6.8	6.5
Freq. (MHz)	467.0	479.0	493.0	479.0
Limit (dB)	24.8	24.4	24.0	24.4



	Worst Case Margin		Worst Case Value	
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	45-36	36-45	45-36	36-45
ELFEXT (dB)	10.8	11.2	10.8	11.2
Freq. (MHz)	488.0	488.0	488.0	488.0
Limit (dB)	10.4	10.4	10.4	10.4
Worst Pair	36	45	36	45
PSELFEXT (dB)	13.5	13.3	13.5	13.3
Freq. (MHz)	488.0	485.0	488.0	487.0
Limit (dB)	7.4	7.5	7.4	7.4



	Worst Case Margin		Worst Case Value	
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	78	36	36	36
RL (dB)	4.6	4.1	4.8	4.1
Freq. (MHz)	20.4	493.0	483.0	493.0
Limit (dB)	19.5	8.0	8.0	8.0





Cable ID: 3161280CRT-002-3

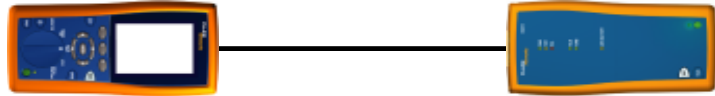
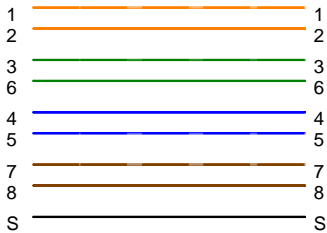
Test Summary: PASS

Date / Time: 09/18/2008 04:35:20am
 Headroom: **2.9 dB (NEXT 36-78)**
 Test Limit: TIA Cat 6A PL Perm. Link
 Cable Type: Cat 6 FTP

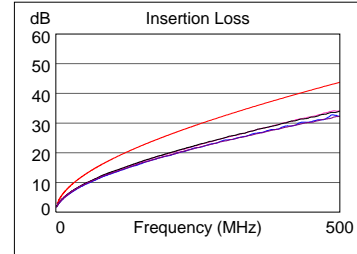
Operator: JOHN CASH
 Software Version: 2.0600
 Limits Version: 1.26P
 NVP: 70.0%

Model: DTX-1800
 Main S/N: 9385159
 Remote S/N: 9385160
 Main Adapter: DTX-PLA002
 Remote Adapter: DTX-PLA002

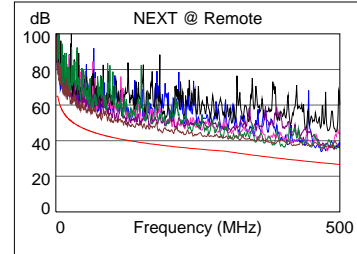
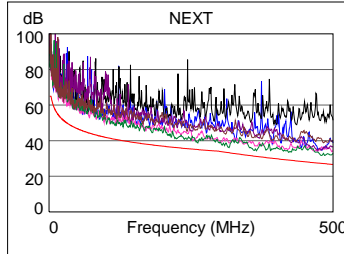
Wire Map (T568B)
PASS



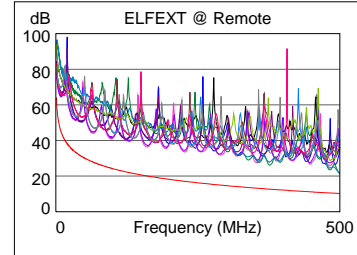
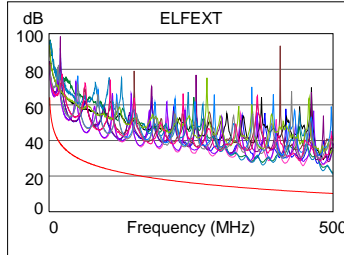
Length (ft), Limit 295	[Pair 12]	246
Prop. Delay (ns), Limit 498	[Pair 45]	390
Delay Skew (ns), Limit 44	[Pair 45]	32
Resistance (ohms)	[Pair 78]	11.8
Insertion Loss Margin (dB)	[Pair 36]	9.6
Frequency (MHz)	[Pair 36]	500.0
Limit (dB)	[Pair 36]	43.8



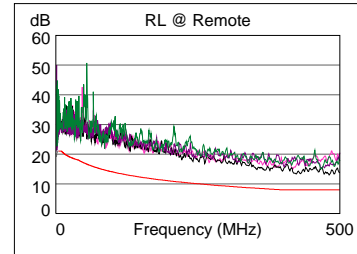
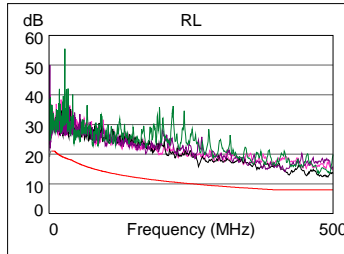
	Worst Case Margin		Worst Case Value	
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	36-78	12-36	36-78	12-36
NEXT (dB)	2.9	6.3	4.4	6.3
Freq. (MHz)	317.0	467.0	479.0	467.0
Limit (dB)	33.2	27.6	27.3	27.6
Worst Pair	36	36	36	36
PSNEXT (dB)	4.3	5.9	4.3	5.9
Freq. (MHz)	480.0	467.0	480.0	467.0
Limit (dB)	24.4	24.8	24.4	24.8



	Worst Case Margin		Worst Case Value	
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	45-36	36-45	45-36	36-45
ELFEXT (dB)	10.8	11.0	10.8	11.0
Freq. (MHz)	500.0	500.0	500.0	500.0
Limit (dB)	10.2	10.2	10.2	10.2
Worst Pair	36	45	36	45
PSELFEXT (dB)	13.7	13.7	13.7	13.7
Freq. (MHz)	500.0	500.0	500.0	500.0
Limit (dB)	7.2	7.2	7.2	7.2



	Worst Case Margin		Worst Case Value	
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	36	36	36	36
RL (dB)	4.3	5.0	4.3	5.0
Freq. (MHz)	491.0	481.0	491.0	481.0
Limit (dB)	8.0	8.0	8.0	8.0





Cable ID: 3161280CRT-002-4

Test Summary: PASS

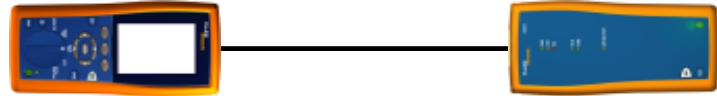
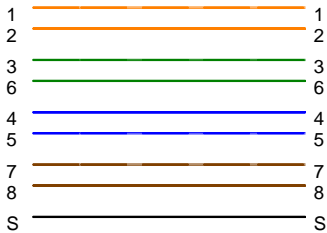
Date / Time: 09/18/2008 04:35:58am
 Headroom: 5.4 dB (NEXT 12-45)
 Test Limit: TIA Cat 6A PL Perm. Link
 Cable Type: Cat 6 FTP

Operator: JOHN CASH
 Software Version: 2.0600
 Limits Version: 1.26P
 NVP: 70.0%

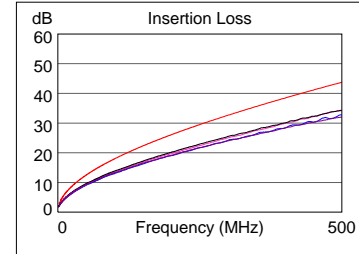
Model: DTX-1800
 Main S/N: 9385159
 Remote S/N: 9385160
 Main Adapter: DTX-PLA002
 Remote Adapter: DTX-PLA002

Wire Map (T568B)

PASS

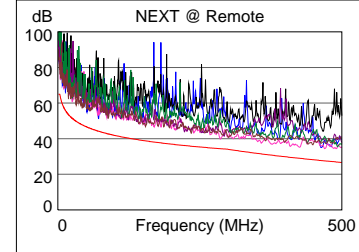
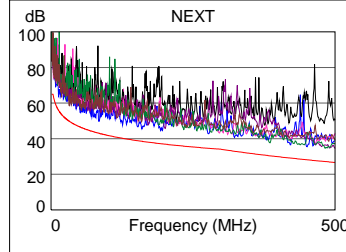


Length (ft), Limit 295	[Pair 12]	247
Prop. Delay (ns), Limit 498	[Pair 45]	389
Delay Skew (ns), Limit 44	[Pair 45]	30
Resistance (ohms)	[Pair 78]	11.8
Insertion Loss Margin (dB)	[Pair 45]	9.5
Frequency (MHz)	[Pair 45]	500.0
Limit (dB)	[Pair 45]	43.8

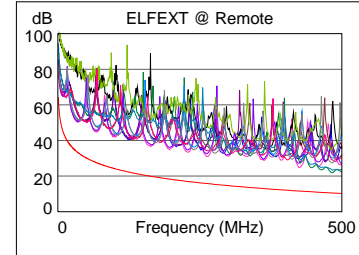
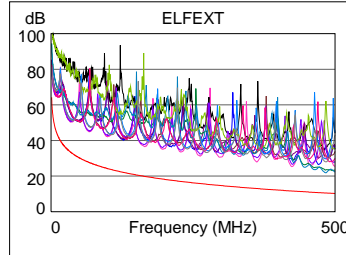


Worst Case Margin Worst Case Value

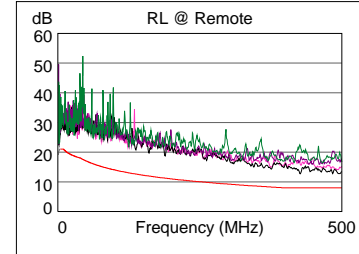
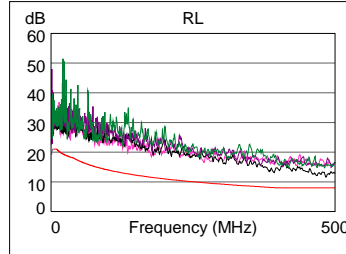
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	12-36	12-45	36-45	12-45
NEXT (dB)	6.7	5.4	7.8	6.9
Freq. (MHz)	84.0	286.0	500.0	470.0
Limit (dB)	43.1	34.4	26.7	27.5
Worst Pair	36	45	36	45
PSNEXT (dB)	7.4	5.6	7.4	7.2
Freq. (MHz)	490.0	300.0	490.0	471.0
Limit (dB)	24.1	31.4	24.1	24.7



	MAIN	SR	MAIN	SR
PASS				
Worst Pair	45-36	36-45	45-36	36-45
ELFEXT (dB)	11.3	11.4	11.3	11.4
Freq. (MHz)	484.0	482.0	484.0	482.0
Limit (dB)	10.5	10.5	10.5	10.5
Worst Pair	36	45	36	45
PSELFEXT (dB)	13.7	13.5	13.7	13.5
Freq. (MHz)	484.0	484.0	484.0	484.0
Limit (dB)	7.5	7.5	7.5	7.5



	MAIN	SR	MAIN	SR
PASS				
Worst Pair	36	36	36	36
RL (dB)	3.6	4.7	3.6	4.7
Freq. (MHz)	484.0	427.0	484.0	427.0
Limit (dB)	8.0	8.0	8.0	8.0





Cable ID: 3161280CRT-002-5

Test Summary: PASS

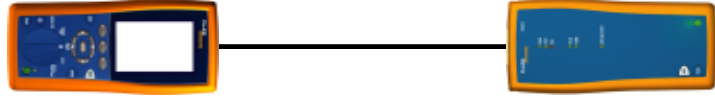
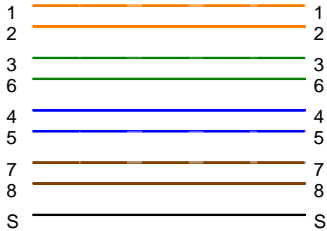
Date / Time: 09/18/2008 04:37:25am
 Headroom: 3.9 dB (NEXT 12-36)
 Test Limit: TIA Cat 6A PL Perm. Link
 Cable Type: Cat 6 FTP

Operator: JOHN CASH
 Software Version: 2.0600
 Limits Version: 1.26P
 NVP: 70.0%

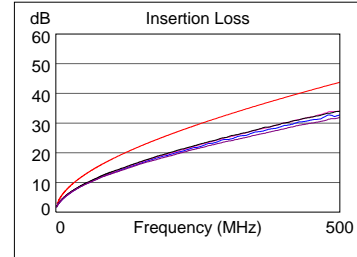
Model: DTX-1800
 Main S/N: 9385159
 Remote S/N: 9385160
 Main Adapter: DTX-PLA002
 Remote Adapter: DTX-PLA002

Wire Map (T568B)

PASS

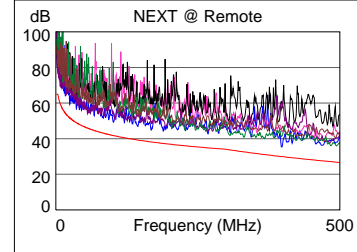
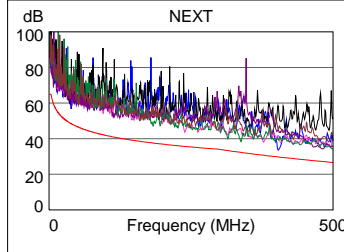


Length (ft), Limit 295	[Pair 78]	246
Prop. Delay (ns), Limit 498	[Pair 45]	389
Delay Skew (ns), Limit 44	[Pair 45]	31
Resistance (ohms)	[Pair 78]	11.8
Insertion Loss Margin (dB)	[Pair 36]	9.6
Frequency (MHz)	[Pair 36]	500.0
Limit (dB)	[Pair 36]	43.8

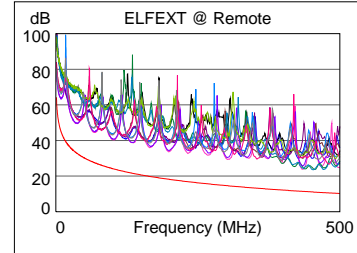
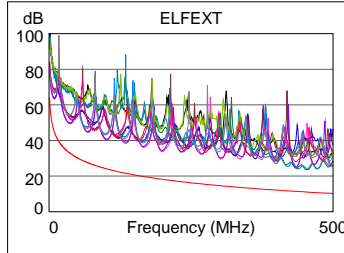


Worst Case Margin Worst Case Value

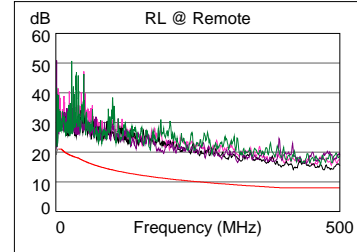
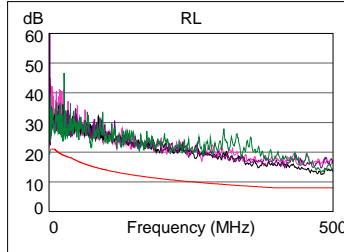
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	12-36	12-36	12-36	12-36
NEXT (dB)	3.9	5.4	3.9	5.4
Freq. (MHz)	403.0	398.0	404.0	398.0
Limit (dB)	29.8	29.9	29.7	29.9
Worst Pair	36	36	36	36
PSNEXT (dB)	5.4	7.1	6.8	8.5
Freq. (MHz)	404.0	398.0	483.0	483.0
Limit (dB)	26.9	27.2	24.3	24.3



	MAIN	SR	MAIN	SR
PASS				
Worst Pair	36-45	12-45	36-45	45-36
ELFEXT (dB)	12.5	12.4	12.5	12.4
Freq. (MHz)	452.0	434.0	452.0	453.0
Limit (dB)	11.1	11.4	11.1	11.1
Worst Pair	45	45	45	45
PSELFEXT (dB)	12.7	13.2	12.7	13.2
Freq. (MHz)	434.0	436.0	434.0	436.0
Limit (dB)	8.4	8.4	8.4	8.4



	MAIN	SR	MAIN	SR
PASS				
Worst Pair	36	78	36	36
RL (dB)	4.5	5.8	4.5	6.0
Freq. (MHz)	479.0	17.6	479.0	472.0
Limit (dB)	8.0	19.8	8.0	8.0





Cable ID: 3161280CRT-002-6

Test Summary: PASS

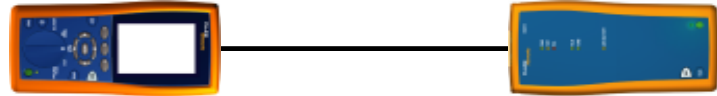
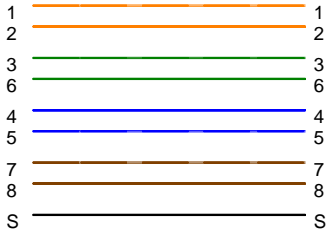
Date / Time: 09/18/2008 04:38:07am
 Headroom: 4.4 dB (NEXT 36-78)
 Test Limit: TIA Cat 6A PL Perm. Link
 Cable Type: Cat 6 FTP

Operator: JOHN CASH
 Software Version: 2.0600
 Limits Version: 1.26P
 NVP: 70.0%

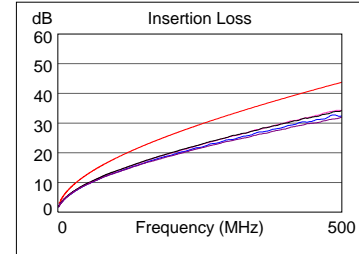
Model: DTX-1800
 Main S/N: 9385159
 Remote S/N: 9385160
 Main Adapter: DTX-PLA002
 Remote Adapter: DTX-PLA002

Wire Map (T568B)

PASS

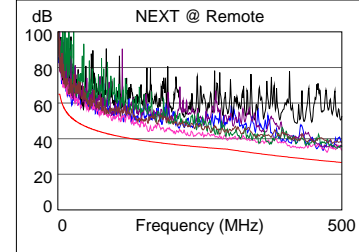
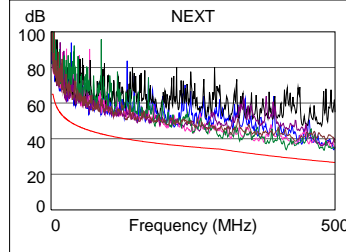


Length (ft), Limit 295	[Pair 12]	246
Prop. Delay (ns), Limit 498	[Pair 45]	389
Delay Skew (ns), Limit 44	[Pair 45]	31
Resistance (ohms)	[Pair 78]	11.8
Insertion Loss Margin (dB)	[Pair 36]	9.5
Frequency (MHz)	[Pair 36]	500.0
Limit (dB)	[Pair 36]	43.8

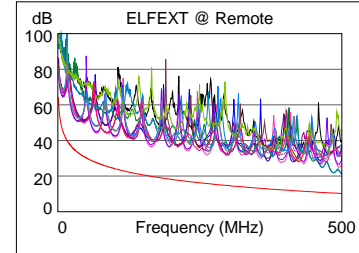
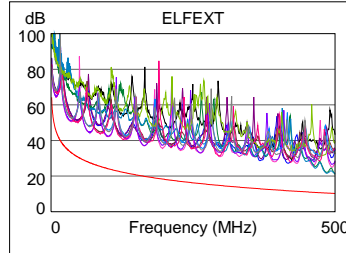


Worst Case Margin Worst Case Value

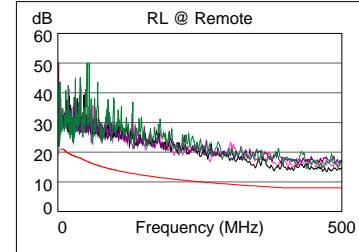
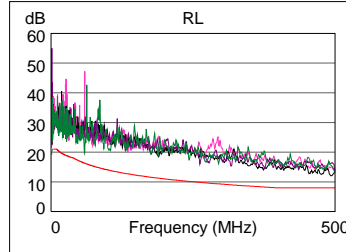
PASS	MAIN	SR	MAIN	SR
Worst Pair	36-78	12-45	36-78	12-45
NEXT (dB)	4.4	4.9	6.3	4.9
Freq. (MHz)	414.0	474.0	481.0	474.0
Limit (dB)	29.4	27.4	27.2	27.4
Worst Pair	36	45	36	45
PSNEXT (dB)	6.2	5.3	6.2	5.3
Freq. (MHz)	480.0	474.0	480.0	474.0
Limit (dB)	24.4	24.6	24.4	24.6



PASS	MAIN	SR	MAIN	SR
Worst Pair	36-45	45-36	36-45	45-36
ELFEXT (dB)	10.8	10.7	10.8	10.7
Freq. (MHz)	500.0	500.0	500.0	500.0
Limit (dB)	10.2	10.2	10.2	10.2
Worst Pair	45	45	45	45
PSELFEXT (dB)	12.8	13.2	12.8	13.2
Freq. (MHz)	500.0	499.0	500.0	499.0
Limit (dB)	7.2	7.2	7.2	7.2



PASS	MAIN	SR	MAIN	SR
Worst Pair	78	78	36	36
RL (dB)	3.4	4.3	4.0	5.4
Freq. (MHz)	59.0	27.3	493.0	473.0
Limit (dB)	16.3	18.8	8.0	8.0





Cable ID: 3161280CRT-002-7

Test Summary: PASS

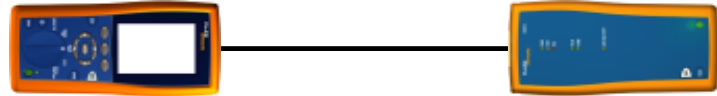
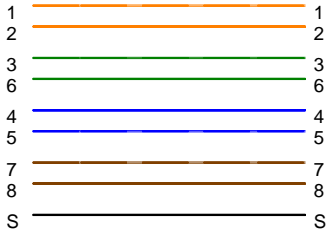
Date / Time: 09/18/2008 04:38:52am
 Headroom: 2.8 dB (NEXT 36-78)
 Test Limit: TIA Cat 6A PL Perm. Link
 Cable Type: Cat 6 FTP

Operator: JOHN CASH
 Software Version: 2.0600
 Limits Version: 1.26P
 NVP: 70.0%

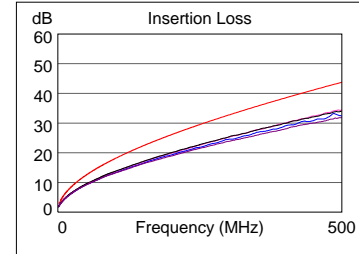
Model: DTX-1800
 Main S/N: 9385159
 Remote S/N: 9385160
 Main Adapter: DTX-PLA002
 Remote Adapter: DTX-PLA002

Wire Map (T568B)

PASS

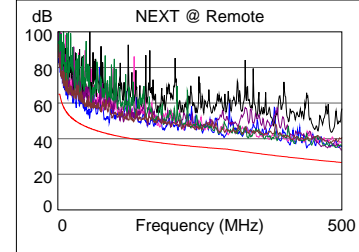
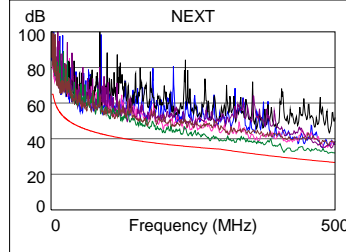


Length (ft), Limit 295	[Pair 12]	247
Prop. Delay (ns), Limit 498	[Pair 45]	390
Delay Skew (ns), Limit 44	[Pair 45]	31
Resistance (ohms)	[Pair 78]	11.9
Insertion Loss Margin (dB)	[Pair 36]	9.4
Frequency (MHz)	[Pair 36]	500.0
Limit (dB)	[Pair 36]	43.8

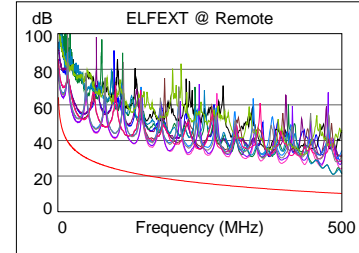
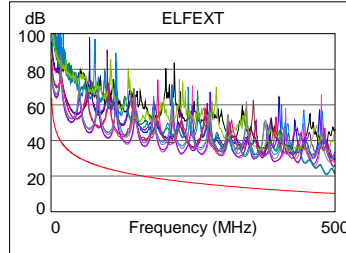


Worst Case Margin Worst Case Value

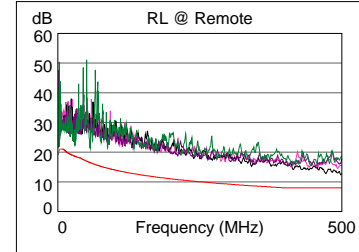
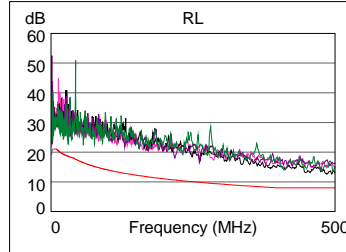
	MAIN	SR	MAIN	SR
PASS				
Worst Pair	36-78	12-36	36-78	36-45
NEXT (dB)	2.8	5.6	4.8	6.9
Freq. (MHz)	410.0	56.0	488.0	499.0
Limit (dB)	29.5	45.9	27.0	26.7
Worst Pair	78	36	36	36
PSNEXT (dB)	4.9	6.5	5.3	6.5
Freq. (MHz)	410.0	499.0	488.0	499.0
Limit (dB)	26.7	23.8	24.1	23.8



	MAIN	SR	MAIN	SR
PASS				
Worst Pair	45-36	36-45	45-36	36-45
ELFEXT (dB)	10.1	10.4	10.1	10.4
Freq. (MHz)	484.0	485.0	484.0	485.0
Limit (dB)	10.5	10.5	10.5	10.5
Worst Pair	36	45	36	45
PSELFEXT (dB)	12.7	12.5	12.7	12.5
Freq. (MHz)	500.0	500.0	500.0	500.0
Limit (dB)	7.2	7.2	7.2	7.2



	MAIN	SR	MAIN	SR
PASS				
Worst Pair	78	78	36	36
RL (dB)	4.1	3.6	4.6	4.4
Freq. (MHz)	30.1	30.1	485.0	498.0
Limit (dB)	18.6	18.6	8.0	8.0



Appendix B
External Test Results

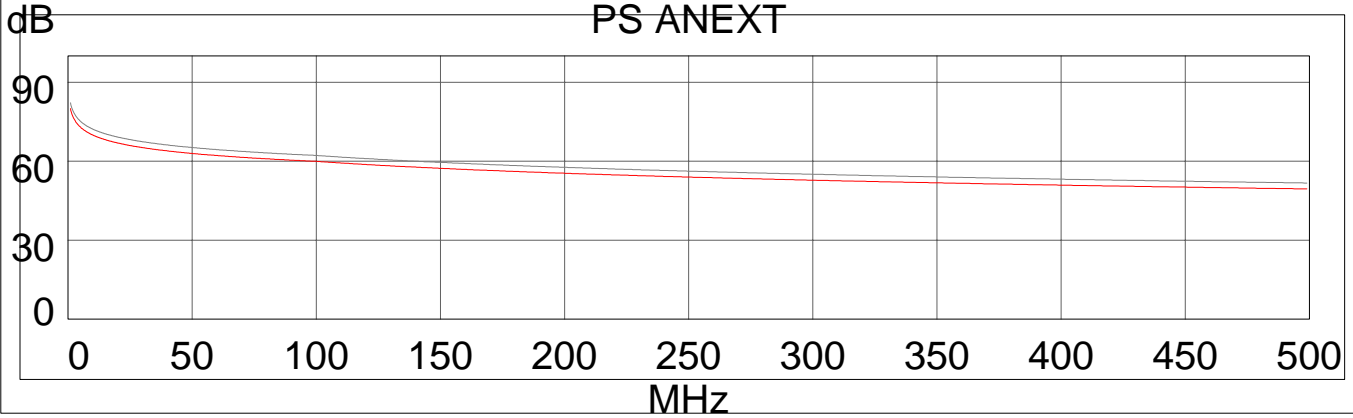
Any data reported above 500 MHz is for indication only.

This Appendix contains 2 pages.

PS ANEXT

Pair	Frequency	Value	Limit	Margin	Status	
12	* All test data above significance condition					Pass
36	* All test data above significance condition					Pass
45	* All test data above significance condition					Pass
78	* All test data above significance condition					Pass
Average	* All test data above significance condition					Pass

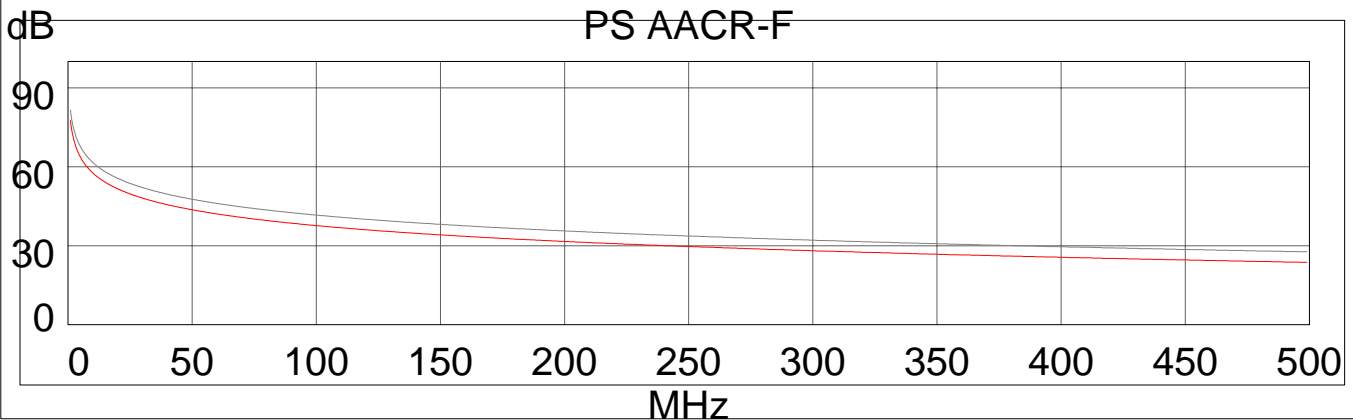
Disturber List
 3161280CRT-002-2
 3161280CRT-002-3
 3161280CRT-002-4
 3161280CRT-002-5
 3161280CRT-002-6
 3161280CRT-002-7



PS AACR-F

Pair	Frequency	Value	Limit	Margin	Status	
12	* All test data above significance condition					Pass
36	* All test data above significance condition					Pass
45	* All test data above significance condition					Pass
78	* All test data above significance condition					Pass
Average	* All test data above significance condition					Pass

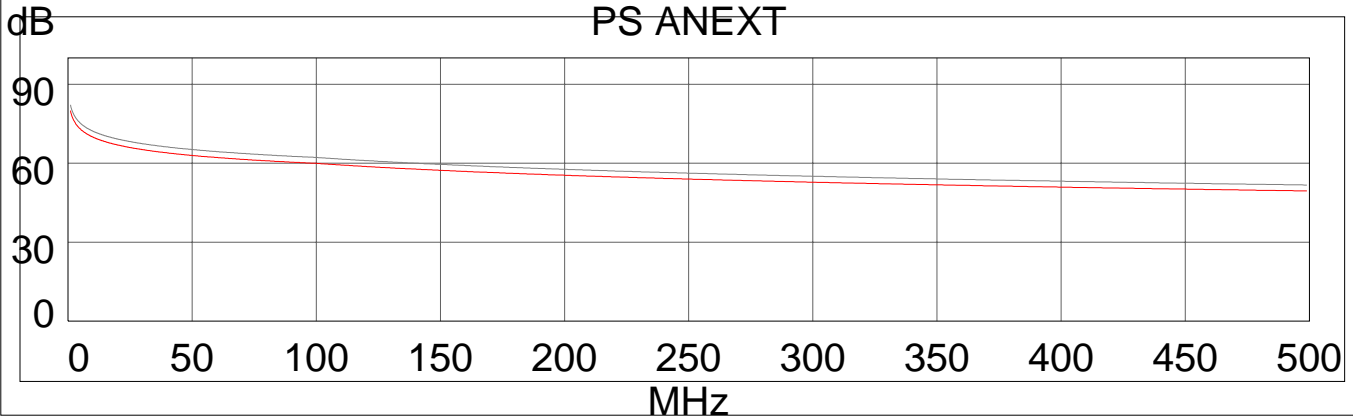
Disturber List
 3161280CRT-002-2
 3161280CRT-002-3
 3161280CRT-002-4
 3161280CRT-002-5
 3161280CRT-002-6
 3161280CRT-002-7



PS ANEXT

Pair	Frequency	Value	Limit	Margin	Status	
12	* All test data above significance condition					Pass
36	* All test data above significance condition					Pass
45	* All test data above significance condition					Pass
78	* All test data above significance condition					Pass
Average	* All test data above significance condition					Pass

Disturber List
 3161280CRT-002-2
 3161280CRT-002-3
 3161280CRT-002-4
 3161280CRT-002-5
 3161280CRT-002-6
 3161280CRT-002-7



PS AACR-F

Pair	Frequency	Value	Limit	Margin	Status	
12	* All test data above significance condition					Pass
36	* All test data above significance condition					Pass
45	* All test data above significance condition					Pass
78	* All test data above significance condition					Pass
Average	* All test data above significance condition					Pass

Disturber List
 3161280CRT-002-2
 3161280CRT-002-3
 3161280CRT-002-4
 3161280CRT-002-5
 3161280CRT-002-6
 3161280CRT-002-7

