
BELDEN 10GXE02

Lightware Testing Lab

Cable Testing Method



Professional Cable Performance Analysis

We use Fluke DSX-5000 cable analyzers in the Lightware Testing Lab to measure the properties of the cable relevant to signal transmission. Measured data include the DC resistance of the cable, the loss of signal strength of a signal (attenuation) at one or more frequencies, measuring the isolation between pairs of multi-pair cable threads, cross talk and many more.

This phase of testing can outline the general performance of the cable itself, without the modifying effects of a connected HDBaseT™ device.

Application Tests

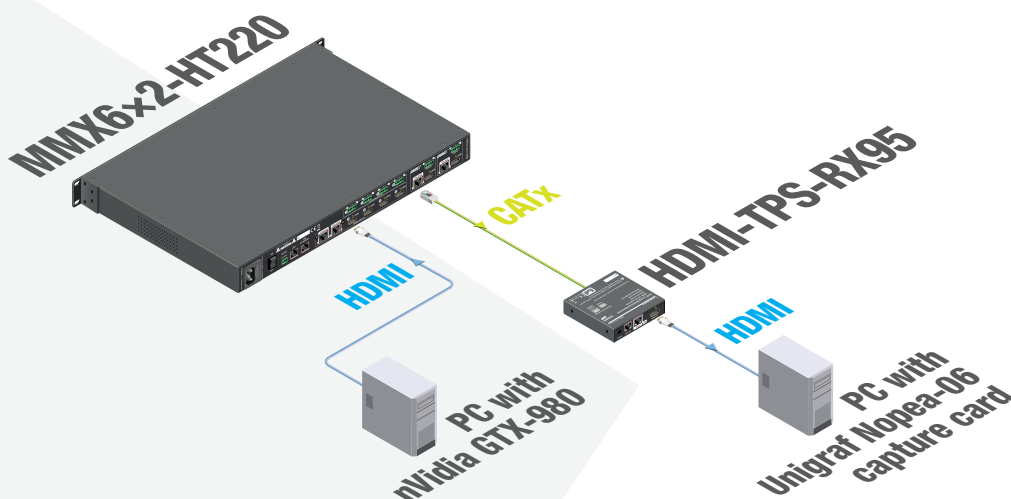
Measuring the performance of CAT cables is generally important, but it is even more useful to test the cables in a system containing HDBaseT™ transmitters and receivers.

These devices along with the used cable greatly affect the overall system performance. HDBaseT™ transmitters and receivers have HDMI input/output stage, reclocking features and other factors that can modify system performance.

We believe that in order to provide the most valuable information for integrators about the HDBaseT™ chain, it is best to test the cables together with HDBaseT™ compatible Lightware TPS products.

Therefore we always run cable performance tests in working applications as well.

Test criteria: Bit Error Rate is under 10^{-9}



					Pixel errors over 200 sec			
	TX	RX	Test Pattern	Length (m)	Red	Green	Blue	Total
Lightware Long Reach Mode	MMX6x2	HDMI-TPS-RX95 ENG-2068	1080p60 pseudorandom	150 m +2x0,3 m patch cable	0	2	2	4
HDBaseT™	MMX6x2	HDMI-TPS-RX95 ENG-2068	2160p30 pseudorandom	90 m +2x0,3 m patch cable	7	2	4	13

Bit Error Rate				Tx Error Rate				Rx Error Rate				
total_ber (tx side)	video_ber (rx side)	audio_ber (rx side)	control_ber (rx side)	A	B	C	D	A	B	C	D	
Lightware Long Reach Mode	10 ⁻⁰⁹	10 ⁻⁰⁹	10 ⁻⁰⁹	10 ⁻⁰⁹	52.1	52.1	52.1	52.1	55.4	55.4	55.4	55.4
HDBaseT™	10 ⁻⁰⁹	2.92 ⁻⁰⁸	10 ⁻⁰⁹	10 ⁻⁰⁹	37.5	37.5	37.5	37.5	60,0	60,0	60,0	60,0



Cable ID: 3 BELDEN 10GXE02

Date / Time: 2017-01-24 02:10:14 PM

Test Limit: Measure All

Cable Type: Cat 6A F/UTP

NVP: 74.0%

Software Version: V4.8 Build 1

Limits Version: V4.8

Calibration Date:

Main (Module): 2016-02-03

Remote (Module): 2016-02-03

Test Summary: PASS

Model: DSX-5000

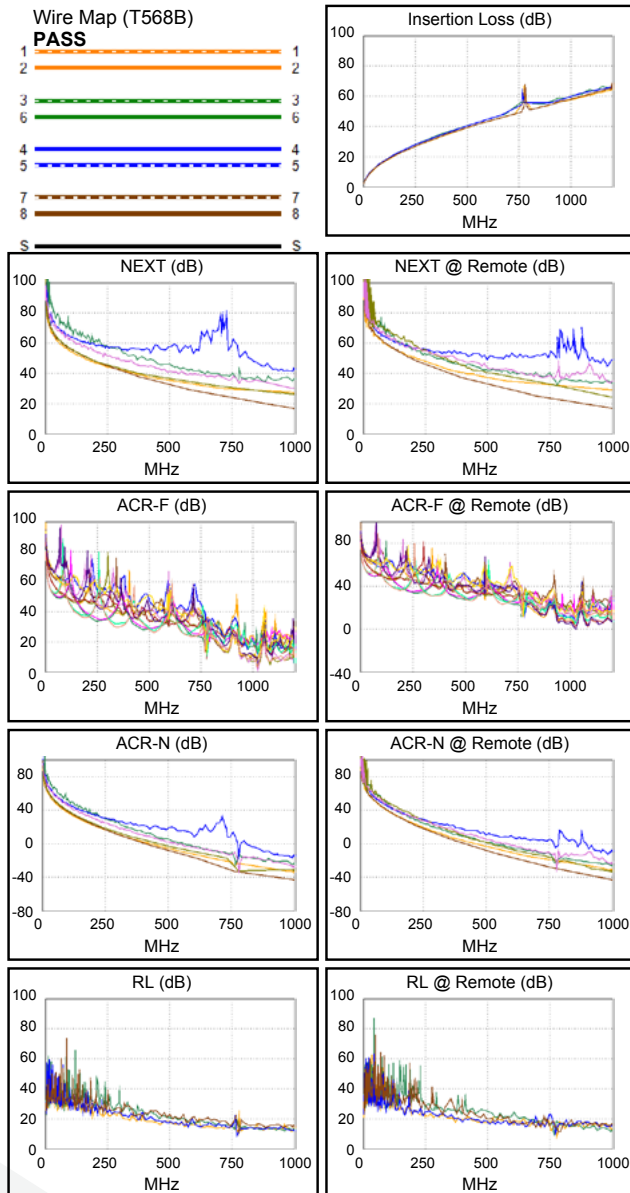
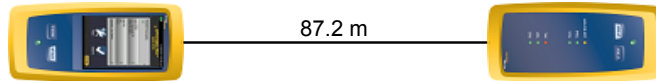
Main S/N: 2797178

Remote S/N: 2797197

Main Adapter: DSX-PLA004

Remote Adapter: DSX-PLA004

Length (m)	[Pair 78]	87.2
Prop. Delay (ns)	[Pair 36]	400
Delay Skew (ns)	[Pair 36]	7
Resistance (ohms)	[Pair 36]	13.27
Resist. Unbal. (ohms)	[Pair 12]	0.041
Resist. P2P Unbal. (ohms)	[Pair 36-78]	0.058
Impedance (ohms)	[Pair 78]	103
Insertion Loss Margin (dB)	[Pair 78]	
Frequency (MHz)	[Pair 78]	1200.0
Limit (dB)	[Pair 78]	



Worst Case Margin Worst Case Value

N/A	MAIN	SR	MAIN	SR
Worst Pair			36-45	36-45
NEXT (dB)			16.7	16.8
Freq. (MHz)			996.0	996.0
Limit (dB)				
Worst Pair			36	36
PS NEXT (dB)			15.9	15.9
Freq. (MHz)			996.0	996.0
Limit (dB)				

N/A	MAIN	SR	MAIN	SR
Worst Pair			36-78	78-36
ACR-F (dB)			1.1	-0.8
Freq. (MHz)			1024.	1022.
Limit (dB)				
Worst Pair			45	36
PS ACR-F (dB)			-0.1	-3.4
Freq. (MHz)			1024.	1022.
Limit (dB)				

N/A	MAIN	SR	MAIN	SR
Worst Pair			36-45	36-45
ACR-N (dB)			-43.2	-43.1
Freq. (MHz)			996.0	996.0
Limit (dB)				
Worst Pair			36	36
PS ACR-N (dB)			-44.4	-44.4
Freq. (MHz)			996.0	996.0
Limit (dB)				

N/A	MAIN	SR	MAIN	SR
Worst Pair			45	12
RL (dB)			8.8	7.2
Freq. (MHz)			769.0	777.0
Limit (dB)				

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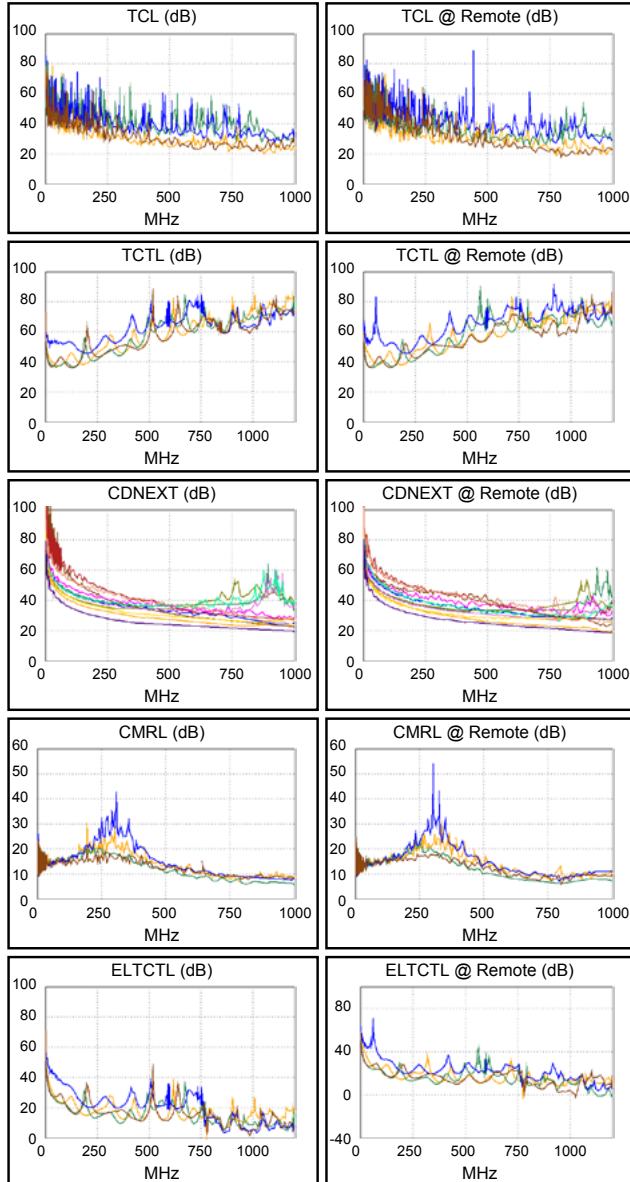
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Remote S/N: 2797197

Main Adapter: DSX-PLA004

Remote Adapter: DSX-PLA004

Worst Case Margin			Worst Case Value	
N/A	MAIN	SR	MAIN	SR
Worst Pair			12	78
TCL (dB)			19.9	17.1
Freq. (MHz)			877.0	794.0
Limit (dB)				
N/A	MAIN	SR	MAIN	SR
Worst Pair			78	36
TCTL (dB)			35.9	36.1
Freq. (MHz)			133.5	40.3
Limit (dB)				
N/A	MAIN	SR	MAIN	SR
Worst Pair			78-36	78-36
CDNEXT (dB)			19.4	17.3
Freq. (MHz)			966.0	909.0
Limit (dB)				
N/A	MAIN	SR	MAIN	SR
Worst Pair			36	78
CMRL (dB)			5.6	5.9
Freq. (MHz)			808.0	801.0
Limit (dB)				
N/A	MAIN	SR	MAIN	SR
Worst Pair			12	36
ELTCTL (dB)			0.7	-2.5
Freq. (MHz)			776.0	1149.
Limit (dB)				



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