



Gigabit Ethernet Consortium

Clause 39 PMD Conformance Test Suite v0.1 Report

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XYZ Networking
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Report Rev. 1.0

Enclosed are the results from the Clause 39 PMD Conformance testing performed on:

Device Under Test (DUT): XYZ Networking DUT5000
Hardware Version: Rev 1.2
Firmware Version: Not Available
Software Version: Not Available
Page and Lane Number: Page 1, Lane 1
IOL ID: Not Applicable

The test suite referenced in this report is available at the UNH-IOL website:

ftp://ftp.iol.unh.edu/pub/ethernet/test_suites/CL39_PMD/Clause39_CX_PMD_testsuite_v0.1.pdf (currently in development)

Issues Observed While Testing

39.1.2 – Differential Output Amplitude – The differential output voltage was observed to exceed the conformance limit.

For specific details regarding issues please see the corresponding test result.

Testing Completed 07/08/2009

Review Completed 07/08/2009

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Table 1: Hardware Information

DUT Configuration	
Amplitude Setting	Powerup default
Emphasis Setting	Powerup default
Test System Hardware	
Real-time DSO	Tektronix CSA7404
Test System Software	UNH-IOL Ethernet Physical Layer Test System v0.2

Test Setup

All testing was performed at TP2, as indicated in figure 1a and 1b.

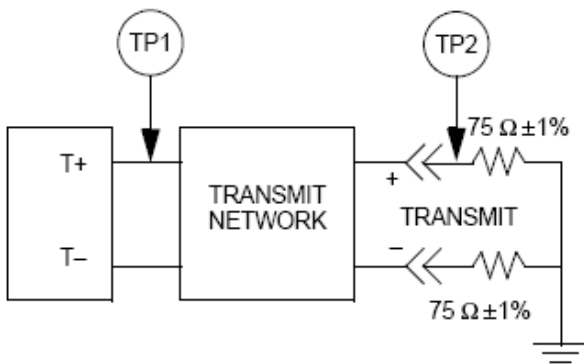


Figure 1a: Test Points

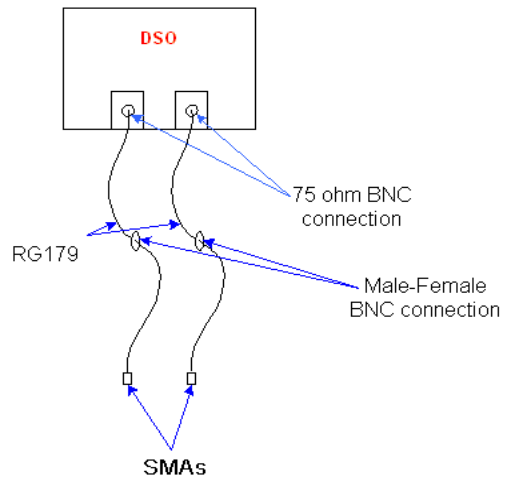


Figure 1b: Physical Test Setup

Report Key

[Table 1](#) contains setup and configuration information for the Device Under Test (DUT), as well as the test system hardware. A best effort is made to record as much information as possible about the DUT, including hardware, software, and firmware versions. The test system hardware information fields display the GPIB device identification strings for each piece of system hardware. These identifiers generally include the manufacturer, model number, serial number, and firmware revision information for the particular piece of equipment, however the amount of detail can vary depending on the instrument.

[Table 2](#) summarizes the electrical conformance requirements and results, listed by IOL test number. A brief description is given for each parameter, along with the range of conformant values and the values measured during testing. There is also a convenient link to the figure that is relevant to the specific test.

The remainder of the report contains graphical supplements to the tabulated results. Most of these supplements are informative, and are included to provide insight into the measurement methodologies used to generate the numerical results. A brief explanation of each figure is provided here:

[Figure 1](#) contains the eye pattern for the DUT. It is a persistence waveform generated in MATLAB from the actual waveform data acquired during the jitter test.

[Figure 2](#) contains the eye diagram using normalized 0 and 1 levels determined when the DUT is transmitting an alternating K28.5 pattern.

[Figure 3](#) contains information pertaining to the average high and low voltage levels ("0" and "1"), which is extracted from measurements from the eye diagram.

[Figure 4](#) contains the rise and fall times, which are extracted from measurements from the eye diagram when the DUT is transmitting a D21.5 pattern.

[Figure 5](#) shows the mean skew in red and differential skew in blue versus the block number.

[Figure 6](#) shows the TX bit rate deviation from nominal signaling speed versus capture. This is derived from measurements made on the eye. The mean of the rate is the average TX signaling speed.

[Figure 7](#) shows a jitter histogram, with the deterministic jitter in red, and random jitter in blue.

[Figure 8](#) shows the deterministic and random jitter in the frequency domain.

Table 2: Summary of Electrical Requirements and Results

Parameter	Min	Max	Measured	Units	Figure
39.1.1 – Signaling Speed					
Average TX bit rate, difference from 1.25 GBd	-125	125	2.78	kBd	<u>6</u>
39.1.2 – Differential Output Amplitude					
Maximum differential peak-to-peak output voltage measured at TP2	1100	2000	(2177)	mV	
39.1.3 – Transmit Jitter					
TP1 Peak-to-peak total jitter (TJ)	0	0.240	N/A	UI	
TP1 Peak-to-peak deterministic (DJ)	0	0.12	N/A	UI	
TP1 Peak-to-peak random jitter (RJ)	0	0.12	N/A	UI	
TP2 Peak-to-peak total jitter (TJ)	0	0.279	0.127	UI	<u>7, 8</u>
TP2 Peak-to-peak deterministic (DJ)	0	0.14	0.061	UI	<u>7, 8</u>
TP2 Peak-to-peak random jitter (RJ)	0	0.139	0.055	UI	<u>7, 8</u>
39.1.4 – Rise and Fall Times					
20%-80% rising edge transition time	85	327	322.3	ps	<u>3, 4</u>
80%-20% falling edge transition time	85	327	310.4	ps	<u>3, 4</u>
39.1.5 – Differential Skew					
Maximum differential time difference of the true and complement signals at TP2	0	25	-0.8	ps	<u>5</u>
39.1.6 – Transmitter Eye Mask					
The captured waveform should have no mask violations	0	0	0	hits	<u>1</u>
The normalized waveform should have no mask violations	0	0	0	hits	<u>2</u>

Note 1: Failing results are shown in red text, enclosed by parentheses ()

Annex A – Supplemental Figures

