Transmitter Droop Limit Proposal

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Test Mode 6

149.5.1.1 Test fixtures

The following fixtures, or their equivalents, as shown in Figure 149–33, Figure 149–34, Figure 149–35, Figure 149–36, and Figure 149–37, in stated respective tests, shall be used for measuring the transmitter specifications for data communication only. The tolerance of resistors shall be ± 0.1%.

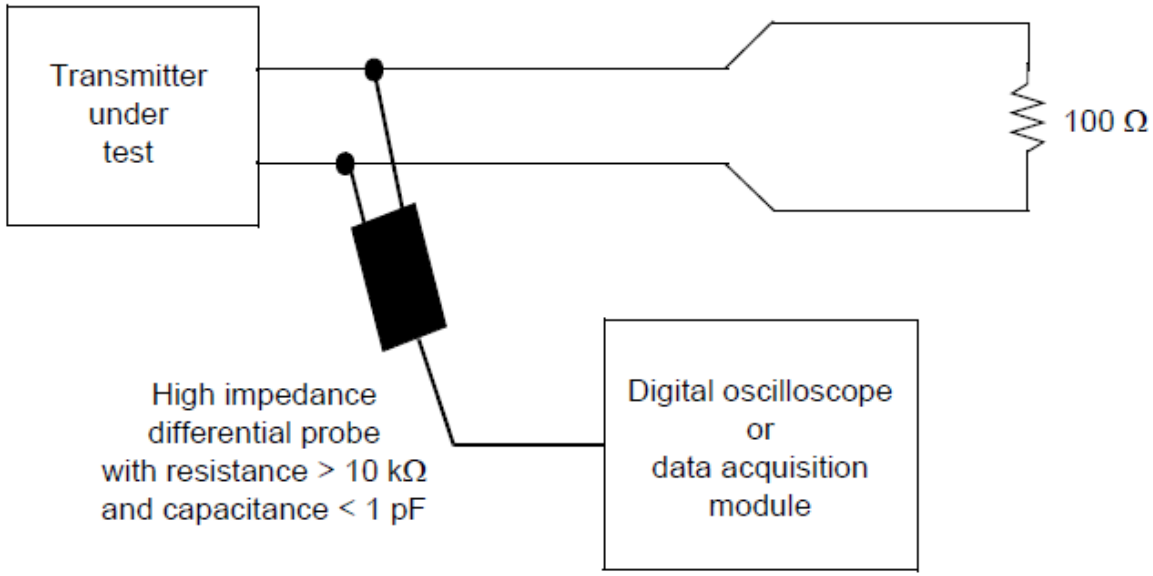
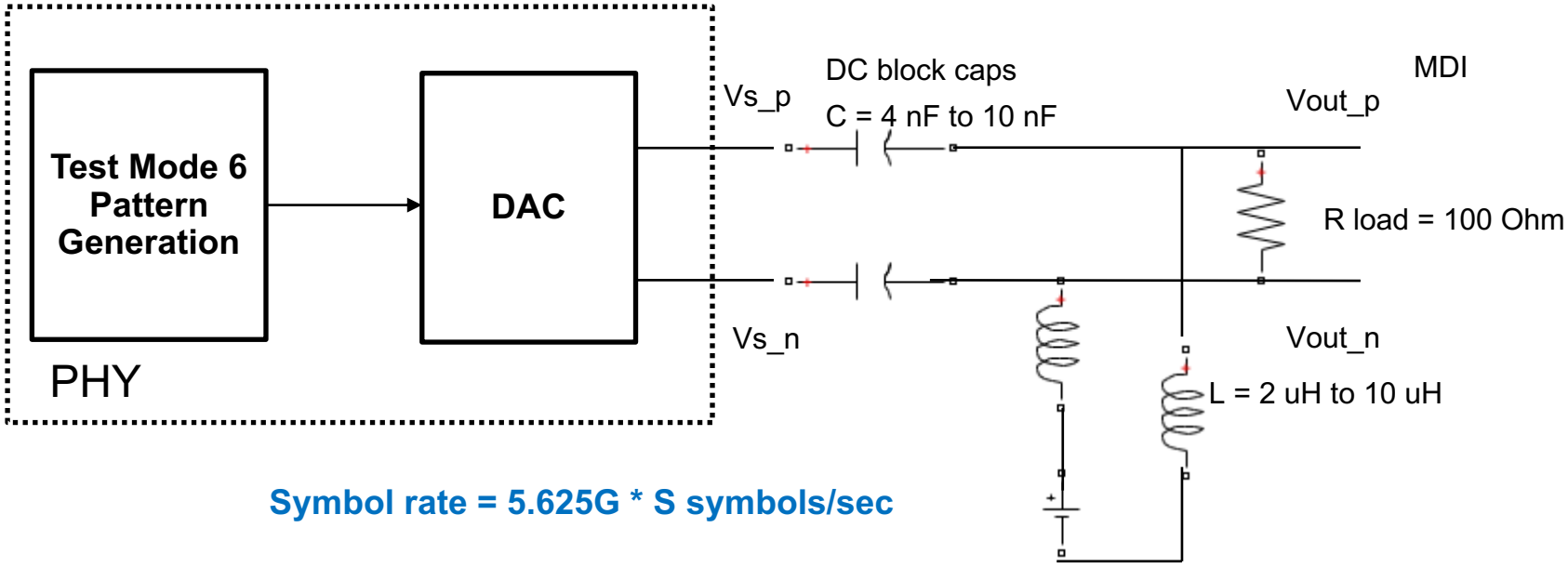


Figure 149–46—Transmitter test fixture 1 for transmitter droop measurement

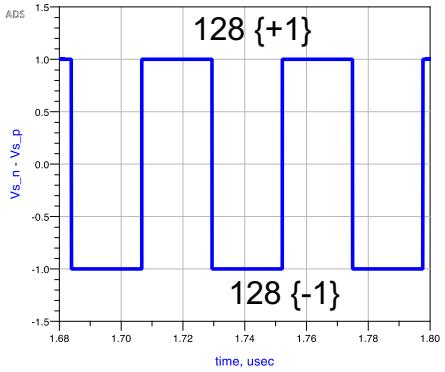
Test Mode 6

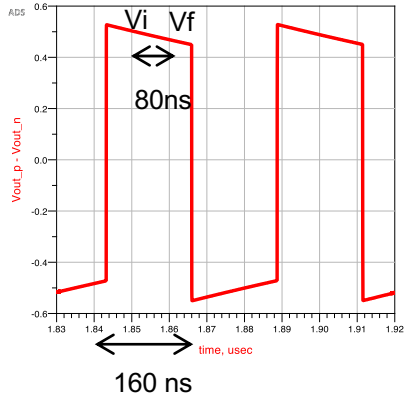


Symbol rate = 5.625G * S symbols/sec

IEEE 802.3 Droop Comparison

10GBASE-T
800 MBaud

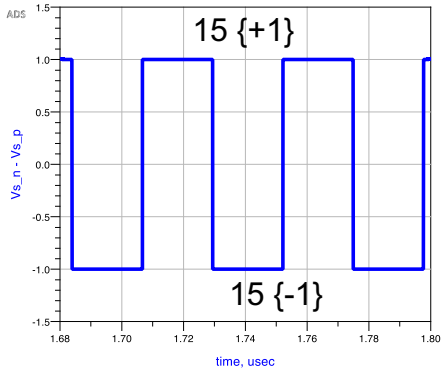


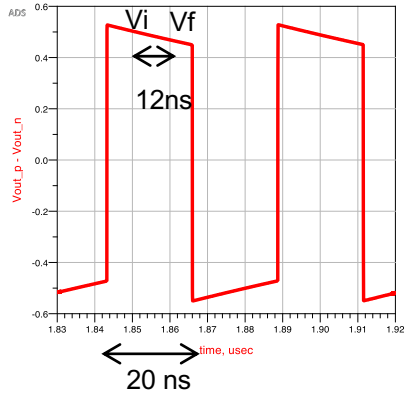


$\frac{80}{160} = 50\%$

$\frac{Vi-Vf}{Vi} < 10\%$

1000BASE-T1
750 MBaud

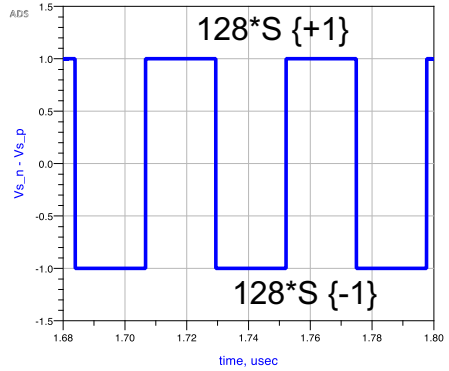


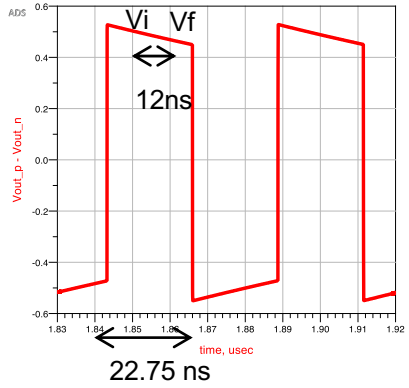


$\frac{12}{20} = 60\%$

$\frac{Vi-Vf}{Vi} < 10\%$

MGig Auto
5.625 GBaud

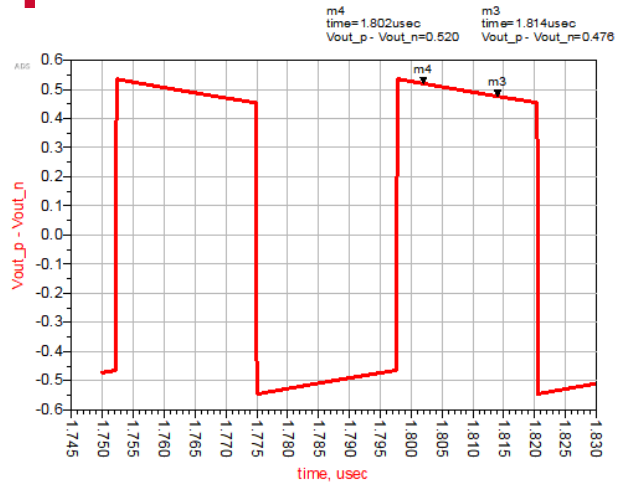


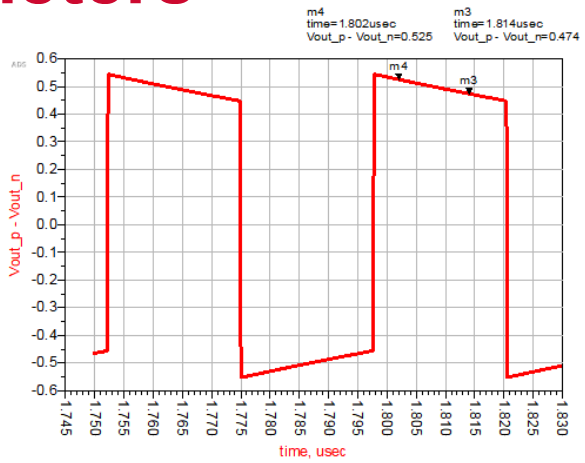


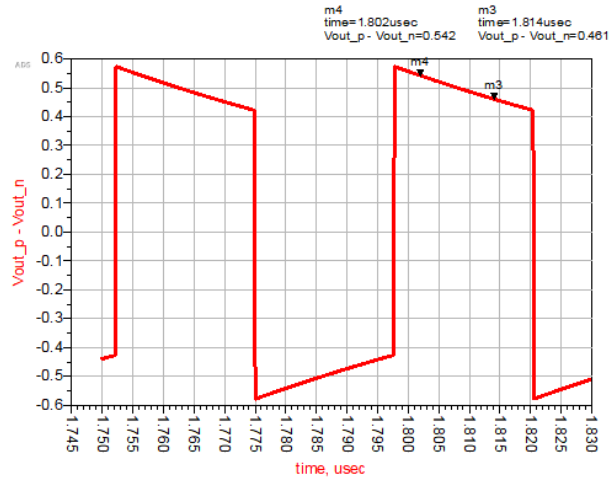
$\frac{12}{22.75} = 53\%$

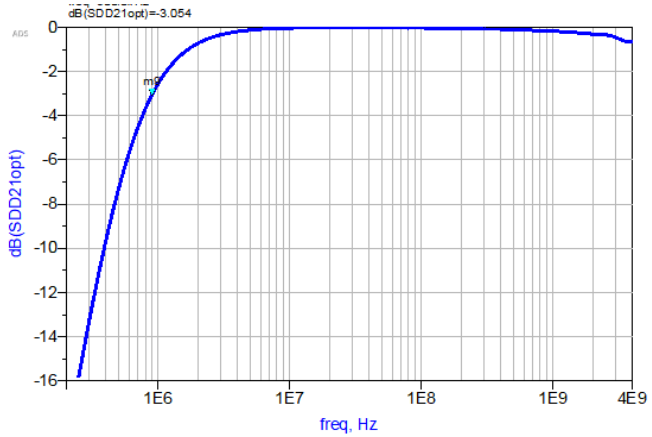
$\frac{Vi-Vf}{Vi} < 15\%$

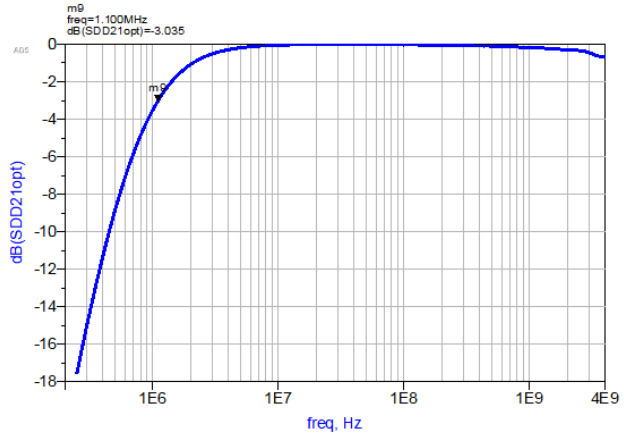
Impact of Circuit Parameters

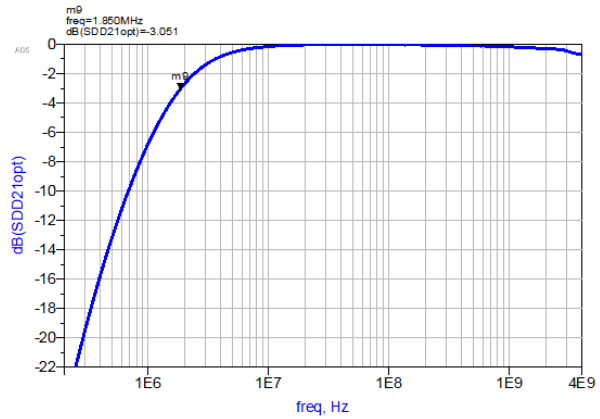












DC cap = **10 nF**
L = **4 uH** , 0.15 pF internal parasitic cap
R load = 100 Ohm
R source = 100 Ohm
Board Trace = 1 inch
Connector = Rosenberger H-MTD

Droop = **8.5 %**
HighPass_3dB = **0.9 MHz**

DC cap = **10 nF**
L = **3.3 uH** , 0.15 pF internal parasitic cap
R load = 100 Ohm
R source = 100 Ohm
Board Trace = 1 inch
Connector = Rosenberger H-MTD

Droop = **9.7 %**
HighPass_3dB = **1.1 MHz**

DC cap = **10 nF**
L = **2 uH** , 0.15 pF internal parasitic cap
R load = 100 Ohm
R source = 100 Ohm
Board Trace = 1 inch
Connector = Rosenberger H-MTD

Droop = **15 %**
HighPass_3dB = **1.85 MHz**

Proposed Modifications to Draft Standard

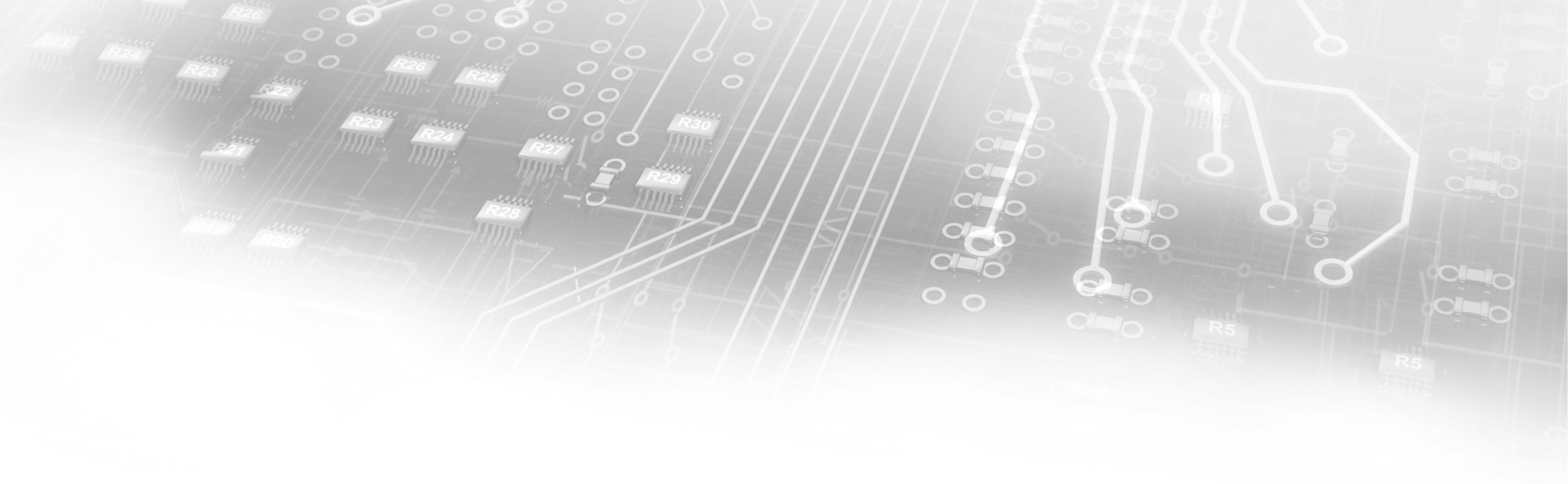
149.5.1 Test Modes, replace lines 50-51 with the following text

When test mode 6 is enabled, the PHY shall transmit a continuous pattern of 128*S {+1} symbols followed by 128*S {–1} symbols with the transmitted symbols timed from its local clock source.

[Note: From 149.1.1 Nomenclature, the parameter S is used for scaling. For 2.5GBASE-T1, S = 0.25; for 5GBASE-T1, S = 0.5; and for 10GBASE-T1, S = 1.]

149.5.2.1 Maximum output droop, replace lines 3-5 with the following text

With the transmitter in test mode 6 and using the transmitter test fixture 1, the magnitude of both the positive and negative droop shall be less than 15% , measured with respect to an initial value at 4 ns after the zero crossing and a final value at 16 ns after the zero crossing (12 ns period).



THANK YOU