















VTX-BOOST-FS / VTX-BOOST-RS	VTX-BOOST-FS	Tx boost ratio for full swing	8.0 (min)	dB
What's new for Gen 3.0	V _{TX-BOOST-RS}	Tx boost ratio for reduced swing	2.5 (min)	dB
 De-Emphasis (Va) and pre-shoot (Vc) Transmitters must support 11TX equalization pressure 	re-sets	Preset Number	Preshoot (dB)	De-emphasis (dB)
		P4	0.0	0.0
i ne nigh frequency nature of 8.0 GT/s signalin	g	P1	0.0	-3.5 ± 1 dB
makes measurement of single UI pulse heights	6	P0	0.0	-6.0 ± 1.5 dB
impractical due to attenuation by the package	and	P9	3.5 ± 1 dB	0.0
breakout channel		P8	3.5 ± 1 dB	-3.5 ± 1 dB
		P7	3.5 ± 1 dB	-6.0 ± 1.5 dB
 Amplitude measurements are taken on low frequency waveforms (64 ones/ 64 zeros in the compliance 			1.9 ± 1 dB	0.0
			2.5 ± 1 dB	0.0
pattern) using last few UI of each half period		P3	0.0	-2.5 ± 1 dB
 Va and Vc values are obtained by setting the DI 	UT to	P2	0.0	-4.4 ± 1.5 dB
a different preset value where the desired Va or	Vc	P10	0.0	See Note 2.
	Preset Number	De-emphasis (dB) 20log10 (Vb(i)/Vb(j))	Presho 20log10	ot (dB) (Vb(i)/Vb(j))
UI 57-62-	<u>P4</u>	N/A	<u>N/A</u>	
	<u>P1</u>	P1/P4	<u>N/A</u>	
400	<u>P0</u>	P0/P4	<u>N/A</u>	
200	<u>P9</u>	<u>N/A</u>	P4/P9	
	<u>P8</u>	P8/P6	P3/P8	
0 Alf period A Alf period VTX-FS-NC	-EQ P7	P7/P5	P2/P7	
-200	<u>P5</u>	N/A	P4/P5	
	<u>P6</u>	<u>N/A</u>	P4/P6	
-400 / / / / / / / / / / / / / / / / / /	<u>P3</u>	P3/P4	N/A	
		P2/P4	N/A	
-600	<u>P2</u>	1 2/1 4		

Transmitter Voltage Measurements VTX-EIEOS-FS / VTX-EIEOS-RS

- Launch Voltage of Electrical Idle Exit • Ordered Set
- Required to ensure that the RX can • properly detect an exit from electrical idle
- Taken on a pattern of eight ones • followed by eight zeros repeated 128 times included in the compliance pattern Taken on the middle five UI to reduce attenuation effects of the channel
- VTX-EIEOS-FS Full Swing Signaling • - Measured by Preset 10
- VTX-EIEOS-RS Reduced Swing • Signaling Measured by Preset 1



VTX-EIEOS-FS	Min swing during EIEOS for full swing	250 (min)	mVPP
Vtx-eieos-rs	Min swing during EIEOS for reduced swing	232 (min)	m∨PP

10 | 2010-10-30



Transmitter Jitter Measurements

- Necessary to take transmitter jitter measurements with all lanes operating in order to capture crosstalk effects
- Measurements are taken at TP1 and de-embedded back to the pins of the TX
- Necessary to separate uncorrelated and data dependent jitter in order to ensure that jitter that can be recovered is not budgeted as uncorrelated jitter

Jitter measurements	Data Dependent Jitter	Uncorrelated Jitter
Cause	Due to package loss and reflections (dynamics in the channel, ISI)	Uncorrelated - PLL jitter, crosstalk, noise conversion (amplitude to phase)
How to compensate	Can be reduced by equalization	Difficult to remove (better components, layout)
: 2010-10-30		





































Stressed Voltage Test
BERTScope Pre-Emphasis Optimized TxEo 100 MHz Refdk Stressed Voltage Eye applied to
B GB PRBS Combiner Calibration Channel Channel Channel
DUT placed in Loopback for BER Test 4 TP6 Receiver Under Test Loopback Rj Source Source noise ISI Board
BERTScope performs BER test. BERTScope with Clock Recovery CR125A























































Transmitter Tests Transmitter jitter and timing measurements.	DSA/DPO/MSO 71604C / MSO71604C Recommended (12.5Ghz Minimum) PCI Express 3.0 Analysis Software Opt. DPOJET Jitter and Eye Diagram Analysis Tool Opt. SDLA Serial Data Link Analysis for RX equalization and Channel Embedding / De-embedding	
Receiver Tests and PLL Loop Bandwidth Receiver Jitter Tolerance Test and Debug and Analysis Tools	BERTScope BSA85C w/Opt. STR and PCISTR DPP125 w/ Opt. 4T – 4 tap de-emphasis CR125A with Opt 12GJ & Opt PCIECR125ACBL (Precision delay-matched cable set for use with BSA & CR in SSC applications)	
Protocol	TLA7SAxx Serial Protocol Analysis Module Mid-Bus Slot Interposer Solder Down Probes	
Interconnect Far End Noise, Near End Noise, impedance, Insertion loss, and return loss measurements. S-parameter measurements for channel de-embed.	DSA8200 80E08 TDR Sampling Module for DSA8200 IConnect TDR and S-Parameter measurement software (80SSPAR)	