USB 3.1 ENGINEERING CHANGE NOTICE FORM

Title: Tx RJ Measurement Point
Applied to: USB3.1

Brief description of the functional changes:
Presently there is informative jitter budgeting information in Table 6-15 at the silicon pads and normative transmitter eye specs at test point TP1 (end of the channel) in table 6-19. This ECR changes transmitter RJ in table 6-19 to be measured as close to the Tx silicon pads as possible.

Benefits as a result of the changes:
Measuring RJ at the far end of a lossy channel when RJ is present causes some DJ to be misinterpreted as RJ. This change will allow the proper value for the transmitter RJ to be measured. Additionally, this change will create consistency between the informative and normative jitter budgets.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
No impact.

An analysis of the hardware implications:
No impact.

An analysis of the software implications:
No software implications.

An analysis of the compliance testing implications:
The CTS measurement methodology was already being done at the near end. This ECR will also improve consistency between the CTS and the base spec.

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Actual Change (change based on accepted ECN)

(a). From, in section 6.7.3, table 6-19, page 6-32

Table Error! No text of specified style in document.**-1. Normative Transmitter Eye Mask at Test Point TP1**

	5GT/s			10GT/s				
Signal Characteristic	**Minimum**	**Nominal**	**Maximum**	**Minimum**	**Nominal**	**Maximum**	**Units**	**Note**
Eye Height	100		1200	70		1200	mV	2,4
Dj			0.43			0.530	UI	1,2,3
Rj			0.23			0.141	UI	1,2,3,5
Tj			0.66			0.671	UI	1,2,3

Notes:

1. Measured over 10^6 consecutive UI and extrapolated to 10^{-12} BER.
2. Measured after receiver equalization function.
3. Measured at end of reference channel and cables at TP1 in **Error! Reference source not found.**.
4. The eye height is to be measured at the minimum opening over the range from the center of the eye ± 0.05 UI.
5. The Rj specification is calculated as 14.069 times the RMS random jitter for 10^{-12} BER.

(a). To, in section 6.7.3, table 6-19, page 6-32

Table Error! No text of specified style in document.**-2. Normative Transmitter Eye Mask at Test Point TP1**

	5GT/s			10GT/s				
Signal Characteristic	**Minimum**	**Nominal**	**Maximum**	**Minimum**	**Nominal**	**Maximum**	**Units**	**Note**
Eye Height	100		1200	70		1200	mV	2,4
Dj			0.43			0.530	UI	1,2,3
Rj			0.23			0.141	UI	1,2,5,6
Tj			0.66			0.671	UI	1,2,3

Notes:

1. Measured over 10^6 consecutive UI and extrapolated to 10^{-12} BER.
2. Measured after receiver equalization function.
3. Measured at end of reference channel and cables at TP1 in **Error! Reference source not found.**.
4. The eye height is to be measured at the minimum opening over the range from the center of the eye ± 0.05 UI.
5. The Rj specification is calculated as 14.069 times the RMS random jitter for 10^{-12} BER.
6. Measured at the output of the compliance breakout board without embedding the compliance cable and load board.