USB 3.1 ENGINEERING CHANGE NOTICE FORM

Title: Loss Budget Clarification
Applied to: USB 3.1 Specification Release

Brief description of the functional changes:
Clarify the PHY compliance channel requirements, specifically addressing the intended loss budget stated in the ECN, "USB 3.1 CTLE," from June 2014 (posted on the USB-IF website as "USB 3.1 ECN CTLE.pdf"). In that ECN, the benefit was stated as "Allows SuperSpeed Gen 2 systems to support an additional 3 dB of loss (10 dB host/6 dB cable assembly/7 dB device) in order to minimize the need for re-timers." The original 20 dB budget was symmetrical (7 dB host/6 dB cable assembly/7 dB device) was based upon the expectation that hosts and devices would have similar routing requirements. The introduction of the Type C connector has reaffirmed this expectation, based upon input from system customers who have stated intent to design for "dual role" in which the port can act as either host or device. As a result, the loss budget (which forms the basis for the compliance channel designs) needs to be symmetric (8.5 dB host/6 dB cable assembly/8.5 dB device) in order to maximize route lengths. Note that this ECR does not change anything in the USB 3.1 specification, but simply documents the loss budget that is used in defining the compliance test boards.

Benefits as a result of the changes:
Enables PCB routing lengths that optimize the trade-off between hosts, single role devices, and dual role devices (can operate as both host and device).

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:
Enables PCB routing lengths that optimize the trade-off between hosts, single role devices, and dual role devices (can operate as both host and device).

An analysis of the software implications:
No impact.

An analysis of the compliance testing implications:
The compliance load boards for testing hosts and devices will have the same loss for all connector types.

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Actual Change

(a) From Text (and location):

(a) To Text (and location):