

USB 3.1 ENGINEERING CHANGE NOTICE FORM

Title: Retimer in Recovery.TSx
Applied to: Appendix E rev1p1

Brief description of the functional changes:

Clarifications of the requirement in Recovery.TSx.

If a BLR entering Recovery transmitting TS1A OS, its transmit clock is switched from a local clock with SSC disabled. In the unlikely case its following SRIS retimer detects TS1A OS and is still able to maintain bit/symbol lock, it forward TS1A OS with its local clock and with SSC enabled. The proposed change is to correct this behavior and apply it to BLR/SRIS retimer for simplifications.

Benefits as a result of the changes:

Remove confusion and potential interop issue in the spec.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
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No conformed retimer yet. this case is also highly unlikely

An analysis of the hardware implications:
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Design change is needed

An analysis of the software implications:
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No SW change is required

An analysis of the compliance testing implications:
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NA

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Actual Change

(a). From Text (and location): E.3.11.1.1 Recovery.TSx Requirements

- If entry to Recovery is due to detecting TS1 OS, TS2 OS, TS1A OS, or TS1B OS, the re-timer shall forward OS and monitor the progression of LTSSM. Note that entry to Recovery under this condition may be due to the need for host to reset the device based on Hot Reset, or other operation modes, or due to bit errors that result in link layer initiating entry to Recovery. The bit-lock and symbol lock are preserved and no link training is required.
- If entry to Recovery is due to the timeout of the tU0RecoveryTimeout timer, or loss of bit-lock and symbol lock, the re-timer shall perform link training.

(b). To Text (and location): E.3.11.1.1 Recovery.TSx Requirements

- If entry to recovery is due to detection of TS1 OS, or TS1A OS, or TS1B OS, and bit-lock/symbol lock are still preserved in both directions, a bit-level retimer shall forward the received OS and monitor the progression of LTSSM. A SRIS retimer shall transmit local TS1 OS instead of the received TS1A OS or TS1B OS until TS1 OS is received. Note that entry to Recovery under this condition may be due to the need for host to reset the device based on Hot Reset, or other operation modes, or due to bit errors that result in link layer initiating entry to Recovery. The bit-lock and symbol lock are preserved and no link training to acquire bit/symbol lock is required.
- If entry to Recovery is due to the timeout of the tU0RecoveryTimeout timer, or loss of bit-lock and symbol lock, the re-timer shall perform link training as defined in Section E.3.4.4.