USB4 1.0 ENGINEERING CHANGE NOTICE FORM

Title: DP OUT Adapter Transition to Idle
Applied to: USB4 Specification Version 1.0

Brief description of the functional changes:
Instead of requiring a DP OUT Adapter to transition to Idle when link training ends, it may transition to Idle or keep transmitting the last TPS.

Benefits as a result of the changes:
Remaining in TPS and not moving to IDLE is more robust, since the transition from self generated Idle to Idle coming from the Tunnel introduces corner cases for SST mode and may cause unwanted behavior for MST mode.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
None

An analysis of the hardware implications:
None

An analysis of the software implications:
None

An analysis of the compliance testing implications:
None

USB4 1.0 ENGINEERING CHANGE NOTICE FORM

Actual Change

(a). Section 10.4.10.1 8b/10b LTTPR

10.4.10.1 8b/10b LTTPR

10.4.10.1.2 DP OUT Adapter Requirements

- A DP OUT Adapter that receives a SET_CONFIG Packet of Type SET_TRAINING with *TS* field equal to 1, 2, 3 or 7 shall transmit TPS1, TPS2, TPS3 or TPS4 accordingly.

- A DP OUT Adapter that receives a SET_CONFIG Packet of Type SET_TRAINING with *TS* field equal to 0 ~~shall~~ may transition to transmit IDLE pattern according to the DisplayPort 1.4a Specification or keep transmitting the same TPS it currently transmits.

- A DP OUT Adapter shall set its Voltage Swing (VS) and Pre-Emphasis (PE) levels for all enabled lanes upon receiving a SET_CONFIG Packet of type SET_VSPE. The VS and PE levels shall be according to the MSG Data.

- The DP OUT Adapter shall transition on the 10-bit symbol boundary when:
    o Transitioning from one training pattern to another training pattern.
    o Transitioning to IDLE sequence after DP Link training is done.

(b). Section 10.4.10.2 Non-LTTPR and 8b/10b LTTPR Transparent

10.4.10.2 8b/10b Non-LTTPR and 8b/10b LTTPR Transparent

10.4.10.2.2 DP OUT Adapter Requirements

If link training finishes successfully, a DP OUT Adapter shall~~:~~

~~Send~~send a SET_CONFIG Packet of type SET_LINK, with the same *LC* and *LR* fields it received from the DP IN Adapter when link training was initiated. A DP OUT Adapter may transition to transmit

~~Generate~~ IDLE pattern (including SR) for both MST and SST DP Links or keep transmitting the same TPS it currently transmits.

(c). Section 10.4.10.4 Transition to High Speed Tunnel

10.4.10.4 Transition to High Speed Tunnel

A DP OUT Adapter transitions from sending IDLE pattern or TPS to reconstructing the DisplayPort Main-Link symbols according to Section 10.5.5.

USB4 1.0 ENGINEERING CHANGE NOTICE FORM

(d). Section 10.5.5 DP OUT Adapter Buffer

10.5.5 DP OUT Adapter Buffer

After the DP link is successfully trained, a DP OUT Adapter ~~shall~~ may start generating idle pattern as described in the DisplayPort 1.4a Specification or keep transmitting the same TPS it was last transmitted. The DP OUT Adapter transitions from sending self-generated idle pattern or TPS to reconstructing the DP Main-Link from the Tunneled Packets after completing the following steps:

10.5.5.1 Buffer Operation

During Active Video periods, the buffer is filled to some extent due to the Accumulation Cycles that the DP OUT Adapter waits when switching from self-generated idle pattern or TPS to reconstruction of DP Main-Link.