USB Type-C ENGINEERING CHANGE NOTICE

Title: TBT3 LRD clarification for USB4 hosts
Applied to: USB Type-C Specification Release 2.1, May 2021

Brief description of the functional changes proposed:
This ECR clarifies USB4 host requirements while entering USB4 mode with TBT3 linear re-driver based cables.

Benefits as a result of the proposed changes:
Currently, there is no explicit mention whether DFP needs to send Enter_USB/Enter_Mode message to the TBT3 LRD cables. This may lead to different interpretations and implementations in USB eco-system, further leading to confusion.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
Legacy systems would treat TBT3 LRD cables as passive cables and do not need to send any message to the cable. Such systems are expected to work with TBT3 LRD cables as passive cables.

An analysis of the hardware implications:
None expected

An analysis of the software implications:
FW/SW implementing USB4 discovery and entry flow may have to be updated

An analysis of the compliance testing implications:
Clarifying USB4 host requirement for TBT3 LRD cables will help USB Type-C functional compliance accurately test for host compliance to the base spec with TBT3 LRD cables.

Actual Change Requested

(a). Section 5.4.3.2.3, Page 260

From Text:

4. If this discovery is part of the USB4-compatible passive cable discovery process, from the cable's Discover Modes VDO responses (see Section F.2.6), extract the value in the Cable Speed field to complete the process.

5. If this discovery is part of the USB4-compatible active cable discovery process, from the cable's Discover Modes VDO responses (see Section F.2.6), extract the value in the TBT_Rounded_Support field to complete the process. [Note: discovery and use of USB4-compatible TBT3 active cables is an optional feature that also would require use of USB PD Enter Mode command to enable the cable for USB4 operation.]

To Text:

4. If this discovery is part of the USB4-compatible passive cable discovery process, from the cable's Discover Modes VDO responses (see Section F.2.6), extract the value in the Cable Speed field to complete the process. Additionally, if this cable is TBT3 LRD cable as indicated by cable's Discover Modes VDO response (Bit 22=0 and Bit 25=1), DFP may optionally send USB PD Enter_USB or USB PD Enter Mode command to the cable.

5. If this discovery is part of the USB4-compatible active cable discovery process, from the cable's Discover Modes VDO responses (see Section F.2.6), extract the value in the TBT_Rounded_Support field to complete the process. [Note: discovery and use of USB4-compatible TBT3 active cables is an optional feature that also would require use of USB PD Enter Mode command to enable the cable for USB4 operation.]