

USB4 Re-timer 0.96 ENGINEERING CHANGE NOTICE FORM

Title: TxFFE Asymmetric Negotiation Clarifications
Applied to: USB4 Re-timer Specification Version 0.96

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| Brief description of the functional changes: |
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| Fixes tables related to Asymmetric TxFFE negotiation and adding information about LT_Resume2 transaction. |
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| Benefits as a result of the changes: |
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| Clearer description of the flows in Asymmetric TxFFE negotiation. |
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| An assessment of the impact to the existing revision and systems that currently conform to the USB specification: |
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| None |
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| An analysis of the hardware implications: |
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| None |
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| An analysis of the software implications: |
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| None |
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| An analysis of the compliance testing implications: |
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| None |
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Actual Change

(a). Table 6-3 TxFFE Negotiation flows, Page 62

To Text:

| Re-timer Type | Lane Adapter Position | Rx/Tx | TxFFE Negotiation Flow | Reference | Transactions |
|-------------------|--|--|---|---------------------|--|
| On-Board Re-timer | Adjacent to a Router or an On-Board Re-timer in the same Router Assembly | Receiver or Transmitter | Symmetric TxFFE Negotiation flow | USB4 Specification | Addressed RT Transactions, with the <i>Index</i> field set to 0 |
| On Board Re-timer | Adjacent to a Cable Re-timer | Transmitter only | Asymmetric TxFFE Parameter Negotiation with a Transmitting Primary Partner flow | USB4 Specification | AT Transactions, <u>requests are sent</u> with the <i>Recipient</i> bit set to 0, <u>process responses with Recipient bit set to 1</u> |
| On-Board Re-timer | Adjacent to a Cable Re-timer | Receiver only | Asymmetric TxFFE Parameter Negotiation with a Receiving Primary Partner | USB4 Specification | AT Transactions, <u>send transactions</u> with the <i>Recipient</i> bit set to 0, <u>process responses with Recipient bit set to 1</u> |
| On-Board Re-timer | Adjacent to a Passive Cable | Receiver or Transmitter | Symmetric TxFFE Negotiation flow | USB4 Specification | AT Transactions, <u>send requests and process responses</u> with the <i>Recipient</i> bit set to 1 |
| Cable Re-timer | Adjacent to a USB Type-C connector | Transmitter <u>Receiver</u> only | Asymmetric TxFFE Parameter Negotiation with a Receiving Subordinate Partner | Section 6.2.1.3.3.1 | AT Transactions, <u>process requests</u> with the <i>Recipient</i> bit set to 0, <u>send responses with Recipient bit set to 1</u> |
| Cable Re-timer | Adjacent to a USB Type-C connector | <u>Receiver</u> Transmitter only | Asymmetric TxFFE Parameter Negotiation with a Transmitting Subordinate Partner | Section 6.2.1.3.3.2 | AT Transactions, <u>process requests</u> with the <i>Recipient</i> bit set to 0, <u>send responses with Recipient bit set to 1</u> |

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(b). 6.2.1.2.1 LT Transactions, Page 57

To Text:

A Cable Re-timer shall forward an LT_Resume2 Transaction received on its Router-Facing USB4 Port to its Cable-Facing USB4 Port.

Note: The LT Resume2 Transaction is forwarded by the Cable Re-timer to indicate it is transmitting data received by its corresponding receiver using a recovered clock with SSC. This indication can be used by the other Cable Re-timer for the internal TxFFE negotiation.

(c). 6.2.1.1.2 On-Board Re-timers, Page 57

To Text:

- The USB4 Port shall not forward a received Transaction if it is still waiting for a Response to an ~~RA~~ **RA** Command it sent.