

# USB4 1.0 ENGINEERING CHANGE NOTICE FORM

**Title: LT\_LRoff on Downstream Facing Port**  
**Applied to: USB4 Specification Version 1.0**

<b>Brief description of the functional changes:</b>
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Specifies the Phase on which Lane Initialization start after receiving an LT_LRoff transaction on an Inter-Domain Link.
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<b>Benefits as a result of the changes:</b>
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Wake capability on Inter-Domain Link.
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<b>An assessment of the impact to the existing revision and systems that currently conform to the USB specification:</b>
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None
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<b>An analysis of the hardware implications:</b>
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None
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<b>An analysis of the software implications:</b>
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None
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<b>An analysis of the compliance testing implications:</b>
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None
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## Actual Change

### (a). Section 4.2.1.2.2, page 137

#### From Text:

A Lane Adapter that enters this state due to a disconnect shall perform Lane Initialization starting from Phase 1.

#### To Text:

A Lane Adapter that enters this state due to a disconnect shall perform Lane Initialization starting from Phase 1. ~~unless specify otherwise, except for the following cases:~~

- Downstream Facing Port Disconnect due to reception of LT LROff (see Section 4.4.5.2.2)

### (b). Section 4.4.5.2.2, page 182

#### From Text:

The Router shall do the following for each enabled Lane Adapter in the disconnected Port:

- Send the Connection Manager a Hot Plug Event Packet with the *UPG* bit set to 1b.
- Load the following fields in Adapter Configuration Space with their default values:
  - Basic Configuration Registers:
    - *Link Credits Allocated*.
    - *HEC Errors* (optional, recommended).
    - *Invalid HopID Errors* (optional, recommended).
    - *ECC Errors* (optional, recommended).
  - TMU Adapter Configuration Capability:
    - *Inter-domain Slave*.
  - Lane Adapter Configuration Capability:
    - *Target Link Width*.
    - *CL0s Enable*.
    - *CL1 Enable*.
    - *CL2 Enable*.
    - *Lane Bonding*.
    - *PM Secondary* (optional, recommended).
    - *Logical Layer Errors* (optional, recommended).
    - *Logical Layer Errors Enable* (optional, recommended).
- Load the TxFFE register in SB Register Space with its default values.
- Start Lane Initialization.

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The following events initiate a disconnect on a Downstream Facing Port of a Router as defined in this section:

- The Domain enters Sleep state, the *USB4 Port is inter-Domain* bit is 1b and the *Enable Wake on inter-Domain* bit is set to 1b (see Section 4.5.1).

## To Text:

The Router shall do the following for each enabled Lane Adapter in the disconnected Port:

- Send the Connection Manager a Hot Plug Event Packet with the *UPG* bit set to 1b.
- Load the following fields in Adapter Configuration Space with their default values:
  - Basic Configuration Registers:
    - *Link Credits Allocated*.
    - *HEC Errors* (optional, recommended).
    - *Invalid HopID Errors* (optional, recommended).
    - *ECC Errors* (optional, recommended).
  - TMU Adapter Configuration Capability:
    - *Inter-domain Slave*.
  - Lane Adapter Configuration Capability:
    - *Target Link Width*.
    - *CL0s Enable*.
    - *CL1 Enable*.
    - *CL2 Enable*.
    - *Lane Bonding*.
    - *PM Secondary* (optional, recommended).
    - *Logical Layer Errors* (optional, recommended).
    - *Logical Layer Errors Enable* (optional, recommended).
- Load the TxFFE register in SB Register Space with its default values.
- ~~Start Lane Initialization~~ from Phase 2.

The following events initiate a disconnect on a Downstream Facing Port of a Router as defined in this section:

- The Domain enters Sleep state, the *USB4 Port is inter-Domain* bit is 1b and the *Enable Wake on inter-Domain* bit is set to 1b (see Section 4.5.1).

**Note: The Router will not get a response for its AT transactions in Phase 3 while its Link Partner is in Sleep state. The expected behavior described in section 4.1.1.2.5.1**