

# ECN for USB Power Delivery Specification Revision 3.2

## Version 1.1, 2024-10

### Title: Clarify requirement of PSSourceOffTimer in FRS

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| <b>Brief description of the functional changes proposed:</b>                          |
| Clarify that during an FRS, the PSSourceOffTimer should use the EPR tPSSourceOff time |

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| <b>Benefits as a result of the proposed changes:</b>            |
| Clarifies requirement and gives time for EPR range to discharge |

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| <b>An assessment of the impact to the existing revision and systems that currently conform to the USB specification:</b> |
| Relaxes time if using SPR time so no interop issues  |

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| <b>An analysis of the hardware implications:</b> |
| None.  |

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| <b>An analysis of the software implications:</b> |
| Update time to check                             |

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| <b>An analysis of the compliance testing implications:</b>                              |
| Seems that compliance isn't properly testing this at all today so that should be fixed. |

# ECN for USB Power Delivery Specification Revision 3.2

## Version 1.1, 2024-10

### Actual Change Requested

#### (a). Section 6.6.5.2, Page 252,

#### From Text:

##### 6.6.5.2 PSSourceOffTimer

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###### 6.6.5.2.1 Use during Power Role Swap

The **PSSourceOffTimer** is used by the Policy Engine in Dual-Role Power Device that is currently acting as a Sink to timeout on a **PS\_RDY** Message during a Power Role Swap AMS. This condition leads to USB Type-C Error Recovery.

If a **PR\_Swap** Message request has been sent by the Dual-Role Power Device currently acting as a Source the Sink can respond with an **Accept** Message. When the last bit of the **GoodCRC** Message **EOP**, corresponding to this transmitted **Accept** Message, is received by the Sink's PHY Layer, then the **PSSourceOffTimer** **Shall** be started.

If a **PR\_Swap** Message request has been sent by the Dual-Role Power Device currently acting as a Sink the Source can respond with an **Accept** Message. When the last bit of the **GoodCRC** Message **EOP**, corresponding to this received **Accept** Message, is transmitted by the Sink's PHY Layer, then the **PSSourceOffTimer** **Shall** be started.

The **PSSourceOffTimer** **Shall** be stopped when the last bit of the **GoodCRC** Message **EOP**, corresponding to the received **PS\_RDY** Message, is transmitted by the PHY Layer.

The **PSSourceOffTimer** relates to the time taken for the remote Dual-Role Power Device to stop supplying power (see also [Section 7.3.2.1, "Sink Requested Power Role Swap"](#) and [Section 7.3.2.2, "Source Requested Power Role Swap"](#)). The timer **Shall** time out if a **PS\_RDY** Message has not been received from the remote Dual-Role Power Device within **tPSSourceOff** indicating this has occurred.

###### 6.6.5.2.2 Use during Fast Role Swap

The **PSSourceOffTimer** is used by the Policy Engine in Dual-Role Power Device that is the Initial Sink (currently providing **vSafe5V**) to timeout on a **PS\_RDY** Message during a Fast Role Swap AMS. This condition leads to USB Type-C Error Recovery.

When the **FR\_Swap** Message request has been sent by the Initial Sink, the Initial Source **Shall** respond with an **Accept** Message. When the last bit of the **GoodCRC** Message **EOP**, corresponding to this **Accept** Message is received by the Initial Sink's PHY Layer, then the **PSSourceOffTimer** **Shall** be started.

The **PSSourceOffTimer** **Shall** be stopped when

the last bit of the **GoodCRC** Message **EOP**, corresponding to the received **PS\_RDY** Message, is transmitted by the PHY Layer.

The **PSSourceOffTimer** relates to the time taken for the Initial Source to stop supplying power and for **VBUS** to revert to **vSafe5V** (see also [Section 7.2.10, "Fast Role Swap"](#) and [Section 7.3.4, "Transitions Caused by Fast Role Swap"](#)). The timer **Shall** time out if a **PS\_RDY** Message has not been received from the Initial Source within **tPSSourceOff** indicating this has occurred.

# ECN for USB Power Delivery Specification Revision 3.2

## Version 1.1, 2024-10

### To Text:

#### 7.31.5.2 PSSourceOffTimer

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##### 7.31.5.2.1 Use during Power Role Swap

The **PSSourceOffTimer** is used by the Policy Engine in Dual-Role Power Device that is currently acting as a Sink to timeout on a **PS\_RDY** Message during a Power Role Swap AMS. This condition leads to USB Type-C Error Recovery.

If a **PR\_Swap** Message request has been sent by the Dual-Role Power Device currently acting as a Source the Sink can respond with an **Accept** Message. When the last bit of the **GoodCRC** Message **EOP**, corresponding to this transmitted **Accept** Message, is received by the Sink's PHY Layer, then the **PSSourceOffTimer** **Shall** be started.

If a **PR\_Swap** Message request has been sent by the Dual-Role Power Device currently acting as a Sink the Source can respond with an **Accept** Message. When the last bit of the **GoodCRC** Message **EOP**, corresponding to this received **Accept** Message, is transmitted by the Sink's PHY Layer, then the **PSSourceOffTimer** **Shall** be started.

The **PSSourceOffTimer** **Shall** be stopped when the last bit of the **GoodCRC** Message **EOP**, corresponding to the received **PS\_RDY** Message, is transmitted by the PHY Layer.

The **PSSourceOffTimer** relates to the time taken for the remote Dual-Role Power Device to stop supplying power (see also [Section 7.3.2.1, "Sink Requested Power Role Swap"](#) and [Section 7.3.2.2, "Source Requested Power Role Swap"](#)). The timer **Shall** time out if a **PS\_RDY** Message has not been received from the remote Dual-Role Power Device within **tPSSourceOff** indicating this has occurred.

##### 7.31.5.2.2 Use during Fast Role Swap

The **PSSourceOffTimer** is used by the Policy Engine in Dual-Role Power Device that is the Initial Sink (currently providing **vSafe5V**) to timeout on a **PS\_RDY** Message during a Fast Role Swap AMS. This condition leads to USB Type-C Error Recovery.

When the **FR\_Swap** Message request has been sent by the Initial Sink, the Initial Source **Shall** respond with an **Accept** Message. When the last bit of the **GoodCRC** Message **EOP**, corresponding to this **Accept** Message is received by the Initial Sink's PHY Layer, then the **PSSourceOffTimer** **Shall** be started.

The **PSSourceOffTimer** **Shall** be stopped when

the last bit of the **GoodCRC** Message **EOP**, corresponding to the received **PS\_RDY** Message, is transmitted by the PHY Layer.

The **PSSourceOffTimer** relates to the time taken for the Initial Source to stop supplying power and for **VBUS** to revert to **vSafe5V** (see also [Section 7.2.10, "Fast Role Swap"](#) and [Section 7.3.4, "Transitions Caused by Fast Role Swap"](#)). The timer **Shall** time out if a **PS\_RDY** Message has not been received from the Initial Source within **tPSSourceOff** indicating this has occurred. When the Initial Source and Initial Sink are in SPR mode when the FRS event occurs, the SPR **tPSSourceOff** time is used. When the Initial Source and Initial Sink are in EPR mode when the FRS event occurs, the EPR **tPSSourceOff** time is used.