

USB Power Delivery ENGINEERING CHANGE NOTICE

Title: Source PDP Rating Field Clarifications

**Applied to: USB Power Delivery Specification Revision 3.2
Version 1.0**

Brief description of the functional changes proposed:
This ECN clarifies/simplifies the definitions of SPR and EPR versions of the Source PDP Rating fields in the Source_Capabilities_Extended message. While likely most designs are putting in appropriate values, the way that these fields are defined in the latest spec is confusing at best and could be much simpler by aligning them with the definition used for Port Maximum PDP as it applies to the mode of operation (SPR or EPR).

Benefits as a result of the proposed changes:
Simpler/clearer definitions of SPR and EPR Source PDP Rating field values.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
No intended impact.

An analysis of the hardware implications:
No intended implications.

An analysis of the software implications:
No intended implications.

An analysis of the compliance testing implications:
No intended implications.

USB Power Delivery ENGINEERING CHANGE NOTICE

Actual Change Requested

(a). Section 1.6, Table 1.3

From:

Table 1.3 Terms and Abbreviations

Term	Description
PD Power (PDP)	The output power, in Watts, of a Source, as specified by the manufacturer and expressed in Fixed Supply PDOs as defined in Section 10, "Power Rules" .
PDP Rating	Manufacturer declared PDP for a Source Port. The PDP Rating is the same as the Port Maximum PDP , except where there is a fractional value, in which case the Port Maximum PDP corresponds to the integer part of the PDP Rating (see Section 6.4.11.2 "Port Maximum PDP Field").

To:

Table 1.3 Terms and Abbreviations

Term	Description
PD Power (PDP)	The output power, in Watts, of a Source, as specified by the manufacturer and expressed in Fixed Supply PDOs as defined in Section 10, "Power Rules" .
PDP Rating	Manufacturer declared PDP for a Source Port. The PDP Rating is the same as the Manufacturer declared PDP for a Source Port Port Maximum PDP , except where there is a fractional value, in which case the PDP Rating Port Maximum PDP corresponds to the integer part of the Manufacturer declared PDP Rating (see Section 6.4.11.2 "Port Maximum PDP Field").

(b). Section 6.4.11.2

From:

6.4.11.2 Port Maximum PDP Field

Port Maximum PDP is a static field that **Shall** indicate the maximum amount of power the Port is designed to deliver. A Guaranteed Capability Port (as indicated by the Port Type field being set to '1') **Shall** always be capable of supplying

USB Power Delivery ENGINEERING CHANGE NOTICE

this amount of power. A Managed Capability Port (as indicated by the Port Type field being set to '0') **Shall** be able to offer this amount of power at some time.

The **Port Maximum PDP Shall** be the same as the larger of the Source PDP Rating and the EPR Source PDP Rating in the **Source_Capabilities_Extended** Message.

To:

6.4.11.2 Port Maximum PDP Field

Port Maximum PDP is a static field that **Shall** **report the integer portion of the PDP Rating of the Port indicate the maximum amount of power the Port is designed to deliver**. A Guaranteed Capability Port (as indicated by the Port Type field being set to '1') **Shall** always be capable of supplying this amount of power. A Managed Capability Port (as indicated by the Port Type field being set to '0') **Shall** be able to offer this amount of power at some time.

The **Port Maximum PDP Shall** be the same as the larger of the **SPR** Source PDP Rating and the EPR Source PDP Rating in the **Source_Capabilities_Extended** Message.

(c). Section 6.5.1.14

From:

6.5.1.14 SPR Source PDP Rating Field

The SPR Source PDP Rating field **Shall** report the integer portion of the Source's Source PDP Rating, when operating in SPR Mode, as defined in **Table 10.2 "SPR Normative Voltages and Minimum Currents"**, **Table 10.12 "EPR Source Capabilities based on the Port Maximim PDP and using an EPR Capable Cable"** and **Table 10.13 "EPR Source Capabilities when Port Present PDP is less than Port Maximum PDP and using an EPR-capable cable"**.

The Source PDP Rating field that is reported **Shall** be invariant and **Shall** follow the **[USB Type-C 2.3]** requirements for single-port, Multi-port Assured Capacity Chargers, or Multi-port Shared Capacity Chargers.

To:

6.5.1.14 SPR Source PDP Rating Field

For an SPR Source, the SPR Source PDP Rating field Shall report the integer portion of the Source's Source PDP Rating, of the Port when operating in SPR Mode, as defined in Table 10.2 "SPR Normative Voltages and Minimum Currents", Table 10.12 "EPR Source Capabilities based on the Port Maximim PDP and using an EPR Capable Cable" and Table 10.13 "EPR Source Capabilities when Port Present PDP is less than Port Maximum PDP and using an EPR-capable cable".

For an EPR Source, the SPR Source PDP Rating field Shall report the integer portion of the maximum amount of power that the Port is designed to deliver in SPR Mode.

The Source PDP Rating field that is reported **Shall** be **Static** and **Shall** follow the **[USB Type-C 2.3]** requirements for **single-port, Multi-port Assured Capacity Chargers, or Multi-port Shared Capacity Chargers.**

USB Power Delivery ENGINEERING CHANGE NOTICE

(c). Section 6.5.1.15

From:

6.5.1.15 EPR Source PDP Rating Field

The EPR Source PDP Rating field **shall** report the integer portion of the EPR Source's Source PDP Rating as defined in *Table 10.12 "EPR Source Capabilities based on the Port Maximum PDP and using an EPR Capable Cable"*. If the Source is not an EPR capable Source, this field **shall** be set to zero.

The EPR Source PDP Rating field that is reported **shall** be invariant and **shall** follow the *[USB Type-C 2.3]* requirements for single-port, Multi-port Assured Capacity Chargers, or Multi-port Shared Capacity Chargers.

To:

6.5.1.15 EPR Source PDP Rating Field

For an EPR Source, the EPR Source PDP Rating field **shall** report the integer portion of the EPR Source's Source PDP Rating of the Port as defined in *Table 10.12 "EPR Source Capabilities based on the Port Maximum PDP and using an EPR Capable Cable"*.

For an SPR ~~if the Source is not an EPR capable~~ Source, this field **shall** be set to zero.

The EPR Source PDP Rating field that is reported **shall** be **Static** and ~~shall~~ follow the *[USB Type-C 2.3]* requirements for single port, Multi-port Assured Capacity Chargers, or Multi-port Shared Capacity Chargers.