

USB Power Delivery ENGINEERING CHANGE NOTICE

Title: USB4 V2 Alignment Updates Adjusted

**Applied to: USB Power Delivery Specification Revision 3.1
Version 1.5**

Brief description of the functional changes proposed:
This ECN makes some rewording for the SVDM versioning updates needed in the USB PD spec to align with the USB4® V2 (80 Gbps) spec update. The adjustment differentiates SVDM 2.0 from SVDM 2.1 using a more generic definition instead of tying it to a specific feature.

Benefits as a result of the proposed changes:
Enables USB4 Gen4 discovery and entry through the use of updated USB PD protocol.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
Defines new normative definitions for USB4-related USB PD protocol.

An analysis of the hardware implications:
Might require more code space in the USB PD controller to support the revised USB4-related protocol.

An analysis of the software implications:
Based on implementation, software/firmware updates will be needed to be USB4 V2 compatible.

An analysis of the compliance testing implications:
All new.

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Actual Change Requested

(a). Section 6.4.4.2, Page 150, Table 6-29

From Text:

B14...13	Structured VDM Version	Version Number of the Structured VDM (not this specification Version): <ul style="list-style-type: none">• Version 1.0 = 00b (Shall Not be used)• Version 2.0 = 01b• Values 2-3 are Reserved and Shall Not be used
B12...11	Reserved	For Commands 0...15 Shall be set to 0 and Shall be Ignored SVID Specific Commands (16...31) defined by the SVID.

To Text:

B14...13	Structured VDM Version (Major)	Version Number (Major) of the Structured VDM (not this specification Version): <ul style="list-style-type: none">• Version 1.0 = 00b (Shall Not be used)• Version 2.x = 01b• Values 2-3 are Reserved and Shall Not be used
B12...11	Structured VDM Version (Minor)	For Commands 0...15, Version Number (Minor) of the Structure VDM <ul style="list-style-type: none">• Version 2.0 = 00b (Used for ports implemented prior to USB PD Revision 3.1, Version 1.6)• Version 2.1 = 01b (Used for ports implemented starting with USB PD Revision 3.1, Version 1.6)• All other Values are Reserved and Shall Not be used SVID Specific Commands (16...31) defined by the SVID.

(b). Section 6.4.4.2.3, Page 151

From Text:

The Structured VDM Version field indicates the level of functionality supported in the Structured VDM part of the specification. This is not the same version as the version of this specification. This field **Shall** be set to 01b to indicate Version 2.0.

To ensure interoperability with existing USBPD Products, USBPD Products **Shall** support every Structured VDM Version number starting from Version 1.0.

On receipt of a VDM Header with a higher Version number than that supported, a Port **Shall** respond using the highest Version number it supports.

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To Text:

The Structured VDM Version field indicates the level of functionality supported in the Structured VDM part of the specification. This is not the same version as the version of this specification. The Structured VDM Version (Major) field **shall** be set to 01b to indicate Version 2.x with the Structured VDM Version (Minor) field set as appropriate based on whether the port is implemented to USB PD Revision 3.1, Version 1.6 (or newer) or a prior version.

To ensure interoperability with existing USBPD Products, USBPD Products **shall** support every Structured VDM Version number starting from Version 1.0.

On receipt of a VDM Header with a higher Version number than it supports, a Port or Cable Plug **shall** respond using the highest Version number it supports. On receipt of a VDM Header with a lower Version number than it supports, a Port or Cable Plug **shall** respond using the same Version number it received.

(c). Section 6.4.4.3.1.4, Page 158, Table 6-39

From Text:

B2...0	USB Highest Speed	000b = [USB 2.0] only, no SuperSpeed support 001b = [USB 3.2] Gen1 010b = [USB 3.2]/[USB4] Gen2 011b = [USB4] Gen3 100b...111b = Reserved, Shall Not be used
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To Text:

B2...0	USB Highest Speed	000b = [USB 2.0] only, no SuperSpeed support 001b = [USB 3.2] Gen1 010b = [USB 3.2]/[USB4] Gen2 011b = [USB4] Gen3 100b = [USB4] Gen4 101b...111b = Reserved, Shall Not be used
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(d). Section 6.4.4.3.1.4.8, Page 159

From Text:

The USB Highest Speed field Shall indicate the port's highest signaling capability.

To Text:

The USB Highest Speed field Shall indicate the port's highest signaling capability. The DFP **shall** consider all values indicated in this field that are higher than the highest value that the DFP recognizes as being valid and functionally compatible with the highest speed that the DFP supports.

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(e). Section 6.4.4.3.1.6, Page 161, Table 6-41

From Text:

B2...0	USB Highest Speed	000b = <i>[USB 2.0]</i> only, no SuperSpeed support 001b = <i>[USB 3.2]</i> Gen1 010b = <i>[USB 3.2]/[USB4]</i> Gen2 011b = <i>[USB4]</i> Gen3 100b...111b = <i>Reserved, Shall Not</i> be used
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To Text:

B2...0	USB Highest Speed	000b = <i>[USB 2.0]</i> only, no SuperSpeed support 001b = <i>[USB 3.2]</i> Gen1 010b = <i>[USB 3.2]/[USB4]</i> Gen2 011b = <i>[USB4]</i> Gen3 100b = <i>[USB4]</i> Gen3 10 1 b...111b = <i>Reserved, Shall Not</i> be used
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(f). Section 6.4.4.3.1.6.10, Page 162

From Text:

The USB Highest Speed field (B2...0) ***Shall*** indicate the highest signaling rate the cable supports.

To Text:

The USB Highest Speed field (B2...0) ***Shall*** indicate the highest signaling rate the cable supports. **The DFP *Shall* consider all values indicated in this field that are higher than the highest value that the DFP recognizes as being valid and functionally compatible with the highest speed that the DFP supports.**

(g). Section 6.4.4.3.1.7, Page 163, Table 6-42

From Text:

B2...0	USB Highest Speed	000b = <i>[USB 2.0]</i> only, no SuperSpeed support 001b = <i>[USB 3.2]</i> Gen1 010b = <i>[USB 3.2]/ [USB4]</i> Gen2 011b = <i>[USB4]</i> Gen3 100b...111b = <i>Reserved, Shall Not</i> be used
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To Text:

B2...0	USB Highest Speed	000b = <i>[USB 2.0]</i> only, no SuperSpeed support 001b = <i>[USB 3.2]</i> Gen1 010b = <i>[USB 3.2]</i> / <i>[USB4]</i> Gen2 011b = <i>[USB4]</i> Gen3 100b = <i>[USB4]</i> Gen4 10 1 b...111b = <i>Reserved, Shall Not</i> be used
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(h). Section 6.4.4.3.1.7.14, Page 165

From Text:

The USB Highest Speed field (B2...0) **Shall** indicate the highest signaling rate the cable supports.

To Text:

The USB Highest Speed field (B2...0) **Shall** indicate the highest signaling rate the cable supports. **The DFP *Shall* consider all values indicated in this field that are higher than the highest value that the DFP recognizes as being valid and functionally compatible with the highest speed that the DFP supports.**

(i). Section 6.4.8, Page 182, Table 6-49

From Text:

B23...21	<i>Cable Speed²</i>	000b: <i>[USB 2.0]</i> only, no SuperSpeed support 001b: <i>[USB 3.2]</i> Gen1 010b: <i>[USB 3.2]</i> Gen2 and <i>[USB4]</i> Gen2 011b: <i>[USB4]</i> Gen3 111b...100b: <i>Reserved, Shall</i> not be used
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To Text:

B23...21	<i>Cable Speed²</i>	000b: <i>[USB 2.0]</i> only, no SuperSpeed support 001b: <i>[USB 3.2]</i> Gen1 010b: <i>[USB 3.2]</i> Gen2 and <i>[USB4]</i> Gen2 011b: <i>[USB4]</i> Gen3 100b: <i>[USB4]</i> Gen3 101b... 111b: <i>Reserved, Shall</i> not be used
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(j). Section 6.4.8.4, Page 183

From Text:

The *Cable Speed* field **Shall** be used to indicate the cable's maximum speed.

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To Text:

The *Cable Speed* field **shall** be used to indicate the cable's maximum speed.

When a UFP is capable of operating in **[USB4]** Gen4, it **shall** recognize that when the Cable Speed field is 011b (**[USB4]** Gen3) and Cable Type field is 00b (Passive), that the cable is capable of **[USB4]** Gen4 operation.