

ECN for USB Power Delivery Specification Revision 3.2

Version 1.1, 2024-10

Title: Fix Regression in Active Cable VDO Version

Brief description of the functional changes proposed:

Interpretation of the fields inside Active Cable VDO1 and Active Cable VDO2 depend on SVDM version (in the Structured VDM Header), as well as the VDO Version field of Active Cable VDO1.

I have identified that between USB PD R3.2 V1.0 and USB PD R3.2 V1.1 (and therefore inherited in this R3.2 V1.2 draft), that the VDO Version in Active Cable VDO1 was inadvertently reset from Version 1.3 = 011b back to Version 1.0 = 000b.

This causes an ambiguity in interpreting an Active Cable VDO1 response which indicates V1.0 = 000b, which could be a brand new Active Cable conforming to R3.2 V1.1, or it could also be a cable conforming to the 2016 spec, R3.0 V1.0a.

Change the required active cable VDO Version to back to 1.3, as there have been no structural changes to the VDOs in USB PD R3.2 V1.1 or USB PD R3.2 V1.2

Benefits as a result of the proposed changes:

Eliminates ambiguity in interpreting Active Cable VDO. Allows a port to tell the difference between a circa 2016 active cable (Active VDO Version 1.0), and a circa 2025 active cable.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:

Hopefully R3.2 V1.1's active cable vdo table (including the erroneous VDO Version 1.0 = 000b wasn't actually used in any cable's firmware. Evidence is that PD compliance tests would not allow for VDO version 1.0 anyway.

An analysis of the hardware implications:

None

An analysis of the software implications:

Software that decodes VDO contents based on historical versions of the USB PD spec needs to ignore the table in R3.2 V1.1, as it contains this error.

An analysis of the compliance testing implications:

The current USB PD3 CTS Q3 2025 OR has a consistency check that requires In PD3: VDO Version is 011b, see TEST.PD.VDM.CBL.1 Discovery Process and Enter Mode.

PD Compliance has to be informed not to edit consistency checks to demand cables conform to the incorrect R3.2 V1.1 table value of VDO Version 1.0 = 000b.

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Actual Change Requested

(a). Section 6.4.4.3.1.7 Active Cable VDOs

From Text:

Table 6.42 Active Cable VDO1

Bit(s)	Field Name	Description
B31...28	<i>HW Version</i>	0000b...1111b assigned by the <i>VID</i> owner
B27...24	<i>Firmware Version</i>	0000b...1111b assigned by the <i>VID</i> owner
B23...21	<i>VDO Version</i>	<i>Version</i> Number of the <i>VDO</i> (not this specification <i>Version</i>): <ul style="list-style-type: none">Version 1.0 = 000b Values 001b...111b are Reserved and Shall Not be used.

To Text (section 6.4.12.3.9):

Table 6.42 Active Cable VDO1

Bit(s)	Field Name	Description
B31...28	<i>HW Version</i>	0000b...1111b assigned by the <i>VID</i> owner
B27...24	<i>Firmware Version</i>	0000b...1111b assigned by the <i>VID</i> owner
B23...21	<i>VDO Version</i>	<i>Version</i> Number of the <i>VDO</i> (not this specification <i>Version</i>): <ul style="list-style-type: none">Version 1.3 = 011b Values 000b...010b, 100b...111b are Reserved and Shall Not be used.