

USB Type-C ENGINEERING CHANGE NOTICE

Title: VBus maximum voltage

Applied to: USB Type-C Specification Release 1.1, April 3, 2015

Brief description of the functional changes:
Clarifies that maximum voltage on VBUS is 20V nominal. Adds a cable assembly tolerance requirement of 21V _{DC} on VBUS.

Benefits as a result of the changes:
Avoid possible safety issues. Ensure that USB Type-C cable assemblies that contain electric and/or electronic components that are powered from VBUS are tolerant to the voltages possible on USB Type-C.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
Adjacent contacts on unmated and mated connectors are required to tolerate 100 V AC (RMS), and are expected to pass the 21V DC requirement without any design change. Bulk cable insulation resistance is not specified, but is anticipated as meeting the new requirement. Cables that incorporate other electrical or electronic components (e.g. LED indicators or cable illumination) may not be compliant to the new requirement.

An analysis of the hardware implications:
Anticipated as being none.

An analysis of the software implications:
None

An analysis of the compliance testing implications:
A new compliance test is needed

USB Type-C ENGINEERING CHANGE NOTICE

Actual Change

(a). Add new section 3.7.3.5

3.7.3.5 VBUS DC Voltage tolerance

A USB Type-C to USB Type-C Cable Assembly shall tolerate a VBUS voltage of 21V DC at the cable rated current (i.e. 3A or 5A) applied for one hour as a pre-condition of the testing of the electrical aspects of the cable assembly.

(b) Change section 4.6

From Text:

4.6 Power

Power delivery over the USB Type-C connector takes advantage of the existing USB methods as defined by: the [USB 2.0](#) and [USB 3.1](#) specifications, the [USB BC 1.2](#) specification and the [USB Power Delivery](#) specification. The USB Type-C Current mechanism allows the DFP to offer more current than defined by the [USB BC 1.2](#) specification.

To Text:

4.6 Power

Power delivery over the USB Type-C connector takes advantage of the existing USB methods as defined by: the [USB 2.0](#) and [USB 3.1](#) specifications, the [USB BC 1.2](#) specification and the [USB Power Delivery](#) specification. The USB Type-C Current mechanism allows the DFP to offer more current than defined by the [USB BC 1.2](#) specification. A USB Power Source shall not provide more than 20V nominal on VBUS.

(c). Change section 4.6.2

From Text:

4.6.2 VBUS Power Provided Over a USB Type-C Cable

The minimum requirement for VBUS power supplied over the USB Type-C cable matches the existing requirement for VBUS supplied over existing legacy USB cables. [USB Power Delivery](#) is an optional capability that is intended to work over un-modified USB Type-C to USB Type-C cables, therefore any USB Type-C cable assembly that incorporates electronics

USB Type-C ENGINEERING CHANGE NOTICE

that gets it power from VBUS shall be tolerant up to 20 V.

To Text:

4.6.2 VBUS Power Provided Over a USB Type-C Cable

The minimum requirement for VBUS power supplied over the USB Type-C cable assembly matches the existing requirement for VBUS supplied over existing legacy USB cable assemblies. USB Power Delivery is an optional capability that is intended to work over unmodified USB Type-C to USB Type-C cable assemblies, therefore any USB Type-C cable assembly that incorporates electrical components or electronics ~~that gets it power from VBUS~~ shall ensure that they are ~~be~~ tolerant ~~up to,~~ or are protected from, a VBUS voltage of 2120 V.