USB Type-C ENGINEERING CHANGE NOTICE

Title: Type-C to legacy USB cable assembly bypass cap value
Applied to: USB Type-C Specification Release 1.0, August 11, 2014

Brief description of the functional changes:
The Type-C Rev 1.0 spec requires that the VBUS pins on the cable assembly paddle card be connected to GND through a 10 nF bypass cap. This was intended for Type-C to Type-C cable assemblies only, but somehow was required for the Type-C to legacy USB cable assemblies also. In the latter case, the access capacitance will cause signal degradation with FSK signaling. This ECN fixes this.

Benefits as a result of the changes:
This ECN will ensure no signal degradation issue with the FSK signaling for the Type-C to legacy USB PD cable assembly.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
None.

An analysis of the hardware implications:
It will require cable assembly manufacturers to change the bypass cap vale for the Type-C to legacy USB PD cable assembly. Since all Type-C cables are still in development phase, the impact should be very minimum

An analysis of the software implications:
None.

An analysis of the compliance testing implications:
None.

Actual Change

(a). Section 3.5.1, Note 5 of Table 3-12, Page 58

From Text:

All VBUS pins shall be connected together within the USB Type-C plug. A 10 nF bypass capacitor (minimum voltage rating of 30 V for cable assemblies supporting *USB PD*) is required for the VBUS pin in the USB Type-C plug end of the cable. The bypass capacitor should be placed as close as possible to the power supply pad. A bypass capacitor is not required for the VBUS pin in the Standard-A plug.

To Text:

All VBUS pins shall be connected together within the USB Type-C plug. A bypass capacitor is required for the VBUS pin in the USB Type-C plug end of the cable. This bypass capacitor shall be 2.2 nF±20% with a minimum voltage rating 30 V for cable assemblies supporting USB PD, and 10 nF otherwise. The bypass capacitor should be placed as close as possible to the power supply pad. A bypass capacitor is not required for the VBUS pin in the Standard-A plug.

(b). Section 3.5.3, Note 5 of Table 3-14, Page 60

From Text:

All VBUS pins shall be connected together within the USB Type-C plug. A 10 nF bypass capacitor (minimum voltage rating of 30 V for cable assemblies supporting *USB PD*) is required for the VBUS pin in the USB Type-C plug end of the cable. The bypass capacitor should be placed as close as possible to the power supply pad. A bypass capacitor is not required for the VBUS pin in the Standard-B plug.

To Text:

All VBUS pins shall be connected together within the USB Type-C plug. A bypass capacitor is required for the VBUS pin in the USB Type-C plug end of the cable. This bypass capacitor shall be 2.2 nF±20% with a minimum voltage rating 30 V for cable assemblies supporting USB PD, and 10 nF otherwise. The bypass capacitor should be placed as close as possible to the power supply pad. A bypass capacitor is not required for the VBUS pin in the Standard-B plug.

(c). Section 3.5.6, Note 5 of Table 3-17, Page 64

From Text:

All VBUS pins shall be connected together within the USB Type-C plug. A 10 nF bypass capacitor (minimum voltage rating of 30 V for cable assemblies supporting *USB PD*) is required for the VBUS pin in the USB Type-C plug end of the cable. The bypass capacitor should be placed as close as possible to the power supply pad. A bypass capacitor is not required for the VBUS pin in the Micro-B plug.

To Text:

All VBUS pins shall be connected together within the USB Type-C plug. A bypass capacitor is required for the VBUS pin in the USB Type-C plug end of the cable. This bypass capacitor shall be 2.2 nF±20% with a minimum voltage rating 30 V for cable assemblies supporting USB PD, and

10 nF otherwise. The bypass capacitor should be placed as close as possible to the power supply pad. A bypass capacitor is not required for the VBUS pin in the Micro-B plug.

(d). Section 3.6.1, Note 5 of Table 3-19, Page 67

From Text:

All VBUS pins shall be connected together within the USB Type-C plug. A 10 nF bypass capacitor is required for the VBUS pin in the USB Type-C plug end of the cable. The bypass capacitor should be placed as close as possible to the power supply pad. A bypass capacitor is not required for the VBUS pin in the Standard-A receptacle.

To Text:

All VBUS pins shall be connected together within the USB Type-C plug. A bypass capacitor is required for the VBUS pin in the USB Type-C plug end of the cable. This bypass capacitor shall be 2.2 nF±20% with a minimum voltage rating 30 V for cable assemblies supporting USB PD, and 10 nF otherwise. The bypass capacitor should be placed as close as possible to the power supply pad. A bypass capacitor is not required for the VBUS pin in the Standard-A receptacle.