USB Type-C ENGINEERING CHANGE NOTICE

Title: Remove Snubber Capacitors
Applied to: USB Type-C Specification Release 2.2, October 2022

Brief description of the functional changes proposed:
Removes the specific recommendation for adding snubber caps in USB Type-C EPR cables used to mitigate inductive kickback induced arcing.

Benefits as a result of the proposed changes:
Reduces complexity of implementing USB Type-C EPR cables as there now appears no need to address inductive kickback-induced arcing given the energy associated with such arcing is very low and not harmful to the connector.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
Does not impact existing cables, may lower cost of future cables.

An analysis of the hardware implications:
No impact to HW.

An analysis of the software implications:
No impact to SW.

An analysis of the compliance testing implications:
No impact to compliance testing.

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Actual Change Requested

(a) Section 3.11.1

Redline changes:

3.11 Extended Power Range (EPR) Cables

3.11.1 Electrical Requirements

Extended Power Range cables have additional requirements to assure that these cables can deliver the full defined voltage and current range for *USB PD* EPR operation.

EPR cables shall functionally support a reported 50 V and 5 A operation. The minimum functional voltage that a cable shall support is 50.9 V. The electrical components potentially in the path of V_{BUS} in an EPR cable, e.g. bypass capacitors, should be minimally rated for 63 V.

~~To control the impact of inductive kickback and ringing that can increase the chance of arcing between a USB Type-C plug and receptacle when a cable is removed while power is still applied, an EPR cable may include a snubber capacitor within the plug at each end of the cable.~~ See Appendix H for ~~more~~ information about USB PD high-voltage design and mitigating arcing damage during cable withdrawal.