USB Type-C ENGINEERING CHANGE NOTICE

Title: Cable Flex Testing Update
Applied to: USB Type-C Specification Release 2.2, October 2022

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Universal Serial Bus Type-C Connectors and Cable Assemblies Compliance Document Revision 2.1b June 2021

Brief description of the functional changes proposed:
Updates the cable flex testing requirements to be more specific to USB Type-C.

Benefits as a result of the proposed changes:
Existing test requirement may be introducing unnecessary vertical stress on cables.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
No intention to invalidate any prior certifications based on the existing test. Update being done to improve the applicability of the test to the specifics of USB Type-C cable and plug design.

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:
Updates to cable CTS are included to align with the updated spec.

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Actual Change Requested

(a) USB Type-C Specification Release 2.2, October 2022, Section 1.5

Redline changes:

Term	Description
Hybrid Optical Active Cable	A cable that uses an intermediate optical transmission line for the high-speed signaling path (TX/RX) while retaining a ~~copper~~metallic conductor-based solution for the rest of the defined interfaces, e.g., CC, *USB 2.0*, SBUs, etc.
Optically Isolated Active Cable (OIAC)	A cable that uses an intermediate optical transmission line for all signaling. This cable has no metallic conductors and is electrically isolated between the two plugs. ~~A~~ This cable ~~with~~ has a USB Type-C Plug on each end with one Cable Plug supporting SOP' and the other supporting SOP". ~~This cable is electrically isolated between the two plugs.~~

(b) USB Type-C Specification Release 2.2, October 2022, Section 3.8.1.4

Redline changes:

3.8.1.4 Cable Flexing (EIA 364-41, Condition 1)

No physical damage or discontinuity over 1ms during flexing shall occur to the cable assembly with dimension X = ~~3.7 times the cable diameter~~ and 500 cycles in each of two planes.

3.8.1.4 Cable Flexing (EIA 364-41, Condition 1)

No physical damage or discontinuity over 1 ms during flexing shall occur to the cable assembly with dimension X = 22mm and 500 cycles in each of two planes.

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Actual Change Requested

(a) USB Type-C Compliance Document Revision 2.1b
Table 3-3 USB Type-C Cable Assembly Mechanical and Voltage Drop Compliance Requirements

Redline changes:

Test Description	Test Procedure	Performance Requirement
Cable Flexing	EIA 364-41, Condition I with Dimension X = ~~3.7 times the cable diameter~~ and 500 cycles in each of two planes 120 degree arc.	No physical damage and discontinuity over 1 microsecond during flexing shall occur to the cable assembly.

Test Description	Test Procedure	Performance Requirement
Cable Flexing	EIA 364-41, Condition I with Dimension X = 22mm and 500 cycles in each of two planes 120 degree arc.	No physical damage and discontinuity over 1 microsecond during flexing shall occur to the cable assembly.