

USB Type-C ENGINEERING CHANGE NOTICE

Title: Audio Adapter Pin Shorting Clarification

Applied to: USB Type-C Specification Release 1.0, August 11, 2014

Brief description of the functional changes:

Shorting of pins A6 with B6, and A7 with B7, in the Adapter.

Benefits as a result of the changes:

Spec clarification. One possible interpretation of the spec is that the adapter only connects one of A6/B6 to “Right” and only one of A7/B7 to “Left”, but does not define which one. System implementations therefore have to be able to accommodate either. Even if this were defined, an additional analog mux in the system is required for systems that wish to support Alternate Modes on pins B6 and B7 (which could easily be a significant number of systems supporting USB Type-C). Additional switches add complexity and silicon area. These audio switch transistors need to have good linearity and have a small “on” resistance to ensure acceptable audio quality. This makes them relatively large compared to standard transistors. This change saves this complexity.

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

Existing specification says that the adapter may short A6/B6 and A7/B7. This is inconsistent, given that both A6/A7 are specified as connected to “Right” and both B6/B7 are specified as connected to “Left”. This change resolves the ambiguity. It was always intended by the proposers of the analog audio adapter that the pins should be shorted in the adapter..

An analysis of the hardware implications:

This change has minimal cost for adapters, in the case that the previous ambiguity was interpreted as only one of A6/B6 have to be connected to “Right” and only one of A7/B7 have to be connected to “Left”. This change saves the complexity of an audio quality analog switch in a significant number of system designs.

An analysis of the software implications:

None

An analysis of the compliance testing implications:

None

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Actual Change

(a). Section A.2., Table A-1, Page 167

From Text:

A6 and B6 may be shorted together in the adapter

A7 and B7 may be shorted together in the adapter

To Text:

A6 and B6 shall be shorted together in the adapter

A7 and B7 shall be shorted together in the adapter

(a). Section A.3., Table A-2, Page 168

From Text:

A6 and B6 may be shorted together in the analog audio adapter

A7 and B7 may be shorted together in the analog audio adapter

To Text:

A6 and B6 shall be shorted together in the analog audio adapter

A7 and B7 shall be shorted together in the analog audio adapter