

USB Power Delivery ENGINEERING CHANGE NOTICE

Title: Specification Revision for GoodCRC

Applied to: USB Power Delivery Specification Revision 3.0 Version 1.1

Brief description of the functional changes proposed:

Mandate that USB PD 3.0 devices use 01b as the spec rev in the GoodCRC response when connected to a Rev 2 system.

Benefits as a result of the proposed changes:

This avoids the case in a USB PD 2.0 Source to USB PD 3.0 Sink passing through a Soft Reset cycle upon Attachment. This can happen as below:

The Source follows the existing spec (2.0) and the Sink follows the existing spec (3.0)

- Source sends Rev 2.0 Source Caps
- Sink sends Rev 3.0 GoodCRC
- Source is confused and retries the Rev 2.0 Source Caps
- Sink continues to send Rev 3.0 GoodCRC (it has not had time to process the Source Caps message and update the spec rev yet, which is very likely for a TCPC implementation)
- Sink ignores the new Source Caps since it has the same message ID as the one already received.
- Source moves to PE_SRC_Discovery state.
- In the meantime Sink Policy Engine has received the Rev 2.0 Source Caps and knows that the Source is Rev 2.0
- Sink sends a Rev. 2.0 request, which the Source is not expecting while in the PE_SRC_Discovery state.
- Source sends GoodCRC
- Source sends Soft Reset,
- Sink sends Rev 2.0 GoodCRC
- Sink sends Accept
- Source sends GoodCRC
- Source sends Rev 2.0 Source Caps
- Everything proceeds as expected

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

This is only changing a recommendation to something simpler.

An analysis of the hardware implications:

None

An analysis of the software implications:

none

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An analysis of the compliance testing implications:
Compliance testers may need to adjust their test.

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Actual Change Requested

(a). Section 6.2.1.1.5, Page 232

From Text:

The 2-bit *Specification Revision* field of a *GoodCRC* Message does not carry any meaning and *Shall* be considered as don't care by the recipient of the Message. The sender of a *GoodCRC* Message *Should* set the *Specification Revision* field to 00b.

To Text:

The 2-bit *Specification Revision* field of a *GoodCRC* Message does not carry any meaning and *Shall* be considered as don't care by the recipient of the Message. The sender of a *GoodCRC* Message *Shall* set the *Specification Revision* field to 01b when responding to a Message that contains 01b in the Specification Revision field of the Message Header. The sender of a *GoodCRC* Message *May* set the *Specification Revision* field to 00b or 01b or 10b when responding to a Message that contains 10b in the Specification Revision field of the Message Header.