

USB PD CTS ENGINEERING CHANGE NOTIFICATION FORM

NOTICE: Any Company or Companies submitting a USB Power Delivery ECR proposal must be one of the following: a Promoter or Contributor of the USB 3.0 and 2.0 Specifications who have completed the USB Power Delivery addendum. If a group of Companies is submitting an ECR proposal, each company must be either a Promoter or Contributor of the USB 3.0 and 2.0 Specifications who have completed the USB Power Delivery addendum.

SPECIFICATION REVISIONS AND ADDENDA: At any point in time, there shall only be one current version of the USB PD CTS, termed the production version. At the same time, there may also be proposed revisions to the specification's design which are not yet approved and shall be held confidential as deemed necessary by the USB 3.0 and USB 2.0 Promoters and within the Group of Working Committee(s).

PROCEDURES FOR SUBMITTING PROPOSALS: Both members of the USB Implementers Forum as a whole and members of the USB 3.0 and USB 2.0 Promoters may submit requests to revise the USB PD CTS Specification. Such a request may be rejected or may result in a USB PD Engineering Change Notice (ECN), which is the official way USB specifications may be changed.

FORMAT OF PROPOSAL: The originator of a request to alter the USB PD CTS Specification may do so by posting this to the USB Power Delivery Compliance working group for review. Once the proposal has been reviewed by the working group it will be passed to the USB 3.0 and 2.0 Promoters for approval to publish.

RESUBMISSION AND APPEAL: The originator of a request that was not approved can redraft the original request. Rewritten proposal will be treated as a new proposal and will be evaluated using the procedures described above. The originator of a request that was not approved can also submit an appeal to the USB 3.0 and 2.0 Promoters. The appeal must be made in writing and addressed to the Secretary of the USB Implementers Forum.

ABOUT THE ENGINEERING CHANGE REQUEST FORM:

The Purpose of this Engineering Change Request Form is to expedite the review process of the proposal by providing explanations, background information, and examples of the proposed changes at a high level. This form serves as an executive summary to the actual proposal.

STEPS ON HOW TO SUBMIT A USB PD ENGINEERING CHANGE REQUEST:

- 1) Please fill out the Engineering Change Request Form on the following pages completely:
 - a) Detail the names and contact details for each of the ECR contributors
 - b) Update the ECR Title
 - c) Give a minimum of 2-3 sentences for each description on the form outlining the background to the ECR
- 2) For each section/table/figure to be updated:
 - a) Detail the section number, starting page and figure/table number to be updated as appropriate.
 - b) Detail existing text under "From Text"
 - c) Detail changed text under "To Text"
- 3) Save the file as "USB PD CTS 1.0 R 1" followed by the ECR Title as per step 1)b)
- 4) Post the ECR in the USB PD CTS Documents section under "ECR | New ECRs".
 - a) This ECR will then be reviewed by the Power Delivery Compliance Working Group.
 - b) Revisions to the ECR originating from the review should be submitted as document revision of the original ECR using "Add new document".

USB PD CTS ENGINEERING CHANGE NOTIFICATION FORM

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USB PD CTS ENGINEERING CHANGE NOTIFICATION FORM

Title: TEST.PD.PS.SNK.1_ECR

Applied to: USB PD CTS Specification Version 1.0 Revision 1

USB PD CTS ENGINEERING CHANGE NOTIFICATION FORM

Brief description of the functional changes proposed:

USB PD CTS ENGINEERING CHANGE NOTIFICATION FORM

When Tester checks if the UUT responds correctly to a new Source Capability Message with the lowest PDO, 5V@0Amp), the Tester also checks if the UUT settles at the suspend current. The timer being used by the Tester is $t_{SrcTransition}$.

17. The Tester sends an *Accept* Message.

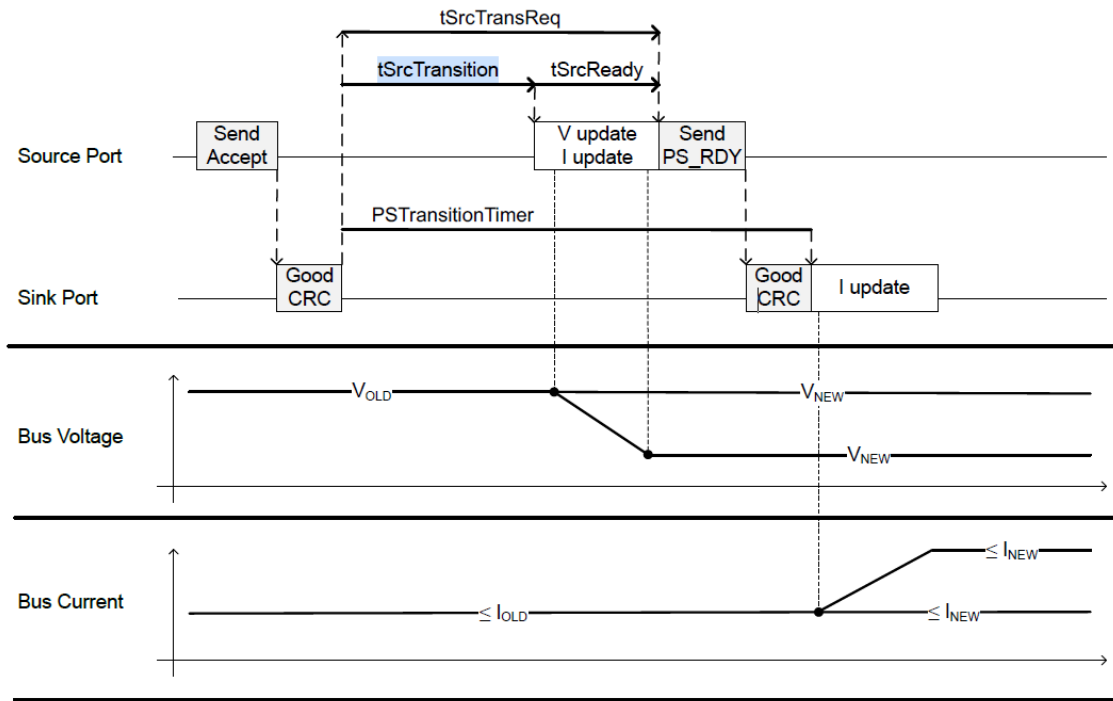
- i. After a total of $t_{SrcTransition}$ min, check that current drawn by the UUT does not exceed $p_{SnkSusp}$ max. [TEST.PD.PS.SNK.1#10]
- ii. The Tester sends a *PS_RDY* Message to the UUT.

18. The Tester shall continue to monitor current/power for $t_{CtsInfinite}$.

[TEST.PD.PS.SNK.1#11]

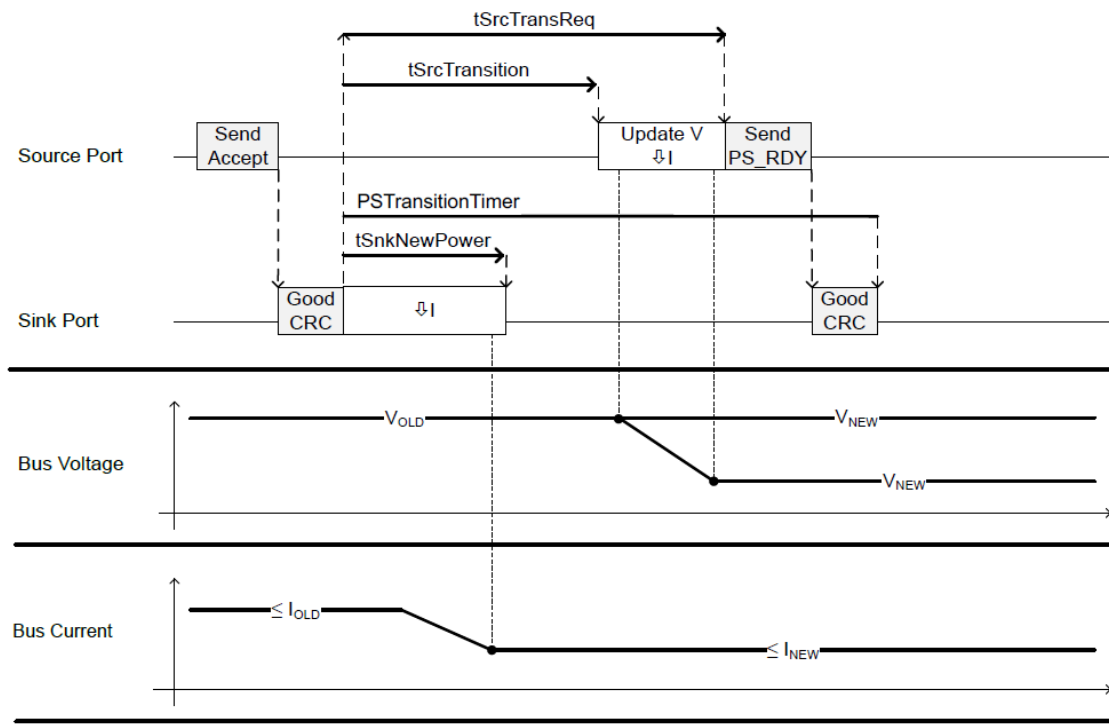
However, per the PD spec the power shall not change within this timeframe when Voltage is decreasing and/or current is either decreasing or increasing (on one diagram the current is increasing, on the other the current is decreasing.)

Figure 4.17. Transition Diagram for Decreasing Voltage and/or Increasing Current



USB PD CTS ENGINEERING CHANGE NOTIFICATION FORM

Figure 4.18. Transition Diagram for Decreasing Voltage and Decreasing Current



Benefits as a result of the proposed changes:

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

An analysis of the hardware implications:

An analysis of the software implications:

USB PD CTS ENGINEERING CHANGE NOTIFICATION FORM

An analysis of the compliance testing implications:

An analysis of the Vendor Info File (VIF) implications:

USB PD CTS ENGINEERING CHANGE NOTIFICATION FORM

Actual Change Requested

(a). Section TEST.PD.PS.SNK.1, Page 224

From Text:

15. The Tester sends another new *Source_Capabilities* Message with single PDO
 - a. The PDO:
 - i. B31...30 (Fixed Supply) set to 00b.
 - ii. B29 (Dual-Role Power) set to 0b.
 - iii. B28 (USB Suspend Supported) set to 0b.
 - iv. B27 (Unconstrained Power) set to 0b.
 - v. B26 (USB Communications Capable) set to 0b.
 - vi. B25 (Dual-Role Data) set to 0b.
 - vii. B24 (PD3, Unchunked Extended Message Supported) set to 0b.
 - viii. B23 (EPR Mode Capable) to 1b when in PD3, and 0b when in PD2
 - ix. B22 (Reserved) set to 0b.
 - x. B21...20 (Peak Current) set to 00b.
 - xi. B19...10 (Voltage) set to 5V.
 - xii. B9...0 (Maximum Current) set to 0mA.
16. The check fails if the UUT does not respond with a *Request* Message [TEST.PD.PS.SNK.1#7]
17. The Tester sends an *Accept* Message.
 - xiii. After a total of *tSrcTransition* min, check that current drawn by the UUT does not exceed *pSnkSusp* max. [TEST.PD.PS.SNK.1#10]
 - xiv. The Tester sends a *PS_RDY* Message to the UUT.
18. The Tester shall continue to monitor current/power for *tCtsInfinite*. [TEST.PD.PS.SNK.1#11]

To Text:

15. The Tester sends another new *Source_Capabilities* Message with single PDO
 - a. The PDO:
 - i. B31...30 (Fixed Supply) set to 00b.
 - ii. B29 (Dual-Role Power) set to 0b.
 - iii. B28 (USB Suspend Supported) set to 0b.
 - iv. B27 (Unconstrained Power) set to 0b.
 - v. B26 (USB Communications Capable) set to 0b.
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 - viii. B23 (EPR Mode Capable) to 1b when in PD3, and 0b when in PD2
 - ix. B22 (Reserved) set to 0b.
 - x. B21...20 (Peak Current) set to 00b.
 - xi. B19...10 (Voltage) set to 5V.
 - xii. B9...0 (Maximum Current) set to 0mA.
16. The check fails if the UUT does not respond with a *Request* Message [TEST.PD.PS.SNK.1#7]
17. The Tester sends an *Accept* Message.
 - i. After a total of *tSrcTranReq* max, check that current drawn by the UUT does not exceed *pSnkSusp* max. [TEST.PD.PS.SNK.1#10]
 - ii. The Tester sends a *PS_RDY* Message to the UUT.
18. The Tester shall continue to monitor current/power for *tCtsInfinite*. [TEST.PD.PS.SNK.1#11]