

USB Power Delivery ENGINEERING CHANGE NOTICE

Title: Clarify EPR Entry Process

Applied to: USB Power Delivery Specification Revision 3.1

Version 1.8

Brief description of the functional changes proposed:
Clarifies what the First Explicit Contract is to ensure the first condition covers all conditions where the cable's EPR capabilities need to be checked.
Cleans up EPR entry process to allow a Source that has already determined the cable is EPR capable to check it again.

Benefits as a result of the proposed changes:
Ensures all entries to EPR are preceded by a check that the cable is EPR capable.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
Likely none.

An analysis of the hardware implications:
None.

An analysis of the software implications:
Likely none.

An analysis of the compliance testing implications:
Will have to update current CTS to properly cover the alternate EPR entry process which is currently not complete.

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Actual Change Requested

(a). Section 1.6

Add Text:

First Explicit Contract	The Explicit Contract that immediately follows an Attach, Power On, Hard Reset, PR_Swap or FR_Swap event.
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(b). Section 6.4.10.1, P.185

From Text:

6.4.10.1 Process to enter EPR Mode

For port partners to successfully enter EPR mode, a number of conditions must be met prior to initiating the entry process:

- The EPR Source **Shall** have done one of the following:
 - Discover the cable prior to entering its first Explicit Contract
 - Alternatively, within **tEPRSourceCableDiscovery** of entry into the first Explicit Contract
 - If it is the VCONN Source, discover the cable.
 - If not the VCONN Source, do a VCONN Swap then discover the cable.
- A Sink **Shall Not** be Connected to the Source through a Charge Through VPD (CT-VPD).
- The Source and Sink **Shall** be in an SPR Explicit Contract.
- The EPR Mode capable bit **Shall** be set in the 5V.
- The EPR Mode capable bit **Shall** have been set in the RDO in the last **Request** Message received by the Source.
- The EPR Mode capable bit **Shall** be set in the Cable Plug VDO

To Text:

For port partners to successfully enter EPR mode, ~~a number of conditions must be met prior to initiating the entry process~~ the following conditions must be met:

- ~~• The EPR Source **Shall** have done one of the following:
 - Discover the cable prior to entering its first Explicit Contract
 - Alternatively, within **tEPRSourceCableDiscovery** of entry into the first Explicit Contract
 - If it is the VCONN Source, discover the cable.
 - If not the VCONN Source, do a VCONN Swap then discover the cable.~~
- The Sink **Shall** request entry into the EPR Mode.
- The Source **Shall** verify the cable is EPR capable.
- A Sink **Shall Not** be Connected to the Source through a Charge Through VPD (CT-VPD).
- The Source and Sink **Shall** be in an SPR Explicit Contract.
- The EPR Mode capable bit **Shall** be set in the **Fixed** 5V **PDO**.
- The EPR Mode capable bit **Shall** have been set in the RDO in the last **Request** Message received by the Source.
- ~~• The EPR Mode capable bit **Shall** be set in the Cable Plug VDO~~

To verify the cable is EPR capable, the EPR Source **Shall** either have already done one of the following:

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- Discover the cable prior to entering its First Explicit Contract
- Alternatively, within ***tePRSourceCableDiscovery*** of entry into the First Explicit Contract
 - If it is the VCONN Source, discover the cable.
 - If not the VCONN Source, do a VCONN Swap then discover the cable.

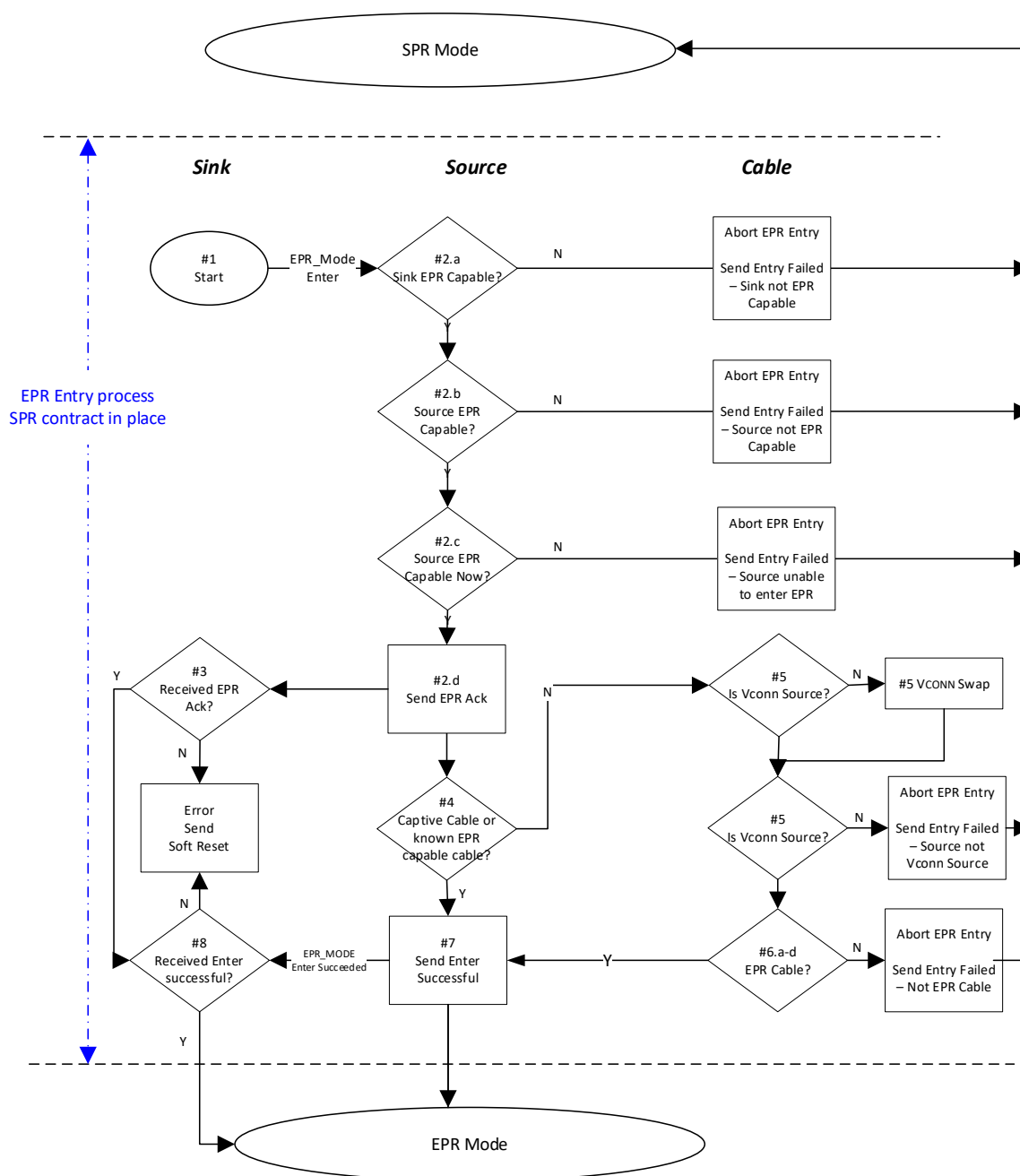
or ***Shall*** verify the cable is EPR capable by completing steps 5 and 6 in the entry process below.

(c). Figure 6-33, P.186

From Text:

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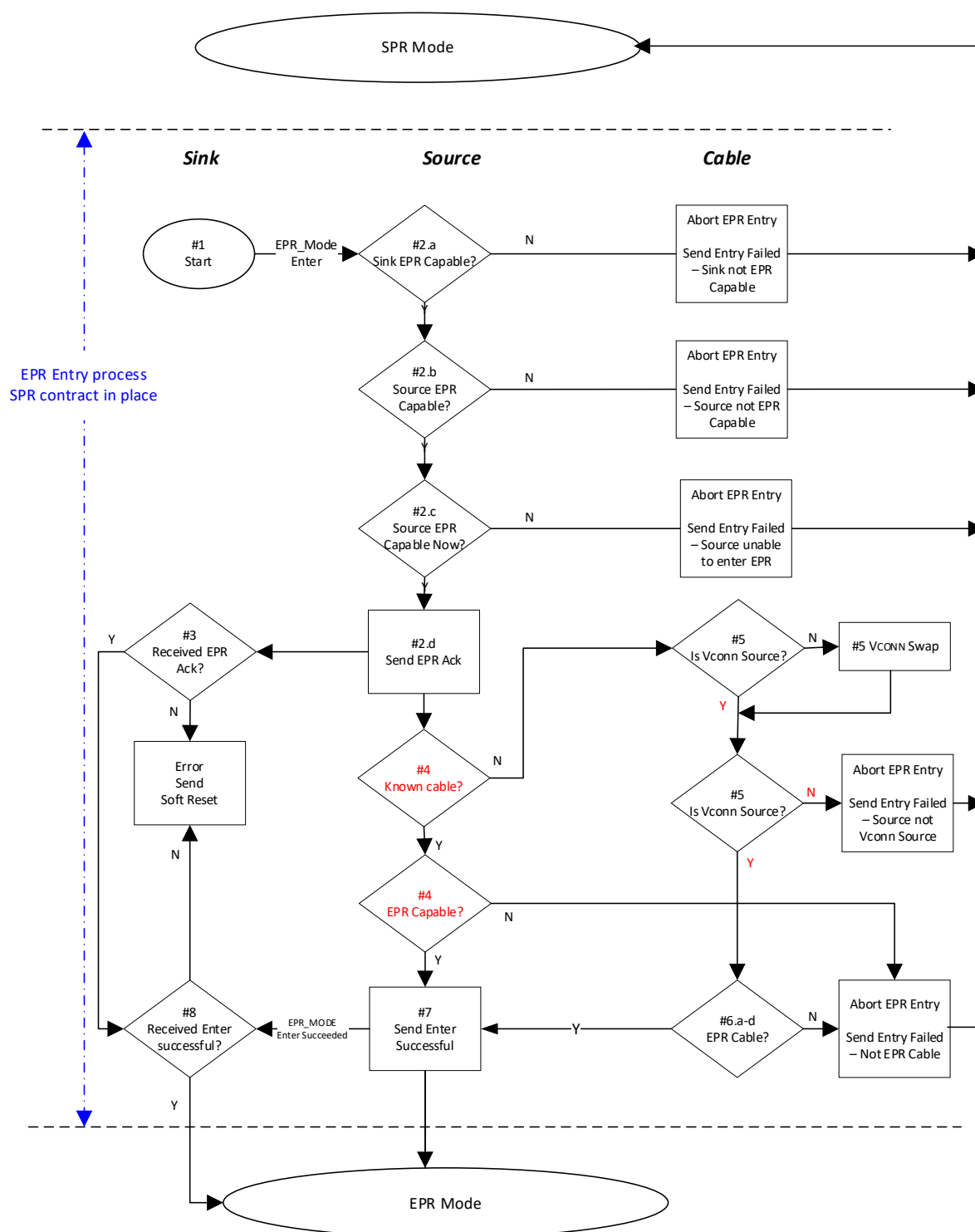
Figure 6-1 Illustration of process to enter EPR Mode



To Text:

Figure 6-2 Example EPR Mode Entry process

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(d). Section 6.4.10.1, P.187

From Text:

4. If the Source has a captive cable, or the Source has already determined it is connected to an EPR Capable cable, it ***shall*** go directly to Step 7.

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To Text:

- 4) When the EPR Source has used the ***Discover Identity*** Command to determine and remembers the cable's capabilities or the EPR Source is connected with a captive cable:
 - a) If the cable is EPR capable it ***Should*** go directly to Step 7, but ***May*** continue to Step 5.
 - b) If the cable is not EPR capable it ***Shall*** do the following:
 - i) Send an ***EPR_Mode*** Message with the Action field set to 4 ("Enter Failed") and the Data field set to 1 ("Cable not EPR capable").
 - ii) Abort the EPR Mode entry process and remain in the existing SPR Explicit Contract.