

Errata for “Battery Charging Specification Revision 1.2 December 7, 2010”, as of Oct 12, 2011.

Chapter 3

Point Out Difficulties of ID Pin Resistance Measurement:

Background: A number of early implementations of ID pin resistance detection circuitry have encountered problems, as a result of not taking into account the effects of the ground offset between an OTG device and an ACA, caused by the current flowing in the ground wire. The offset voltage can be as much as 0.15V in one direction, or 0.05V in the other. Leakage current is also an important consideration. To avoid future designers having similar problems, it is proposed to point out the effects in a note in the BC 1.2 specification.

Changes to section 3.2.6 (ACA Detection)

After the following paragraph:

“A PD detects the presence of an ACA by sensing the resistance on the ID pin. There are five different resistance values that shall be detected during ACA Detection, namely: RID_GND, RID_C, RID_B, RID_A and RID_FLOAT. PDs that support ACA Detection shall monitor the ID resistance during the entire time that VBUS is asserted, and respond according to the PD State Machine in Section 6.2.7.”

add:

“Note: It is important that designers take into account the following factors when designing circuitry to distinguish these ID pin resistance values:

- The resistance has to be correctly detected in the presence of a voltage drop in the ACA cable ground resulting from IDEV_CHG flowing through ROTG_ACA_GND, causing the ACA ground to be lower than the OTG ground.*
- The resistance has to be correctly detected in the presence of a voltage drop in the ACA cable ground resulting from ICFG_MAX flowing through ROTG_ACA_GND causing the ACA ground to be higher than the OTG ground.*
- Leakage currents (Table 5-3, Note 2) should be considered and their effects also taken into account.”*

Chapter 3

Clarify Usage of Good Battery Algorithm:

Background: Readers not originally involved in the development of the BC Specification, have been confused by the apparent fact that a PD with a Good Battery appears to be allowed not to be “Ready to be enumerated”, as this label appears in ‘Figure 3-15 Good Battery Algorithm’. This would imply that a PD with a good battery is not required to comply with TSVLD_CON_WKB.

In fact, the intention is that the Good Battery Algorithm may be used by PDs with a weak battery, under the provisions of the Dead Battery Provision, and for this reason may not be ready to be enumerated for a period of TSVLD_CON_WKB, under these provisions.

Changes in the specification wording are required to make this clear. The changes do not alter the intention of the specification.

Changes to section 3.3.2 (Good Battery Algorithm)

Change the following text:

“Figure 3-15 shows the charger detection algorithm that a PD with a Good Battery is required to implement.”

to:

“Figure 3-15 shows the charger detection algorithm that a PD with a Good Battery is required to implement. It may also be used by a PD with a Weak Battery, subject to meeting the requirements of the Dead Battery Provision. Thus a PD, having reached the bottom of the flow chart may in all cases, with the exception of the DCP/CDP exit, delay for up to TSVLD_CON_WKB before connecting or applying a bus reset as appropriate.”

Also the parameter name TVLD_CON_WKB in Figure 3-14 should actually be TSVLD_CON_WKB.

Changes to Fig 3-14 (Weak Battery Algorithm)

Change two instances of:

TVLD_CON_WKB

to:

TSVLD_CON_WKB

Chapter 6

Further Measure to Assist with ID Pin Resistance Measurement:

Background: Following on from the 'Difficulties of ID Pin Resistance Measurement' text addition, a further measure is desirable to provide additional assistance in measuring the ID pin resistance reliably. Requiring the ACA captive OTG cable to have its shield connected directly to ground within the ACA (and not connected inside the plug) allows various strategies in the PD to improve ID pin resistance measurement. This was always assumed to be the construction, but was never made explicit.

Add text to Figure 6-2, close to the OTG port:

"Captive cable shield must be connected to ground at this end, but not within the plug."

