*Cl* **104** *SC* **104.3.2** *P* **15** *L* **30** # 1

Abramson, David Texas Instruments

*Comment Type* **TR** *Comment Status* **X**

This comment applies to Table 104-1.

The power class table needs to be updated to allow for realistic power delivery and startup behavior

*SuggestedRemedy*

See abramson_01bu_0715.pdf

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.4.6** *P* **27** *L* **16** # 2

Abramson, David Texas Instruments

*Comment Type* **TR** *Comment Status* **X**

This comment applies to Table 104-6 items 4 and 5.

The Von and Voff voltages need to be specified

*SuggestedRemedy*

See abramson_01bu_0715.pdf

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.3.6** *P* **22** *L* **15** # 3

Abramson, David Texas Instruments

*Comment Type* **TR** *Comment Status* **X**

This comment applies to both Table 104-3.

The sleep mode threshold levels, mps levels, and max currents need to be examined to see if they are economically feasible to implement.

*SuggestedRemedy*

See abramson_01bu_0715.pdf

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.4.6** *P* **28** *L* **33** # 4

Abramson, David Texas Instruments

*Comment Type* **TR** *Comment Status* **X**

This comment applies to both Table 104-6.

The sleep mode threshold levels, mps levels, and max currents need to be examined to see if they are economically feasible to implement.

*SuggestedRemedy*

See abramson_01bu_0715.pdf

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.2** *P* **15** *L* **39** # 24

Dwelley, David Linear Technology

*Comment Type* **T** *Comment Status* **X**

Table 104-1 has too many significant figures in several places

*SuggestedRemedy*

Round to 2 significant figures (which implies 1% accuracy) where possible.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.3.3** *P* **18** *L* **42** # 26

Dwelley, David Linear Technology

*Comment Type* **E** *Comment Status* **X**

There are several "B" exits in the state machine, all due to !mr_pse_enable, and it looks like there should be more for completeness. It would be cleaner to treat !mr_pse_enable as a global transition into the DISABLED state.

*SuggestedRemedy*

Delete all "B" exit arcs. Label "B" entrance into DISABLED state with "!mr_pse_enable".

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.3.4** *P* **19** *L* **30** # 27

Dwelley, David Linear Technology

*Comment Type* **T** *Comment Status* **X**

Sentence "The period of time when a PSE is not attempting to detect a PD signature is implementation dependent." is left over from PoE. It is unneeded here.

*SuggestedRemedy*

Remove sentence.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.3.4.2** *P* **20** *L* **4** # 28

Dwelley, David Linear Technology

*Comment Type* **TR** *Comment Status* **X**

"A PSE shall accept as a valid PD signature a link segment with a constant voltage in the range of Vgood as specified in Table 104–4 in response to a probing current in the range Ivalid as specified in Table 104–2."

We refer to the PD limits here as the accept criteria for the PSE. This leaves no margin.

*SuggestedRemedy*

Add a new parameter to Table 104-3 called Vgood_pse, with margined accept criteria (perhaps 2.8V and 3.2V). Point the original sentence to it:

"A PSE shall accept as a valid PD signature a link segment with a constant voltage in the range of Vgood_pse as specified in Table 104–2 in response..."

Do the same for Vbad on line 18.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.4.3.1** *P* **24** *L* **19** # 30

Dwelley, David Linear Technology

*Comment Type* **T** *Comment Status* **X**

"If the PD input voltage is less than Vsig_disable, the PD shall present a constant voltage signature."

Voltage signature specs are not referenced.

*SuggestedRemedy*

Add a reference to the end of the sentence:

"If the PD input voltage is less than Vsig_disable, the PD shall present a constant voltage signature, defined in Section 104.4.4."

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.4.4** *P* **26** *L* **9** # 31

Dwelley, David Linear Technology

*Comment Type* **T** *Comment Status* **X**

"A PD shell present a non-valid detection signature when it is powered via the PI."

This made sense in PoE but not in PoDL. When powered, the signature is invalid by definition.

*SuggestedRemedy*

Remove the sentence.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.4.5** *P* **26** *L* **51** # 33

Dwelley, David Linear Technology

*Comment Type* **E** *Comment Status* **X**

Add a reference to the SCCP chapter to the end of this section

*SuggestedRemedy*

"A PD may be classified by the PSE based on SCCP information provided by the PD. The intent of PD classification is to provide information about the voltage and power required by the PD during operation. SCCP classification may also be used to establish mutual identification between a PSE and a PD. See section 104.6 for more information about SCCP."

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.4.6** *P* **27** *L* **25** # 34

Dwelley, David Linear Technology

*Comment Type* **E** *Comment Status* **X**

Table 104-6, items 4x and 5x: Use Class names (Class III, Class IV, etc.) to shorten Parameter fields

*SuggestedRemedy*

Use Class names (Class III, Class IV, etc.) to shorten Parameter fields

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **Table 104-1** *P* **15** *L* **29** # 38

Gardner, Andrew Linear Technology

*Comment Type* **T** *Comment Status* **X**

Some of the values in table 104-1 don't make sense. For example, under class I (12V unreg) VPSE(min) is 5.3V, but 5.3V + 4 ohms * 0.09A =5.66V which is less than 6V. Also the amount of power dissipated in the 4 ohms plus the 6.5 ohms in the cable is less than 20% of the power sourced by VPSE.

*SuggestedRemedy*

Recalculate the values in the table. See my presentation for suggested values.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.3.3.2** *P* **16** *L* **38** # 39

Gardner, Andrew Linear Technology

*Comment Type* **E** *Comment Status* **X**

The conventions subclause is still TBD.

*SuggestedRemedy*

Copy the text from the corresponding sub-clause in the bt draft into subclause 104.3.3.2: "The notation used in the state diagrams follows the conventions of state diagrams as described in 21.5."

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.3.3.3** *P* **16** *L* **41** # 40

Gardner, Andrew Linear Technology

*Comment Type* **T** *Comment Status* **X**

The constants sub-clause is still TBD.

*SuggestedRemedy*

Incorporate definitions for constants from my presentation into sub-clause 104.3.3.3.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.3.3.4** *P* **16** *L* **45** # 41

Gardner, Andrew Linear Technology

*Comment Type* **T** *Comment Status* **X**

The variables sub-clause is still TBD.

*SuggestedRemedy*

Incorporate definitions for the variables sub-clause from my presentation.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.3.3.5** *P* **16** *L* **49** # 42

Gardner, Andrew Linear Technology

*Comment Type* **T** *Comment Status* **X**

The timers sub-clause is still TBD.

*SuggestedRemedy*

Incorporate definitions for the timers from my presentation.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.3.3.6** *P* **17** *L* **1** # 43

Gardner, Andrew Linear Technology

*Comment Type* **T** *Comment Status* **X**

The functions sub-clause is still TBD.

*SuggestedRemedy*

Incorporate the functions definitions from my presentation.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **figure 104-4** *P* **18** *L* **21** # 44

Gardner, Andrew — Linear Technology

*Comment Type* **T** *Comment Status* **X**

The signature invalid state appears to be superfluous.

*SuggestedRemedy*

Remove the signature invalid state and route the !good_sig arc directly to the restart_delay state.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **figure 104-4** *P* **18** *L* **17** # 45

Gardner, Andrew — Linear Technology

*Comment Type* **T** *Comment Status* **X**

The tdet_timer_done arc from the start_detection state appears to be redundant with the !good_sig arc coming out of the detect_eval state. Also, what's the relevance of the do_detection_done*!tdet_timer_done exit condition for the start_detection state? Can't this be replaced with do_detection_done?

*SuggestedRemedy*

Delete the tdet_timer_done arc from the start_detection state. Change the exit condition of the remaining arc to just do_detction_done. Add a state diagram to describe the do_detection function. See my presentation on defintions for variables, timers, and function.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **figure 104-4** *P* **18** *L* **36** # 46

Gardner, Andrew — Linear Technology

*Comment Type* **T** *Comment Status* **X**

The tpon_timer_done variable does not appear to have a corresponding condition where the tpon_timer is started.

*SuggestedRemedy*

As is the case with the bt PSE state machine, add 'start tpon_timer' to the detect_eval state.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **figure 104-6** *P* **25** *L* **40** # 48

Gardner, Andrew — Linear Technology

*Comment Type* **T** *Comment Status* **X**

The fault state appears to be identical to the offline state except for the pd_fault=TRUE assignment.

*SuggestedRemedy*

Simplify the fault state to just pd_fault=TRUE and make the exit arc UCT and connect it to the input of the offline state.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **figure 104-4** *P* **18** *L* **6** # 49

Gardner, Andrew — Linear Technology

*Comment Type* **T** *Comment Status* **X**

Shouldn't the !mr_pse_enable arcs labelled 'B' apply to all the states (except for the error_delay state) and not just the power_on, settle_sleep, and sleep states?

*SuggestedRemedy*

Add !mr_pse_enable exit arcs to all the states except for disabled and error_delay states.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **table 104-3** *P* **22** *L* **12** # 50

Gardner, Andrew — Linear Technology

*Comment Type* **T** *Comment Status* **X**

The sleep current and wakeup current thresholds are TBD. Assuming a max port current of 1A and a max average PD sleep current of 100uA yields a dynamic range of 10,000 to 1 range or 14 bits which is an onerous requirement for an ADC. A 10 bit resolution requirement yields a sleep current threshold of 1mA which may be low enough so as not to restrict the PD's normal operating current. A higher sleep current threshold may restrict the PD for higher Vin however.

*SuggestedRemedy*

Make the PD sleep current threshold 1mA. The wakeup current minimum should be substantially higher than this. I would suggest a a minimum of at least 2mA and a maximum less than 10mA.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.4.3.3** *P* **24** *L* **21** # 51

Gardner, Andrew Linear Technology

*Comment Type* **T** *Comment Status* **X**

The PD state machine constants sub-clause is TBD.

*SuggestedRemedy*

Use the constants definitions proposed in my presentation for clause 104.4.3.3.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.4.3.4** *P* **24** *L* **24** # 52

Gardner, Andrew Linear Technology

*Comment Type* **T** *Comment Status* **X**

The PD state machine variables sub-clause is TBD.

*SuggestedRemedy*

Use the PD state machine variables definitions from my presentation for subclause 104.4.3.4.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.4.3.5** *P* **24** *L* **28** # 53

Gardner, Andrew Linear Technology

*Comment Type* **T** *Comment Status* **X**

The PD state machine timers definition sub-clause is TBD.

*SuggestedRemedy*

Use the PD state machine timers definitions from my presentation for sub-clause 104.4.3.5.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **table 104-8** *P* **36** *L* **1** # 57

Gardner, Andrew Linear Technology

*Comment Type* **T** *Comment Status* **X**

The bit mapping for the PD info byte shown in Table 104-8 is still TBD.

*SuggestedRemedy*

Use the bit mapping proposed in my presentation about the corrected class table.

*Proposed Response* *Response Status* **W**

NotEZ.

*Cl* **104** *SC* **104.3.6.4** *P* **20** *L* **44** # 59

Gardner, Andrew Linear Technology

*Comment Type* **T** *Comment Status* **X**

There is no requirement on how fast the PSE shall discharge the PI to Vsleep during the SLEEP_SETTLE state in the event a PD is disconnected.

*SuggestedRemedy*

Add the following requirement to the PSE output current subclause as follows:
"A PSE operating in the SLEEP_SETTLE state shall discharge the PI to the range of Vsleep with a current greater than Idischarge."

Add the following to table 104-3:

Output discharge current during SETTLE_SLEEP state, Idischarge, A, 1mA min, see 104.3.6.4.

*Proposed Response* *Response Status* **W**

NotEZ.