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* **104.1**   *P* **13**   *L* **19**   # 21

Dwelley, David   Linear Technology

Comment Type **E**   *Comment Status* **D**

e) A data layer protocol to classify devices based on their power needs.

SCCP isn't officially in the data layer of the OSI stack

SuggestedRemedy

Combine with the above line:

d) Physical layer protocols allowing the detection of a device that requests power from a PSE and classification of the device based on its power needs.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT. EZ.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Comment ID

Comment ID **21**   Page 1 of 8
7/7/2015 1:39:08 PM

Cl **104**　　*SC* **104.1.3**　　　　　　*P* **14**　　　*L* **12**　　　# 22
Dwelley, David　　　　　　　　　Linear Technology

Comment Type **E**　　　*Comment Status* **D**
"Figure 104–1—1-Pair PoDL power sourcing equipment (PSE) relationship to the physical interface circuitry and the IEEE 802.3 Ethernet"

The word "model" was deleted from the end of the Figure title (also Figure 104.-2)

SuggestedRemedy
Add "model" to the end of the figure titles:

"Figure 104–1—1-Pair PoDL power sourcing equipment (PSE) relationship to the physical interface circuitry and the IEEE 802.3 Ethernet model"

"Figure 104–2—1-Pair PoDL powered device (PD) relationship to the physical interface circuitry (PHY) and the IEEE 802.3 Ethernet model"

Proposed Response　　*Response Status* **W**
PROPOSED ACCEPT. EZ.

Cl **104**　　*SC* **104.2**　　　　　　　*P* **15**　　　*L* **34**　　　# 23
Dwelley, David　　　　　　　　　Linear Technology

Comment Type **E**　　　*Comment Status* **D**
"The maximum DC loop resistance of the link segment shall be less than 6.5ohms."

"maximum" and "less than" are redundant

SuggestedRemedy
Remove "maximum":

"The DC loop resistance of the link segment shall be less than 6.5ohms."

Proposed Response　　*Response Status* **W**
PROPOSED ACCEPT. EZ.

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* **104.2**　　　　　　　*P* **16**　　　*L* **2**　　　# 25
Dwelley, David　　　　　　　　　Linear Technology

Comment Type **E**　　　*Comment Status* **X**
Extra period at the end of note 2..

SuggestedRemedy
Remove extra period

Proposed Response　　*Response Status* **W**
See comment 37. EZ.

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.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general　　　　　*Comment ID* **27**　　Page 2 of 8
COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed Z/withdrawn　　　　7/7/2015 1:39:09 PM
SORT ORDER: Comment ID

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* **104.3.6.7**　　　　*P* **23**　　*L* **7**　　　# 29
Dwelley, David　　　　　　　　　Linear Technology

Comment Type **T**　　*Comment Status* **D**

This concept has been confusing in PoE:

"Pclass is the minimum continuous class power defined in Table 104.1."

SuggestedRemedy

Change to:

"Pclass is the minimum continuous class power that the PSE nust be capable of supplying, defined in Table 104.1."

Proposed Response　　　*Response Status* **W**

PROPOSED ACCEPT. EZ.

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.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Comment ID

Comment ID **31**　　　Page 3 of 8
7/7/2015 1:39:09 PM

Cl **104**   *SC* **104.4.4**   *P* **26**   *L* **13**   # **32**

Dwelley, David   Linear Technology

Comment Type **E**   *Comment Status* **D**

"The detection signature is a constant voltage per Table 104–4 when measured by the PSE."

"is" is the wrong word

SuggestedRemedy

Replace "is" with "consists of":

"The detection signature consists of a constant voltage per Table 104–4 when measured by the PSE."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT. EZ.

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* **104.5.1**   *P* **30**   *L* **22**   # **35**

Dwelley, David   Linear Technology

Comment Type **E**   *Comment Status* **D**

"Any equipment that can be connected to a PD through a non-MDI connector that is not isolated from the MDI leads needs to provide isolation between all accessible external conductors, including frame ground (if any), and the non-MDI connector."

"needs to" isn't correct IEEE language

SuggestedRemedy

Change "needs to" to "must"

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT. EZ.

Cl **104**   *SC* **104.6.3.2**   *P* **33**   *L* **37**   # **36**

Dwelley, David   Linear Technology

Comment Type **E**   *Comment Status* **D**

Extra quote marks around defined terms

SuggestedRemedy

Remove quotes from "Write 1" and "Write 0". Check for similar quotes elsewhere in this section.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT. EZ.

Cl **104**   *SC* **104.2**   *P* **15**   *L* **46**   # **37**

Gardner, Andrew   Linear Technology

Comment Type **ER**   *Comment Status* **D**

There is an extra period at the end of foot note 2.

SuggestedRemedy

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT. EZ.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Comment ID

Comment ID **37**   Page 4 of 8
7/7/2015 1:39:09 PM

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.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Comment ID

Comment ID **44**   Page 5 of 8
7/7/2015 1:39:09 PM

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* **1**   # 47
Gardner, Andrew   Linear Technology

Comment Type   **T**   *Comment Status*   **D**

States in the PD state machine diagram should have unique names to differentiate them from the PSE state machine diagram.

SuggestedRemedy

Rename the sleep state to PD_sleep.

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT. EZ.

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.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Comment ID* **50**   Page 6 of 8
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   7/7/2015 1:39:09 PM
SORT ORDER: Comment ID

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* **104.4.7**   *P* **29**   *L* **49**   # 54

Gardner, Andrew   Linear Technology

Comment Type   **E**   *Comment Status*   **D**

There appear to be extra carriage returns in sub-clause 104.4.7 on lines 49 and 50.

SuggestedRemedy

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT. EZ.

Cl **104**   *SC* **104.6**   *P* **30**   *L* **51**   # 55

Gardner, Andrew   Linear Technology

Comment Type   **E**   *Comment Status*   **D**

There is a space missing between 'The' and 'PSE' at the beginning of the first paragraph in
sub-clause 104.6.

SuggestedRemedy

Add the space.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT. EZ.

Cl **104**   *SC* **figure 104-10**   *P* **34**   *L* **1**   # 56

Gardner, Andrew   Linear Technology

Comment Type   **ER**   *Comment Status*   **D**

Some of the labels in Figure 104-10 appears to be missing.

SuggestedRemedy

Restore the missing labels in Figure 104-10.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT. EZ.

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 **00**   *SC*   *P*   *L*   # 58

NoName

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

SuggestedRemedy

Proposed Response   *Response Status*   **W**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Comment ID

Comment ID **58**

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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.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general　　　*Comment ID* **59**　　　Page 8 of 8
COMMENT STATUS: D/dispatched A/accepted R/rejected　　　RESPONSE STATUS: O/open W/written C/closed Z/withdrawn　　　7/7/2015 1:39:09 PM
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