Cl **30**   *SC* **30.2.3**   *P* **22**   *L* **3**   # i-141
Dove, Daniel   Linear Technology

Comment Type   **TR**   *Comment Status*   **D**   *nonez*

DL: Since IEEE P802.3br is currently in its 2nd sponsor recirculation ballot it seems reasonable at this time to assume it will be approved before IEEE P802.3bu. Based on this the DTE system entity relationship diagram needs to be updated to reflect the changes being made to it by IEEE P802.3br to add support for the oMACMergeEntity.

SuggestedRemedy

Please replace Figure 30-3 with the new figure in IEEE_P802d3bu_Clause_30_250416.pdf attached to this comment.

Proposed Response   *Response Status*   **Z**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Duplicate comment with i-86.

Cl **45**   *SC* **45.2.7b.2.8**   *P* **34**   *L* **40**   # i-147
Dove, Daniel   Linear Technology

Comment Type   **GR**   *Comment Status*   **D**   *nonez*

If a PD does not classify, but the PSE is delivering power due to detection, etc; what would the value of these bits be? I suggest a change to the register bits to include "1111 = Classification not valid", and instruction to address this change.

SuggestedRemedy

Update the table to include "1111 = Classification not valid" and correct the adjacent entries to reconcile that change.

Replace "Bits 13.1.6:3 report the PD Class of a detected PD as specified in 104.5.2. " with "Bits 13.1.6:3 report a value of "1111" until a valid classification has taken place, or if no PD is present. Once a valid classification has occurred, the value of these bits reflect the PD Class of an attached PD as specified in 104.5.2."

Delete "The value in this register is valid while a PD is connected, i.e., while the PSE Status (13.1.2:0) bits are reporting "delivering power"."

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Reconcile with i-14.

Cl **45**   *SC* **45.2.7b.2.8**   *P* **34**   *L* **42**   # i-14
Anslow, Peter   Ciena Corporation

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

To fit with the following text (which doesn't make sense) "When read as '0000' bits 13.1.2:0 a Class 0 PD is indicated," should be "When read as '0000' a Class 0 PD is indicated,". Also, in the parts that follow, "when read as a 'xxxx'" should be "when read as 'xxxx'".

SuggestedRemedy

Change "When read as '0000' bits 13.1.2:0 a Class 0 PD is indicated," to "When read as '0000' a Class 0 PD is indicated,".
Also, change "when read as a 'xxxx'" to "when read as 'xxxx'" (i.e. delete the "a") in 8 places.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Reconcile with i-147

Cl **104**   *SC* **104.1**   *P* **37**   *L* **33**   # i-154
Dove, Daniel   Linear Technology

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

Incorrect use of the word "systems"

SuggestedRemedy

replace "systems" with "devices" or "components" or "elements". The system includes all of them.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Replace "…of PD and PSE systems…" with "…of a PD and a PSE…"

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 U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **104**
SC **104.1**

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Cl **104**	*SC* **104.1.3**	*P* **38**	*L* **44**	# i-119		

Zimmerman, George   Commscope and Line

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

Under this definition, a PoDL system MUST have a PHY. This was not my understanding from other discussions. If a PoDL system can exist without a PHY, the text needs modification to allow for that. Additionally, for consideration, perhaps there is also a Type D, which has no PHY?

SuggestedRemedy

Change "A PoDL system, consisting of PHYs, PSE, ... Is defined..." to "A PoDL system, consisting of PSE, MDIs, link segment, a PD, and optionally a PHY is defined..."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolved by comment i-80.

Cl **104**	*SC* **104.1.3**	*P* **38**	*L* **44**	# i-80		

Law, David   Hewlett Packard Enter

Comment Type **TR**   *Comment Status* **D**   *nonez*

Subclause 104.1.3 'PoDL system types' states that 'A PoDL system, consisting of PHYs, PSE, MDIs, link segment, and a PD is defined as Type A, Type B, or Type C.'. It then states that 'A Type A system is compatible with 100BASE-T1 PHYs, and a Type B system is compatible with 1000BASE-T1 PHYs.'. If Type is an attribute of a complete system, how can the system then be compatible with a particular PHY?
Subclause 104.4.6.3 'Power feeding ripple and transients' then states that 'When measuring the ripple voltage for a Type A PSE as specified by Table 104-3 item (4a) ...' and that 'When measuring the ripple voltage for a Type B PSE as specified in Table 104-3 item (4a) ...' and subclause 104.5.6.3 'PD ripple and transients' states that 'The ripple and transient specifications for a Type A PD shall be met for all operating ...' and ' The ripple and transient specifications for a Type B PD shall be met for all operating ...'. This implies that the Type is not defined by the system, but instead an attribute of the PSE and PD.

SuggestedRemedy

Either Type is an attribute of the complete system, and can only be determined by the complete system, or is an attribute of a PSE and PD, and can be determined in isolation. Please clarify which it is and then update text as necessary.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment i-219.

Propose changing:

"A PoDL system, consisting of PHYs, PSE, MDIs, link segment, and a PD is defined as Type A, Type B, or Type C. A Type A system is compatible with 100BASE-T1 PHYs, and a Type B system is compatible with 1000BASE-T1 PHYs. A Type C system is compatible with both 100BASE-T1 and 1000BASE-T1 PHYs."

to

"A PoDL system consists of a PSE, link segment, and a PD. A Type A or Type C PSE and Type A or Type C PD is compatible with 100BASE-T1 PHYs. A Type B or Type C PSE and Type B or Type C PD is compatible with 1000BASE-T1 PHYs. A Type C PSE and Type C PD is compatible with both 100BASE-T1 and 1000BASE-T1 PHYs."

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 U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **104**
SC **104.1.3**

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Cl **104**   *SC* **104.1.3**   *P* **38**   *L* **44**   # i-219
Gardner, Andrew   Linear Technology

Comment Type **TR**   *Comment Status* **D**   *nonez*

While there are PoDL types for 100BASE-T1, 1000BASE-T1, and both 100BASE-T1/1000BASE-T1 PSEs and PDs, there is no Type for PoDL PSEs and PDs without a data entity or with a data entity other than 100BASE-T1 or 1000BASE-T1.

SuggestedRemedy

Add a Type D for PoDL PSEs and PDs without a data entity or with a data entity other than 100BASE-T1 or 1000BASE-T1. See gardner_3bu_02_0716.pdf for complete remedy.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

TFTD after presentation gardner_3bu_02_0716.pdf.

Cl **104**   *SC* **104.1.3**   *P* **38**   *L* **44**   # i-155
Dove, Daniel   Linear Technology

Comment Type **TR**   *Comment Status* **D**   *nonez*

DL: Subclause 104.1.3 'PoDL system types' states that 'A PoDL system, consisting of PHYs, PSE, MDIs, link segment, and a PD is defined as Type A, Type B, or Type C.'. It then states that 'A Type A system is compatible with 100BASE-T1 PHYs, and a Type B system is compatible with
1000BASE-T1 PHYs.'. If Type is an attribute of a complete system, how can the system then be compatible with a particular PHY?
Subclause 104.4.6.3 'Power feeding ripple and transients' then states that 'When measuring the ripple voltage for a Type A PSE as specified by Table 104-3 item (4a) ...' and that 'When measuring the ripple voltage for a Type B PSE as specified in Table 104-3 item (4a) ...' and subclause 104.5.6.3 'PD ripple and transients' states that 'The ripple and transient specifications for a Type A PD shall be met for all operating ...' and ' The ripple and transient specifications for a Type B PD shall be met for all operating ...'. This implies that the Type is not defined by the system, but instead an attribute of the PSE and PD.

SuggestedRemedy

Either Type is an attribute of the complete system, and can only be determined by the complete system, or is an attribute of a PSE and PD, and can be determined in isolation. Please clarify which it is and then update text as necessary.

Proposed Response   *Response Status* **Z**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Duplicate comment with i-80.

Cl **104**   *SC* **104.2**   *P* **39**   *L* **22**   # i-122
Zimmerman, George   Commscope and Line

Comment Type **TR**   *Comment Status* **D**   *nonez*

Equation 104-1 and its description confuse the requirement on loop resistance, which is in the following paragraph (lines 32-35). The inclusion of the equation adds no requirements and introduces confusion with the actual requirement for loop resistance. The extra tutorial text is not useful, since it is dependent on parameters not used in this standard, such as R_PSE.

SuggestedRemedy

Delete equation 104-1 and descriptive text on page 39 lines 22-27.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **104**   *SC* **104.2**   *P* **39**   *L* **22**   # i-121
Zimmerman, George   Commscope and Line

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

Equation 104-1 and the descriptive text really don't describe the maximum resistance of the wire pair per unit length, but rather the average maximum per unit length (the wire could have higher resistances at some places and lower others and still satisfy Eq 104-1). The length actually falls out of the equation entirely and its inclusion only serves to confuse the reader. What this equation really describes is the relationship of the maximum DC loop resistance to the power system parameters.

SuggestedRemedy

Change "The maximum DC loop resistance of the link segment wire pair (per unit length) as a function of power system parameters" to "The relationship of the maximum DC loop resistance of the link segment to the power system parameters" and change Equation 104-1 by deleting the 1/2L term and changing the units from Ohms/m to Ohms

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment i-122.

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 U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **104**
SC **104.2**

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Cl **104**　　　*SC* **104.2**　　　*P* **39**　　　*L* **29**　　　# i-156
Dove, Daniel　　　　　　　　Linear Technology

Comment Type **TR**　　*Comment Status* **D**　　　　　　　*nonez*
The use of (ohm/m) is lacking a parameter name.

SuggestedRemedy
Replace "(ohm/m)" with "Loop Resistance (ohm/m)"

Proposed Response　　　*Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

See comment i-122.

Cl **104**　　　*SC* **104.2**　　　*P* **39**　　　*L* **30**　　　# i-81
Law, David　　　　　　　　Hewlett Packard Enter

Comment Type **E**　　*Comment Status* **D**　　　　　　　*nonez*
Please format the equation following subclause 15.3 'Presentation of equations' found in the '2014 IEEE-SA Standards Style Manual' <https://development.standards.ieee.org/myproject/Public/mytools/draft/styleman.pdf>, that is the equation is presented followed by the text 'where' and then the variables are defined in a list.

SuggestedRemedy
See comment.

Proposed Response　　　*Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

See comment i-122.

Cl **104**　　　*SC* **104.2**　　　*P* **39**　　　*L* **30**　　　# i-82
Law, David　　　　　　　　Hewlett Packard Enter

Comment Type **T**　　*Comment Status* **D**　　　　　　　*nonez*
I don't believe that [Greek letter omega]/m is the result of the equation, instead it is the units of the result of the equation. However if K is a ratio as stated on line 25, then K x (1-K) x VPSE_OC(min) on the numerator will result in a voltage, when then divided by the power PPD on the denominator, will result in the inverse of current, not a resistance.

SuggestedRemedy
Please verify if the equation is correct.

Proposed Response　　　*Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

See comment i-122.

Cl **104**　　　*SC* **104.2**　　　*P* **39**　　　*L* **30**　　　# i-157
Dove, Daniel　　　　　　　　Linear Technology

Comment Type **E**　　*Comment Status* **D**　　　　　　　*nonez*
DL: Please format the equation following subclause 15.3 'Presentation of equations' found in the '2014 IEEE-SA Standards Style Manual' <https://development.standards.ieee.org/myproject/Public/mytools/draft/styleman.pdf>, that is the equation is presented followed by the text 'where' and then the variables are defined in a list.

SuggestedRemedy
See comment.

Proposed Response　　　*Response Status* **Z**
PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Duplicate comment with i-81.

Cl **104**　　　*SC* **104.2**　　　*P* **39**　　　*L* **30**　　　# i-158
Dove, Daniel　　　　　　　　Linear Technology

Comment Type **T**　　*Comment Status* **D**　　　　　　　*nonez*
DL: I don't believe that [Greek letter omega]/m is the result of the equation, instead it is the units of the result of the equation. However if K is a ratio as stated on line 25, then K x (1-K) x VPSE_OC(min) on the numerator will result in a voltage, when then divided by the power PPD on the denominator, will result in the inverse of current, not a resistance.

SuggestedRemedy
Please verify if the equation is correct.

Proposed Response　　　*Response Status* **Z**
PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Duplicate comment with i-82.

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 U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **104**
SC **104.2**

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Cl **104**   *SC* **104.3**   *P* **40**   *L* **2**   # i-108

Abramson, David   Texas Instruments Inc

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

There is not a single sentence in the section, just Table 104-1 with no description. We should add a sentence so the reader understand what the table is trying to convey.

SuggestedRemedy

Add text: "PSEs and PDs are further categorized by their system class. These classes and the relevant electrical specifications are shown in Table 104-1." to beginning of section 104.3.
Note: "sytem class" may not be the correct phrase, editorial licesense is given to pick a more correct name.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add text: "PSEs and PDs are further categorized by their system class. These classes and the relevant electrical specifications are shown in Table 104-1." to beginning of section 104.3.

Cl **104**   *SC* **104.3**   *P* **40**   *L* **6**   # i-87

Goergen, Joel   Cisco Systems, Inc.

Comment Type **TR**   *Comment Status* **D**   *nonez*

The table lists several ampacities that are outside safe operation for multiple bundles or 24awg cables still meeting the maximum loop resistance. Class 3, 7, 8, and 9 all are outside the ampacity defined in NEC 725.144, even though all meet the power exclusion defined in 840.160 of 60 watts.

SuggestedRemedy

There is no environmental section describing limits and other standards to reference. Section similar to .3bt must be added.
There is no limitation on gauge and wire sizing, or reference to NEC for guidance.
Presentation to address possible text will be provided.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add the following note to Table 104-1:

"NOTE - Users are cautioned to be aware of the ampacity of cabling, as installed, and local codes and regulations, e.g., ANSI/NFPA 70 – National Electric Code® (NEC®), relevant to the maximum class supported."

TFTD after presentation zimmerman_3bu_1_0716.pdf.

Cl **104**   *SC* **104.3.3**   *P* **43**   *L* **6**   # i-216

Gardner, Andrew   Linear Technology

Comment Type **TR**   *Comment Status* **D**   *nonez*

The definition of power_available which is true when "the PSE is able to source the required power to the attached PD" needs to include the definition of valid PSE-PD pairings.

SuggestedRemedy

Propose adding a PSE-PD compatibility matrix that clearly defines what class of PSE is allowed to power the attached PD. See gardner_3bu_01_0716.pdf for complete remedy.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Suggested remedy is on page x of gardner_3bu_1_0716.pdf.

Cl **104**   *SC* **104.4.3.3**   *P* **43**   *L* **20**   # i-109

Abramson, David   Texas Instruments Inc

Comment Type **TR**   *Comment Status* **D**   *nonez*

The current PSE state diagram (and associated text) never checks to see if both the PSE and PD are the same voltage before powering on. We should add the check. We may even want to make sure the PD and PSE are in the same system class category (e.g. 12V regulated).
I have chosen to fix this by changing a variable definition, we could also create a new variable and add it to the state diagram.

SuggestedRemedy

Change definitions for variable "valid_class" to:
TRUE: valid class information was received from the PD during SCCP and the PSE and PD voltage levels match.
FALSE: valid class information was not receivedf rom the PD during SCCP or the PSE and PD voltage levels do not match.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add the following new paragraph to the end of 104.4.5:

"Valid class information is one which returns one of the defined bit patterns in Table 104-8 with a valid CRC8 result and the PSE is able to source the voltage associated with the PD class in Table 104-1."

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 U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **104**
SC **104.4.3.3**

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Cl **104**   *SC* **104.4.3.6**   *P* **45**   *L*   # i-174
Dove, Daniel   Linear Technology

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

AB: When in the POWER_UP state, the lack of a transition when power is stable concurrent with the In-rush timer expiring (i.e. power_stable * tinrush_timer_done) indicates the state machine remains in the POWER_UP state. Such behavior appears to hang the state machine

SuggestedRemedy

Define the expected behavior when this situation occurs - For example, add this as another condition for the POWER_UP to POWER_ON transition

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT IN PRINCIPLE.

Propose changing the condition on the arc from the POWER_UP state to the RESTART state from "tinrush_timer_done*!power_stable" to "tinrush_timer_done"

Cl **104**   *SC* **104.4.3.6**   *P* **45**   *L* **15**   # i-106
Abramson, David   Texas Instruments Inc

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

We should allow a PD that requires classification prior to the application of power to be compliant in order for PDs to be optimized (not all PDs will want to be able to withstand 50V).

SuggestedRemedy

See abramson_01bu_0716.pdf for text and state diagram markups. Many changes are required to implement this comment.

Proposed Response   *Response Status*   **W**
TFTD.

Cl **104**   *SC* **104.4.3.6**   *P* **45**   *L* **16**   # i-94
Stover, David   Linear Technology

Comment Type   **TR**   *Comment Status*   **D**   *nonez*

The state machine can proceed to POWER_UP state only when power is available

SuggestedRemedy

change the exit condition from DETECTION_EVAL to RESTART to "(mr_invalid_signature + !power_available) * !mr_sccp_enabled". Refer to presentation for additional details

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT IN PRINCIPLE.

See gardner_3bu_1_0716.pdf for complete remedy.

Cl **104**   *SC* **104.4.3.6**   *P* **45**   *L* **16**   # i-225
Stover, David   Linear Technology

Comment Type   **TR**   *Comment Status*   **D**   *nonez*

The state machine can proceed to POWER_UP state only when power is available.

SuggestedRemedy

change the exit condition from DETECTION_EVAL to POWER_UP to "mr_valid_signature * !mr_sccp_enabled * power_available". Refer to presentation for additional details.

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT IN PRINCIPLE.

See gardner_3bu_01_0716.pdf for complete remedy.

Cl **104**   *SC* **104.4.3.6**   *P* **45**   *L* **34**   # i-98
Stover, David   Linear Technology

Comment Type   **TR**   *Comment Status*   **D**   *nonez*

The state machine should proceed to RESTART if the power is unavailable when in POWER_ON state

SuggestedRemedy

Add a branch from POWER_ON to RESTART state with an exit condition - "!power_available"

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT IN PRINCIPLE.

See gardner_3bu_1_0716.pdf for complete remedy.

Cl **104**   *SC* **104.4.4**   *P* **47**   *L* **3**   # i-128
Zimmerman, George   Commscope and Line

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

"The PSE shall probe the PI as described in 104.4.4.1." 104.4.4.1 does not describe any probing. It simply states the current requirements for detection and introduces table 104-2. It contains its own Shall. Not clear what additionally is meant by this shall. It may be to include the electrical parameters of the probing current not called out specifically by the other shall. See comment marked GZ1 on Table 104-2.

SuggestedRemedy

Delete "The PSE shall probe the PI as described in 104.4.4.1."

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

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 U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **104**
SC **104.4.4**

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Cl **104** *SC* **104.4.4.1** *P* **47** *L* **12** # i-129

Zimmerman, George   Commscope and Line

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

(comment GZ1) There are many parameters in Table 104-2 which are not covered by any shall statement. The statement "shall be within the Ivalid current range, as specified in Table 104-2" covers only the Ivalid range in the table, but looks intended to cover the whole set of characteristics. (additionally, some of the "output characteristics" in Table 104-2 are not output characteristics, but are the characteristics of a valid signature - these might need their own table, not addressed in my remedy).

SuggestedRemedy

Change "All detection currents at the PI shall be within the Ivalid current range, as specified in Table 104-2, when connected to a valid PD detection signature as specified in Table 104-4." to read "The PSE PI detection state will have the electrical output characteristics specified in Table 104-2. All detection currents at the PI shall be within the Ivalid current range, as specified in Table 104-2, when connected to a valid PD detection signature as specified in Table 104-4."

Proposed Response *Response Status* **Z**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl **104** *SC* **104.4.4.1** *P* **47** *L* **12** # i-107

Abramson, David   Texas Instruments Inc

Comment Type **TR** *Comment Status* **D** *nonez*

There are items in Table 104-2 that are never referenced in the text. These parameters do not currently have a "shall" associated with them since there is not a general "shall" for the table.

SuggestedRemedy

Add text: "The detection probe shall conform to Voc, Isc, Islew, and Cout as specified in Table 104-2."
at end of section 104.4.4.1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **104** *SC* **104.4.6** *P* **49** *L* **9** # i-217

Gardner, Andrew   Linear Technology

Comment Type **TR** *Comment Status* **D** *nonez*

The PSE output range during SLEEP is currently specified as 3.1V to 3.45V which translates to a +/-5% range. Suggest opening up the max limit in order reduce burden on PSE implementation.

SuggestedRemedy

Propose relaxing the output range max requirement from 3.45V to 3.575V which yields a +/-7% range for item 10 (VSleep) in Table 104-3 and corresponding item 10 (VSleep_PD) in Table 104-6. VSleep max of 3.575V still leaves adequate margin for differentiating Vsig_disable min of 3.6V.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **104** *SC* **104.4.6.1** *P* **49** *L* **39** # i-220

Gardner, Andrew   Linear Technology

Comment Type **TR** *Comment Status* **D** *nonez*

There is no spec for VPSE when a PSE is not delivering any power to the PI, i.e. pi_powered, pi_sleeping, pi_detecting, pi_prebiased, and pi_classifying are all FALSE.

SuggestedRemedy

Insert the following sentence after the first sentence in this subclause. "A PSE shall apply a voltage at the PI in the range of VDisable when in the OVERLOAD, OVERLOAD_DELAY, and DISABLED states (see 104.4.6.5)." Add new line item to Table 104-3 as follows: '21, DC output voltage during the DISABLED, OVERLOAD, and OVERLOAD_DELAY states, VDisable, V, -, 1, All, All, See 104.4.6.1'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **104** *SC* **104.4.6.2.1** *P* **48** *L* **47** # i-215

Gardner, Andrew   Linear Technology

Comment Type **TR** *Comment Status* **D** *nonez*

The 50ms minimum value for TLIM in Table 104-3 is too restrictive, 10ms should be sufficiently large.

SuggestedRemedy

Change the minimum value of TLIM from 50ms to 10ms

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general *Cl* **104** Page 7 of 13
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn *SC* **104.4.6.2.1** 7/19/2016 4:17:26 PM
SORT ORDER: Clause, Subclause, page, line

Cl **104**   *SC* **104.4.6.5**   *P*   *L*   # i-221

Gardner, Andrew   Linear Technology

Comment Type **TR**   *Comment Status* **D**   *nonez*

There is no disable time spec for VPSE when a PSE is not delivering any power to the PI, i.e. pi_powered, pi_sleeping, pi_detecting, pi_prebiased, and pi_classifying are all FALSE.

SuggestedRemedy

Add line item to Table 104-3 as follows: '22, Disable time, TDisable, ms, -, 500, All, All, See 104.4.6.6'.

Increment existing sub-clause 104.4.6.6 to 104.4.6.7 and insert new sub-clause 104.4.6.6 as follows:

'104.4.6.6 Disable time
The specification for TDisable in Table 104-3 shall apply to the discharge time from VPSE to VDisable with a test resistor of 320 kohm attached to the PI. TDisable starts when VPSE drops 1 V below the steady-state value after the pi_powered, pi_classifying, pi_detecting, pi_prebiased, and pi_sleeping variables are cleared (see Figure 104-4). TDisable ends when VPSE less than or equal to VDisable max.'

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **104**   *SC* **104.5**   *P* **52**   *L* **29**   # i-84

Law, David   Hewlett Packard Enter

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

The text 'A device that is capable of becoming a PD may have the ability to draw power from an alternate power source. A PD requiring power from the PI may simultaneously draw power from an alternate power source.' appears to be duplicative to subclause 104.5.6, but less detailed in respect to the PD drawing none, some, or all of its power from its PI.

SuggestedRemedy

Suggest that this text in subclause 104.5 be deleted.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **104**   *SC* **104.5**   *P* **52**   *L* **29**   # i-186

Dove, Daniel   Linear Technology

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

The text 'A device that is capable of becoming a PD may have the ability to draw power from an alternate power source. A PD requiring power from the PI may simultaneously draw power from an alternate power source.' appears to be duplicative to subclause 104.5.6, but less detailed in respect to the PD drawing none, some, or all of its power from its PI.

SuggestedRemedy

Suggest that this text in subclause 104.5 be deleted.

Proposed Response   *Response Status* **Z**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Duplicate comment with i-84.

Cl **104**   *SC* **104.5.3.6**   *P* **55**   *L* **1**   # i-222

Gardner, Andrew   Linear Technology

Comment Type **TR**   *Comment Status* **D**   *nonez*

PD state diagram behavior in the FAULT state needs to be clarified.

SuggestedRemedy

Propose changing UCT to !fault_detected for arc from FAULT to DISCONNECT. Add enable_mdi_power<=FALSE and present_mfvs<=FALSE to FAULT state assignments. Set pd_fault<=FALSE in the DISCONNECT state. See gardner_3bu_03_0716.pdf for complete remedy.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Adopt remedy as proposed on slides x-y of gardner_3bu_3_0716.pdf.

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 U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **104**
SC **104.5.3.6**

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7/19/2016 4:17:26 PM

Cl **104**   *SC* **104.5.4**   *P* **54**   *L* **39**   # i-226

Dove, Daniel   Linear Technology

Comment Type **GR**   *Comment Status* **D**   *nonez*

DA: I would like to see PDs not be required to show a valid signature during detection. This would allow them to only be powered by PSEs that do classification.

SuggestedRemedy

See abramson_01bu_0516.pdf

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate comment with i-106.

Cl **104**   *SC* **104.5.4**   *P* **55**   *L* **39**   # i-193

Dove, Daniel   Linear Technology

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

DL: Subclause 104.5.4 'PD signature' states that 'A PD shall present a valid detection signature when VPD is less than Vsig_enable.'. Since Vsig_enable is 4.3 V max to 3.6 V min (Table 104-4), this seems to require a valid detection signature to be present from a threshold in the range 4.3 V max to 3.6 V min and any voltage less than that threshold. Subclause 104.5.6.2 'Input current' however states that 'A PD that requires detection and power-up shall draw current in the range of IWakeup_PD for at least TWakeup_PD when Vsleep_PD min < VPD < Vsleep max as specified in Table 104-3 and Table 104-6.'. Since Vsleep max is 3.5 V (Table 104-3, item 10), less than the Vsig_enable min (3.6V). These seems to be conflicting requirements.

SuggestedRemedy

Please clarify.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate comment with i-65. Remedy as per remedy for comment i-65.

Cl **104**   *SC* **104.5.4**   *P* **55**   *L* **39**   # i-65

Law, David   Hewlett Packard Enter

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

Subclause 104.5.4 'PD signature' states that 'A PD shall present a valid detection signature when VPD is less than Vsig_enable.'. Since Vsig_enable is 4.3 V max to 3.6 V min (Table 104-4), this seems to require a valid detection signature to be present from a threshold in the range 4.3 V max to 3.6 V min and any voltage less than that threshold. Subclause 104.5.6.2 'Input current' however states that 'A PD that requires detection and power-up shall draw current in the range of IWakeup_PD for at least TWakeup_PD when Vsleep_PD min < VPD < Vsleep max as specified in Table 104-3 and Table 104-6.'. Since Vsleep max is 3.5 V (Table 104-3, item 10), less than the Vsig_enable min (3.6V). These seems to be conflicting requirements.

SuggestedRemedy

Please clarify.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The PD signature is enabled when VPD is in the range of Vsig_enable and it is disabled when it is in the range of Vsig_disable. Although the detection signature is not discoverable at the PD PI when VPD is in the range of Vsleep, it is enabled. A PD that requires wakeup presents the wakeup signature current when VPD is in the range of Vsleep (consult PD state diagram).

Propose changing:

"A PD shall present a valid detection signature when VPD is less than Vsig_enable."

to

"A PD shall enable a valid detection signature when VPD is in the range of Vsig_enable."

In order to clarify 104.5.4.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **104**   Page 9 of 13
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *SC* **104.5.4**   7/19/2016 4:17:26 PM
SORT ORDER: Clause, Subclause, page, line

Cl **104**   *SC* **104.5.4**   *P* **55**   *L* **49**   # i-195

Dove, Daniel   Linear Technology

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

DL: While it is correct that 'A PD that presents a signature within the limits set out in Table 104-4 is assured to pass detection.', it may however be prudent to add that it may not necessarily be powered due to the PSE not having sufficient available power (transition from CLASSIFICATION_EVAL to RESTART due to !power_avalible).

SuggestedRemedy

Suggest the text '... pass detection.' be changed to read '... pass detection, although may not necessarily be powered due to the PSE being unable to source the required power.'.

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

While the explanatory text is useful, it is inappropriate because it describes PSE behaviour. See 104.4.4.

Cl **104**   *SC* **104.5.6**   *P* **57**   *L* **6**   # i-68

Law, David   Hewlett Packard Enter

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

Subclause 104.5.6.1 'PD input voltage' states that 'The PD shall remain off until the input voltage reaches a value in the range of VOn, as specified in Table 104-6, after a delay greater than Tpower_dly.'. For the case of a 12 V unregulated PSE 104-6 however lists Von max as 5.75 V (item 4a).

Subclause 104.5.6.1 however also states that 'The PD shall turn on or off without startup oscillation and within the first trial when a voltage in the range of VPSE (as defined in Table 104-1) is applied with a series resistance within the range of valid channel resistance.'. For the case of a 12 V unregulated PSE Table 104-1 lists VPSE(min) for a Class code 0 PSE as 5.6 V.

Based on the above it appears that a conformant class code 0 PD need not turn on until 5.75 V (Von max), yet Subclause 104.5.6.1 requires that it turn on when a PSE supplies 5.6 V through a series resistance within the range of valid channel resistance.

SuggestedRemedy

Please verify the respective values.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The values are correct. Since the open-circuit VPSE min for class 0 is 6V, the PD is assured of being able to turn on if its Von max is 5.75V. After the PD is drawing power from the PI, the VPSE may drop to as low as 5.6V and VPD may drop as low as 4.94V. The PD Voff min of 3.6V ensures that the PD will remain on.

Cl **104**   *SC* **104.5.6**   *P* **57**   *L* **13**   # i-198

Dove, Daniel   Linear Technology

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

DL: Subclause 104.5.6.1 'PD input voltage' states that 'Once the PD is turned on, the PD may remain on in the input voltage range less than VOn min but greater than VOff.'. Based on this I suspect that there may be an error for the unregulated 24 V class values in Table 104-6 for Von min (item 4d) which is 17.8 V and Voff (item 5d) which is 19.5 V. For this class, unlike all others, the Von min is lower that the Voff value, hence there is no range where VOn min is greater than VOff.

SuggestedRemedy

If these values are correct, the text is subclause 104.5.6.1 may need clarified for the unregulated 24 V class.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate comment with i-69. Remedy as per remedy for comment i-69.

Cl **104**   *SC* **104.5.6**   *P* **57**   *L* **13**   # i-69

Law, David   Hewlett Packard Enter

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

Subclause 104.5.6.1 'PD input voltage' states that 'Once the PD is turned on, the PD may remain on in the input voltage range less than VOn min but greater than VOff.'. Based on this I suspect that there may be an error for the unregulated 24 V class values in Table 104-6 for Von min (item 4d) which is 17.8 V and Voff (item 5d) which is 19.5 V. For this class, unlike all others, the Von min is lower that the Voff value, hence there is no range where VOn min is greater than VOff.

SuggestedRemedy

If these values are correct, the text is subclause 104.5.6.1 may need clarified for the unregulated 24 V class.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The value of Von min for the unregulated 24V class is too low and is in error.

Propose remedy on slides x-y gardner_3bu_4_0716.pdf.

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 U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **104**
SC **104.5.6**

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Cl **104**   *SC* **104.5.6.1**   *P* **58**   *L* **28**   # i-71
Law, David   Hewlett Packard Enter

Comment Type **T**   *Comment Status* **D**   *nonez*
Subclause 104.5.6.1 'PD input voltage' requires that a voltage '... is applied with a series resistance within the range of valid channel resistance. While I see that subclause 104.2 'Link segment' defines a maximum DC loop resistance, I'm not able to find a definition of the 'valid channel resistance'.

SuggestedRemedy
Please add a cross reference to the subclause where valid channel resistance is defined.

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Editor to replace all instances of "channel resistance" with "DC loop resistance" and include cross reference to 104.2.

Cl **104**   *SC* **104.6.2**   *P* **60**   *L* **27**   # i-110
Abramson, David   Texas Instruments Inc

Comment Type **GR**   *Comment Status* **D**   *nonez*
There is no reason to include the fault tolerances from clause 96 in this clause.
These requirements apply to the appropriate applications by their inclusion in clause 96.
Leaving them in clause 104 only adds them as a requirement to applications that may not require them.

SuggestedRemedy
Remove sentence: "The PI shall meet the fault tolerance requirements as specified in 96.8.3."

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

See i-219.

Cl **104**   *SC* **104.6.3**   *P* **60**   *L* **31**   # i-207
Dove, Daniel   Linear Technology

Comment Type **TR**   *Comment Status* **D**   *nonez*
DL: This requirements in this subclause can't 'supersede' requirements elsewhere in IEEE Std 802.3 as 'supersede' has the special meaning that one standard has replaced the other, for example IEEE Std 802.3-2015 supersedes IEEE Std 802.3-2012 and all its amendments. I believe instead that this requirement is in addition to the 100BASE-T1 requirements for a 100BASE-T1 associated with a PoDL PD or PSE. In other words a 100BASE-T1 PHY has to always meet 96.5.4.1, but a 100BASE-T1 PHY associated with a PoDL PD or PSE has to also meet 104.6.3.1.1.

SuggestedRemedy
Since the last sentence of 104.1.2 states that 'The PI is encompassed within the MDI.' suggest that the subclause text be replaced with 'Subclauses 104.6.3.1 and 104.6.3.2 define additional requirements for a 100BASE-T1 PHY with a MDI that incorporates a PI.'

Proposed Response   *Response Status* **Z**
PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Duplicate comment with i-72.

Cl **104**   *SC* **104.6.3**   *P* **60**   *L* **31**   # i-72
Law, David   Hewlett Packard Enter

Comment Type **TR**   *Comment Status* **D**   *nonez*
This requirements in this subclause can't 'supersede' requirements elsewhere in IEEE Std 802.3 as 'supersede' has the special meaning that one standard has replaced the other, for example IEEE Std 802.3-2015 supersedes IEEE Std 802.3-2012 and all its amendments. I believe instead that this requirement is in addition to the 100BASE-T1 requirements for a 100BASE-T1 associated with a PoDL PD or PSE. In other words a 100BASE-T1 PHY has to always meet 96.5.4.1, but a 100BASE-T1 PHY associated with a PoDL PD or PSE has to also meet 104.6.3.1.1.

SuggestedRemedy
Since the last sentence of 104.1.2 states that 'The PI is encompassed within the MDI.' suggest that the subclause text be replaced with 'Subclauses 104.6.3.1 and 104.6.3.2 define additional requirements for a 100BASE-T1 PHY with a MDI that incorporates a PI.'

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

TFTD.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **104**   Page 11 of 13
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *SC* **104.6.3**   7/19/2016 4:17:26 PM
SORT ORDER: Clause, Subclause, page, line

Cl **104**   *SC* **104.6.3.1**   *P* **60**   *L* **34**   # i-208
Dove, Daniel   Linear Technology

Comment Type **TR**   *Comment Status* **D**   *nonez*

DL: I don't see a ' Type A PoDL transmitter' defined anywhere.

SuggestedRemedy

Based on the title of subclause 104.6.3.2 being 'MDI return loss', and assuming my comment to change this subclause to only be required for a 100BASE-T1 PHY with a MDI that incorporates a PI, suggest that:

[1] This title be changed to read 'Transmitter output droop'.
[2] The text 'With the Type A PoDL transmitter in test ... ' be changed to read 'With the transmitter in test ...'.
[3] The text 'This requirement supersedes the transmitter output droop requirement in clause 96' be deleted.

Proposed Response   *Response Status* **Z**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Duplicate comment with i-73.

Cl **104**   *SC* **104.6.3.1**   *P* **60**   *L* **34**   # i-73
Law, David   Hewlett Packard Enter

Comment Type **TR**   *Comment Status* **D**   *nonez*

I don't see a ' Type A PoDL transmitter' defined anywhere.

SuggestedRemedy

Based on the title of subclause 104.6.3.2 being 'MDI return loss', and assuming my comment to change this subclause to only be required for a 100BASE-T1 PHY with a MDI that incorporates a PI, suggest that:

[1] This title be changed to read 'Transmitter output droop'.
[2] The text 'With the Type A PoDL transmitter in test ... ' be changed to read 'With the transmitter in test ...'.
[3] The text 'This requirement supersedes the transmitter output droop requirement in clause 96' be deleted.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Editor to adopt suggested remedy items [1] and [2].

TFTD item [3].

Cl **104**   *SC* **104.6.3.1.1**   *P* **60**   *L* **43**   # i-74
Law, David   Hewlett Packard Enter

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

Assume that 'transmitter test fixture 1' is the text fixture found in figure 96-20. If so a cross-reference should be added.

SuggestedRemedy

Suggest the text '... transmitter test fixture 1, ...' should be changed to read '... transmitter test fixture 1 (see Figure 96-20), ...'.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **104**   *SC* **104.6.3.1.1**   *P* **60**   *L* **43**   # i-209
Dove, Daniel   Linear Technology

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

DL: Assume that 'transmitter test fixture 1' is the text fixture found in figure 96-20. If so a cross-reference should be added.

SuggestedRemedy

Suggest the text '... transmitter test fixture 1, ...' should be changed to read '... transmitter test fixture 1 (see Figure 96-20), ...'.

Proposed Response   *Response Status* **Z**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Duplicate comment with i-73.

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 U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **104**
SC **104.6.3.1.1**

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7/19/2016 4:17:26 PM

Cl **104**   *SC* **104.7.2.4**   *P* **67**   *L* **10**   *#* i-223

Gardner, Andrew   Linear Technology

Comment Type **TR**   *Comment Status* **D**   *nonez*

    pd_fault bit behavior needs to be clarified.

SuggestedRemedy

    Change name from pd_fault to pd_faulted. Change description to read "When read as a one indicates that a PD fault has been detected. This bit shall be set to true when pd_fault transitions from FALSE to TRUE. The pd_faulted bit shall be implemented with latching high behavior as defined in 45.2." Change bit type from RO to RO/LH. See gardner_3bu_03_0716.pdf for complete remedy.

Proposed Response   *Response Status* **W**

    PROPOSED ACCEPT IN PRINCIPLE.

    Propose remedy on slides x-y of presentation gardner_3bu_3_0716.pdf.

Cl **104**   *SC* **104.7a**   *P* **68**   *L* **23**   *#* i-127

Zimmerman, George   Commscope and Line

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

    This standard is missing the usual "environmental" and "general safety" sections found in other 802.3 PHY and PoE standards. Specifically the guidance for local, regional and national safety specifications.

SuggestedRemedy

    Recommended text will be provided in a contribution, formed from a combination of the environmental sections of Clause 33 (PoE) and the BASE-T1 PHY clauses.

Proposed Response   *Response Status* **W**

    Remedy proposed in presentation zimmerman_3bu_1_0716.pdf.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **104**   Page 13 of 13
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *SC* **104.7a**   7/19/2016 4:17:27 PM
SORT ORDER: Clause, Subclause, page, line