*Cl* **30** *SC* **30** *P* *L* # i-476
Darshan, Yair

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

Who is generating the SNMP MIBs based on clause 30?

*SuggestedRemedy*

Group to discuss.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145** *P* *L* # i-314
Stover, David Analog Devices Inc.

*Comment Type* **G** *Comment Status* **X**

Punctuation usage in equation variable definitions is inconsistent. Some definitions end in a period, others do not.

*SuggestedRemedy*

Consistently use or omit periods on equation variable definitions, per style guidelines.

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.5.1** *P* **0** *L* **0** # i-349
Thompson, Geoffrey Individual

*Comment Type* **ER** *Comment Status* **X**

Cl. 33.5.1, para 1 would seem to be a requirement that applies to cl. 145 devices but I find no clue in 145 to look to cl. 33 for additional requirements.

*SuggestedRemedy*

Add the requirement to cl. 145 (preferred) or put in some general statement that cl. 145 does not have the complete req'ts for a PSE (and PD?) and you have to read all of cl. 33 to find the rest of them and specify which ones.

*Proposed Response* *Response Status* **O**

*Cl* **Patents** *SC* **Patents** *P* **3** *L* **46** # i-316
Crayford, Ian Network Generation L

*Comment Type* **GR** *Comment Status* **X**

*** Comment submitted with the file 94180000003-802.3bt - Crayford Ballot Comments.xls attached ***

This is a general comment regarding Intellectual Property.
The use of PoE has been the subject of multiple litigations from NPEs (Non Practicing Entities), otherwise known as "Patent Trolls".
Two in particular, Chrimar Systems and Network 1, have litigated against a significant group of companies in the Ethernet industry who ship products that implement PoE.
Since 802.3bt increases the available power, this will no doubt attract new companies to utilize PoE in many new applications.
What assurances have been made by companies who believe they have intellectual property that relates to 802.3bt (by at least Chrimar Systems and Network 1), such that licensing under RAND terms can be secured?

*SuggestedRemedy*

Issue a much stronger warning indicating the use of 802,3bt may result in alleged infringement of Intellectual Property,

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79.3.2.1** *P* **15** *L* **13** # i-217
Mcclellan, Brett Marvell Semiconducto

*Comment Type* **ER** *Comment Status* **X**

Note 2 was deleted, but "Note 3" was not renumbered.

*SuggestedRemedy*

change "Note 2" to "Note 3" on lines 13 and 23

*Proposed Response* *Response Status* **O**

*Cl* **1** *SC* **1.4.254** *P* **24** *L* **30** # i-345

Jones, Chad — Cisco Systems, Inc.

*Comment Type* **ER** *Comment Status* **X**

Chair notes... before the clause split, we found it necessary to change the definition of link section (and the modificaiton has evolved). With the clause split, our rationale for the change has disappeared AND I'm not sure it in scope of the PAR (is the definition change required to enable 4P operation or add 10G).

*SuggestedRemedy*

remove the editoral instructions for 1.4.254

*Proposed Response* *Response Status* **O**

*Cl* **1** *SC* **1.4.313a** *P* **24** *L* **35** # i-260

Stewart, Heath — Analog Devices Inc.

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

The existing definition of pairset is PSE centric but is repeatedly referenced by the PD. This definition should be made bi-modal.

Existing definition for pairset:
Either of the two valid 4-conductor connections, Alternative A or Alternative B, as listed in IEEE 802.3, 145.2.4

*SuggestedRemedy*

Append:
The PSE Alternate A and Alternate B connections are referred to as Mode A and Mode B, respectively, at the PD.

*Proposed Response* *Response Status* **O**

*Cl* **1** *SC* **1.4.338** *P* **24** *L* **39** # i-2

Anslow, Peter — Ciena Corporation

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

IEEE Std 802.3bu-2016 has modified 1.4.338.

*SuggestedRemedy*

Change the editing instruction to "Change 1.4.338 (as modified by IEEE Std 802.3bu-2016) as follows:"
Change the base text for 1.4.338 to the text as modified by 802.3bu.

*Proposed Response* *Response Status* **O**

*Cl* **1** *SC* **1.4.338** *P* **24** *L* **41** # i-344

Jones, Chad — Cisco Systems, Inc.

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

Chair notes... the definition of PSE needs to include 2.5-10G

*SuggestedRemedy*

change: intended to provide a single 10BASE-T, 100BASE-TX, or 1000BASE-T device...
to:
intended to provide a single 10BASE-T, 100BASE-TX, 1000BASE-T, 2.5GBASE-T, 5GBASE-T, or 10GBASE-T device...

*Proposed Response* *Response Status* **O**

*Cl* **1** *SC* **1.4.417** *P* **25** *L* **5** # i-255

Lukacs, Miklos — Silicon Laboratories

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

words "power level" are missing

*SuggestedRemedy*

change the sentence to:
"A PD that requests Class 4 power level during Physical
Layer classification, supports Multiple-Event Classification and Data Link Layer classification (see
IEEE 802.3, Clause 33).

*Proposed Response* *Response Status* **O**

*Cl* **1** *SC* **1.4.417** *P* **25** *L* **6** # i-261

Stewart, Heath — Analog Devices Inc.

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

The sentence structure does not quite work with the "and". As written each clause requires a verb.
A PD that requests Class 4 during Physical Layer classification, supports Multiple-Event Classification and Data Link Layer classification (see IEEE 802.3, Clause 33).

*SuggestedRemedy*

Add "supports" before "Data Link Layer"

*Proposed Response* *Response Status* **O**

Cl **1** SC **1.4.418aa** P **25** L **15** # i-256

Lukacs, Miklos — Silicon Laboratories

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

words "power level" are missing

*SuggestedRemedy*

change the sentence to:
"A PD that requests Class 1 to Class 6 power level during Physical Layer classification, implements
Multiple-Event classification, and accepts power on both Modes simultaneously. (See IEEE 802.3,
Clause 145).

*Proposed Response* *Response Status* **O**

Cl **1** SC **1.4.418ac** P **25** L **22** # i-257

Lukacs, Miklos — Silicon Laboratories

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

words "power level" are missing

*SuggestedRemedy*

change the sentence to:
"A PD that requests Class 7 or Class 8 power level during Physical Layer classification, implements
Multiple-Event classification, is capable of Data Link Layer classification, and accepts power on both
Modes simultaneously. (See IEEE 802.3, Clause 145).

*Proposed Response* *Response Status* **O**

Cl **25** SC **25** P **29** L **1** # i-24

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

In Clause 25 we use the construct "Type 2 or greater PD/PSE".
Everywhere else in the draft we use "Type 2, Type 3, or Type 4".

Potentially, 'or greater' could be misunderstood to refer to power level, rather than Type number.

*SuggestedRemedy*

Replace the construct 'Type 2 or greater' by 'Type 2, Type 3, or Type 4' in Clause 25.

*Proposed Response* *Response Status* **O**

Cl **25** SC **25.4.5** P **29** L **29** # i-206

Mcclellan, Brett — Marvell Semiconducto

*Comment Type* **ER** *Comment Status* **X**

link parameters are specified in 25.4.9 not 25.4.8

*SuggestedRemedy*

change "25.4.8" to "25.4.9"

*Proposed Response* *Response Status* **O**

Cl **30** SC **30.9.1.1** P **35** L **8** # i-350

Thompson, Geoffrey — Individual

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

It would appear that all of the strikethrough in this clause is incorrect as it constitutes a change to cl. 33. It is easily possible that the affected text could be improved but it is not proper to remove.

*SuggestedRemedy*

Restore stricken text in 30.9.1.1. Consider improvements to the text.

*Proposed Response* *Response Status* **O**

Cl **30** SC **30.9.1.1.1** P **35** L **11** # i-3

Anslow, Peter — Ciena Corporation

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

aPSEAdminState is 30.9.1.1.2 not 30.9.1.1.1 (the editing instruction is correct in this respect).
Same issue for what is shown as 30.9.1.1.2 through 30.9.1.1.8

*SuggestedRemedy*

Re-number 30.9.1.1.1 through 30.9.1.1.8 to be 30.9.1.1.2 through 30.9.1.1.9

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.1** *P* **35** *L* **11** # i-25

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

The subclause numbering of aPSEAdminState is wrong. Needs to be 30.9.1.1.2.

[Note to self: first implement the other Clause 30 comments, this will change all the numbering]

*SuggestedRemedy*

Make aPSEAdminState subclause number 30.9.1.1.2.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.1** *P* **35** *L* **21** # i-351

Thompson, Geoffrey — Individual

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

Reference to control registers in cl. 145 is missing.

*SuggestedRemedy*

Add reference to cl. 145 after the reference to cl. 33.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.1** *P* **35** *L* **24** # i-26

Yseboodt, Lennart — Philips Lighting

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

TOPIC: Clause 33 management. We deleted subclause 33.5 and then re-instated it when we split Clauses. This required updates in Clause 30.

"If a Clause 22 MII or Clause 35 GMII is present, then this will map to the PSE Enable bit specified in 33.5.1.1.6."

*SuggestedRemedy*

Undo strikeout and change to:
"For Type 1 or Type 2 PSEs, if a Clause 22 MII or Clause 35 GMII is present, then this will map to the PSE Enable bit specified in 33.5.1.1.6."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.2** *P* **35** *L* **37** # i-27

Yseboodt, Lennart — Philips Lighting

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

TOPIC: Clause 33 management. We deleted subclause 33.5 and then re-instated it when we split Clauses. This required updates in Clause 30.

"If a Clause 22 MII or Clause 35 GMII is present, then this will map to the Pair Control Ability bit specified in 33.5.1.2.12"

*SuggestedRemedy*

Undo strikeout and change to:
"For Type 1 or Type 2 PSEs, if a Clause 22 MII or Clause 35 GMII is present, then this will map to the Pair Control Ability bit specified in 33.5.1.2.12."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.3** *P* **36** *L* **7** # i-28

Yseboodt, Lennart — Philips Lighting

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

TOPIC: Clause 33 management. We deleted subclause 33.5 and then re-instated it when we split Clauses. This required updates in Clause 30.

"If a Clause 22 MII or Clause 35 GMII is present, then this will map to the Pair Control bits specified in 33.5.1.1.4."

*SuggestedRemedy*

Undo strikeout and change to:
"For Type 1 or Type 2 PSEs, if a Clause 22 MII or Clause 35 GMII is present, then this will map to the Pair Control bits specified in 33.5.1.1.4."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.4** *P* **36** *L* **15** # i-262

Stewart, Heath — Analog Devices Inc.

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

It is unclear how the disparate SISM states will be described. For example if the primary is powered and the secondary is searching, what will the returned state value be?

*SuggestedRemedy*

Either remove support for dual-signature PDs or complete their specification throughout the standard.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.4** *P* **36** *L* **32** # i-29

Yseboodt, Lennart — Philips Lighting

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

TOPIC: Clause 33 management. We deleted subclause 33.5 and then re-instated it when we split Clauses. This required updates in Clause 30.

"If a Clause 22 MII or Clause 35 GMII is present, then this will map to the PSE Status bits specified in 33.5.1.2.11."

*SuggestedRemedy*

Undo strikeout and change to:
"For Type 1 or Type 2 PSEs, if a Clause 22 MII or Clause 35 GMII is present, then this will map to the PSE Status bits specified in 33.5.1.2.11."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.5** *P* **37** *L* **4** # i-462

Darshan, Yair

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

In the text " This value is only valid while a PD is being powered, that is the attribute aPSEPowerPairsControlAbility reporting the enumeration "deliveringPower", "deliveringPower" isn't an enumeration value of variable 'aPSEPowerPairsControlAbility'. This variable is defined in page 35 line 27.
This variable is the wrong variable to use here.

*SuggestedRemedy*

Change from: "This value is only valid while a PD is being powered, that is the attribute aPSEPowerPairsControlAbility reporting the enumeration "deliveringPower"
To: "This value is only valid while a PD is being powered, that is the attribute aPSEPowerDetectionStatus reporting the enumeration "deliveringPower" .

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.5** *P* **37** *L* **5** # i-30

Yseboodt, Lennart — Philips Lighting

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

TOPIC: Clause 33 management. We deleted subclause 33.5 and then re-instated it when we split Clauses. This required updates in Clause 30.

"If a Clause 22 MII or Clause 35 GMII is present, then this will map to the PD Class bits specified in 33.5.1.2.10."

*SuggestedRemedy*

Undo strikeout and change to:
"For Type 1 or Type 2 PSEs, if a Clause 22 MII or Clause 35 GMII is present, then this will map to the PD Class bits specified in 33.5.1.2.10."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.6** *P* **37** *L* **18** # i-31

Yseboodt, Lennart — Philips Lighting

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

TOPIC: Clause 33 management. We deleted subclause 33.5 and then re-instated it when we split Clauses. This required updates in Clause 30.

"If a Clause 22 MII or Clause 35 GMII is present, then this will map to the Invalid Signature bit specified in 33.5.1.2.6."

*SuggestedRemedy*

Undo strikeout and change to:
"For Type 1 or Type 2 PSEs, if a Clause 22 MII or Clause 35 GMII is present, then this will map to the Invalid Signature bit specified in 33.5.1.2.6."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.7** *P* **37** *L* **25** # i-263

Stewart, Heath — Analog Devices Inc.

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

The PSEPowerDeniedCounter is only specified for Type 1 and Type 2 state machine references. It is not clear if this was intention or if references to Type 3 and Type 4 should be added.
Currently:
This counter is incremented when the PSE state diagram (Figure 33-9) enters the state POWER_DENIED.

*SuggestedRemedy*

Option 1 Change
"(Figure 33-9) enters the state POWER_DENIED"
to
"(Figure 33-9, Figure 145-13, Figure 145-15, or Figure 145-16) enters the state POWER_DENIED, POWER_DENIED_PRI, or POWER_DENIED_SEC"
Option 2 Change
"when the PSE"
to
"when the Type 1 and Type 2 PSE"

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.7** *P* **37** *L* **30** # i-32

Yseboodt, Lennart — Philips Lighting

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

TOPIC: Clause 33 management. We deleted subclause 33.5 and then re-instated it when we split Clauses. This required updates in Clause 30.

"If a Clause 22 MII or Clause 35 GMII is present, then this will map to the Power Denied bit specified in 33.5.1.2.4."

*SuggestedRemedy*

Undo strikeout and change to:
"For Type 1 or Type 2 PSEs, if a Clause 22 MII or Clause 35 GMII is present, then this will map to the Power Denied bit specified in 33.5.1.2.4."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.8** *P* **37** *L* **35** # i-33

Yseboodt, Lennart — Philips Lighting

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

This object was modified to work with Clause 145, but was not updated after the Clause split.
"This counter is incremented when the PSE state diagram (Figure 145-13, Figure 145-15, and Figure 145-16) enters the state ERROR_DELAY, ERROR_DELAY_PRI, or ERROR_DELAY_SEC."

*SuggestedRemedy*

Replace by:
"For Type 1 and Type 2 PSEs, this counter is incremented when the PSE state diagram in Figure 33-9 enters the state ERROR_DELAY.
For Type 3 and Type 4 PSEs, this counter is incremented when the PSE state diagram in Figure 145-13, Figure 145-15, and Figure 145-16 enters the state ERROR_DELAY, ERROR_DELAY_PRI, or ERROR_DELAY_SEC."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.8** *P* **37** *L* **41** # i-264

Stewart, Heath — Analog Devices Inc.

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

The reference to Figure 33-9 has been accidentally deleted.

*SuggestedRemedy*

Change "(Figure 145-23, " to "(Figure 33-9, Figure 145-13, "

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.8** *P* **37** *L* **43** # i-34

Yseboodt, Lennart — Philips Lighting

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

TOPIC: Clause 33 management. We deleted subclause 33.5 and then re-instated it when we split Clauses. This required updates in Clause 30.

"If a Clause 22 MII or Clause 35 GMII is present, then this will map to the Overload bit specified in 33.5.1.2.8."

*SuggestedRemedy*

Undo strikeout and change to:
"For Type 1 or Type 2 PSEs, if a Clause 22 MII or Clause 35 GMII is present, then this will map to the Overload bit specified in 33.5.1.2.8."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.10** *P* **37** *L* **47** # i-4

Anslow, Peter — Ciena Corporation

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

Firstly, is confusing to have nested editing instructions.
Secondly, when 30.9.1.1.10 is deleted, what was previously 30.9.1.1.11 becomes 30.9.1.1.10.
There are examples of this situation in previously published amendments. See IEEE Std 802.3bj-2014 subclause 69.1.2

*SuggestedRemedy*

Change the editing instruction on page 35, line 9 to "Change 30.9.1.1.2 through 30.9.1.1.9 as follows:"
Leave the "Delete" editing instruction on page 37, line 47 as it is.
Add an editing instruction for "aPSEMPSAbsentCounter" of: "Change 30.9.1.1.10 (re-numbered from 30.9.1.1.11 by the deletion of 30.9.1.1.10 above) as follows:"
Renumber the heading for "aPSEMPSAbsentCounter" to 30.9.1.1.10

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.11** *P* **38** *L* **2** # i-265

Stewart, Heath — Analog Devices Inc.

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

The PSEMPSAbsentCounter is only specified for Type 1 and Type 2 state machine references. It is not clear if this was intention or if references to Type 3 and Type 4 should be added.
Currently:
This counter is incremented when the PSE state diagram (Figure 145-13, Figure 145-15, and Figure 145-16) enters the state ERROR_DELAY, ERROR_DELAY_PRI, or ERROR_DELAY_SEC.

*SuggestedRemedy*

Option 1 Change
"transitions directly from the state POWER_ON to the state IDLE due to tmpdo_timer_done being asserted"
to
"transitions directly from the state POWER_ON, SEMI_PWR_PRI, SEMI_PWR_SEC, POWER_ON_PRI, or POWER_ON_SEC to the state IDLE due to tmpdo_timer_done, tmpdo_timer_done_pri or tmpdo_timer_done_sec being asserted"
Option 2 Change
"when the PSE"
to
"when the Type 1 and Type 2 PSE"

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.1.1.11** *P* **38** *L* **3** # i-35

Yseboodt, Lennart — Philips Lighting

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

TOPIC: Clause 33 management. We deleted subclause 33.5 and then re-instated it when we split Clauses. This required updates in Clause 30.

"If a Clause 22 MII or Clause 35 GMII is present, then this will map to the MPS Absent bit specified in 33.5.1.2.9."

*SuggestedRemedy*

Undo strikeout and change to:
"For Type 1 or Type 2 PSEs, if a Clause 22 MII or Clause 35 GMII is present, then this will map to the MPS Absent bit specified in 33.5.1.2.9."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.9.2** *P* **38** *L* **19** # i-352
Thompson, Geoffrey Individual

*Comment Type* **TR** *Comment Status* **X**
Comment is out of the scope of the project.

*SuggestedRemedy*
Delete this line in the draft

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.2.1.8** *P* **38** *L* **30** # i-266
Stewart, Heath Analog Devices Inc.

*Comment Type* **E** *Comment Status* **X**
Google does not think Controlable is a word

*SuggestedRemedy*
Change Controlable to Controllable

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.2.1.9** *P* **38** *L* **53** # i-353
Thompson, Geoffrey Individual

*Comment Type* **TR** *Comment Status* **X**
Missing a syntax value for "Both"

*SuggestedRemedy*
Add enumeration for "Both" plus apprpriate expansion of the "BEHAVIOUR".

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.2.1...** *P* **40** *L* # i-355
Thompson, Geoffrey Individual

*Comment Type* **E** *Comment Status* **X**
I don't understand why each attribute has a "regular" version and a local LLDP version

*SuggestedRemedy*
Please explain.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.2.1.18** *P* **40** *L* **18** # i-354
Thompson, Geoffrey Individual

*Comment Type* **TR** *Comment Status* **X**
There is no enumeration defined for "unknown" or "not supported".

*SuggestedRemedy*
Define the value -1 as indicating "unknown" or "not supported".

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.2.1.18a** *P* **40** *L* **27** # i-5
Anslow, Peter Ciena Corporation

*Comment Type* **E** *Comment Status* **X**
The last inserted subclause is 30.12.2.1.18z15 not 30.12.2.1.18z12

*SuggestedRemedy*
In the editing instruction change "30.12.2.1.18z12" to "30.12.2.1.18z15"

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.2.1.18a** *P* **40** *L* **34** # i-317
Law, David Hewlett Packard Enter

*Comment Type* **E** *Comment Status* **X**
Please format the 'FALSE' and 'TRUE' description as hanging paragraphs. See IEEE Std 802.3-2015 subclause 30.12.2.1.20 aLldpXdot3LocReady for an existing example.

*SuggestedRemedy*
See comment.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.2.1.18b** *P* **40** *L* **50** # i-318
Law, David Hewlett Packard Enter

*Comment Type* **E** *Comment Status* **X**
Please format the 'FALSE' and 'TRUE' description as hanging paragraphs. See IEEE Std 802.3-2015 subclause 30.12.2.1.20 aLldpXdot3LocReady for an existing example.

*SuggestedRemedy*
See comment.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.2.1.18i** *P* **42** *L* # i-319

Law, David Hewlett Packard Enter

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

The aLldpXdot3LocPowerClassxA, aLldpXdot3LocPowerClassxB, aLldpXdot3RemPowerClassxA and aLldpXdot3RemPowerClassxB attributes don't seem to map to any of the TLV fields defined in subclause 79.3.2 or its subclauses.

*SuggestedRemedy*

Suggest that:

[1] Delete attributes aLldpXdot3LocPowerClassxA (subclause 30.12.2.1.18i , page 42, line 22), aLldpXdot3LocPowerClassxB (subclause 30.12.2.1.18j, page 42, line 33), aLldpXdot3RemPowerClassxA (subclause 30.12.3.1.18g, page 51, line 29) and aLldpXdot3RemPowerClassxB (subclause 30.12.3.1.18h, page 51, line 41).

[2] Remove entries for aLldpXdot3LocPowerClassxA, aLldpXdot3LocPowerClassxB, aLldpXdot3RemPowerClassxA and aLldpXdot3RemPowerClassxB from Table 30-7 'LLDP capabilities' (page 32, line 38).

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.2.1.18k** *P* **42** *L* **3** # i-322

Law, David Hewlett Packard Enter

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

There are no attributes provided in the subclause 30.12.2 'LLDP Local System Group managed object class' or subclause 30.12.3 'LLDP Remote System Group managed object class' for the TLV fields 'Dual-signature power Classx Mode A' and 'Dual-signature power Classx Mode B'.

*SuggestedRemedy*

Suggest that:

[1] The following new attributes are added in the LLDP local (aLldpXdot3LocDualSigPowerClassxModeA and aLldpXdot3LocDualSigPowerClassxModeB) and remote (aLldpXdot3RemDualSigPowerClassxModeA and aLldpXdot3RemDualSigPowerClassxModeB) managed object class to support the TLV fields 'Dual-signature power Classx Mode A' and 'Dual-signature power Classx Mode B'.

aLldpXdot3LocDualSigPowerClassxModeA

ATTRIBUTE

APPROPRIATE SYNTAX:
An ENUMERATED value list that has the following entries:
singleSignature Single-signature PD
class5 Class 5
class4 Class 4
class3 Class 3
class2 Class 2
class1 Class 1

BEHAVIOUR DEFINED AS:
If the local system is a PD, a read-only value that indicates if it is a single-signature PD, or for a dual-signature PD, the requested Class for Mode A during Physical Layer Classification (see 145.3.6). If the local system is a PSE, a read-only value that indicates if it has detected a single-signature PD, or if it has detected a dual-signature PD, the assigned Class for Alternative A (see 145.2.7).

aLldpXdot3LocDualSigPowerClassxModeB

ATTRIBUTE

APPROPRIATE SYNTAX:
The same as used for aLldpXdot3LocDualSigPowerClassxModeA.

BEHAVIOUR DEFINED AS:

If the local system is a PD, a read-only value that indicates if it is a single-signature PD, or for a dual-signature PD, the requested Class for Mode B during Physical Layer Classification (see 145.3.6). If the local system is a PSE, a read-only value that indicates if it has detected a single-signature PD, or if it has detected a dual-signature PD, the assigned Class for Alternative B (see 145.2.7).

aLldpXdot3RemDualSigPowerClassxModeA

ATTRIBUTE

APPROPRIATE SYNTAX:
The same as used for aLldpXdot3LocDualSigPowerClassxModeA.

BEHAVIOUR DEFINED AS:
If the remote system is a PD, a read-only value that indicates if it is a single-signature PD, or if it is a dual-signature PD, its requested Class for Mode A during Physical Layer Classification (see 145.3.6). If the remote system is a PSE, a read-only value that indicates if it has detected a single-signature PD, or if it has detected a dual-signature PD, its assigned Class for Alternative A (see 145.2.7).

aLldpXdot3RemDualSigPowerClassxModeB

ATTRIBUTE

APPROPRIATE SYNTAX:
The same as used for aLldpXdot3LocDualSigPowerClassxModeA.

BEHAVIOUR DEFINED AS:
If the remote system is a PD, a read-only value that indicates if it is a single-signature PD, or if it is a dual-signature PD, its requested Class for Mode B during Physical Layer Classification (see 145.3.6). If the remote system is a PSE, a read-only value that indicates if it has detected a single-signature PD, or if it has detected a dual-signature PD, its assigned Class for Alternative B (see 145.2.7).

[2] Mappings for two of the new attributes are added in Table 79-9 'IEEE 802.3 Organizationally Specific TLV/LLDP Local System Group managed object class cross references'. Suggest that the following two new entries are inserted between the row 'PSE power pairx' 'aLldpXdot3LocPowerPairsx' and the row 'Power classx' 'aLldpXdot3LocPowerClassx'.

'Dual-signature power Classx Mode A' 'aLldpXdot3LocDualSigPowerClassxModeA'
'Dual-signature power Classx Mode B' 'aLldpXdot3LocDualSigPowerClassxModeB'

[3] Mappings for two of the new attributes are added in Table 79-10 'IEEE 802.3 Organizationally Specific TLV/LLDP Remote System Group managed object class cross references'. Suggest that the following two new entries are inserted between the row 'PSE power pairx' 'aLldpXdot3RemPowerPairsx' and the row 'Power classx' 'aLldpXdot3RemPowerClassx' in both tables.

'Dual-signature power Classx Mode A' 'aLldpXdot3RemDualSigPowerClassxModeA'
'Dual-signature power Classx Mode B' 'aLldpXdot3RemDualSigPowerClassxModeB'

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.2.1.18l** *P* **43** *L* **6** # i-320

Law, David — Hewlett Packard Enter

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

The behaviour defined for the attributes aLldpXdot3LocPowerTypex and aLldpXdot3RemPowerTypex doesn't see to match the 'Power typex' TLV field that these attributes map to (see Table 79-9 and 79-10). Specifically, the behaviour doesn't include any reference to the single-signature and dual-signature values that Table 79-6d 'System setup field' defines for the 'Power typex' field. Rather than try to further expand the behaviour text to decode bits it would seem a better approach, since these are new attributes being added by IEEE P802.3bt, to change their syntax from 'BIT STRING [SIZE (4)]' to 'ENUMERATED value list'.

*SuggestedRemedy*

Suggest that:

[1] The 'APPROPRIATE SYNTAX:' text for the attributes aLldpXdot3LocPowerTypex and aLldpXdot3RemPowerTypex should be changed to read:

An ENUMERATED value list that has the following entries:
type4dualPD Type 4 dual-signature PD
type4singlePD Type 4 single-signature PD
type3dualPD Type 3 dual-signature PD
type3singlePD Type 3 single-signature PD
type2PD Type 2 PD
type1PD Type 1 PD
type4PSE Type 4 PSE
type3PSE Type 3 PSE
type2PSE Type 2 PSE
type1PSE Type 1 PSE

[2] The 'BEHAVIOUR DEFINED AS:' text for the attribute aLldpXdot3LocPowerTypex should be changed to read:

A read-only attribute that returns a value to indicate if the local system is a Type 1, Type 2, Type 3, or Type 4 PSE or PD, and in the case of a Type 3 or Type 4 PD, if it is single-signature or dual-signature.;

[3] The 'BEHAVIOUR DEFINED AS:' text for the attribute aLldpXdot3RemPowerTypex (subclause 30.12.3.1.18j, page 52, line 16) should be changed to read:

A read-only attribute that returns a value to indicate if the remote system is a Type 1, Type 2, Type 3, or Type 4 PSE or PD, and in the case of a Type 3 or Type 4 PD, if it is a single-signature or dual-signature.;

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79.3.2.6c.2** *P* **45** *L* **45** # i-321

Law, David — Hewlett Packard Enter

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

Based on Table 79-6d, the 'power typex' field can have various values that indicate a Type of PD or PSE, but there isn't a 'PD' or 'PSE' value. In addition, suggest that TLV field names should always be placed in inverted commas.

*SuggestedRemedy*

Suggest that:

[1] The text '... the power typex is PD ...' should be changed to read '... the "Power typex" field indicates a PD ...' at the following locations:

Subclause 79.3.2.6c.2, page 79, line 45.
Subclause 79.3.2.6c.3, page 79, line 53.
Subclause 79.3.2.6c.4, page 80, line 51.

[2] The text '... the dual-signature power Classx Mode A field ...' should be changed to read '... the "Dual-signature power Classx Mode A" field ...' at the following locations:

Subclause 79.3.2.6c.2, page 79, line 45.
Subclause 79.3.2.6c.2, page 79, line 47.

[3] The text '... the dual-signature power Classx Mode B field ...' should be changed to read '... the "Dual-signature power Classx Mode B" field ...' at the following locations:

Subclause 79.3.2.6c.3, page 79, line 53.
Subclause 79.3.2.6c.3, page 80, line 45.

[4] The text '... the power typex is PSE ...' should be changed to read '... the "Power typex" field indicates a PSE ...' at the following locations:

Subclause 79.3.2.6c.2, page 79, line 47.
Subclause 79.3.2.6c.3, page 80, line 45.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.3.1.8** *P* **48** *L* **43** # i-267

Stewart, Heath — Analog Devices Inc.

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

Google does not think Controlable is a word

*SuggestedRemedy*

Change Controlable to Controllable

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.3.1.18a** *P* **50** *L* **8** # i-6

Anslow, Peter — Ciena Corporation

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

The last inserted subclause is 30.12.3.1.18z13 not 30.12.3.1.18z12
The new subclauses should be inserted after 30.12.3.1.18 not 30.12.2.1.18

*SuggestedRemedy*

In the editing instruction change "30.12.3.1.18z12" to "30.12.3.1.18z13"
Also change "30.12.2.1.18" to "30.12.3.1.18"

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.3.1.18e** *P* **51** *L* **17** # i-356

Thompson, Geoffrey — Individual

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

"Value"? What value?

*SuggestedRemedy*

Fully expand the term "value" to "value in units of term, see: 33.n or 145.n."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.3.1.18f** *P* **51** *L* **20** # i-357

Thompson, Geoffrey — Individual

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

I have no idea of what a "load configuration" is, much less how it can be dsecribed by a BOOLEAN.

*SuggestedRemedy*

Expand BEHAVIOUR description so what it references is clear and fully explain (repair?) the syntax.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.3.1.18j** *P* **52** *L* **20** # i-358

Thompson, Geoffrey — Individual

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

Description insufficiently precise.

*SuggestedRemedy*

Change text to read: "The three most significant bits indicate the number of the Type in binary."

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.3.1.18j** *P* **52** *L* **20** # i-359

Thompson, Geoffrey — Individual

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

Requires a slightly different software module to do interpretation for PSE vs. PD for no good reason.

*SuggestedRemedy*

Make syntax the same for PSE and PD.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.3.1.18k** *P* **52** *L* **30** # i-360

Thompson, Geoffrey Individual

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

Definition is too terse. Syntax should probably be BOOLEAN.

*SuggestedRemedy*

Expand BEHAVIOUR description so what it references is clear and fully explain (repair?) the syntax.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.3.1.18m** *P* **52** *L* **50** # i-361

Thompson, Geoffrey Individual

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

Definition is too terse. Perhaps the syntax should be BOOLEAN. In any case, if it is a bit string the value of one and zero should be defined.

*SuggestedRemedy*

Expand BEHAVIOUR description so it is clear and fully explained.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.3.1.18n** *P* **53** *L* **8** # i-362

Thompson, Geoffrey Individual

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

Definition is too terse. Perhaps the syntax should be BOOLEAN. In any case, if it is a bit string the value of one and zero should be defined.

*SuggestedRemedy*

Expand BEHAVIOUR description so it is clear and fully explained.

*Proposed Response* *Response Status* **O**

*Cl* **30** *SC* **30.12.3.1.18q** *P* **53** *L* **38** # i-363

Thompson, Geoffrey Individual

*Comment Type* **ER** *Comment Status* **X**

Incorrect distinction between analog and digital parameter (i.e. measure vs. count).

*SuggestedRemedy*

Change text to read: "A GET attribute that indicates the number of seconds the ..."

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.2.1** *P* **61** *L* **25** # i-36

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

TOPIC: and/or
The Chicago Manual of Style says the following about the use of 'and/or':
"Avoid this Janus-faced term. It can often be replaced by 'and' or 'or' with no loss in meaning.
Where it seems needed, try 'or ... or both'. But also think of other possibilities."

"PSEs can be compatible with 10BASE-T, 100BASE-TX, 1000BASE-T, 2.5GBASE-T, 5GBASE-T, and/or 10GBASE-T."

*SuggestedRemedy*

"PSEs can be compatible with 10BASE-T, 100BASE-TX, 1000BASE-T, 2.5GBASE-T, 5GBASE-T, or 10GBASE-T."

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.3.1** *P* **62** *L* **8** # i-258

Lukacs, Miklos Silicon Laboratories

*Comment Type* **G** *Comment Status* **X**

This is confusing because Clause 145 is also part of THIS standard. Type 1 and Type 2 qualifiers should be added.

*SuggestedRemedy*

PDs that implement only Mode A or Mode B are specifically not allowed by this standard for Type 1 and Type 2 PDs. PDs that simultaneously
require power from both Mode A and Mode B are specifically not allowed by this standard for Type 1 and Type 2 PDs.

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.6** *P* **64** *L* **34** # i-227

Mcclellan, Brett — Marvell Semiconducto

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

E_d_out is a time domain peak to peak voltage but the formula defines E_d_out as varying across frequency. E_d_out isn't measured at individual frequencies.

*SuggestedRemedy*

delete formula (33-17a) and the text defining f and fmax
change text on line 31 from:
"shall not exceed the requirements Equation (33-17a)" (note the missing 'of')
to "shall not exceed 10 mV peak-to-peak when measured in the band from 1 MHz to 10 MHz and shall not exceed 1mV peak-to-peak when measured in the band from 10 MHz to 100 MHz for 2.5GBASE-T, 10 MHz to 250 MHz for 5GBASE-T, and 10 MHz to 500 MHz for 10GBASE-T"

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.1** *P* **65** *L* **3** # i-7

Anslow, Peter — Ciena Corporation

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

Firstly, is confusing to have nested editing instructions.
Secondly, as 33.4.9.1.4 is to be re-numbered it needs a separate editing instruction.

*SuggestedRemedy*

Change the editing instruction on page 65, line 3 to: "Change 33.4.9.1 and 33.4.9.1.1 through 33.4.9.1.3 as follows:"
Change the editing instruction on page 66, line 43 to26/07/2017 "Change the title and text of 33.4.9.1.4 and re-number it to 33.4.9.2 (re-numbering the existing 33.4.9.2 to 33.4.9.3) as follows:"

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.1** *P* **65** *L* **15** # i-8

Anslow, Peter — Ciena Corporation

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

item 3) in this numbered list is being re-numbered to item 2) by the deletion of the original item 2). This should be shown.

*SuggestedRemedy*

Replace 2) with 3) in strikethrough font followed by 2) in underline font.

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.1.1** *P* **65** *L* **27** # i-235

Zimmerman, George — Aquantia, ADI, Comm

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

there appears to be a typo, 33-48 should be 33-18

*SuggestedRemedy*

change 33-48 to 33-18

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.1.1** *P* **65** *L* **27** # i-207

Mcclellan, Brett — Marvell Semiconducto

*Comment Type* **ER** *Comment Status* **X**

typo, change 33-48 to 33-18.

*SuggestedRemedy*

change 33-48 to 33-18.

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.1.1** *P* **65** *L* **33** # i-208

Mcclellan, Brett — Marvell Semiconducto

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

NEXT loss in 33-18 for PSE midspan is 40dB at 100MHz, however 2.5/5GBASE-T budgets 43dB for connectors. 2.5G and higher needs a separate equation.

*SuggestedRemedy*

line 25 change "2.5GBASE-T" to "1000BASE-T"
line 27 delete "For 5GBASE-T, NEXT loss for Midspan PSE devices shall meet the values determined by Equation (145-32) when measured for the transmit and receive pairs from 1 MHz to 250 MHz."
line 29 change "5GBASE-T" to "1000BASE-T"
line 39 insert new paragraph "For 5GBASE-T, NEXT loss for Midspan PSE devices shall meet the values determined by Equation (33-18aa) when measured for the transmit and receive pairs from 1 MHz to 100 MHz. For 5GBASE-T, NEXT loss for Midspan PSE devices shall meet the values determined by Equation (33-18aa) when measured for the transmit and receive pairs from 1 MHz to 250 MHz. For operation with 2.5GBASE-T and 5GBASE-T, for frequencies that correspond to calculated values greater than 65 dB, the requirement reverts to the minimum requirement of 65 dB."
insert a new equation,(33-18aa), copied from (33-18) with accompanied 'NEXTconn' and 'f' definitions, except that "40" is changed to "43"

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.1.1** *P* **65** *L* **43** # i-236

Zimmerman, George — Aquantia, ADI, Comm

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

NEXT loss on PSE midspan for 2.5G/5GBASE-T should be based on Category 5e, not on Clause 40 requirements which predate Category 5e. (same change made in another comment in clause 145.4.9.1.1)

*SuggestedRemedy*

Change "40" to "43" in equations 33-18

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.1.2** *P* **66** *L* **10** # i-238

Zimmerman, George — Aquantia, ADI, Comm

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

Missing requirement for 10GBASE-T in clause 33 (this one is OK in clause 145, just missed in clause 33)

*SuggestedRemedy*

Insert new equation 33-19a identical to 33-19 except 0.040 is changed to 0.020. Add text "For 10GBASE-T capable midspans, insertion loss for Midspan PSE devices shall meet the values determined by Equation (33-19) when measured for the transmit and receive pairs from 1 MHz to 500 MHz."

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.1.2** *P* **66** *L* **10** # i-209

Mcclellan, Brett — Marvell Semiconducto

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

missing a requirement for 10GBASE-T

*SuggestedRemedy*

insert new equation 33-19 identical to 33-19 except 0.040 is changed to 0.020.
Add text " For 10GBASE-T capable midspans, insertion loss for Midspan PSE devices shall meet the values determined by Equation (33-19) when measured for the transmit and receive pairs from 1 MHz to 500 MHz."

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.1.3** *P* **66** *L* **35** # i-210

Mcclellan, Brett — Marvell Semiconducto

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

The return loss limit at 20MHz violates the RL spec in 126.7.2.3 for 2.5G and 5G ( 17dB).

*SuggestedRemedy*

create a separate table entry for 2.5GBASE-T with the following limits based on Cat5E:
1 MHz<f<=31.5 MHz 30 dB
31.5 MHz<f<=100 MHz 20-20log10(f/100)

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.1.3** *P* **66** *L* **35** # i-239

Zimmerman, George — Aquantia, ADI, Comm

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

Return loss on PSE midspan for 2.5G/5GBASE-T shoudl be based on Cat 5e not on clause 40 requirements predating cat 5e. line 35 return loss limit at 20MHz violates the RL spec in 126.7.2.3 for 2.5G and 5G ( 17dB). Make consistent with Cat 5e connector return loss specifications

*SuggestedRemedy*

Delete "or 2.5G/5GBASE-T" from 2nd row of 1st column of Table 33-20.
Insert new row "2.5G/5GBASE-T" between 10/100/1000BASE-T row and 5GBASE-T row, with frequency ranges of:
1<f<= 31.5 MHz at a return loss value of 30 dB, and
31.5 MHz<f<=100MHz at a return loss value of 20 - 20log10(f/100) dB
Change 5GBASE-T row return loss value (100 MHz<= f<= 250 MHz) from 14 dB to 20 dB

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.1.3** *P* **66** *L* **37** # i-211

Mcclellan, Brett — Marvell Semiconducto

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

at 100MHz the limit of 14dB is only 4dB margin vs the 2.5/5G spec

*SuggestedRemedy*

create a separate table entry for 5GBASE-T with the following limits based on Cat6:
1 MHz<f<=50 MHz 30 dB
50 MHz<f<=250 MHz 24-20log10(f/100)

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.2.3** *P* **67** *L* **40** # i-241
Zimmerman, George Aquantia, ADI, Comm

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

"variants 5 through 10" - there are only 5 variants in clause 33

*SuggestedRemedy*

Change "(variants 5 through 10 in 33.4.9.1)" to "(variants 3 through 5 in 33.4.9.1)"

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.2.3** *P* **67** *L* **40** # i-37
Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

"Midspan PSEs intended for operation with 2.5G/5G/10GBASE-T (variants 5 through 10 in 33.4.9.1) are additionally required to meet the following parameters for coupling signals between ports relating to different link segments."

That variant list was split by earlier baseline, there are no items 5 through 10.

*SuggestedRemedy*

Change as follows:
"Midspan PSEs intended for operation with 2.5G/5G/10GBASE-T (variants 3 through 5 in 33.4.9.1 and 33.4.9.2) are ..."

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.2.3** *P* **67** *L* **40** # i-9
Anslow, Peter Ciena Corporation

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

This says "Midspan PSEs intended for operation with 2.5G/5G/10GBASE-T (variants 5 through 10 in 33.4.9.1)" but there are only 5 variants in 33.4.9.1

*SuggestedRemedy*

Change "variants 5 through 10 in 33.4.9.1" to "variants 3 through 5 in 33.4.9.1"

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.2.3** *P* **67** *L* **40** # i-212
Mcclellan, Brett Marvell Semiconducto

*Comment Type* **ER** *Comment Status* **X**

(variants 5 through 10 in 33.4.9.1) there are only 5 variants

*SuggestedRemedy*

change "(variants 5 through 10 in 33.4.9.1)" to "(variants 3 through 5 in 33.4.9.1)"

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.2.4** *P* **67** *L* **50** # i-213
Mcclellan, Brett Marvell Semiconducto

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

for all specified frequencies, The frequency range in Table 33-20b exceeds the frequency requirements for 2.5GBASE-T and 5GBASE-T and may be reduced.

*SuggestedRemedy*

delete "for all specified frequencies"
insert "For other than 5GBASE-T or 10GBASE-T operation, PSANEXT loss for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 100 MHz. For 5GBASE-T capable midspans, PSANEXT loss
for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 250 MHz. For 10GBASE-T capable midspans, PSANEXT loss for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 500 MHz."
Delete the frequency column of Table 33-20b

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.2.4** *P* **67** *L* **50** # i-242

Zimmerman, George — Aquantia, ADI, Comm

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

"for all specified frequencies", The frequency range in Table 33-20b exceeds the frequency requirements for 2.5GBASE-T and 5GBASE-T and may be reduced. (same change in 145.4.9.2.4 in another comment))

While we were trying to manage simplicity with too many midspan variations, we gave the midspan Cat 6a connector PSANEXT requirements for 2.5G/5GBASE-T. This isn't an error, but more style. A more inclusive specification would only have the required frequencies.

*SuggestedRemedy*

In 33.4.9.2.4: delete "for all specified frequencies"
insert "For other than 5GBASE-T or 10GBASE-T operation, PSANEXT loss for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 100 MHz. For 5GBASE-T capable midspans, PSANEXT loss for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 250 MHz. For 10GBASE-T capable midspans, PSANEXT loss for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 500 MHz."
Delete the frequency column of Table 33-20b

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.2.5** *P* **68** *L* **11** # i-214

Mcclellan, Brett — Marvell Semiconducto

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

for all specified frequencies, The frequency range in Table 33-20b exceeds the frequency requirements for 2.5GBASE-T and 5GBASE-T and may be reduced.

*SuggestedRemedy*

delete "for all specified frequencies"
insert "For other than 5GBASE-T or 10GBASE-T operation, PSAFEXT loss for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 100 MHz. For 5GBASE-T capable midspans, PSAFEXT loss
for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 250 MHz. For 10GBASE-T capable midspans, PSAFEXT loss for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 500 MHz."
Delete the frequency column of Table 33-20c

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.9.2.5** *P* **68** *L* **11** # i-244

Zimmerman, George — Aquantia, ADI, Comm

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

line 11 "for all specified frequencies", The frequency range in Table 33-20b exceeds the frequency requirements for 2.5GBASE-T and 5GBASE-T and may be reduced.

*SuggestedRemedy*

delete "for all specified frequencies"
insert "For other than 5GBASE-T or 10GBASE-T operation, PSAFEXT loss for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 100 MHz. For 5GBASE-T capable midspans, PSAFEXT loss for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 250 MHz. For 10GBASE-T capable midspans, PSAFEXT loss for Midspan PSE devices shall meet the values determined by Table 33-20b from 1 MHz to 500 MHz."
Delete the frequency column of Table 33-20c

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.8.1** *P* **68** *L* **42** # i-10

Anslow, Peter — Ciena Corporation

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

The text shown is only the first paragraph of 33.8.1

*SuggestedRemedy*

Change the editing instruction to: "Change the first paragraph of 33.8.1 as follows:"

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.8.2.2** *P* **69** *L* **9** # i-11

Anslow, Peter — Ciena Corporation

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

The text after "Clause 33," should match the new Clause 33 title.

*SuggestedRemedy*

Change "Power over Ethernet" to "Power over Ethernet over 2 Pairs"

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.8.2.2** *P* **69** *L* **14** # i-12

Anslow, Peter — Ciena Corporation

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

The PICS is being modified by the P802.3bt amendment, so the conformance is to IEEE Std 802.3bt

*SuggestedRemedy*

Change "IEEE Std 802.3-201x" to "IEEE Std 802.3bt-201x"

*Proposed Response* *Response Status* **O**

*Cl* **40** *SC* **40.6.1.1** *P* **71** *L* **12** # i-234

Zimmerman, George — Aquantia, ADI, Comm

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

(related to this clause) Now that 2.5G/5GBASE-T and 10GBASE-T are added to the PHYs supporting PoE, the same line needs to be added to clauses 55 (10G) and 126 (2.5G/5G).

*SuggestedRemedy*

Bring Clauses 55 and 126 into the draft, and insert new first paragraph in 55.5.1 and 126.5.1 - "A PHY with a MDI that is a PI (see 33.1.3) shall meet the isolation requirements defined in 33.4.1 or 145.4.1.", Change first sentence of current first paragraph of 55.5.1 and 126.5.1 changing "The PHY" to "A PHY with a MDI that is not a PI" so that it reads: "A PHY with a MDI that is not a PI shall provide electrical isolation between the port device circuits, including frame ground (if any) and all MDI leads."

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79** *P* **73** *L* **1** # i-38

Yseboodt, Lennart — Philips Lighting

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

Dual-signature LLDP is incompletely and incorrectly defined.

*SuggestedRemedy*

Adopt yseboodt_04_0917_LLDP.pdf

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79.3** *P* **73** *L* **36** # i-215

Mcclellan, Brett — Marvell Semiconducto

*Comment Type* **ER** *Comment Status* **X**

can't have a TBD.

*SuggestedRemedy*

Change TBD on line 36 to "8"
Change TBD on line 37 to "9"

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79.3.2** *P* **74** *L* **15** # i-216

Mcclellan, Brett — Marvell Semiconducto

*Comment Type* **ER** *Comment Status* **X**

PI is used without definition in Clause 79.

*SuggestedRemedy*

Change "PI" to "Power Interface (PI)"

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79.3.2.1** *P* **75** *L* **5** # i-13

Anslow, Peter — Ciena Corporation

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

Table 79-3 in the base standard (IEEE Std 802.3-2015) is different from what is shown here.

*SuggestedRemedy*

Change the table title from "MDI power capabilities/status field" to "MDI power capabilities/status"
In the bottom row, change "4-7" to "7:4"

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79.3.2.1** *P* **75** *L* **8** # i-324

Law, David Hewlett Packard Enter

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

Note 1 to Table 79-3 states 'Port class information is implied by the support of the PSE or PD groups.'. As far as I can see there is no mention of a PD group in the last version of IETF RFC 3621 or in IEEE Std 802.3.1-2013 which deprecated IETF RFC 3621.

This table originated as Table G.1 in IEEE Std 802.1AB-2005, and was incorporated in to IEEE Std 802.3 by the IEEE Std 802.3bc-2009 Ethernet Organizationally Specific Type, Length, Values (TLVs) amendment, which added Clause 79. Based on this it seems that this note was generated as a result of comment 124 on IEEE P802.1AB draft D11 <http://www.ieee802.org/1/files/private/ab-drafts/d12/80211AB-D11-dis.pdf#Page=91>. The comment reads:

---

COMMENT TYPE: T
CLAUSE: Annex G..3.1
PAGE: 133
LINE: 9
COMMENT START:
The right columns look like missing information.
COMMENT END:
SUGGESTED CHANGES:
Either:
1) Fill the information in.
2) Insert an N/A notation
3) Insert an em dash, which should then be described in the glossary (802.17 did this).
SUGGESTED CHANGES END:

Disposition of Comment 124

Add notes -
For Port Class the information is implied by the support of the PSE or PD MIB groups For MDI power support the information is implied by support of the power over Ethernet MIB. Refer to the RFC

---

The latest version of IETF RFC 3621, version 08 dated 22nd June 2003 <https://tools.ietf.org/html/draft-ietf-hubmib-power-ethernet-mib-08> states 'The document proposes an extension to the Ethernet-like Interfaces MIB with a set of objects for managing a Power Source Equipment (PSE).'. Looking at the first version however, version 00 dated 25th June 2001, this text reads 'The document proposes an extension to the Ethernet-like Interfaces MIB [RFC2665] with a set of objects for managing a power Ethernet Powered Device (PD) and/or Power Source Equipment (PSE).'. This text changed between version 04 date 19th December 2002 <https://tools.ietf.org/html/draft-ietf-hubmib-power-ethernet-mib-04> and version 05 dated 21st May 2003 <https://tools.ietf.org/html/draft-ietf-hubmib-power-ethernet-mib-05>. Based on this it seems the IETF RFC 3621 drafts supported both PSE and PD management up to 21st May 2003.

While the IEEE P802.3AB comment was processed in October 2004, after PD management was removed from RFC 3621, it may be possible that this had not been noted, or it may have been assumed that RFC 3621 which is titled 'Power Ethernet MIB' supported both PDs and PSEs. Regardless, it seems that the intent of the note was to describe how to determine how to set this bit by reference to attributes in the IETF RFC.

Since (a) this note references a non-existent PD group in the MIB; (b) we don't mandate implementation of any particular management protocol, or any management, a PSE may or may not implement the PSE group in the MIB, and (c) in the reminder of subclause 79.3.2 'Power Via MDI TLV' we generally defined the bits through text rather than a cross reference to Objects, suggest that we do the same for the MDI power capabilities/status field.

*SuggestedRemedy*

Suggest that:

[1] The entire 'Object reference' column of Table 79-3 'MDI power capabilities/status field' is deleted.

[2] The two remaining notes for Table 79-3 'MDI power capabilities/status field' are deleted.

[3] New subclauses are added to describe the "MDI power capabilities/status" fields that read as follows:

79.3.2.1.1 Port class

The "Port class" field transmitted shall indicate if the port is a PSE or a PD.

79.3.2.1.2 PSE MDI power support

The "PSE MDI power support" field shall indicate if MDI power is supported.

79.3.2.1.3 PSE MDI power state

The "PSE MDI power state" field transmitted by a PSE shall indicate if the PSE function is enabled or disabled. When disabled all PSE functions are disabled and behaviour is as if there was no PSE functionality. The value of the "PSE MDI power state" transmitted by a PD is undefined.

79.3.2.1.4 PSE pairs control ability

The "PSE pairs control ability" field transmitted by a PSE shall indicate if the PSE has the capability to control which PSE Pinout Alternative (see 33.2.3 and 145.2.4) is used for PD detection and power. If capable the PSE Pinout Alternative used can be controlled through the pethPsePortPowerPairs attribute (see IEEE Std 802.3.1). If not the PSE Pinout Alternative used cannot be controlled through the pethPsePortPowerPairs attribute.

*Proposed Response* *Response Status* **O**

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*Cl* **79** *SC* **79.3.2.3** *P* **76** *L* **21** # i-323

Law, David Hewlett Packard Enter

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

This text reads 'Class 5 and above is communicated by the Power Class field ...'. I don't believe this is correct, I believe that the Class 5 and above is communicated by the 'Power Classx' field. In addition, suggest that TLV field names should always be placed in inverted commas.

*SuggestedRemedy*

Suggest that the text 'Class 5 and above is communicated by the Power Class field ...' should be changed to read 'Class 5 and above is communicated by the "Power Classx" field ...'.

*Proposed Response* *Response Status* **O**

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*Cl* **79** *SC* **79.3.2.4** *P* **76** *L* **42** # i-14

Anslow, Peter Ciena Corporation

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

Although the heading for 79.3.2.4 is required, the text is not being modified, so should not be shown here.

*SuggestedRemedy*

Delete the text from 79.3.2.4

*Proposed Response* *Response Status* **O**

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*Cl* **79** *SC* **79.3.2.4.1** *P* **77** *L* **1** # i-15

Anslow, Peter Ciena Corporation

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

Although Table 79-4 is referenced from 79.3.2.4.1, the table resides in 79.3.2.4 so it should not be shown here.

*SuggestedRemedy*

Delete Table 79-4 from the draft

*Proposed Response* *Response Status* **O**

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*Cl* **79** *SC* **79.3.2.6** *P* **78** *L* **35** # i-16

Anslow, Peter Ciena Corporation

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

"33.3.8.2" on line 35 should be "33.3.7.2"
"33.2.7" on line 37 should be "33.2.6"

*SuggestedRemedy*

Change "33.3.8.2" on line 35 to "33.3.7.2"
Change "33.2.7" on line 37 to "33.2.6"

*Proposed Response* *Response Status* **O**

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*Cl* **79** *SC* **79.3.2.6c.3** *P* **80** *L* **7** # i-39

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

The bits labeled "PSE power pairsx" in the Power status field have a confusing name that can easily be mistaken for "PSE power pair"
The 'x' was meant to denote this is an extended field.

*SuggestedRemedy*

Rename "PSE power pairsx" to "PSE power pairs ext" throughout the draft (Clause 30 objects, Clause 79, Clause 145).

*Proposed Response* *Response Status* **O**

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*Cl* **79** *SC* **79.3.2.6c.3** *P* **80** *L* **29** # i-40

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

The bits labeled "Power Classx" in the Power status field have a confusing name that can easily be mistaken for "Power Class".
The 'x' was meant to denote this is an extended field.

*SuggestedRemedy*

Rename "Power Classx" to "Power Class ext" throughout the draft (Clause 30 objects, Clause 79, Clause 145).
Do the same change for Dual-signature power Classx Mode A and Mode B.

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79.3.2.6d** *P* **81** *L* **16** # i-41

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

The bits labeled "Power typex" in the System setup field have a confusing name that can easily be mistaken for "power type"
The 'x' was meant to denote this is an extended field.
Also, Type should be capitalized.

*SuggestedRemedy*

Rename "Power typex" to "Power Type ext" throughout the draft (Clause 30 objects, Clause 79, Clause 145).

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79.3.2** *P* **81** *L* **33** # i-395

Darshan, Yair

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

The 4PID bit need to move to legacy TLV field in order to support legacy PDs.
This will resolve also comment #130 from D2.4.

*SuggestedRemedy*

In Table 79-6d PD 4PID bit: Move this bit to Table 79-4 to bit 3:2 instead of the reserve bits. Make the PD 4PID bit as the reserved bits.

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79.3.2.6f** *P* **82** *L* **21** # i-460

Darshan, Yair

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

Table 79-6f describes autoclass field. Per the draft, autoclass can be requested any time including after the physical layer autoclass after transitioning to POWER_ON.
The are some issues that appear to be not closed.
In the case PD is and PSE supporting LLDP: Why PD will ask for autoclass through LLDP if he can do similar task by LLDP? I am asking this question since if PD eventually do this, it add a level of complexity (that can be resolved) that yet is not addressed in the standard. for example:
a) There is no syncing or handshake mechanism defined to verify that the PD won't start to consume more power than the PSE allows it to draw, before the PSE is ready for it
b) It is also not covered in the state machine diagram at page 131 line 43, when moving from IDLE_ACS to MEASURE_ACS.
To resolve this, we need at least to add new variable "dll_autoclass_pd_pse_ready". This variable will indicate that PD has set it's requested power level for the PSE to be measure and the PSE has the available power to measure the PD requested power without going to overload/Ilim 2p condition.

*SuggestedRemedy*

1. add new variable "dll_autoclass_pd_pse_ready" to the variable list in 145.2.5.4 with the following definition:
"dll_autoclass_pd_pse_ready
This variable indicates that PD has set it's requested power level for the PSE to be measure and the PSE has the available power in order to stay powered and to measure the PD requested power without going to overload/Ilim 2p condition."
2. In the state machine in page 131 line 43 in the exit from IDLE_ACS to MEASURE_ACS, change from:
"MirroredPDAutoclassRequest"
To: "MirroredPDAutoclassRequest*dll_autoclass_pd_pse_ready"

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79.3.8** *P* **83** *L* **36** # i-218

Mcclellan, Brett — Marvell Semiconducto

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

"subtype=2" is NOT defined for Power Via MDI Measurements
The subtype for Power Via MDI Measurements was left TBD (see other comment)

*SuggestedRemedy*

change "subtype=2" to "subtype=8"

*Proposed Response* *Response Status* **O**

*Cl* **79** *SC* **79.3.8.1** *P* **85** *L* **15** # i-42

Yseboodt, Lennart — Philips Lighting

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

For the LLDP measurements, the valid values for current are 0-20000, voltage 1-65000, and power 1-10000.
Why is current allowed to be zero, but not the other two ?

*SuggestedRemedy*

Change valid values for all 3 to start at 0.

*Proposed Response* *Response Status* **O**

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*Cl* **79** *SC* **79.5.3** *P* **90** *L* **7** # i-17

Anslow, Peter — Ciena Corporation

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

The table in 79.5.3 has been modified by IEEE Std 802.3br-2016

*SuggestedRemedy*

Add the row for "*AE" as added by 802.3br

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.1** *P* **95** *L* **7** # i-364

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

There is no clear statement of the top level model of a PoE system in clause 145.1. such a statement is essential for someone reading the standard for the first time in order for the reader to figure out how to structure his thinking and to parse the problem.

*SuggestedRemedy*

See proposed text in submitted file GOT - Proposed text.txt. Pick existing text back up at the start of the list at line 27.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.1** *P* **95** *L* **9** # i-43

Yseboodt, Lennart — Philips Lighting

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

"This clause defines the functional and electrical characteristics for providing an enhancement of the Power over Ethernet (PoE) system defined in Clause 33 for deployment over balanced twisted-pair cabling."

Makes it seem that Clause 145 is an 'add-on' to Clause 33. It isn't, it is a complete, standalone PoE Clause.

*SuggestedRemedy*

"This clause defines the functional and electrical characteristics of an enhanced Power over Ethernet (PoE) system originally defined in Clause 33 for deployment over balanced twisted-pair cabling."

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.1** *P* **95** *L* **21** # i-365

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

Clause 1.4 is the definitions clause for the entire standard. If this line is necessary it would appear in each clause.

*SuggestedRemedy*

Delete line 21

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.1** *P* **95** *L* **25** # i-366

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

The phrase "with a single interface to both the data it requires and the power to process this data" implies that the power provided is adequate to do data processing on 10GBASE-T. The TF has done no investigation to establish whether such is the case or is factual. Further, there are broader valid uses for PoE than is implied in the text.

*SuggestedRemedy*

Change text to read: "...with a single cabling interface for both the data and power."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1e** *P* **95** *L* **32** # i-367

Thompson, Geoffrey Individual

*Comment Type* **ER** *Comment Status* **X**

The PSE and PD are mentioned in the plural. The "method" referred to is only between one PSE and PD. Dynamic negotiation between PSEs, while possible, is outside the scope of this standard.

*SuggestedRemedy*

Change text to read: "A method for a PSE and the PD to which it is paired to dynamically negotiate and allocate power"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1** *P* **95** *L* **45** # i-368

Thompson, Geoffrey Individual

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

Change: "This clause differentiates between the two ends of the powered portion of the link, defining the PSE and the PD as separate but related devices."

*SuggestedRemedy*

To read: "This clause differentiates between the two ends of the powered portion of the link, i.e the link section, defining the PSE and the PD as separate but related devices."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2** *P* **97** *L* **1** # i-369

Thompson, Geoffrey Individual

*Comment Type* **ER** *Comment Status* **X**

This paragraph is a problem. Regarding the first sentence, I don't believe we specify, or should specify a PSE at the MDI, we specify at the PI. After all, that is why we created the PI. Thus, I don't think there are any statements that express PSE specs in terms of the MDI (though I confess I did not search). If there are they should be re-expressed in terms of the PI. Regarding the second sentence, this is a HUGE escape clause which allows ANY mid-span to claim compliance to the standard

*SuggestedRemedy*

Replace with: "In the case of a Midspan PSE PI, the interface specification point is physically separate from the MDI and is contained within the cabling portion of the data transmission system."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1.3** *P* **97** *L* **21** # i-370

Thompson, Geoffrey Individual

*Comment Type* **ER** *Comment Status* **X**

We have proved in TF discussions that there can be multiple PSEs in a valid system but only one of them can be active for there not to be a fault.

*SuggestedRemedy*

Change wording to read: A valid power system consists only of a single active PSE, a single PD, and the link section connecting them. If needed, we could say: "A valid active power system consists only of a single active PSE, a single PD, and the link section connecting them."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1.3** *P* **97** *L* **37** # i-44

Yseboodt, Lennart Philips Lighting

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

Table 145-1, Type 4 entry lists 0.96A as the nominal current and number of powered pairs as "2 or 4".

We only allow >0.6A when in 4-pair mode though (with the exception of dual-signature fault conditions).

*SuggestedRemedy*

Split Type 4 line in two:

| | | | | |
|---|---|---|---|---|
| Type 4 | 0.6 | 2 | 12.5 | (cable spec) |
| Type 4 | 0.96 | 4 | 12.5 | (cable spec) |

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1.3** *P* **97** *L* **38** # i-394

Diminico, Christopher

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

For a constant power load and a worse case PSE the current per pair (ICable, A) is dependent on the loop resistance (equation 145-2). The current per pair/conductor is a parameter used to limit the number of 4-pair cables in a cable bundle. The 802.3bt nominal highest current per pair (ICable, A) derived by assuming the worse case DC loop restistance (RCh), associated with 100 meters of cabling, is being used to limit the number of 4-pair cables in a bundle for all cabling lengths (DCR). Assuming the worse case DCR (length) for all cabling topologies leads to overly pessimistic limits on the number of 4-pair cables in a cable bundle.

*SuggestedRemedy*

Develop informative Annex to characterize the current as a function of DCR (length) for constant power loads and worse case PSEs (equation 145-2). Presention of proposed Annex to be provided.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1.3** *P* **97** *L* **43** # i-45

Yseboodt, Lennart Philips Lighting

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

There are two paragraphs under Table 145-1:

"I Cable is the current on one twisted pair in the balanced twisted-pair cable. ..."

"I Cable , defined in Table 145-1, is the highest nominal current on a pair for a system without pair-to-pair current unbalance. ..."

It doesn't make sense to say where ICable is defined in the second paragraph.

*SuggestedRemedy*

Change as follows:

"I Cable, defined in Table 145-1, is the current on one twisted pair in the balanced twisted-pair cable. ..."

"I Cable is the highest nominal current on a pair for a system without pair-to-pair current unbalance. ..."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1.3** *P* **97** *L* **49** # i-371

Thompson, Geoffrey Individual

*Comment Type* **ER** *Comment Status* **X**

This is not the "definition" of Icable, it is the specification.

*SuggestedRemedy*

Change the word "defined" to "specified".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1.3** *P* **98** *L* **2** # i-334

Abramson, David Texas Instruments Inc

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

Inconsistent language: This clause uses "pairset DC loop resistance"...
However, a few lines below (lines 10 and 15) we use "DC pairset loop resistance".

*SuggestedRemedy*

Editor to change line 2 to "DC pairset loop resistance" and confirm all other uses in claus 145 are aligned.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1.3** *P* **98** *L* **6** # i-372

Thompson, Geoffrey Individual

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

It is a fine point but Iport is defined on the basis of the cabling, but a "port" is a feature of equipment, not cabling. Therefore the definition should be "Iport is the total current sourced by a PSE or sunk by a PD."

*SuggestedRemedy*

Change text per comment.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1.3.1** *P* **98** *L* **28** # i-378

Thompson, Geoffrey Individual

*Comment Type* **ER** *Comment Status* **X**

There is no reason for 145.1.3.1 Cabling requirements and 145.3.2 Link section requirements to be separate peer clauses. There is no difference between the two so there is no reason to have separate clauses.

*SuggestedRemedy*

Consolidate the text of the two sub-clauses into a single clause or consolidate the text into any new form of the specification.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1.3.1** *P* **98** *L* **28** # i-379

Thompson, Geoffrey Individual

*Comment Type* **ER** *Comment Status* **X**

The placement of the cabling specifications in 145.1.3 System Parameters is wrong. Cabling is not a "system parameter". Placement there is organizationally confusing. Cabling is a full element of the the specified 3 element system. The cabling should have its own sub-clause at a peer level with 145.2 PSE and 145.3 PD.

*SuggestedRemedy*

Move the specification (whether it be by reference or local) for cabling to its own higher level clause, presumably cl. 145.4 which would bump the rest of the clause further out.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1.3.1** *P* **98** *L* **40** # i-46

Yseboodt, Lennart Philips Lighting

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

Footnote starts with number 3.
It is the third footnote of the entire document...

*SuggestedRemedy*

Check with Editorial staff to see if this is correct, and fix if needed.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2** *P* **99** *L* **1** # i-347

Jones, Chad Cisco Systems, Inc.

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

Chair notes... Confirm that it is not possible that a Type 3, 4 PSE DOES NOT present 4 or 5 event class and only uses L1 to get to >30W. I know this is a bad format comment and breaks all my rules. I ran out of time to research. I will withdraw if I can find the answer after the ballot closes.

*SuggestedRemedy*

Make the change to prevent a Type 3 or 4 PSE from only using LLDP to get to >30W

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.1** *P* **99** *L* **25** # i-346

Jones, Chad Cisco Systems, Inc.

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

Chair notes... We are missing the statement that a PSE does not change Type once it is powering a PD.

*SuggestedRemedy*

On page 99, line 25, add the sentence:
Once a PSE is reached POWER_ON, PSE Type does not change.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.1** *P* **99** *L* **30** # i-259

Lukacs, Miklos Silicon Laboratories

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

The "Range of maximum class supported" column of table 145-2 is confusing. Class 8 is not a range, and it suggests that Type 4 PSE only supports Class 8

*SuggestedRemedy*

Break it to 2 columns for single and dual signature.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.2** *P* **99** *L* **53** # i-47

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

TOPIC: and/or
The Chicago Manual of Style says the following about the use of 'and/or':
"Avoid this Janus-faced term. It can often be replaced by 'and' or 'or' with no loss in meaning.
Where it seems needed, try 'or ... or both'. But also think of other possibilities."

"PSEs can be compatible with 10BASE-T, 100BASE-TX, 1000BASE-T, 2.5GBASE-T, 5GBASE-T, and/or 10GBASE-T."

*SuggestedRemedy*

"PSEs can be compatible with 10BASE-T, 100BASE-TX, 1000BASE-T, 2.5GBASE-T, 5GBASE-T, or 10GBASE-T."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.1.3.1** *P* **102** *L* **30** # i-48

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

"Type 3 and Type 4 operation requires Class D or better cabling as specified in ISO/IEC 11801:2002."

Redundant reference to Type. Also, not completely true, a Type 3 system operating at Class 3 will still work over 20 ohm cable.
Trying to explain that nuance in this sentence seems unneccesairy.

*SuggestedRemedy*

"Class D or better cabling as specified in ISO/IEC 11801:2002 is required to support operation as specified in this Clause."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.4** *P* **107** *L* **40** # i-49

Yseboodt, Lennart Philips Lighting

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

A PD's diode bridge is the dominant, and most unpredicatable, contributor to pair-to-pair current unbalance.
Diode specifications generally do not include information or guarantees about the maximum spread in forward voltage between samples.
This makes it hard to get to a provable correct design that will always meet the current unbalance spec.
It is however not impossible, analysis over the course of this project has shown that diode forward voltage differences of more than 60mV are extremely rare. This number has been used to calculate the unbalance budget for the PD.

What isn't taken into account is diode aging. As diodes are exposed to current and temperature, their forward voltage will begin to drift.
A pair of parallel diodes exposed to roughly the same current may be expected to age in the same way (this is uncertain, but let's accept it for the moment).

If 4-pair PSEs are allowed to provide power in polarity configurations that can result in ONE pairset having the other polarity between two PSEs,
this would mean that a PD that has been exposed to a certain current configuration, would find itself powered in a way that has one 'aged' diode conduct, and another 'new' diode in parallel. By 'new' I refer to a diode that has not seen any significant current over it's lifetime.

At the moment of writing this comment, it is unknown what the magnitude of this issue is.
Test to determine this are planned.

*SuggestedRemedy*

1. Quantify this issue for the November meeting
2. Appropriate solition, if needed to be presented then

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.4** *P* **107** *L* **40** # i-268

Stewart, Heath — Analog Devices Inc.

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

"or" implies exclusivity. Eg the set of permitted polarity configures only includes one Alternative.
"PSEs shall use only the permitted polarity configurations associated with Alternative A or Alternative B"
"and" implies the selection can be made from A, B, A and B.
Respectfully I believe this merits a less than one minute discussion and will withdraw if contentious.

*SuggestedRemedy*

Change "or" to "and"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5** *P* **108** *L* **6** # i-50

Yseboodt, Lennart — Philips Lighting

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

Clause 33 in the base standard, subclause 33.5 says:
"If the PSE is implemented with a management interface described in 22.2.4 or 45.2 (MDIO), then the management access shall use the PSE register definitions shown in 33.5.1. Where no physical embodiment of the Clause 22 or Clause 45 management is supported, equivalent management capability shall be provided. Managed objects corresponding to PSE and PD control parameters and states are described in Clause 30."

Clause 145 will not define these specific registers, as implementors choose to use a different interface than MDIO to configure the PSE.
We should however maintain the requirement that certain basic parameters in the state diagram must be configurable by the implementor of the PSE.

*SuggestedRemedy*

Adopt yseboodt_05_0917_management.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.1** *P* **108** *L* **48** # i-51

Yseboodt, Lennart — Philips Lighting

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

"If the connected PD is identified as dual-signature, the top level state diagram will proceed to the SISM_START state and remain in that state, at which point the semi-independent state diagrams for the Primary and Secondary Alternative become active."

State names do not need the extra word state.

*SuggestedRemedy*

Change to:
"If the connected PD is identified as dual-signature, the top level state diagram will proceed to SISM_START and remain in that state, at which point the semi-independent state diagrams for the Primary and Secondary Alternative become active."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.3** *P* **109** *L* **42** # i-253

Peker, Arkadiy — Microsemi Corporation

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

This comment is an update to the comment that requires to delete Figure 145B-3:
Per the definition of CC_DET_SEQ=0 for dual-signature, the detection need to be parallel and not staggered and this contradicts figure 145B-3 that is shown as one of the staggered detection versions. So we have two options to resolve this:
a) To delete figure 145B-3 to sync with CC_DET_SEQ=0 definition for dual-signature PDs and also update state machine which will be complicated task at this point of time. OR,
b) (Preferred) Keep Figure 145B-3, and change the ""CC_DET_SEQ=0 definition that to allow staggered detection in addition to parallel detection which currently is supported by the state machine."

*SuggestedRemedy*

Change "Connection Check is followed by staggered detection for a single-signature PD and parallel detection for a dual-signature PD."
To: Connection Check is followed by staggered detection for a single-signature PD and parallel or staggered detection for a dual-signature PD."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.3** *P* **109** *L* **42** # i-481

Darshan, Yair

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

This comment is an update to the comment that requires to delete Figure 145B-3:
Per the definition of CC_DET_SEQ=0 for dual-signature, the detection need to be parallel and not staggered and this contradicts figure 145B-3 that is shown as one of the staggered detection versions. So we have two options to resolve this:
a) To delete figure 145B-3 to sync with CC_DET_SEQ=0 definition for dual-signature PDs and also update state machine which will be complicated task at this point of time. OR,
b) (Preferred) Keep Figure 145B-3, and change the "CC_DET_SEQ=0 definition that to allow staggered detection in addition to parallel detection which currently is supported by the state machine.

*SuggestedRemedy*

Change "Connection Check is followed by staggered detection for a single-signature PD and parallel detection for a dual-signature PD."
To: Connection Check is followed by staggered detection for a single-signature PD and parallel or staggered detection for a dual-signature PD."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **110** *L* **27** # i-52

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

For variable alt_pwrd_pri, the values are described:
"FALSE: The PSE is not to apply power to the Primary Alternative.
TRUE: The PSE has detected, classified, and will power a PD on the Primary Alternative; or power is being forced on the Primary Alternative in TEST_MODE."

Why are we describing half of the state machine for the 'TRUE' value ?

*SuggestedRemedy*

Replace TRUE by:
TRUE: The PSE is to apply power to the Primary Alternative.

Same change for _sec.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **110** *L* **42** # i-53

Yseboodt, Lennart Philips Lighting

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

Variable autoclass_enabled is not consistent with e.g. pse_dll_enable.

*SuggestedRemedy*

Change variable autoclass_enabled to autoclass_enable throughout draft.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **111** *L* **30** # i-54

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

"det_temp: A temporary variable that indicates whether "

The variable is not temporary, just it's use is restricted in nature.

*SuggestedRemedy*

Strike 'temporary'

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **111** *L* **36** # i-457

Darshan, Yair

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

In the variable description dll_4PID "dll_4PID A variable that indicates whether the PSE and PD have negotiated 2-pair or 4-pair power."
it doesn't say with what they were negotiate etc.

*SuggestedRemedy*

Change from "dll_4PID
A variable that indicates whether the PSE and PD have negotiated 2-pair or 4-pair power."
To: "dll_4PID
A variable that indicates whether the PSE and PD have negotiated 2-pair or 4-pair power capability via the Data Link Layer."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **112** *L* **38** # i-56

Yseboodt, Lennart — Philips Lighting

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

In the PSE state diagram variable list, the variable IPort-2P-pri is not used in the state diagram.
Same for IPort-2P-sec.

*SuggestedRemedy*

Remove both variables.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.2.5.4** *P* **112** *L* **38** # i-55

Yseboodt, Lennart — Philips Lighting

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

In the PSE state diagram variable list, the variable IInrush-2P is not used in the state diagram.

*SuggestedRemedy*

Remove variable.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.2.5.4** *P* **113** *L* **24** # i-269

Stewart, Heath — Analog Devices Inc.

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

option_class_probe can be utilized to both reduce dissapated heat during classification and increase classification flexibility.
See stewart_0917_01.

*SuggestedRemedy*

Adopt stewart_0917_01.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.2.5.4** *P* **113** *L* **40** # i-477

Darshan, Yair

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

In the variable option_probe_alt_sec definition:
"option_probe_alt_sec
This variable indicates if the PSE will continue to detect and conditionally class on the Secondary Alternative in the event an invalid detect or class result is found on the Primary Alternative. This variable applies to CC_DET_SEQ = 3.
Values:
FALSE: PSE does not probe the Secondary Alternative if an invalid signature is found on the Primary Alternative.
TRUE: PSE does probe the Secondary Alternative if an invalid signature is found on the Primary Alternative." we few issues:
1) The definition text says "in the event an invalid detect or class result is found" is not reflected in the text that defines the TRUE and FALSE. Only the "invalid detection" is addressed.
2) The text " if an invalid signature is found" in the TRUE and FALSE definition is not logically accurate and can lead to wrong interpretation. It should be " if an invalid signature will be found" since this variable can be set in system config phase or on the fly, but the current definition may be interpreted as this parameter can be configured only on the fly as function of the result of primary detection signature result if valid or not.

*SuggestedRemedy*

Change the TRUE and FALSE definition from:
"FALSE: PSE does not probe the Secondary Alternative if an invalid signature is found on the Primary Alternative.
TRUE: PSE does probe the Secondary Alternative if an invalid signature is found on the Primary Alternative."
To:
"FALSE: PSE does not probe the Secondary Alternative if an invalid detection signature or classification will be found on the Primary Alternative.
TRUE: PSE does probe the Secondary Alternative if an invalid detection signature or classification will be found on the Primary Alternative"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **113** *L* **40** # i-249

Peker, Arkadiy — Microsemi Corporation

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

In the variable option_probe_alt_sec definition:
"option_probe_alt_sec
This variable indicates if the PSE will continue to detect and conditionally class on the Secondary Alternative in the event an invalid detect or class result is found on the Primary Alternative. This variable applies to CC_DET_SEQ = 3.
Values:
FALSE: PSE does not probe the Secondary Alternative if an invalid signature is found on the Primary Alternative.
TRUE: PSE does probe the Secondary Alternative if an invalid signature is found on the Primary Alternative." we have few issues:
1) The definition text says "in the event an invalid detect or class result is found" is not reflected in the text that defines the TRUE and FALSE. Only the "invalid detection" is addressed.
2) The text " if an invalid signature is found" in the TRUE and FALSE definition is not logically accurate and can lead to wrong interpretation. It should be " if an invalid signature will be found" since this variable can be set in system config phase or on the fly, but the current definition may be interpreted as this parameter can be configured only on the fly as function of the result of primary detection signature result if valid or not."

*SuggestedRemedy*

Change the TRUE and FALSE definition from:
"FALSE: PSE does not probe the Secondary Alternative if an invalid signature is found on the Primary Alternative.
TRUE: PSE does probe the Secondary Alternative if an invalid signature is found on the Primary Alternative."
To:
"FALSE: PSE does not probe the Secondary Alternative if an invalid detection signature or classification will be found on the Primary Alternative.
TRUE: PSE does probe the Secondary Alternative if an invalid detection signature or classification will be found on the Primary Alternative"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **114** *L* **19** # i-57

Yseboodt, Lennart — Philips Lighting

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

"A variable indicating if the PSE output current has been in an overload condition on the Primary Alternative (see 145.2.8.7) for at least T CUT-2P of a one second sliding time."

The word 'window' is missing somewhere in that sentence.

*SuggestedRemedy*

Replace by:
"A variable indicating if the PSE output current has been in an overload condition on the Primary Alternative (see 145.2.8.7) for at least T CUT-2P of a one second sliding window."

Same fix for ovld_det_sec.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **114** *L* **20** # i-58

Yseboodt, Lennart — Philips Lighting

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

Topic: SLIDING
Issue: we use the concept of 'sliding windows' in our draft very inconsistently, the SLIDING comments try to make the whole bunch consistent.
Aim: get everything in the form "measure xxx using a xx time sliding window".

In this case, the description of the overload rules is in 145.2.8.7, and should not be repeated in the variable description (especially not if they don't match perfectly like here).

"A variable indicating if the PSE output current has been in an overload condition on the Primary Alternative (see 145.2.8.7) for at least T CUT-2P of a one second sliding time."

*SuggestedRemedy*

"A variable indicating if the PSE output current has been in an overload condition on the Primary Alternative; see 145.2.8.7."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **114** *L* **25** # i-59

Yseboodt, Lennart — Philips Lighting

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

Topic: SLIDING
Issue: we use the concept of 'sliding windows' in our draft very inconsistently, the SLIDING comments try to make the whole bunch consistent.
Aim: get everything in the form "measure xxx using a xx time sliding window".

In this case, the description of the overload rules is in 145.2.8.7, and should not be repeated in the variable description (especially not if they don't match perfectly like here).

"A variable indicating if the PSE output current has been in an overload condition on the Secondary Alternative (see 145.2.8.7) for at least T CUT-2P of a one second sliding time."

*SuggestedRemedy*

"A variable indicating if the PSE output current has been in an overload condition on the Secondary Alternative; see 145.2.8.7."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **114** *L* **32** # i-270

Stewart, Heath — Analog Devices Inc.

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

Existing definition of pd_4pair_cand is out of sync with 145.2.6.7, which describes 4 possible procedures. The Physical Classification procedure is missing.
pd_4pair_cand
This variable is used by the PSE to indicate that a connected PD is a candidate to receive power on both Modes. This variable is a function of the results of Detection, Connection Check, and PD 4PID; see 145.2.6.7.

*SuggestedRemedy*

Change "Connection Check, " to "Connection Check, Physical Classification, "

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **114** *L* **37** # i-60

Yseboodt, Lennart — Philips Lighting

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

"This variable indicates 4PID and Type 3 or Type 4 dual-signature PD has been established by using the method to generate 3 class events on the Primary Alternative."

The PD has been established ?

*SuggestedRemedy*

Replace by:
"This variable indicates that 4PID has been established on the Primary Alternative by using the method to generate 3 class events to determine the PD's Type."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **114** *L* **45** # i-61

Yseboodt, Lennart — Philips Lighting

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

"This variable indicates 4PID and Type 3 or Type 4 dual-signature PD has been established by using the method to generate 3 class events on the Secondary Alternative."

The PD has been established ?

*SuggestedRemedy*

Replace by:
"This variable indicates that 4PID has been established on the Secondary Alternative by using the method to generate 3 class events to determine the PD's Type."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **115** *L* **53** # i-62

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

"pse_avail_pwr: This variable indicates the highest power PD Class the PSE may assign by Physical Layer classification. The value is determined in an implementation-specific manner; see Table 145-6."

- Something went wrong in this sentence.... what is a 'PD Class' ?
- We should point out that Table 145-6 contains restrictions that must be followed.

*SuggestedRemedy*

Replace by:
"This variable indicates the highest Class the PSE may assign to the PD by Physical Layer classification. The value is restricted to the allowed range defined in Table 145-6 and set in an implementation-specific manner."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **116** *L* **11** # i-63

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

"pse_avail_pwr_pri: This variable indicates the highest power PD Class the PSE may assign by Physical Layer classification on the Primary Alternative. The value is determined in an implementation-specific manner; see Table 145-6."

- Something went wrong in this sentence.... what is a 'PD Class' ?
- We should point out that Table 145-6 contains restrictions that must be followed.

*SuggestedRemedy*

Replace by:
"This variable indicates the highest Class the PSE may assign to the PD by Physical Layer classification on the Primary Alternative.
The value is restricted to the allowed range defined in Table 145-6 and set in an implementation-specific manner."

Same fix for pse_avail_pwr_sec.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **117** *L* **1** # i-64

Yseboodt, Lennart Philips Lighting

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

"pse_power_update_pri: A variable that is set when the PSEAllocatedPowerValue_alt(X) in the DLL state diagram in Figure 145-43 has been updated."

Does not mention which Alternative this is for. The _sec variant has the exact same description text.

*SuggestedRemedy*

Change to:
"pse_power_update_pri: A variable that is set when the PSEAllocatedPowerValue_alt(X) in the DLL state diagram in Figure 145-43 has been updated, where X is the Primary Alternative."

And for pse_power_update_sec:
"pse_power_update_sec: A variable that is set when the PSEAllocatedPowerValue_alt(X) in the DLL state diagram in Figure 145-43 has been updated, where X is the Secondary Alternative."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.4** *P* **118** *L* **29** # i-65

Yseboodt, Lennart Philips Lighting

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

"temp_var: A temporary variable used to store the value of the state variable pd_class_sig."

The variable is not temporary, it's use is.

*SuggestedRemedy*

Change to: "temp_var: A variable used to store the value of pd_class_sig."
Same fix for temp_var_pri and temp_var_sec.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.5** *P* **119** *L* **10** # i-271

Stewart, Heath — Analog Devices Inc.

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

There are two differing spelling of t_class_acs vs t_classacs. Note the _ after the t denotes subscript.

*SuggestedRemedy*

Globally change t_classacs_timer to t_class_acs. Note the _ after the t denotes subscript.
Page 119, line 10
Page 128, lines 17 and 21

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.5** *P* **119** *L* **36** # i-272

Stewart, Heath — Analog Devices Inc.

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

sism state machines only have four class events.

*SuggestedRemedy*

Change "fifth" to "fourth"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.5** *P* **119** *L* **39** # i-273

Stewart, Heath — Analog Devices Inc.

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

sism state machines only have four class events.

*SuggestedRemedy*

Change "fifth" to "fourth"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.6** *P* **122** *L* **13** # i-274

Stewart, Heath — Analog Devices Inc.

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

The do_classification_[pri|sec] function is unique in that it remembers previous calls and builds return variable responses based on the preceding collection of calls.

*SuggestedRemedy*

Append after "variables for the Primary Alternative."
Return values are based on all do_classification_pri events until a detection or class reset clears the memory.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.6** *P* **122** *L* **37** # i-275

Stewart, Heath — Analog Devices Inc.

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

The pd_class_sig_xxx variable returns class signature not Class information

*SuggestedRemedy*

Change "Class" to "class signature"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.6** *P* **122** *L* **44** # i-276

Stewart, Heath — Analog Devices Inc.

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

The do_classification_[pri|sec] function is unique in that it remembers previous calls and builds return variable responses based on the preceding collection of calls.

*SuggestedRemedy*

Append after "variables for the Secondary Alternative."
Return values are based on all do_classification_sec events until a detection or class reset clears the memory.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.6** *P* **123** *L* **13** # i-277

Stewart, Heath — Analog Devices Inc.

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

The pd_class_sig_xxx variable returns class signature not Class information

*SuggestedRemedy*

Change "Class" to "class signature"

*Proposed Response* *Response Status* **O**

---

*Cl* **145** *SC* **145.2.5.6** *P* **123** *L* **39** # i-278

Stewart, Heath — Analog Devices Inc.

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

Odd language in the do_detect_pri definition.
Existing:
open_circuit: The PSE has detected an open circuit.
valid: The PSE has detected a PD requesting power.
invalid: Neither open circuit nor valid PD detection signature has been found.

*SuggestedRemedy*

Change:
Valid: The PSE has detected a PD requesting power.
To
Valid: The PSE has detected a valid PD signature.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.2.5.6** *P* **123** *L* **48** # i-279

Stewart, Heath — Analog Devices Inc.

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

Odd language in the do_detect_sec definition.
Existing:
open_circuit: The PSE has detected an open circuit.
valid: The PSE has detected a PD requesting power.
invalid: Neither open circuit nor valid PD detection signature has been found.

*SuggestedRemedy*

Change:
Valid: The PSE has detected a PD requesting power.
To
Valid: The PSE has detected a valid PD signature.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.2.5.7** *P* **125** *L* **1** # i-348

Jones, Chad — Cisco Systems, Inc.

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

Chair notes... PSE State Diagram. I cannot find a path to power up with pse_ss_mode=0. There is the ELSE statement in POWER_ON, where alt_pwrd_pri gets set true and alt_pwrd_sec gets set false. This seems to allow a Type 3 PSE to power up a class 1-4 in 2P mode, (which my Chair note indicated I needed to confirm) but then it implies that there is no path to 4P power for Class 1-4. Will withdraw when I am educated on how to get to each operating point.

*SuggestedRemedy*

Change figure 145-13 to enable Class 1-4 operation on either 2P or 4P.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.2.5.7** *P* **125** *L* **1** # i-66

Yseboodt, Lennart — Philips Lighting

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

The PSE state diagram currently requires a PSE to either turn on, or go back to IDLE within Tpon referenced at the end of detection.
Another option is to 'renew' Tpon by checking is the PD is drawing a correct mark current. This flexibility has a number of use cases as explained in http://www.ieee802.org/3/bt/public/may17/lukacs_01_0517_Mark&Hold_rev1.0.pdf

*SuggestedRemedy*

Adopt yseboodt_06_0917_markhold.pdf

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.2.5.7** *P* **125** *L* **29** # i-396

Darshan, Yair

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

In the exit from CXN_CHK_EVAL to START_DETECT the conditions are:
(sig_type = single) *(((CC_DET_SEQ = 0) +(CC_DET_SEQ = 3)) *!tcc2det_timer_done + (CC_DET_SEQ = 1) *(sig_pri = valid) * !tdet2det_timer_done).
How it can be that sig_pri=valid in the part (CC_DET_SEQ = 1) *(sig_pri = valid) * !tdet2det_timer_done) while at this point of time, no detection was conducted?
It should be !(sig_pri=valid).

*SuggestedRemedy*

Change "(sig_pri=valid)" to " !(sig_pri=valid)".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **125** *L* **32** # i-67

Yseboodt, Lennart — Philips Lighting

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

State diagram logic from START_DETECT to DETECT_EVAL is missing a closing paren at the end.
Caused by editing implementation mistake of yseboodt_09_0317.pdf (copy/paste mistake).

*SuggestedRemedy*

Add closing paren all the way at the end: "... (det_temp = both_neither)))".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **127** *L* **33** # i-196

Peker, Arkadiy — Microsemi Corporation

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

The text allows the PSE to do detection and if there is any implementation specific system error, to go to IDLE. This is not covered by the state machine. As a result in the exit from DETECT_EVAL to IDLE , we need to add to the condition the variable error_condition.

*SuggestedRemedy*

"Change from:
""(pse_alternative = both) * ((det_temp = only_one) * (sig_pri NE valid) +(det_temp = both_neither) * (sig_sec NE valid) + (((CC_DET_SEQ = 0) + (CC_DET_SEQ = 3)) * (det_temp = only_one) * tdet2det_timer_done)) + (pse_alternative = a) * (sig_pri NE valid) +(pse_alternative = b) * (sig_pri = open_circuit)""
To:
""error_condition + (pse_alternative = both) * ((det_temp = only_one) * (sig_pri NE valid) +(det_temp = both_neither) * (sig_sec NE valid) + (((CC_DET_SEQ = 0) + (CC_DET_SEQ = 3)) * (det_temp = only_one) * tdet2det_timer_done)) + (pse_alternative = a) * (sig_pri NE valid) +(pse_alternative = b) * (sig_pri = open_circuit)"""

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **127** *L* **33** # i-288

Stover, David — Analog Devices Inc.

*Comment Type* **ER** *Comment Status* **X**

Missing parenthesis in PSE SD (shown in proposed change as a right square bracket; should be inserted as a right parenthesis).

*SuggestedRemedy*

Change to "(pse_alternative = both) * ((det_temp = only_one) * (sig_pri != valid) + (det_temp = both_neither) * (sig_sec != valid) + (((CC_DET_SEQ = 0) + (CC_DET_SEQ = 3)) * (det_temp = only_one) * tdet2det_timer_done))] + (pse_alternative = a) * (sig_pri != valid) + (pse_alternative = b) * (sig_pri = open_circuit)" replacing right square bracket with right parenthesis.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **127** *L* **33** # i-397

Darshan, Yair

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

The text allows the PSE to do detection and if there is any implementation specific system error, to go to IDLE. This is not covered by the state machine. As a result in the exit from DETECT_EVAL to IDLE , we need to add "+error_condition".

*SuggestedRemedy*

Change from:
"(pse_alternative = both) * ((det_temp = only_one) * (sig_pri ? valid) +(det_temp = both_neither) * (sig_sec ? valid) + (((CC_DET_SEQ = 0) + (CC_DET_SEQ = 3)) * (det_temp = only_one) * tdet2det_timer_done)) + (pse_alternative = a) * (sig_pri ? valid) +(pse_alternative = b) * (sig_pri = open_circuit)"
To:
"error_condition + (pse_alternative = both) * ((det_temp = only_one) * (sig_pri ? valid) +(det_temp = both_neither) * (sig_sec ? valid) + (((CC_DET_SEQ = 0) + (CC_DET_SEQ = 3)) * (det_temp = only_one) * tdet2det_timer_done)) + (pse_alternative = a) * (sig_pri ? valid) +(pse_alternative = b) * (sig_pri = open_circuit)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **128** *L* **6** # i-398

Darshan, Yair

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

In CLASSIFICATION state, the assignment pse_allocated_power = 0 is not possible per the pse_allocated_power variable definition that starts from 1 and not from 0.

*SuggestedRemedy*

Change from: pse_allocated_power<= = 0
To: pse_allocated_power<= = 1

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **128** *L* **8** # i-456

Darshan, Yair

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

To add optional exit from CLASS_PROBE state to IDLE. This will add flexibility to PSE by allowing many class cycles performed prior to powering on a PD.
PSEs may DET-CLASS, Then provide PD Requested Class information to host, Host then implements POWER_ON command at its leisure After repeating DET-CLASS as necessary

*SuggestedRemedy*

1. Add exit from CLASS_PROBE to IDLE with the condition "option_probe2idle*do_class_probe_done".
2. Change the exit from CLASS_PROBE to CLASS_RESET from: "do_class_probe_done"
To: "!option_probe2idle*do_class_probe_done".
3. Add the following new variable to the variable list in 145.2.5.4:
"option_probe2idle
This variable indicates if the PSE should go to IDLE after executing do_class_probe
Values:
FALSE: The PSE will not go to IDLE_PRI after executing do_class_probe.
TRUE: The PSE will go to IDLE_PRI after executing do_class_probe. "

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **128** *L* **46** # i-459

Darshan, Yair

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

In the exit from CLASS_EV3 MARK_EV3 "tcle3_timer_done * (pse_alternative = both) *(pd_class_sig ? 4) *((pse_avail_pwr ? pd_class_sig+5) +(pse_avail_pwr > 5))",
the "+" in pd_class_sig+5 is (according to page 109 line 22) "a Boolean OR" while in the intent here is to used as mathematical sum. There is a need to either update the '+' definition or add another symbol for mathematical summation.

*SuggestedRemedy*

1. add '++' symbol to table in page 109 and define this symbol as mathematical summation.
2. Change from "pd_class_sig+5)" to "pd_class_sig++5)"
3. Fix the same problem in P128, l46 in MARK_EV3 state.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **128** *L* **46** # i-458

Darshan, Yair

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

In the exit from CLASS_EV3 MARK_EV3 "tcle3_timer_done * (pse_alternative = both) *(pd_class_sig ? 4) *((pse_avail_pwr ? pd_class_sig+5) +(pse_avail_pwr > 5))",
missing parenthesis in pd_class_sig+5.

*SuggestedRemedy*

Change from: " "tcle3_timer_done * (pse_alternative = both) *(pd_class_sig ? 4) *((pse_avail_pwr ? pd_class_sig+5) +(pse_avail_pwr > 5))""
To: "tcle3_timer_done * (pse_alternative = both) *(pd_class_sig ? 4) *((pse_avail_pwr ? (pd_class_sig+5)) +(pse_avail_pwr > 5))"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **128** *L* **54** # i-470

Darshan, Yair

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

The title of figure 145-13 is: "Figure 145-13--Top level PSE state diagram (continued)" however it is actually for single-signature.

*SuggestedRemedy*

Change from: "Figure 145-13--Top level PSE state diagram (continued)" to ""Figure 145-13--Top level, single-signature PSE state diagram (continued)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **129** *L* **42** # i-194

Peker, Arkadiy Microsemi Corporation

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

I could not find in the text allowance for the PSE to do detection and classification and if there is any implementation specific system error, to go to IDLE. I couldn't find how currently it is covered by the state machine. As a result in the state CLASS_EVAL I propose to add exit to IDLE with the condition error condition.

*SuggestedRemedy*

Add exit from the state CLASS_EVAL to IDLE with the condition error condition.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **129** *L* **42** # i-399

Darshan, Yair

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

I could not find in the text allowance for the PSE to do detection and classification and if there is any implementation specific system error, to go to IDLE. I couldn't find how currently it is covered by the state machine. As a result in the state CLASS_EVAL I propose to add exit to IDLE with the condition erorr_condition.

*SuggestedRemedy*

Add exit from the state CLASS_EVAL to IDLE with the condition erorr_condition.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **129** *L* **54** # i-471

Darshan, Yair

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

The title of figure 145-13 is: "Figure 145-13--Top level PSE state diagram (continued)" however it is actually for single-signature.

*SuggestedRemedy*

Change from: "Figure 145-13--Top level PSE state diagram (continued)" to ""Figure 145-13--Top level, single-signature PSE state diagram (continued)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **130** *L* **34** # i-474

Darshan, Yair

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

In the POWER_ON state we are addressing two use cases:
a) The PSE is working over 4-pairs
b) The PSE is working over 2-pairs for class <5
If we work over 4-pairs and we had error on the pri for example, we are allowing the sec keep working until the sec will have error (in this case we go to IDLE) or the sec will continue to work.
In the case that the sec is continued to work, we need to move to SEMI_PWR_SEC state in page 131 which is done by the exit from POWER_ON to SEMI_PWR_SEC which is: semi_pwr_en * !error_sec * error_pri.
Now we are in SEMI_PWR_SEC and our options to exit from SEMI_PWR_SEC is when we have erro_sec (going to IDLE) or not sufficient power (going to POWER_DENIDE and then to IDLE) or tmpdo_timer_done (going to IDLE)
So far all is good.
Now if the use case is that the port is working with single-signature PD over 2-pairs, class <5. This will cause issue in the state machine. Why?
1. The above use case means per the POWER_ON state alt_pwrd_pri=TRUE and alt_pwrd_pri=FALSE i.e. only the pri is ON.
2. Now something happened and I have error event on the pri.
3. When I have error event on the primary, the condition from POWER_ON to SEMI_POWER_ON_SEC became true: semi_pwr_en * !error_sec * error_pri and we move to SEMI_POWER_ON_SEC which is a problem...THE SEC was OFF already...so I can't be in SEMI_POWER_ON_SEC. So the question is, what we have to do to exit from SEMI_POWER_ON_SEC back to IDLE or block us from going to SEMI_POWER_ON_SEC?
The simplest way is: to prevent going to SEMI_POWER_ON_SEC in this case and allow going to IDLE through the ERROR_DELAY state.

*SuggestedRemedy*

1. Make the following changes in the exit from POWER_ON to SEMI_PWRON_SEC:
Change from: "semi_pwr_en * !error_sec * error_pri"
To: "semi_pwr_en * !error_sec * error_pri*altpwrd_sec"
2. Make the following changes in the exit from POWER_ON to ERROR_DELAY:
Change from:"(!semi_pwr_en*(error_pri+ error_sec))+(semi_pwr_en*error_pri* error_sec)"
To:"(!semi_pwr_en*(error_pri+error_sec))+(semi_pwr_en*error_pri*error_sec)+ (semi_pwr_en*error_pri*!alt_pwrd_sec)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **130** *L* **54** # i-472

Darshan, Yair

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

The title of figure 145-13 is: "Figure 145-13--Top level PSE state diagram (continued)" however it is actually for single-signature.

*SuggestedRemedy*

Change from: "Figure 145-13--Top level PSE state diagram (continued)" to ""Figure 145-13--Top level, single-signature PSE state diagram (continued)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **131** *L* **6** # i-400

Darshan, Yair

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

In the exit from SEMI_PWRON_PRI to POWER_DENIED need to be !power_available_pri and not !power_available

*SuggestedRemedy*

Change from "!power_available" to " "!power_available_pri"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **131** *L* **7** # i-401

Darshan, Yair

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

In the exit from SEMI_PWRON_PRI to IDLE need to be power_available_pri and not power_available

*SuggestedRemedy*

Change from "power_available" to " "power_available_pri"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **131** *L* **21** # i-402

Darshan, Yair

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

In the exit from SEMI_PWRON_SEC to POWER_DENIED need to be !power_available_sec and not !power_available

*SuggestedRemedy*

Change from "!power_available" to " "!power_available_sec"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **131** *L* **25** # i-403

Darshan, Yair

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

In the exit from SEMI_PWRON_SEC to IDLE need to be power_available_sec and not power_available

*SuggestedRemedy*

Change from "power_available" to " "power_available_sec"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **131** *L* **39** # i-404

Darshan, Yair

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

In the Exit from IDLE_ACS to WAIT_ACS we have the following conditions:
pd_autoclass * !tpon_timer_done *tinrush_timer_pri_done * pwr_app_pri *(!alt_pwrd_sec + (tinrush_timer_sec_done * pwr_app_sec))
It looks that we have two issues here:
1) redundancy in the term " tinrush_timer_pri_done * pwr_app_pri. If pwr_app_pri is true, it means that tinrush_timer_pri_done is TRUE as well.
2) the term (!alt_pwrd_sec + (tinrush_timer_sec_done * pwr_app_sec)) is always TRUE.
- alt_pwrd_sec in false meaning that "The PSE is not to apply power to the Primary Alternative. "
- tirnush_timer_sec_done *pwr_app_pri indicates that we POWER up secondary pair and inrush is done in the secondary.
So, we have a condition that if we power up/or not power up.
It's like doing (X or not X) that is always true, which requires to remove this term completely...
In order to find what we really need here, let's expand the whole original term. It is equivalent to the following two parts:
a) pd_autoclass * !tpon_timer_done *tinrush_timer_pri_done * pwr_app_pri*!alt_pwrd_sec +
b) pd_autoclass * !tpon_timer_done *tinrush_timer_pri_done * pwr_app_pri *tinrush_timer_sec_done * pwr_app_sec
I believe that our intent is to allow Autoclass for Type 3 and 4 PSEs supporting single-signature PDs over 4-pairs or Type 3 PSE supporting SS-PD over 2-pairs.
There are few issues:
In part (a), redundancy in the term " tinrush_timer_pri_done * pwr_app_pri ".
If pwr_app_pri is true, it means that tinrush_timer_pri_done is TRUE as well.
As a result, it is sufficient to reduce this term from " tinrush_timer_pri_done * pwr_app_pri " to "pwr_app_pri", resulting with term (a):
"pd_autoclass * !tpon_timer_done * pwr_app_pri*!alt_pwrd_sec"
In part (b), the same concept as in part (a) applies to tinrush_timer_sec_done * pwr_app_sec i.e. If pwr_app_sec is true, it means that tinrush_timer_sec_done is TRUE as well.
As a result, we can reduce term (b) to:
"pd_autoclass * !tpon_timer_done * pwr_app_pri * pwr_app_sec"
The net result is:
pd_autoclass * !tpon_timer_done * pwr_app_pri*!alt_pwrd_sec + pd_autoclass * !tpon_timer_done * pwr_app_pri * pwr_app_sec =
pd_autoclass * !tpon_timer_done * pwr_app_pri*(!alt_pwrd_sec + pwr_app_sec )

*SuggestedRemedy*

Change from:
"pd_autoclass * !tpon_timer_done *tinrush_timer_pri_done * pwr_app_pri *(!alt_pwrd_sec + (tinrush_timer_sec_done * pwr_app_sec))"
To:
"pd_autoclass * !tpon_timer_done * pwr_app_pri*(!alt_pwrd_sec + pwr_app_sec )"

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.2.5.7** *P* **132** *L* **4** # i-195

Peker, Arkadiy Microsemi Corporation

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

Missing error_condition_pri at the input to the state IDLE_PRI at the condition iclass_lim_det_pri.

*SuggestedRemedy*

1. Change from: "iclass_lim_det_pri" to "iclass_lim_det_pri + error_condition_pri"
2. Add new variable to 145.2.5.4:
"error_condition_pri
A variable indicating the status of implementation-specific fault conditions or optionally other system faults that prevent the PSE from meeting the specifications in Table 145-16 and that require the PSE not to source power over the Primary Alternative.
Values:
FALSE: No fault indication.
TRUE: A fault indication exists.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.2.5.7** *P* **132** *L* **4** # i-405

Darshan, Yair

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

Missing error_condition_pri at the input to the state IDLE_PRI at the condition iclass_lim_det_pri.

*SuggestedRemedy*

1. Change from: "iclass_lim_det_pri" to "iclass_lim_det_pri + error_condition_pri"
2. Add new variable to 145.2.5.4:
"error_condition_pri
A variable indicating the status of implementation-specific fault conditions or optionally other system faults that prevent the PSE from meeting the specifications in Table 145-16 and that require the PSE not to source power over the Primary Alternative.
Values:
FALSE: No fault indication.
TRUE: A fault indication exists.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **133** *L* **5** # i-198

Peker, Arkadiy — Microsemi Corporation

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

Figure 145-15 doesn't have the option of using short class event when doing "class probe" functionality as we have in single-signature class probe case. This cost with more time to complete process and more power dissipation. The same applies to the secondary part in page 137. It is suggested to replicate CLASSIFICATION pre-state and CLASS_PROBE from page Figure 145-13 page 128 in primary and secondary state machines with the relevant modifications.

*SuggestedRemedy*

Adopt darshan_04_0917.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **133** *L* **5** # i-406

Darshan, Yair

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

Figure 145-15 doesn't have the option of using short class event when doing "class probe" functionality as we have in single-signature class probe case. This cost with more time to complete process and more power dissipation. The same applies to the secondary part in page 137. It is suggested to replicate CLASSIFICATION pre-state and CLASS_PROBE from page Figure 145-13 page 128 in primary and secondary state machines with the relevant modifications.

*SuggestedRemedy*

Adopt darshan_04_0917.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **133** *L* **5** # i-68

Yseboodt, Lennart — Philips Lighting

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

Figure 145-15, arc from CLASS_EV1_LCE_PRI to MARK_EV1_PRI:
"tlce_timer_pri_done * ((class_4PID_mult_events_pri * (pd_class_sig_pri > 0)) + (pd_class_sig_pri = 4) * pse_avail_pwr_pri >= 4))"

Missing paren.

*SuggestedRemedy*

Change to:
"tlce_timer_pri_done * ((class_4PID_mult_events_pri * (pd_class_sig_pri > 0)) + (pd_class_sig_pri = 4) * (pse_avail_pwr_pri >= 4))"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **133** *L* **13** # i-229

Peker, Arkadiy — Microsemi Corporation

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

"In the exit from CLASS_EV2_PRI to MARK_EV2_PRI, the variable option_2ev is missing in the condition:
tcle2_timer_pri_done *(pd_class_sig_pri = temp_var_pri) * (class_4PID_mult_events_pri +(pse_avail_pwr_pri > 4)).
It needs to be the same concept as in the single-signature case."

*SuggestedRemedy*

Change from:
"tcle2_timer_pri_done *(pd_class_sig_pri = temp_var_pri) * (class_4PID_mult_events_pri +(pse_avail_pwr_pri > 4))"
To:
"tcle2_timer_pri_done * (pd_class_sig_pri = temp_var_pri) * ( (class_4PID_mult_events_pri * !option_2ev)+ (pse_avail_pwr_pri > 4)) "

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **133** *L* **13** # i-464

Darshan, Yair

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

In the exit from CLASS_EV2_PRI to MARK_EV2_PRI, the condition: tcle2_timer_pri_done *(pd_class_sig_pri = temp_var_pri) * (class_4PID_mult_events_pri +(pse_avail_pwr_pri > 4)) is missing the variable option_2ev as we did in the single-signature case.

*SuggestedRemedy*

Change from:
"tcle2_timer_pri_done *(pd_class_sig_pri = temp_var_pri) * (class_4PID_mult_events_pri +(pse_avail_pwr_pri > 4))"
To:
"tcle2_timer_pri_done * (pd_class_sig_pri = temp_var_pri) * ( (class_4PID_mult_events_pri * !option_2ev)+ (pse_avail_pwr_pri > 4)) "

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **133** *L* **18** # i-465

Darshan, Yair

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

In the exit from CLASS_EV2_PRI to MARK_EV_LAST_PRI, the condition: "tcle2_timer_pri_done * (pd_class_sig_pri = temp_var_pri) * !class_4PID_mult_events_pri * pse_avail_pwr_pri = 4" is missing the variable option_2ev as we did in the single-signature case.

*SuggestedRemedy*

Change from:
"tcle2_timer_pri_done * (pd_class_sig_pri = temp_var_pri) * !class_4PID_mult_events_pri * pse_avail_pwr_pri = 4"
To:
"tcle2_timer_pri_done * option_2ev * (pd_class_sig_pri = temp_var_pri) * !class_4PID_mult_events_pri * pse_avail_pwr_pri = 4"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **133** *L* **18** # i-469

Darshan, Yair

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

In the exit from CLASS_EV2_SEC to MARK_EV_LAST_SEC, the condition: "tcle2_timer_sec_done * (pd_class_sig_sec = temp_var_sec) * !class_4PID_mult_events_sec * pse_avail_pwr_sec = 4" is missing parenthesis in "pse_avail_pwr_sec = 4".

*SuggestedRemedy*

Change from:
"tcle2_timer_sec_done * (pd_class_sig_sec = temp_var_sec) * !class_4PID_mult_events_sec * pse_avail_pwr_sec = 4"
To:
"tcle2_timer_sec_done * (pd_class_sig_sec = temp_var_sec) * !class_4PID_mult_events_sec * (pse_avail_pwr_sec = 4)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **133** *L* **18** # i-466

Darshan, Yair

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

In the exit from CLASS_EV2_PRI to MARK_EV_LAST_PRI, the condition: "tcle2_timer_pri_done * (pd_class_sig_pri = temp_var_pri) * !class_4PID_mult_events_pri * pse_avail_pwr_pri = 4" is missing parenthesis in "pse_avail_pwr_pri = 4".

*SuggestedRemedy*

Change from:
"tcle2_timer_pri_done * (pd_class_sig_pri = temp_var_pri) * !class_4PID_mult_events_pri * pse_avail_pwr_pri = 4"
To:
"tcle2_timer_pri_done * (pd_class_sig_pri = temp_var_pri) * !class_4PID_mult_events_pri * (pse_avail_pwr_pri = 4)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **133** *L* **18** # i-230

Peker, Arkadiy

Microsemi Corporation

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

"In the exit from CLASS_EV2_PRI to MARK_EV_LAST_PRI, the variable option_2ev is missing in the condition:
"tcle2_timer_pri_done * (pd_class_sig_pri = temp_var_pri) * !class_4PID_mult_events_pri * pse_avail_pwr_pri = 4".
It needs to be the same concept as in the single-signature case."

*SuggestedRemedy*

"Change from:
"tcle2_timer_pri_done * (pd_class_sig_pri = temp_var_pri) * !class_4PID_mult_events_pri * pse_avail_pwr_pri = 4"
To:
"tcle2_timer_pri_done * option_2ev * (pd_class_sig_pri = temp_var_pri) * !class_4PID_mult_events_pri * pse_avail_pwr_pri = 4"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **135** *L* **6** # i-407

Darshan, Yair

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

State machine, CLASS_EVAL_PRI:
The intent of the following procedure:
IF (pd_cls_4PID_pri * (sig_sec = valid) * (sig_pri = valid) + pwr_app_sec)
THEN pd_4pair_cand<== TRUE
END "

Was to handle the following cases:
1) pd_4pair_cand is TRUE if both pairs have valid signature and pd-cls_4PID_pri is used.
OR
2) pd_4pair_cand is TRUE if both pairs have valid signature and secondary pair is powered and at the same time sig_pri is valid.

if we are doing the complete math we get:
pd_4pair_cand <== TRUE if:
pd_cls_4PID_pri * (sig_sec = valid) * (sig_pri = valid) +(sig_sec = valid) * (sig_pri = valid) * pwr_app_sec

Reviewing the state CLASS_EVAL_PRI shows that:
(a) If we are in CLASS_EVAL_PRI state, it means that pri_sig=valid.
(b) If pwr_app_sec is true, it means that sec_sig=valid but it doesn't mean that sig_pri=valid at the same time that pwr_app_sec is true.
Which means that:
(c ) pwr_app_sec need to be multiplied by (sig_pri = valid)
(d) pd_cls_4PID_pri need to be multiplied only with sig_sec = valid

Resulting with:
IF (pd_cls_4PID_pri * (sig_sec = valid) + pwr_app_sec * (sig_pri = valid) )
THEN pd_4pair_cand<== TRUE
END "

*SuggestedRemedy*

Change from: "(pd_cls_4PID_pri * (sig_sec = valid) * (sig_pri = valid) + pwr_app_sec)"
To: (pd_cls_4PID_pri * (sig_sec = valid) + pwr_app_sec* (sig_pri = valid))

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **135** *L* **8** # i-69

Yseboodt, Lennart Philips Lighting

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

Figure 145-15, arc from CLASS_EVAL_PRI to POWER_UP_PRI:
"ted_timer_pri_done * ted_timer_done (pd_req_pwr_pri <= pse_avail_pwr_pri) *
(pd_4pair_cand + !alt_pwrd_sec)"

Missing operator after ted_timer_done.

*SuggestedRemedy*

Replace by: "ted_timer_pri_done * ted_timer_done * (pd_req_pwr_pri <=
pse_avail_pwr_pri) * (pd_4pair_cand + !alt_pwrd_sec)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **135** *L* **10** # i-408

Darshan, Yair

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

In the exit from CLASS_EVAL_PRI to POWER_UP_PRI we use in the condition:
"ted_timer_pri_done * ted_timer_done
(pd_req_pwr_pri ? pse_avail_pwr_pri) * (pd_4pair_cand + !alt_pwrd_sec)".
Two issues:
a) Missing "*" afterted_timer_done.
b) The variable ted_timer_done looks that is not belong here since we are in the semi-independent state machine or the intent for this is not clear.

*SuggestedRemedy*

Two options for remedy:
a) Add "*" afterted_timer_done and explain why we need ted_timer_done OR
b) Delete ted_timer_done

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **135** *L* **10** # i-409

Darshan, Yair

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

In the exit from CLASS_EVAL_PRI to POWER_DENIDE_PRI we use in the condition:
"!ted_timer_pri_done + !ted_timer_done +
(pd_req_pwr_pri > pse_avail_pwr_pri) + (!pd_4pair_cand * !alt_pwrd_sec)".
The variable ted_timer_done looks that is not belong here since we are in the semi-independent state machine or the intent for this is not clear.

*SuggestedRemedy*

Two options for remedy:
a)explain why we need ted_timer_done OR
b) Delete ted_timer_done

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **135** *L* **37** # i-410

Darshan, Yair

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

In the exit from ERROR_DELAY_PRI to IDLE we have the following condition:
"ted_timer_pri_done + option_detect_ted_pri".
A) The variable option_detect_ted_pri is missing from the variable list.
B) in addition I believe it is not required since if you have the option to do detection during Ted time interval or you dont have the option, you are going to IDLE_PRI and in IDLE_PRI you don't do detection.

*SuggestedRemedy*

Change from: " "ted_timer_pri_done + option_detect_ted_pri""
To: "ted_timer_pri_done "

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **136** *L* **4** # i-199

Peker, Arkadiy Microsemi Corporation

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

Missing error_condition_sec at the input to the state IDLE_SEC at the condition iclass_lim_det_sec.

*SuggestedRemedy*

"1. Change from: ""iclass_lim_det_sec"" to ""iclass_lim_det_sec + error_condition_sec""
2. Add new variable to 145.2.5.4:
""error_condition_sec
A variable indicating the status of implementation-specific fault conditions or optionally other system faults that prevent the PSE from meeting the specifications in Table 145-16 and that require the PSE not to source power over the Secondary Alternative.
Values:
FALSE: No fault indication.
TRUE: A fault indication exists."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **136** *L* **4** # i-411

Darshan, Yair

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

Missing error_condition_sec at the input to the state IDLE_SEC at the condition iclass_lim_det_sec.

*SuggestedRemedy*

1. Change from: "iclass_lim_det_sec" to "iclass_lim_det_sec + error_condition_sec"
2. Add new variable to 145.2.5.4:
"error_condition_sec
A variable indicating the status of implementation-specific fault conditions or optionally other system faults that prevent the PSE from meeting the specifications in Table 145-16 and that require the PSE not to source power over the Secondary Alternative.
Values:
FALSE: No fault indication.
TRUE: A fault indication exists.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **136** *L* **11** # i-475

Darshan, Yair

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

This comment is marked as CC_DET_SEQ=3-1 and is improvement of the comment marked as CC_DET_SEQ=3.
In the exit from IDLE_SEC to START_DETECT_SEC we have the following condition:
(!pwr_app_sec * pwr_app_pri) + ((CC_DET_SEQ=3) * option_probe_alt_sec * !det_start_pri * !det_once_sec)
Based on the description in page 109 lines 37-38 for CC_DET_SEQ and specifically, CC_DET_SEQ=3 for dual-signature means: Connection check is followed by staggered detection
(The analysis and simulations results for other sequences 0, 1 and 2 are covered by other comments and most of them are OK).

The staggered detection range may occur with starting the secondary detection after doing the primary detection (option 1) up to doing the secondary detection only if the primary is on (option 2). This covers the full range of possibilities.
Option 1 is normally used when class_4PID_mult_events_sec=TRUE. This currently is not covered by the state machine.
Option 2 is normally used when class_4PID_mult_events_sec=FALSE and it is covered in the 1st part of the condition: (!pwr_app_sec * pwr_app_pri).
Option 3 is covers the case that the primary return to IDLE_PRI due to various reasons and the secondary didn't detect even once: ((CC_DET_SEQ=3) * option_probe_alt_sec * !det_start_pri * !det_once_sec).

The current state diagram covers option 2 and 3, and does not cover option 1!

The state diagram should allow staggered detection before Primary power up, after primary power up, and during power up in case that class_4PID_mult_events_sec is set to FALSE.
The proposed changes in the state diagram will allow staggered detection after Primary finished its 1st detection without affecting the previous functionality and flow, by oring the additional missing possibility (option 1).
The proposed changes do not affect:
a) The behavior of other CC_DET_SEQ ?3 flows.
b) Previous state diagram possibilities.

In addition, the proposed changes also required to cover multiple cycles of detection+classification until host decides to power on the port (which is covered by darshan_04_0917.pdf).
The additional missing possibility is covered by adding the following part:
+ (class_4PID_mult_events_sec*(CC_DET_SEQ=3) * !det_once_sec * det_once_pri )
In order to implement the addition, we need to add the following variable for the primary side (similar variable is already exist for the secondary):

"det_once_pri
This variable indicates if the PSE has probed the Primary Alternative at least once, when entering to DETECT_EVAL_PRI.
Values:

FALSE: The PSE has not probed on the Primary Alternative since entering the Primary Alternative state diagram.
TRUE: The PSE has probed the Primary Alternative at least once since entering the Primary Alternative state diagram."

In the above proposed change, det_once_pri is used as a condition for starting detection in the secondary any time until power up, after primary was detected at least once.
det_once_pri is set to FALSE when sism = FALSE at ENTRY_PRI.
det_once_pri is set to TRUE when Primary state diagram reaches to "DETECT_EVAL_PRI", to clearly indicate that detection on primary has ended before tdet_timer_pri expired.

*SuggestedRemedy*

1. Change from:
"(!pwr_app_sec *pwr_app_pri) + ((CC_DET_SEQ=3) * option_probe_alt_sec * !det_start_pri * !det_once_sec)"
To:
"(!pwr_app_sec *pwr_app_pri) + ((CC_DET_SEQ=3) * option_probe_alt_sec * !det_start_pri * !det_once_sec) + (class_4PID_mult_events_sec*(CC_DET_SEQ=3) * !det_once_sec * det_once_pri )
2. Add the following variable to the variable list:
det_once_pri
This variable indicates if the PSE has probed the Primary Alternative at least once, when entering to DETECT_EVAL_PRI. Values:
FALSE: The PSE has not probed on the Primary Alternative since entering the Primary Alternative state diagram.
TRUE: The PSE has probed the Primary Alternative at least once since entering the Primary Alternative state diagram.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.2.5.8** *P* **136** *L* **11** # i-473

Darshan, Yair

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

This comment is marked CC_DET_SEQ=3.
This problem was a dressed in other comment and is repeated here in shorter and clearer way.
Using CC_DET_SEQ=3 is possible if we exit from ENTRY_SEC and from IDLE_SEC to START_DETECT_SEC.
In the exit from IDLE_SEC to START_DETECT_SEC we have the following conditions:
(!pwr_app_sec *pwr_app_pri) + ((CC_DET_SEQ=3) * option_probe_alt_sec * !det_start_pri * !det_once_sec) = A+B.
This condition syas:
A) the first part of the condition says: go and detect sec if power is not applied to secondary AND power is applied to primary. This allows detection of secondary only if primary is ON. This is OK but not cover the other case of CC_DET_SEQ=3 that detect secondary after detection primary and not waiting until primary is ON.
In addition, it doesnt allow to do multiple detection+classification until power on.
B) The 2nd part is OK but doesnt resolve the issue in part A.
Currently the staggered detection i slimited to the case of doing detection on sec only if pri is ON and it should be limited per th eCC_DET_SEQ definition to only this case which will prevent the general case of doing sequences of staggered detection + classification sequences until power on of both alternatives.
The solution is to add part (C) which is (CC_DET_SEQ=3)*do_detect_pri_done

*SuggestedRemedy*

Change from:
"(!pwr_app_sec *pwr_app_pri) + ((CC_DET_SEQ=3) * option_probe_alt_sec * !det_start_pri * !det_once_sec)"
To:
"(!pwr_app_sec *pwr_app_pri) + ((CC_DET_SEQ=3) * option_probe_alt_sec * !det_start_pri * !det_once_sec) + ((CC_DET_SEQ=3)*do_detect_pri_done)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **136** *L* **11** # i-254

Peker, Arkadiy
Microsemi Corporation

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

In the exit from IDLE_SEC to START_DETECT_SEC we have the following condition:
"(!pwr_app_sec * pwr_app_pri) + ((CC_DET_SEQ=3) * option_probe_alt_sec * !det_start_pri * !det_once_sec)"
Based on the description in page 109 lines 37-38 for CC_DET_SEQ and specifically, CC_DET_SEQ=3 for dual-signature means: Connection check is followed by staggered detection
(The analysis and simulations results for other sequences 0, 1 and 2 are covered by other comments and most of them are OK).

The staggered detection range may occur with starting the secondary detection after doing the primary detection (option 1) up to doing the secondary detection only if the primary is on (option 2). This covers the full range of possibilities.
Option 1 is normally used when class_4PID_mult_events_sec=TRUE. This currently is not covered by the state machine.
Option 2 is normally used when class_4PID_mult_events_sec=FALSE and it is covered in the 1st part of the condition: (!pwr_app_sec * pwr_app_pri).
Option 3 is  covers the case that the primary return to IDLE_PRI due to various reasons and the secondary didn't detect even once: ((CC_DET_SEQ=3) * option_probe_alt_sec * !det_start_pri * !det_once_sec).

The current state diagram covers option 2 and 3, and does not cover option 1!

The state diagram should allow staggered detection before Primary power up, after primary power up, and during power up in case that class_4PID_mult_events_sec is set to FALSE.
The proposed changes in the state diagram will allow staggered detection after Primary finished its 1st detection without affecting the previous functionality and flow, by oring the additional missing possibility (option 1).
The proposed changes do not affect:
a)  The behavior of other "CC_DET_SEQ NE 3" flows.
b) Previous state diagram possibilities.

In addition, the proposed changes also required to cover multiple cycles of detection+classification until host decides to power on the port (which is covered by darshan_04_0917.pdf).
The additional missing possibility is covered by adding the following part:
+ (class_4PID_mult_events_sec*(CC_DET_SEQ=3) * !det_once_sec * det_once_pri )
In order to implement the addition, we need to add the following variable for the primary side (similar variable is already exist for the secondary):

"det_once_pri
This variable indicates if the PSE has probed the Primary Alternative at least once, when entering to DETECT_EVAL_PRI.
Values:
FALSE: The PSE has not probed on the Primary Alternative since entering the Primary Alternative state diagram.
TRUE: The PSE has probed the Primary Alternative at least once since entering the Primary Alternative state diagram."

In the above proposed change, det_once_pri is used as a condition for starting detection in the secondary any time until power up, after primary was detected at least once.
det_once_pri is set to FALSE when sism = FALSE at ENTRY_PRI.
det_once_pri is set to TRUE when Primary state diagram reaches to "DETECT_EVAL_PRI", to clearly indicate that detection on primary has ended before tdet_timer_pri expired."

*SuggestedRemedy*

1. Change from:
"(!pwr_app_sec *pwr_app_pri) + ((CC_DET_SEQ=3) * option_probe_alt_sec * !det_start_pri * !det_once_sec)""
To:
"(!pwr_app_sec *pwr_app_pri) + ((CC_DET_SEQ=3) * option_probe_alt_sec * !det_start_pri * !det_once_sec) +
(class_4PID_mult_events_sec*(CC_DET_SEQ=3) * !det_once_sec * det_once_pri )
2. Add the following variable to the variable list:
det_once_pri
This variable indicates if the PSE has probed the Primary Alternative at least once, when entering to DETECT_EVAL_PRI. Values:
FALSE: The PSE has not probed on the Primary Alternative since entering the Primary Alternative state diagram.
TRUE: The PSE has probed the Primary Alternative at least once since entering the Primary Alternative state diagram.
"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **136** *L* **20** # i-251

Peker, Arkadiy — Microsemi Corporation

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

In Figure 145-16, in the exit from ENTRY_SEC to START_DET_SEC, when selecting CC_DET_SEQ 0 or 1, and class_4PID_multi_event_sec = FALSE, the secondary state machine allows to move from ENTRY_SEC state to START_DETECT_SEC only if pwr_app_pri = TRUE per the existing condition:
sism * ((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)

If Primary fails to powerup, the Primary state machine returns back to IDLE_PRI. As a result, pwr_app_pri variable will remain in FALSE, and the secondary state machine won't be able to exit from ENTRY_SEC i.e. will be stuck there.
The easy way to handle this problem is to enable moving to START_DETECT_SEC from ENTRY_SEC, also if primary performed detection at least once and is now in IDLE_PRI state which prevents stuck at ENTRY_SEC. This solution requires the addition of new variable det_once_pri (the current draft has only det_once_sec) which is required also by other comments that all related to each other and can be see in darshan_04_0917.pdf. "

*SuggestedRemedy*

See darshan_04_0917.pdf for how the following change is also addresses other issues including the possibility to do cycles of detection + class_probe events on primary and secondary with the option to go to IDLE_PRI/SEC and WAIT_PRI/SEC.
---
1) Add the following variable:
det_once_pri
This variable indicates if the PSE has probed the Primary Alternative at least once, when entering to DETECT_EVAL_PRI. Values:
FALSE: The PSE has not probed on the Primary Alternative since entering the Primary Alternative state diagram.
TRUE: The PSE has probed the Primary Alternative at least once since entering the Primary Alternative state diagram.
2) Change from:
"sism *((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
To:
sism * ((!class_4PID_mult_events_sec * (pwr_app_pri + det_once_pri * !det_start_pri ) ) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **136** *L* **20** # i-250

Peker, Arkadiy — Microsemi Corporation

*Comment Type* **ER** *Comment Status* **X**

There is redundant parenthesis in the exit from ENTRY_SEC to START_DETECT_SEC:
"sism *((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
in the part: (!class_4PID_mult_events_sec * pwr_app_pri). "

*SuggestedRemedy*

Change from:
"sism *((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
To:
"sism *(!class_4PID_mult_events_sec * pwr_app_pri + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
---
See darshan_04_0917.pdf for additional changes proposed to this condition due to other comments."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **136** *L* **20** # i-478

Darshan, Yair

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

There is redundant parenthesis in the exit from ENTRY_SEC to START_DETECT_SEC:
"sism *((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
in the part: (!class_4PID_mult_events_sec * pwr_app_pri).

*SuggestedRemedy*

Change from:
"sism *((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
To:
"sism *(!class_4PID_mult_events_sec * pwr_app_pri + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **136** *L* **20** # i-479

Darshan, Yair

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

In Figure 145-16, in the exit from ENTRY_SEC to START_DET_SEC, when selecting CC_DET_SEQ 0 or 1, and class_4PID_multi_event_sec = FALSE, the secondary state machine allows to move from ENTRY_SEC state to START_DETECT_SEC only if pwr_app_pri = TRUE per the existing condition:
sism * ((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)

If Primary fails to powerup, the Primary state machine returns back to IDLE_PRI. As a result, pwr_app_pri variable will remain in FALSE, and the secondary state machine won't be able to exit from ENTRY_SEC i.e. will be stuck there.
The easy way to handle this problem is to enable moving to START_DETECT_SEC from ENTRY_SEC, also if primary performed detection at least once and is now in IDLE_PRI state which prevents stuck at ENTRY_SEC. This solution requires the addition of new variable det_once_pri (the current draft has only det_once_sec) which is required also by other comments that all related to each other and can be see in darshan_04_0917.pdf.

*SuggestedRemedy*

See darshan_04_0917.pdf for how the following change is also addresses other issues including the possibility to do cycles of detection + class_probe events on primary and secondary with the option to go to IDLE_PRI/SEC and WAIT_PRI/SEC.
---
1) Add the following variable:
det_once_pri
This variable indicates if the PSE has probed the Primary Alternative at least once, when entering to DETECT_EVAL_PRI. Values:
FALSE: The PSE has not probed on the Primary Alternative since entering the Primary Alternative state diagram.
TRUE: The PSE has probed the Primary Alternative at least once since entering the Primary Alternative state diagram.
2) Change from:
"sism *((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
To:
sism * ((!class_4PID_mult_events_sec * (pwr_app_pri + det_once_pri * !det_start_pri ) ) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1).

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **136** *L* **21** # i-480

Darshan, Yair

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

In the transition between ENTRY_SEC to START_DET_SEC we have the following condition:
sism * ((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1).
In this condition, when class_4PID_mult_events_sec=FALSE, and CC_DET_SEQ=0 OR 1, If START_DET_PRI exit to IDLE_PRI due to tdet_timer_pri_done, the pwr_app_pri will remain in FALSE which wont allow exiting from ENTRY_SEC to START_DETECT_SEC and the secondary state machine remain stuck in ENTRY_SEC.

The proposed solution for this problem is:
1) To add stop_tdet_timer_pri in the DETECT_EVAL_PRI state. This action ensures that tdet_timer_pri_done will remain FALSE when moving from START_DETECT_PRI to DETECT_EVAL_PRI. This action enables the usage of tdet_timer_pri_done in the secondary state machine at the exit from ENTRY_SEC to START_DETECT_SEC.
2. Add "tdet_timer_pri_done to the condition of the exit from ENTRY_SEC to START_DETECT_SEC as follows:
"sism *((!class_4PID_mult_events_sec * ( pwr_app_pri + tdet_timer_pri_done ) ) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)" . This change will allow to move to START_DETECT_SEC in case that we move from START_DETECT_PRI to IDLE_PRI due to tdet_timer_pri expiration.

*SuggestedRemedy*

1. Add "stop_tdet_timer_pri" to the DETECT_EVAL_PRI state.
2. Add "tdet_timer_pri_done to the condition of the exit from ENTRY_SEC to START_DETECT_SEC by performing the following change:
Change from:
"sism *((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
To:
"sism *((!class_4PID_mult_events_sec * ( pwr_app_pri + tdet_timer_pri_done) ) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
---
Due to the fact that item 2 need additional changes due to other comments, and in order to meet the requirement that we need single independent comment for each issue which I did here but may cause editor confusion of how to apply the remedies of other comments, See darshan_04_0917.pdf for how the above change is combined with other changes i.e. the possibility to do cycles of detection + class_probe events on primary and secondary with the option to go to IDLE_PRI/SEC and WAIT_PRI/SEC.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **136** *L* **21** # i-412

Darshan, Yair

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

In the exit from ENTRY_SEC to START_DETECT_SEC we have the following condition: sism * ( (!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec ) * (CC_DET_SEQ=0 + CC_DET_SEQ=1).
class_4PID_mult_events_sec and !class_4PID_mult_events_sec doesn't belong here. The way how we do detection sequence or connection check and detection sequence is not relevant to the issue of how we do 4PID. The 4PID way is determined in page 139 line 6 in CLASS_EVAL_PRI and page 139 line 6 CLASS_EVAL_SEC.

*SuggestedRemedy*

Two options:
1. change from: "sism * ( (!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec ) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)."
To: "sism * ( pwr_app_pri + ((CC_DET_SEQ=0) + (CC_DET_SEQ=1))."
2. Use other solution that doesn't block detecting the secondary in parallel to detecting the primary for single signature or staggered detection for dual-signature after detection the primary (regardless if primary is powered) per CC_DET_SEQ=0 or CC_DET_SEQ=1 which is even more flexible than CC_DET_SEQ=0.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **136** *L* **21** # i-252

Peker, Arkadiy Microsemi Corporation

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

In the transition between ENTRY_SEC to START_DET_SEC we have the following condition:
"sism * ((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
In this condition, when class_4PID_mult_events_sec=FALSE, and CC_DET_SEQ=0 OR 1, If START_DET_PRI exit to IDLE_PRI due to tdet_timer_pri_done, the pwr_app_pri will remain in FALSE which won't allow exiting from ENTRY_SEC to START_DETECT_SEC and the secondary state machine remain stuck in ENTRY_SEC.

The proposed solution for this problem is:
1) To add stop_tdet_timer_pri in the DETECT_EVAL_PRI state. This action ensures that tdet_timer_pri_done will remain FALSE when moving from START_DETECT_PRI to DETECT_EVAL_PRI. This modification is required since even if we did detection before tdet_timer_pri is expired, we will get tdet_timer_pri_done anyway. This action will enables the usage of tdet_timer_pri_done in the secondary state machine at the exit from ENTRY_SEC to START_DETECT_SEC when we will add this variable in (2).
2. To add ""tdet_timer_pri_done to the condition of the exit from ENTRY_SEC to START_DETECT_SEC as follows:
""sism *((!class_4PID_mult_events_sec * ( pwr_app_pri + tdet_timer_pri_done ) ) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"" . This change will allow to move to START_DETECT_SEC in case that we move from START_DETECT_PRI to IDLE_PRI due to tdet_timer_pri expiration."

*SuggestedRemedy*

1. Add "stop_tdet_timer_pri"" to the DETECT_EVAL_PRI state.
2. Add "tdet_timer_pri_done to the condition of the exit from ENTRY_SEC to START_DETECT_SEC by performing the following change:
Change from:
"sism *((!class_4PID_mult_events_sec * pwr_app_pri) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
To:
"sism *((!class_4PID_mult_events_sec * ( pwr_app_pri + tdet_timer_pri_done) ) + class_4PID_mult_events_sec) * (CC_DET_SEQ=0 + CC_DET_SEQ=1)"
---
Due to the fact that item 2 need additional changes due to other comments, and in order to meet the requirement that we need single independent comment for each issue which I did here but may cause editor confusion of how to apply the remedies of other comments, See darshan_04_0917.pdf for how the above change is combined with other changes i.e. the possibility to do cycles of detection + class_probe events on primary and secondary with the option to go to IDLE_PRI/SEC and WAIT_PRI/SEC."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **137** *L* **7** # i-70

Yseboodt, Lennart — Philips Lighting

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

Arc logic from CLASS_EV1_LCE_SEC to MARK_EV1_SEC:
"tlce_timer_sec_done * ((class_4PID_mult_events_sec * (pd_class_sig_sec > 0)) + (pd_class_sig_sec = 4) * pse_avail_pwr_sec >= 4))"

Missing paren.

*SuggestedRemedy*

Replace by: "tlce_timer_sec_done * ((class_4PID_mult_events_sec * (pd_class_sig_sec > 0)) + (pd_class_sig_sec = 4) * (pse_avail_pwr_sec >= 4))"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **137** *L* **13** # i-231

Peker, Arkadiy — Microsemi Corporation

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

"In the exit from CLASS_EV2_SEC to MARK_EV2_SEC, the variable option_2ev is missing in the condition:
""tcle2_timer_sec_done *(pd_class_sig_sec = temp_var_sec) * (class_4PID_mult_events_sec +(pse_avail_pwr_sec > 4))"".
It needs to be the same concept as in the single-signature case."

*SuggestedRemedy*

Change from:"tcle2_timer_sec_done *(pd_class_sig_sec = temp_var_sec) * (class_4PID_mult_events_sec +(pse_avail_pwr_sec > 4))"
To: "tcle2_timer_sec_done *(pd_class_sig_sec = temp_var_sec) * ((class_4PID_mult_events_sec * !option_2ev) + (pse_avail_pwr_sec > 4))"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **137** *L* **13** # i-467

Darshan, Yair

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

In the exit from CLASS_EV2_SEC to MARK_EV2_SEC, the condition:
"tcle2_timer_sec_done *(pd_class_sig_sec = temp_var_sec) * (class_4PID_mult_events_sec +(pse_avail_pwr_sec > 4))" is missing the variable option_2ev as we did in the single-signature case.

*SuggestedRemedy*

Change from: "tcle2_timer_sec_done *(pd_class_sig_sec = temp_var_sec) * (class_4PID_mult_events_sec +(pse_avail_pwr_sec > 4))"
To: "tcle2_timer_sec_done *(pd_class_sig_sec = temp_var_sec) * ?((class_4PID_mult_events_sec * !option_2ev) + (pse_avail_pwr_sec > 4))"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **137** *L* **18** # i-232

Peker, Arkadiy — Microsemi Corporation

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

In the exit from CLASS_EV2_SEC to MARK_EV_LAST_SEC, the variable option_2ev is missing in the condition:
"tcle2_timer_sec_done * (pd_class_sig_sec = temp_var_sec) * !class_4PID_mult_events_sec * pse_avail_pwr_sec = 4".
It needs to be the same concept as in the single-signature case."

*SuggestedRemedy*

Change from:
"tcle2_timer_sec_done * (pd_class_sig_sec = temp_var_sec) * !class_4PID_mult_events_sec * pse_avail_pwr_sec = 4"
To:
"tcle2_timer_sec_done * option_2ev* (pd_class_sig_sec = temp_var_sec) * !class_4PID_mult_events_sec * pse_avail_pwr_sec = 4"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **137** *L* **18** # i-468

Darshan, Yair

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

In the exit from CLASS_EV2_SEC to MARK_EV_LAST_SEC, the condition:
"tcle2_timer_sec_done * (pd_class_sig_sec = temp_var_sec) *
!class_4PID_mult_events_sec * pse_avail_pwr_sec = 4" is missing the variable option_2ev as we did in the single-signature case.

*SuggestedRemedy*

Change from:
"tcle2_timer_sec_done * (pd_class_sig_sec = temp_var_sec) *
!class_4PID_mult_events_sec * pse_avail_pwr_sec = 4"
To:
"tcle2_timer_sec_done * option_2ev* (pd_class_sig_sec = temp_var_sec) *
!class_4PID_mult_events_sec * pse_avail_pwr_sec = 4"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.8** *P* **139** *L* **6** # i-413

Darshan, Yair

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

This comment rationale is identical to my comment regarding CLASS_EVAL_PRI, so this comment will be shorter.
State machine, CLASS_EVAL_SEC:
IF (pd_cls_4PID_sec * (sig_sec = valid) * (sig_pri = valid) + pwr_app_pri)
THEN pd_4pair_cand <== TRUE
END "
Reviewing the logic shows that:
(c) If we are in CLASS_EVAL_SEC state, it means that sec_sig=valid.
(d) If pwr_app_pri is true, it means that pri_sig=valid but it doesn't mean that sig_sec=valid at the same time that pwr_app_pri is true.
Resulting with changing: (pd_cls_4PID_sec * (sig_sec = valid) * (sig_pri = valid) + pwr_app_pri)
To: pd_cls_4PID_sec * (sig_pri = valid) + pwr_app_pri * (sig_sec = valid)

*SuggestedRemedy*

Change from: " (pd_cls_4PID_sec * (sig_sec = valid) * (sig_pri = valid) + pwr_app_pri) "
To:pd_cls_4PID_sec * (sig_pri = valid) + pwr_app_pri * (sig_sec = valid)

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **139** *L* **10** # i-415

Darshan, Yair

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

In the exit from CLASS_EVAL_SEC to POWER_DENIDE_SEC we use in the condition:
"!ted_timer_sec_done + !ted_timer_done +
(pd_req_pwr_sec > pse_avail_pwr_sec) + (!pd_4pair_cand * !alt_pwrd_pri)".
The variable ted_timer_done looks that is not belong here since we are in the semi-independent state machine or the intent for this is not clear.

*SuggestedRemedy*

Two options for remedy:
a)explain why we need ted_timer_done OR
b) Delete ted_timer_done

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **139** *L* **10** # i-414

Darshan, Yair

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

In the exit from CLASS_EVAL_SEC to POWER_UP_SEC we use in the condition:
"ted_timer_sec_done * ted_timer_done *
(pd_req_pwr_sec ? pse_avail_pwr_sec) * (pd_4pair_cand + (sig_pri ? valid))".
The variable ted_timer_done looks that is not belong here since we are in the semi-independent state machine or the intent for this is not clear.

*SuggestedRemedy*

Two options for remedy:
a) Explain why we need ted_timer_done OR
b) Delete ted_timer_done

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **139** *L* **37** # i-416

Darshan, Yair

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

In the exit from ERROR_DELAY_SEC to IDLE we have the following condition: "ted_timer_sec_done + option_detect_ted_sec".
A) The variable option_detect_ted_sec is missing from the variable list.
B) in addition I believe it is not required since if you have the option to do detection during Ted time interval or you dont have the option, you are going to IDLE_SEC and in IDLE_SEC you dont do detection.

*SuggestedRemedy*

Change from: " "ted_timer_sec_done + option_detect_ted_sec""
To: "ted_timer_sec_done "

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **140** *L* **1** # i-71

Yseboodt, Lennart Philips Lighting

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

In Figure 145-17, MPS monitor state diagram, the arc from DETECT_MPS goes to IDLE_MPS, which is wrong (editor mistake in earlier draft when redrawing the figures).

*SuggestedRemedy*

Make arc from DETECT_MPS go to MONITOR_MPS.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **140** *L* **27** # i-72

Yseboodt, Lennart Philips Lighting

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

In Figure 145-18, MPS monitor state diagram, the arc from DETECT_MPS_PRI goes to IDLE_MPS_PRI, which is wrong (editor mistake in earlier draft when redrawing the figures). Same for _SEC.

*SuggestedRemedy*

Make arc from DETECT_MPS_PRI go to MONITOR_MPS_PRI and same for _SEC.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.6** *P* **141** *L* **20** # i-73

Yseboodt, Lennart Philips Lighting

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

"In any operational state, the PSE shall not apply operating power to a pairset until the PSE has successfully detected a valid signature over that pairset."

A PSE does not apply power, it applies voltage and the PD draws current, causing power to be sourced.
The term 'operating power' is not defined either.
"In any operation state" are 4 redundant words.

*SuggestedRemedy*

"The PSE shall not apply operating voltage to a pairset until the PSE has successfully detected a valid signature over that pairset."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.6** *P* **141** *L* **25** # i-74

Yseboodt, Lennart Philips Lighting

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

"The PSE probes the link section in order to detect a valid PD detection signature. The PSE PI is connected to a PD through a link section."

Swapping the order of those sentences makes the text more logical.

*SuggestedRemedy*

Swap order of sentences.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.6** *P* **141** *L* **29** # i-203

Peker, Arkadiy Microsemi Corporation

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

We have the following text: "Also, a PSE may successfully detect a PD but then opt not to power the detected PD.". We need similar text for the classification i.e. "A PSE may successfully detect and classify a PD but then opt not to power that PD. " to be added at the end of clause 145.2.7 page 148 after line 38.

*SuggestedRemedy*

Add the following text in 145.2.7 page 148 after line 38: "A PSE may successfully detect and classify a PD but then opt not to power that PD. "

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.6** *P* **141** *L* **29** # i-418

Darshan, Yair

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

We have the following text: "Also, a PSE may successfully detect a PD but then opt not to power the detected PD.". We need similar text for the classification i.e. "A PSE may successfully detect and classify a PD but then opt not to power that PD. " to be added at the end of clause 145.2.7 page 148 after line 38.

*SuggestedRemedy*

Add the following text in 145.2.7 page 148 after line 38: "A PSE may successfully detect and classify a PD but then opt not to power that PD. "

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.6.1** *P* **141** *L* **36** # i-75

Yseboodt, Lennart Philips Lighting

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

"PSEs that will deliver power on both pairsets shall complete a connection check prior to the classification of a PD as defined in 145.2.7 to determine if the PSE is connected to a single-signature PD configuration, a dual-signature PD configuration, or neither."

We use the terms 'source power' (7x) and 'deliver power' (2x).

*SuggestedRemedy*

Replace "deliver power" by "source power" in the quoted sentence.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.6.1** *P* **141** *L* **44** # i-335

Abramson, David Texas Instruments Inc

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

Symbol names should be included.

*SuggestedRemedy*

Add ", Voc," after "open circuit voltage" and ", Isc," after "short circuit current".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145** *P* **142** *L* **10** # i-1

Anslow, Peter Ciena Corporation

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

The IEEE-SA Standards Style Manual 13.3.2 says "An em dash (--) should be used to indicate the lack of data for a particular cell in a table."
Comment #29 against P802.3bt D2.4 was: "Several tables in Clause 145 have blank cells in the min or max columns, which should contain an em-dash", but this was rejected with the rebuttal:
"The lack of em-dashes is intentional. The em-dash would convey that there is no relevant information, while the lack of the em-dash conveys that there is no specific number."
This makes no sense.
The first example of this issue is in Table 145-7. "Connection check to detection time" Tcc2det has a maximum value of 0.4 s, but the min column is blank. According to the IEEE style manual the cell should contain an em dash, which would indicate that there is no minimum requirement for this time. If there is some requirement on the minimum (not just a number) then an indication of this should be made via an entry in the cell such as "See 145.x.x". If this is not the case, then the cell should contain an em dash.

*SuggestedRemedy*

Make sure all tables have an entry of em-dash or pointer to the requirement in currently blank min or max columns.
In particular, Tables 145-7, 145-8, 145-9, 145-10, 145-14, 145-16, 145-20, 145-27, 145-28, 145-30, 145-31, 145-32.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.6.3** *P* **143** *L* **34** # i-76

Yseboodt, Lennart Philips Lighting

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

In Table 145-8 is written; "In detection state or connection check state".
Detection and connection check happen in multiple states.

*SuggestedRemedy*

Change to:
"In detection states or connection check states" (two occurrences in Table 145-8)

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.6.7** *P* **145** *L* **20** # i-77

Yseboodt, Lennart Philips Lighting

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

"PSEs shall determine whether an attached PD is a candidate to receive power on both pairsets prior to applying power to both pairsets."
PSEs apply a voltage and PDs can draw current.

*SuggestedRemedy*

Change to:
"PSEs shall determine whether an attached PD is a candidate to receive power on both pairsets prior to applying operating voltage to both pairsets."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7** *P* **145** *L* **43** # i-78

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

"PSEs or PDs that do not implement classification will not be able to complete mutual identification and can only perform as Type 1 devices."

Does not apply for Type 3 / Type 4. All of those support classification.

*SuggestedRemedy*

Remove quoted sentence.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7** *P* **146** *L* **41** # i-79

Yseboodt, Lennart Philips Lighting

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

Topic: SLIDING
"Measurements should be averaged using any sliding window with a width of 1 s."

This sentence follows after the definition of PClass and PClass-2P. That whole section is informative in nature.
- Why is this a should ?
- Measurements of what ? PClass is a capability.
- The actual power requirement of a PSE is encoded in ICon-2P.

*SuggestedRemedy*

Remove quoted sentence.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7** *P* **148** *L* **25** # i-80

Yseboodt, Lennart Philips Lighting

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

"PSEs that will deliver 4-pair power to a dual-signature PD shall perform Physical Layer classification on each pairset."
PSE do not deliver power they source power.

*SuggestedRemedy*

"PSEs that will source power over 4 pairs to a dual-signature PD shall perform Physical Layer classification on each pairset."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7** *P* **148** *L* **36** # i-81

Yseboodt, Lennart Philips Lighting

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

"When connected to a dual-signature PD, a PSE operating over 4 pairs shall treat the requested power over each pairset independently."

Redundant and untestable. The requirement on ICon-2P clearly states that power is independently handled for each pairset.
A PSE is also allowed to allocate the greater of the pairset power to each pairset.
Classification must be performed on both pairsets of a dual-signature PD per line 25.

*SuggestedRemedy*

Remove quoted text.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7.1** *P* **148** *L* **44** # i-82

Yseboodt, Lennart — Philips Lighting

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

"Voltages, VClass, VMark, and VReset are specified in Table 145-14. Currents IClass_LIM, and IMark_LIM are specified in Table 145-14."

Both sentences refer to the same Table, can be merged.
Two crimes against commas in those sentences.

*SuggestedRemedy*

Change to:
"Voltages VClass, VMark, and VReset and currents IClass_LIM and IMark_LIM are specified in Table 145-14."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7.1** *P* **148** *L* **44** # i-280

Stewart, Heath — Analog Devices Inc.

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

Misplaced comma.

*SuggestedRemedy*

Change:
Voltages, VClass, VMark, and VReset are specified in Table 145-14.
To
Voltages VClass, VMark, and VReset are specified in Table 145-14.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7.1** *P* **149** *L* **30** # i-83

Yseboodt, Lennart — Philips Lighting

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

"PSEs that issue more class events than the class they are capable of supporting, in order to determine the PD requested Class, transition to CLASS_RESET to reset the PD's class event count."

Second "class" is not written with capital C.

*SuggestedRemedy*

Change to:
"PSEs that issue more class events than the Class they are capable of supporting, in order to determine the PD requested Class, transition to CLASS_RESET to reset the PD's class event count."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7.1** *P* **149** *L* **36** # i-281

Stewart, Heath — Analog Devices Inc.

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

Typo.

*SuggestedRemedy*

Change T_CLE to T_LCE. _ indicates subscript.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7.1** *P* **149** *L* **40** # i-282

Stewart, Heath — Analog Devices Inc.

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

Text is redundant to state machine. Because the PSE is in the CLASS_EV1_AUTO state is has already met the "PSE in the state CLASS_EV1_LCE does not measure I_Class in the range of class signature 0 and the " clause.

*SuggestedRemedy*

Change
If the Autoclass enabled PSE in the state CLASS_EV1_LCE does not measure IClass in the range of class signature 0 and the PSE in the state CLASS_EV1_AUTO does measure IClass in the range of class signature 0 this indicates the PD will perform Autoclass; see 145.2.7.2 and 145.3.6.2.
to
If the Autoclass enabled PSE in the state CLASS_EV1_AUTO does measure IClass in the range of class signature 0 this indicates the PD will perform Autoclass; see 145.2.7.2 and 145.3.6.2.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7.1** *P* **151** *L* **11** # i-84

Yseboodt, Lennart — Philips Lighting

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

Table 145-14:

T_CLE2 has value 6ms to 30ms.
T_CLE3 has value 6ms to 20ms.

Post clause split, there is no longer a reason to keep T_CLE2.

*SuggestedRemedy*

- Remove T_CLE2 from Table 145-14
- Rename T_CLE3 to T_CLE
- Change any mention of T_CLE2 and T_CLE3 in the draft to T_CLE:
  * Remove tcle2 timers
  * Rename tcle3 timers to tcle timers
  * Update usage in the state diagram
  * Update text in draft (Change T_CLE2 or T_CLE3 to T_CLE)

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7.2** *P* **151** *L* **23** # i-85

Yseboodt, Lennart — Philips Lighting

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

"See Annex 145B for Autoclass timing diagrams."
Can be more specific pointing to figure where it is shown.

*SuggestedRemedy*

Change to:
"See Figure 145B-15 for Autoclass timing diagrams."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7.1** *P* **151** *L* **27** # i-86

Yseboodt, Lennart — Philips Lighting

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

"If the PSE returns to IDLE, it shall maintain the PI voltage in the range of V Reset for a period of at least T Reset min before starting a new detection cycle."

Is contradicted by the state diagram, which does not have this requirement, invalidating this 'shall'.

*SuggestedRemedy*

- Add to IDLE state (Figure 145-13): "start tclass_reset_timer"
- Prepend "tclass_reset_timer_done * " to the logic from IDLE to START_CXN_CHK, START_DETECT, and START_CXN_CHK_DETECT.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7.2** *P* **151** *L* **32** # i-87

Yseboodt, Lennart — Philips Lighting

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

Topic:SLIDING
Issue: we use the concept of 'sliding windows' in our draft very inconsistently, the SLIDING comments try to make the whole bunch consistent.
Aim: get everything in the form "measure xxx using a xx time sliding window".
"Average power is calculated using any sliding window with a width in the range of T AUTO_Window as defined in Table 145-15."

*SuggestedRemedy*

Replace quoted sentence by:
"Average power is measured using a sliding window with a width in the range of T AUTO_Window as defined in Table 145-15."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7.2** *P* **151** *L* **44** # i-283

Stewart, Heath — Analog Devices Inc.

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

The preceding paragraph and the note do not match. The preceding paragraph hooks the start of the T_AUTO_PSEx timers to a specific arc entering the POWER_ON state. The table row incorrectly hooks the timer start to _any_ entry into the POWER_ON state.

*SuggestedRemedy*

Change
Measured from the transition to state POWER_ON
to
Measured from the transition of the POWER_UP state to the POWER_ON state.
Also change line 44 same page

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.7.2** *P* **151** *L* **46** # i-88

Yseboodt, Lennart — Philips Lighting

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

Table 145-15 Autoclass timing requirements, item 3 is called "Autoclass average power sliding window" but really describes the width of the window.

*SuggestedRemedy*

Replace 'Parameter' by "Autoclass average power sliding window width".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **152** *L* **29** # i-89

Yseboodt, Lennart — Philips Lighting

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

Table 145-16, Item 1, Parameter = "Output voltage per pairset in the POWER_ON state".

*SuggestedRemedy*

Replace by: "Output voltage per pairset in POWER_ON"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **152** *L* **30** # i-289

Stover, David — Analog Devices Inc.

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

Vport_PSE_diff and Vport_PSE-2P both apply to either pairset of the PSE when that pairset is in a power on state (POWER_ON, POWER_ON_PRI, POWER_ON_SEC). These items are are not labeled consistently in the table.

*SuggestedRemedy*

Change "Output voltage pair-to-pair difference" to "Output voltage pair-to-pair difference with both pairsets in a power on state"; Change "Output voltage per pairset in the POWER_ON state" to "Output voltage per pairset in a power on state".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **152** *L* **38** # i-90

Yseboodt, Lennart — Philips Lighting

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

Table 145-16, item 10: T_CUT-2P.
For parameters that deal with time and are not exclusive to dual-signature, the "-2P" suffix doesn't make too much sense.

*SuggestedRemedy*

Rename T_CUT-2P to T_CUT throughout Clause 145.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **152** *L* **46** # i-419

Darshan, Yair

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

Icon-2P_unb in Table 145-16 item 5 needs some updates to sync with latest changes and to fit the test verification models accuracy.

*SuggestedRemedy*

Adopt the changes proposed in darshan_03_0917.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **152** *L* **46** # i-463

Darshan, Yair

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

The following question has been asked regarding diode aging and its affect on PD_Vdiff that affect unbalance.
Background:
Our spec defines unbalance requirements for the PSE in terms of VPort_PSE-2P, Icon-2P_unb and for the PD in terms of Icon-2P_unb and inexplicit design requirement to keep PD_Vdiff=60mV max measured at 1-10mA range. The PD_Vdiff has the highest effect on the system current/resistance unbalance.
The following use case has been investigated:
A PD is connected to a PSE over 4-pairs. The PSE is using Alt A (MDI) and Alt B (X) resulting with 1,2 and 7,8 are positive and 3,6 and 4,5 are negative. It runs this way for MANY years. The PD front end is not an active bridge, it is a diode bridge. The PSE has been replaced and it uses Alt A (MDI) and Alt B (S). Now, 1,2 and 4,5 are positive and 3,6 and 7,8 are negative. Now we have diodes that have been aged (1,2 and 3,6) in parallel with diodes that have never have current through them (the ones in 4,5 and 7,8). This is not simply switching from the old diodes to the new ones, its mixing old with new. The questions are:
1. If the aging has an effect on Vf, then we may have higher mismatch between the diodes in parallel leading to higher unbalance.
2. In an extreme case, we may have a runaway situation as the aged diode drops more power and heats more than the 'new' diode.
Answers:
1. All diodes in the diode bridge has to have 60mV maximum Vdiff between any permutations of each two diodes.
2. Silicon doesn't have a memory. The performance characteristics change may changed after diode end of life time period due to mechanical construction and other issues that are function of current conduction.
3. Diodes that are at their end of life will introduce higher leakage current, higher VF, and other parameters will exceed the spec.
4. As long as the diode is kept with their allowed operating conditions, VF will not change significantly during the diode defined life time with or without current conduction.
5. Life time of a diode of reliable vendor can be 20 years. The lowest life time value of reliable vendors is 10 years. The typical is somewhere between these ranges.
6. As a result of the above, any component in the PD or PSE need to be selected with life time which exceed the product life time like any other designs.
7. If vendor follow the above rules, the effect of aging should not be a problem for VF (or other parameter).

*SuggestedRemedy*

See darshan_12_0917.pdf for details

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **152** *L* **49** # i-420

Darshan, Yair

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

There is an error in Icon-2P_unb value in Table 145-16 item 5, class 7. The value need to be 0.786A + 0.005A margin =0.791A instead of 0.781A. See presentation from May 2017 meeting, darshan_07_0517.pdf page 1 where the simulations of class 7 results where correct but the conclusion derived from it (not to update the spec) was is wrong.

*SuggestedRemedy*

Change Icon-2P_unb for class 7 from 0.781A to 0.791A.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **153** *L* **2** # i-91

Yseboodt, Lennart Philips Lighting

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

original text: "See 145.2.8.6 and maximum value definition in Figure 145-23."
Both Figure 145-23 and Equation 145-18 describe the same thing. Only one of them should be leading, in another comment we picked the Equation to be in the lead.

*SuggestedRemedy*

Change to: "See 145.2.8.6 and maximum value definition in in Equation (145-18)."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **153** *L* **16** # i-291

Stover, David Analog Devices Inc.

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

The PSE inrush requirements "I_Inrush" and "I_Inrush-2P" always apply. However, dual-signature PDs may be powered over one or both pairs. For this reason, specifying total output current (I_Inrush) for dual-signature PDs is problematic. For example: When a single pairset of a Type 4/Class 5 dual-signature PD is inrushed, the PSE shall provide an I_Inrush of at least 0.65A and shall not provide an I_Inrush-2P of more than 0.6A.
For dual-signature PDs, output current during inrush should only be specified per-pairset.

*SuggestedRemedy*

Remove I_Inrush entries for dual-signature PDs.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **153** *L* **16** # i-92

Yseboodt, Lennart Philips Lighting

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

Table 145-16, Iinrush (item 6) lists minimum values for dual-signature PDs. Dual-signature PDs may be started up in a staggered fashion, making this parameter meaningless. In general, dual-sig PDs are specified exclusively on a per pairset basis only, this needs to be the same here.

*SuggestedRemedy*

- Remove the two rows for dual-signature PDs in Item 6 of Table 145-16
- Remove the two rows for dual-signature PDs in Item 4 of Table 145-28

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **153** *L* **16** # i-290

Stover, David Analog Devices Inc.

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

Item 6 specifies "Total output current...in the POWER_UP state per the assigned Class", but includes rows for "Type 3" and "Type 4" dual-signature PDs.

*SuggestedRemedy*

Change from "Type 3 dual-signature PD" to "Dual-signature PD, Class 1 to 4"; Change from "Type 4 dual-signature PD" to "Dual-signature PD, Class 5".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **153** *L* **25** # i-284

Stewart, Heath Analog Devices Inc.

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

Item 12 is associated with Type not assigned Class

*SuggestedRemedy*

Delete ", per the assigned Class"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **153** *L* **33** # i-205

Peker, Arkadiy — Microsemi Corporation

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

"Table 145-16, item 8, Tinrush: It is clear from the state machine that Tpon includes Tinrush. It means that effective Tpon is (400-50) msec=350ms or (400-75) ms=325mse which needs to cover long 1st class events, + 4 class events + design margin. group to discuss if it sufficient for their designs and applications in both single and dual-signatures. To consider if Tpon need to be increased by approximately 50mse to compensate for the increase in the 1st long class events to keep our margins as in 802.3af/at. It doesn't affect reliability etc. since we had so far 200msec margin from the 600msec value from the 802.3af experiments and the actual spec numbers."

*SuggestedRemedy*

Increase Tpon from 400msec to 450msec or to what ever the group decides.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **153** *L* **33** # i-93

Yseboodt, Lennart — Philips Lighting

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

Table 145-16, item 8: T_Inrush-2P.
For parameters that deal with time and are not exclusive to dual-signature, the "-2P" suffix doesn't make too much sense.
On the PD side we call it T_Inrush_PD.

*SuggestedRemedy*

Rename T_Inrush-2P to T_Inrush in Clause 145.

*Proposed Response* *Response Status* **O**

*Cl* **45** *SC* **45.2.8** *P* **153** *L* **33** # i-435

Darshan, Yair

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

Table 145-16, item 8, Tinrush: It is clear from the state machine that Tpon includes Tinrush. It means that effective Tpon is (400-50) msec=350ms or (400-75) ms=325mse which needs to cover long 1st class events, + 4 class events + design margin. group to discuss if it sufficient for their designs and applications in both single and dual-signatures. To consider if Tpon need to be increased by ~50mse to compensate for the increase in the 1st long class events to keep our margins as in 802.3af/at. It doesn't affect reliability etc. since we had so far 200msec margin from the 600msec value from the 802.3af experiments and the actual spec numbers.

*SuggestedRemedy*

Increase Tpon from 400msec to 450msec or to what ever the group decide.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **154** *L* **16** # i-421

Darshan, Yair

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

Resolve first comment marked CLASS8_PPD. Table 145-16 item 11, ILIM-2P. ILIM_2P is derived from Ipeak-2P_unb. The value of 0.99 was simulated when PClass_PD was 71W and as a result, Ppeak_PD was 1.05*71W. Now it is 71.3W and Ppeak_PD was already updated in all Tables and equation but not in related parameters in Table 145-16.
If Ppeak_PD for class 8 is 74.8W then ILIM-2P need to be 0.995A.
If Ppeak_PD for class 8 is 74.9W then ILIM-2P need to be 0.996A.

*SuggestedRemedy*

After resolving the comment marked CLASS8_PPD. Adopt the following options accordingly:
Option 1:
If Ppeak_PD for class 8 is 74.8W then ILIM-2P need to be 0.995A.
Option 2:
If Ppeak_PD for class 8 is 74.9W then ILIM-2P need to be 0.996A.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.1** *P* **154** *L* **19** # i-285

Stewart, Heath — Analog Devices Inc.

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

Data Link Layer Classification is deemed optional in Table 145-18. However, because a PSE is _allowed_ to select any one of 4 4PID inspection techniques (see 145.2.6.7), it logically follows that the PD _must_ exhibit all 4 of the 4PID characteristics.
Notably, the 1st characteristic (single-signature) is enough to prove a PD is 4PID compatible, thus a single-signature PD need not comply with the remaining 3 attributes. However, a dual-signature PD has little choice but to comply with all 3 attributes (2-4). Because the PD does not know which of the aforementioned tests will be performed it must have all 2-4 attributes in order to receive 4P power.

*SuggestedRemedy*

Change
Table 145-18, Type 3, Dual, 1 to 3 row :: Data Link Layer Classification column :: from "Optional" to "Mandatory"
Delete Table 145-18, Note 2
Page 184, Line 3 Change
Single-signature PDs that request Class 4 or higher and dual-signature PDs that request Class 4 or higher on at least one of its Modes shall provide DLL classification.
to
Single-signature PDs that request Class 4 or higher and dual-signature PDs shall provide DLL classification.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **154** *L* **23** # i-292

Stover, David — Analog Devices Inc.

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

Tlim-2p is solely a function of PSE Type, regardless of PD assigned Class.

*SuggestedRemedy*

Change "Short circuit time limit per pairset, per the assigned Class" to "Short circuit time limit per pairset".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **154** *L* **23** # i-94

Yseboodt, Lennart — Philips Lighting

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

Table 145-16, parameter 12: T_LIM-2P.
For parameters that deal with time and are not exclusive to dual-signature, the "-2P" suffix doesn't make too much sense.

*SuggestedRemedy*

Rename T_LIM-2P to T_LIM throughout Clause 145.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8** *P* **154** *L* **27** # i-95

Yseboodt, Lennart — Philips Lighting

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

While this is not entirely unambiguous, the spec today requires a PSE to support at least Class 3, due to the PType(min) parameter having a value of 15.4W. The historic reason for this is that classification was optional and not well understood. By requiring at least support for Class 3, the situation was avoided that a PD was plugged in a nothing ever happened (eg. because it is a Class 1 only PSE).

The situation has now changed:
- Classification is mandatory
- The concept of Classes is much more prevalent in the standard
- The Ethernet Alliance logo program uses Class in the logo to make it clear what kind of PSE is needed to power a particular PD

There are valid use-cases for Class 1 and Class 2 only PSE ports, for which it is currently unclear if these are compliant or not.
Per the same logic, Type 4 PSEs should then be allowed to support only Class 7.

*SuggestedRemedy*

Change Table 145-16, Item 13:
- minimum value of Type 3 from 15.4 to 4
- minimum value of Type 4 from 90 to 75

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.1** *P* **155** *L* **32** # i-293

Stover, David Analog Devices Inc.

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

We have multiple "power on" and "power up" states for the PSE. The requirements in 145.2.8.1 apply to any pairset in one of these states.

*SuggestedRemedy*

In 145.2.8.1, change "the POWER_ON state" to "a power on state"; change "the POWER_UP state" to "a power up state".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.1** *P* **155** *L* **37** # i-294

Stover, David Analog Devices Inc.

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

"The voltage transients as a result of load changes up to 35mA/us shall be limited to 3.5V/us". This PSE requirement seems to be the dual of the PD transient behavior requirement (145.2.8.1). In another comment, I show that slew rate (TR3, Source dv/dt) should be 3500 V/s. This PSE requirement should likely reflect that change.

*SuggestedRemedy*

Replace "3.5 V/us" with "3500 V/s".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.1** *P* **155** *L* **38** # i-96

Yseboodt, Lennart Philips Lighting

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

"A PSE in the POWER_ON state may remove power from a pairset when the pairset voltage no longer meets the VPort_PSE-2P specification."

When a state name is mentioned do not use the word "state". Also we need to mention the dual-sig states.

*SuggestedRemedy*

Change to:
"A PSE in POWER_ON, POWER_ON_PRI, or POWER_ON_SEC may remove power from a pairset when the pairset voltage no longer meets the VPort_PSE-2P specification."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.1** *P* **155** *L* **39** # i-295

Stover, David Analog Devices Inc.

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

"A PSE in the POWER_ON state may remove power from a pairset..." there are multiple POWER_ON states; requirement applies to all.

*SuggestedRemedy*

Change "the POWER_ON state" to "a power on state".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.1** *P* **155** *L* **41** # i-97

Yseboodt, Lennart Philips Lighting

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

"A PSE that has assigned Class 1 to 4 to a single-signature PD and is in the POWER_ON state may transition between 2-pair and 4-pair power at any time, including after the expiration of Tpon. A PSE that has assigned Class 5 to 8 to a single-signature PD shall apply power to both pairsets while in the POWER_ON state."

When a state name is mentioned do not use the word "state".

*SuggestedRemedy*

Change to:
"A PSE that has assigned Class 1 to 4 to a single-signature PD and is in POWER_ON may transition between 2-pair and 4-pair power at any time, including after the expiration of Tpon. A PSE that has assigned Class 5 to 8 to a single-signature PD shall apply power to both pairsets while in POWER_ON."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.1** *P* **155** *L* **46** # i-98

Yseboodt, Lennart — Philips Lighting

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

"TRise, as defined in Table 145-16, is referenced from 10% to 90% of the voltage difference between the positive and the negative conductors of a pairset in the POWER_ON state from the beginning of POWER_UP."

When a state name is mentioned do not use the word "state".

*SuggestedRemedy*

Change to:
"TRise, as defined in Table 145-16, is referenced from 10% to 90% of the voltage difference between the positive and the negative conductors of a pairset in POWER_ON from the beginning of POWER_UP."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.1** *P* **155** *L* **47** # i-296

Stover, David — Analog Devices Inc.

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

"TRise...is referenced from...the voltage difference between...conductors of a pairset in the POWER_ON state from the beginning of POWER_UP" applies to all power on and power up states.

*SuggestedRemedy*

Change "the POWER_ON state" to "a power on state"; change "the POWER_UP state" to "a power up state".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.3** *P* **156** *L* **3** # i-99

Yseboodt, Lennart — Philips Lighting

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

KTran_lo, the minimum peak PSE voltages for Type 3, Class 6 and Type 4, Class 8 are 46.2 V and 48.05 V respectively.
If these values are used to calculate VTran_lo-2p in the PD under worst case circumstances, the calculated PD voltages are 37.2V and 34.5V.
This mismatches with the VTran_lo-2P specification in Table 145-28 which is 36V.

Proposed is to change the KTran_lo spec to something that results in 36V on the PD side. Otherwise we might get into Von/Voff PD issues.

Quoted text should follow this proposal.
"A PSE shall maintain an output voltage no less than KTran_lo below VPort_PSE-2P min for transient conditions
lasting more than 30 us and less than 250 us, and meet the requirements of 145.2.8.8. Transients less than 30 us in duration may cause the voltage at the PI to fall more than KTran_lo."

*SuggestedRemedy*

We can rename KTran_lo to VTran-2P, it is obvious it is the low transient voltage, because a minimum is specified.

Change item 3 in Table 145-16 from KTran_lo to VTran-2P.
VTran-2P for Type3 is 45.3V (MIN)
VTran-2P for Type4 is 49V (MIN)
Change 'parameter' to read: "Output voltage during transient".

Change text in 145.2.8.3 to:
"A PSE shall maintain an output voltage no less than VTran-2P for transient conditions lasting more than 30 us and less than 250 us, and meet the requirements of 145.2.8.8. Transients less than 30 us in duration may cause the voltage at the PI to fall below VTran-2P."

Change parameter name in Table 145-28, item 2 from VTran_lo-2P to VTran_PD-2P.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.3** *P* **156** *L* **8** # i-337

Lemahieu, Joris — ON Semiconductor

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

Input Voltage drop to 0V is excessive.

Drop to 0V during 30us spec seems to be written for (theoretical) diode bridge at PD input. Have diode reverse recovery and cable inductance effects (peak reverse recovery current) been taken into account here?

Active bridges seem very popular in 802.3bt PD solutions to reduce dissipation in the input rectifier stage.
An immediate short at the input would significantly discharge Cport as it takes time to turn off the mosfet.

*SuggestedRemedy*

Increase minimum voltage level during first 30us and make spec compliant with active bridges at the PD input.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.3** *P* **156** *L* **8** # i-248

Picard, Jean — Texas Instruments Inc

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

The following sentence does not make sense. In reality the PSE cannot really short the PI voltage, all it can do is temporarily turn off its port (it's only a low side switch after all, with a 0.1uF cap).

"The minimum PD input capacitance CPort min or CPort-2P min defined in Table 145-28, allows a PD to operate for input voltage transients which cause VPD to drop as low as 0 V, lasting less than 30 us as specified in 145.3.8.6."

*SuggestedRemedy*

Use similar wording to the "at" standard, removing "which cause VPD to drop as low as 0 V".
The wording becomes this:
"The minimum PD input capacitance CPort min or CPort-2P min defined in Table 145-28, allows a PD to operate for input voltage transients lasting less than 30 us as specified in 145.3.8.6"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.4** *P* **156** *L* **18** # i-100

Yseboodt, Lennart — Philips Lighting

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

TOPIC: and/or
The Chicago Manual of Style says the following about the use of 'and/or':
"Avoid this Janus-faced term. It can often be replaced by 'and' or 'or' with no loss in meaning.
Where it seems needed, try 'or ... or both'. But also think of other possibilities."

"V Noise , the specification for power feeding ripple and noise in Table 145-16, shall be met for common-mode and/or pair-to-pair noise values for power outputs from (I Hold max x V Port_PSE-2P min) to the maximum power per the PSE's assigned Class for PSEs at static operating V Port_PSE-2P."

The use of and/or in this sentence is particularly bad as it allow TWO interpretations of the shall.
ALSO - we are using a lot of words to redundantly indicate this shall applies at any power level.

*SuggestedRemedy*

"V Noise , the specification for power feeding ripple and noise in Table 145-16, shall be met for common-mode and pair-to-pair noise values at static PSE output voltage."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5** *P* **156** *L* **37** # i-373

Thompson, Geoffrey — Individual

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

It is a fine point but Iport is defined on the basis of the cabling, but a "port" is a feature of equipment, not cabling. Therefore the definition should be "Iport is the total current sourced by a PSE or sunk by a PD."

*SuggestedRemedy*

Change text per comment.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5** *P* **156** *L* **51** # i-204

Peker, Arkadiy — Microsemi Corporation

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

"Equation 145-8 contains the parts that allow us to calculate the value of Icon-2P in case of operating over 2-pairs and for the dual-signature case.
However, for the most important use case which is operating over 4-pairs.
Equation 145-8 contains the part ""Icon-2P=min(Icon - IPort-2P-other, ICon-2P-unb) when operating over 4-pairs.
-Icon is defined in Equation 145-9.
-Icon-2P_unb is defined in Table 145-16 item 5.
There is no information to find the value of Icon-2P_other in order to calculate the value of Icon-2P. As a result, the spec is broken."

*SuggestedRemedy*

Adopt darshan_09_0917.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5** *P* **156** *L* **51** # i-423

Darshan, Yair

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

Equation 145-8 contains the parts that allow us to calculate the value of Icon-2P in case of operating over 2-pairs and for the dual-signature case.
However, for the most important use case which is operating over 4-pairs.
Equation 145-8 contains the part "Icon-2P=min(Icon - IPort-2P-other, ICon-2P-unb) when operating over 4-pairs.
-Icon is defined in Equation 145-9.
-Icon-2P_unb is defined in Table 145-16 item 5.
There is no information to find the value of Icon-2P_other in order to calculate the value of Icon-2P. As a result, the spec is broken.

*SuggestedRemedy*

Adopt darshan_09_0917.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5** *P* **157** *L* **13** # i-101

Yseboodt, Lennart — Philips Lighting

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

"A minimum current of I Con-2P-unb over one of the pairs of the same polarity under maximum unbalance condition (see 145.2.8.5.1) in the POWER_ON state."

The unbalance specification is tied together by ICon-2P-unb which serves 3 distinct roles:
- It is the minimum current a PSE must be able to supply on a pairset
- It is the maximum current a PSE may source when connected to a worst-case unbalance cable + PD
- It is the maximum current a PD may draw when connected to a worst-case unbalance cable + PSE

That makes it that there is ZERO margin between PSE minimum and PD maximum.

*SuggestedRemedy*

Adopt yseboodt_03_0917_unbalancemargin.pdf which aims to create margin by introducing a new parameter that takes the role of specifying the minimum current a PSE must support on a pairset.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5** *P* **157** *L* **14** # i-103

Yseboodt, Lennart — Philips Lighting

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

Do not use combination of word state with statename
"A minimum current of ICon-2P-unb over one of the pairs of the same polarity under maximum unbalance condition (see 145.2.8.5.1) in the POWER_ON state."

*SuggestedRemedy*

Change to:
"A minimum current of ICon-2P-unb over one of the pairs of the same polarity under maximum unbalance condition (see 145.2.8.5.1) in POWER_ON."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5** *P* **157** *L* **14** # i-102

Yseboodt, Lennart — Philips Lighting

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

"A minimum current of ICon-2P-unb over one of the pairs of the same polarity under maximum unbalance condition (see 145.2.8.5.1) in the POWER_ON state."
When a state name is mentioned do not use the word "state".

*SuggestedRemedy*

"A minimum current of ICon-2P-unb over one of the pairs of the same polarity under maximum unbalance condition (see 145.2.8.5.1) in POWER_ON."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5** *P* **157** *L* **29** # i-297

Stover, David — Analog Devices Inc.

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

For Equation (145-10), "when in 2-pair mode" is not aligned with the rest of the entries.

*SuggestedRemedy*

Make alignment consistent.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5** *P* **157** *L* **39** # i-298

Stover, David — Analog Devices Inc.

*Comment Type* **ER** *Comment Status* **X**

Reference to incorrect equation

*SuggestedRemedy*

Replace "See (145-14)" with "See (145-11)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5** *P* **158** *L* **10** # i-104

Yseboodt, Lennart — Philips Lighting

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

"I Peak-2P-unb , defined in Equation (145-12), is the minimum current due to unbalance effects that a PSE supports on a pairset when powering a single-signature PD over 4 pairs."

What follows is a set of equations that define the value of IPeak-2P-unb as function of IPeak (which in turns depends on VPSE and RChan) and RChan-2P.

See: http://www.ieee802.org/3/bt/public/mar17/yseboodt_02_0317_ipeak2punb.pdf
The value of IPeak-2P-unb is often lower than that of ICon-2P-unb. The PSE needs to support ICon-2P-unb, so this has the effect of 'clipping' IPeak-2P-unb to be at least ICon-2P-unb.

The real issue arises in the PD section, where we require a PD never to draw more than IPeak-2P-unb on any given pair.
If that is a requirement (and it should be), then we can't have IPeak-2P-unb depend on VPSE and RChan, both parameters the PD knows nothing about.

Given that there is almost no gain for PSEs to be had from being able to tune IPeak-2P-unb, the most effective solution is to make IPeak-2P-unb a fixed number.

*SuggestedRemedy*

- Replace page 158, lines 12 through 44 by:

IPeak-2P-unb = {ILIM-2P - 0.002

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **158** *L* **45** # i-424

Darshan, Yair

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

Icon-2P_unb values need to be verified when using Equation 145-15 (Rpse_min/max) and Equation 145-26 (Rpd_min/max) with the test verification models described in Table 145-17 and Rsource_min/max requirements with their defined accuracies (+1/-%).

*SuggestedRemedy*

Adopt darshan_03_0917.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **158** *L* **45** # i-105

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

Subclause 145.2.8.5.1 title is "PSE PI pair-to-pair effective resistance and current unbalance".
The main topic here is a current unbalance requirement.
Make title consistent with PD title 148.3.8.0

*SuggestedRemedy*

Change to:
"PSE pair-to-pair current unbalance".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **158** *L* **46** # i-425

Darshan, Yair

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

The changes we did when we move from "channel" to "Link section" breaks some of the work we did for pair to pair resistance unbalance. To fix it, we need to add a text that defines the equipment connector as part of the PSE PI and PD PI when tested for pair-to-pair resistance unbalance for compliance. In this way we don't break the link section definition due to the fact that the PSE load when PSE is tested for compliance and PD voltage source output resistance, Rsource, when PD is tested for compliance include the effect of the equivalent portion of the link section.

*SuggestedRemedy*

Adopt darshan_01_0917.pdf for detailed analysis and proposed baseline.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **158** *L* **47** # i-392

Thompson, Geoffrey Individual

*Comment Type* **ER** *Comment Status* **X**

This seems like an attempt to control the system imbalance (which is controlled by the combined specifications of the three elements, one of which is externally specified) from within the PSE spec.

*SuggestedRemedy*

This is all valuable tutorial material that would be valuable for further work on the topic so it should be moved (with suitable editing) to an informative annex.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **159** *L* **4** # i-106

Yseboodt, Lennart Philips Lighting

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

"ICon-2P-unb is the current in the pairset with the highest current in case of maximum unbalance and will be higher than ICon / 2."
Sentence can be simplified.

*SuggestedRemedy*

Change to:
"ICon-2P-unb is the highest pairset current in case of maximum unbalance and will be higher than ICon / 2."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **159** *L* **27** # i-426

Darshan, Yair

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

This comment is not about active current balancing. This comment is about the typical use of PSE resistive elements to form Rpse_min and Rpse_max that meet equation 145-15 and when PSE connected to the PSE load specified in Table 145-17, will meet the values Icon-2P_unb in Table 145-16.
In D3.0, the maximum value of Rpse_min is not limited. Rpse_max is function of Rpse_min. If Rpse_min maximum value is not limited, it will cause the following issues:
(a) The internal PSE power supply open load voltage to significantly increase in order to keep the PSE voltage at the PI 50V min or 52V min pending the PSE Type under load. This will result with working outside the PSE operating voltage range.
(b) power loss at extreme values of Rpse_min which doesn't make sense.
(c) Per Equation 145-15, if Rpse_min is increased, Rpse_max is increased and at higher values of Rpse_min (starting at 0.5 ohms at Class 7-8 and 1 ohm at class 5-6), the contribution of Rpse to unbalance compared to the channel and PD, resulting with the increase of system unbalance at long cable which violates Icon-2P_unb when tested with test verification model in Table 145-17.
(d) there is no practical benefit to increase Rpse_min to any value.
(e) The above is not relevant to active current balancing.
See calculation results in darshan_02_0917.pdf.

*SuggestedRemedy*

(See calculation results in darshan_02_0917.pdf.)
Change from: "RPSE_min is the lower PSE common mode effective resistance in the powered pairs of the
same polarity."
To: "RPSE_min is the lower PSE common mode effective resistance in the powered pairs of the same polarity. The value of Rpse_min shall be limited to:
a) 1 ohms for class 5 and 6
b) 0.5 ohm for class 7 and 8.
The value of Rpse_min is not limited when active current balancing is used.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **159** *L* **34** # i-427

Darshan, Yair

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

In the text below:
"A PSE shall not source more than ICon-2P-unb min on any pair when connected to a **load** as shown in Figure 145-22, using values of Rload_min and Rload_max as specified in Equation (145-16) and Equation (145-17).", Need to be "PSE load" as in Figure 145-22.

*SuggestedRemedy*

Change text to "A PSE shall not source more than ICon-2P-unb min on any pair when connected to the PSE load as shown in Figure 145-22, using values of Rload_min and Rload_max as specified in Equation (145-16) and Equation (145-17)."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **159** *L* **34** # i-107

Yseboodt, Lennart Philips Lighting

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

"A PSE shall not source more than I Con-2P-unb min on any pair when connected to a load as shown in Figure 145-22, using values of R load_min and R load_max as defined in Equation (145-16) and Equation (145-17)."

- ICon-2P-unb is a minimum, no need to specify I Con-2P-unb min
- We should make it obvious that this shall applies when connected to a given test fixture described in the next paragraphs.

*SuggestedRemedy*

Change quoted text to:
"A PSE shall not source more than I Con-2P-unb on any pair when connected to a test fixture described in Figure 145-22, using values of R load_min and R load_max as defined in Equation (145-16) and Equation (145-17)."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **159** *L* **48** # i-299

Stover, David — Analog Devices Inc.

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

"The sum of RCh_unb_min from the positive pairs and RCh_unb_max from the negative pairs is RChan-2P as described in Figure 145-22 and as defined by the link section pair-to-pair resistance unbalance requirement for 4-pair operation in 145A.3." RChan-2P is not used in either of the cited reference. This paragraph adds no clarity or value.

*SuggestedRemedy*

Remove quoted paragraph.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **160** *L* **1** # i-108

Yseboodt, Lennart — Philips Lighting

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

Table 145-17 contains the values needed to determine Rload, which is the load with which PSE unbalance is checked.
Calculations show that when plugging in these numbers, some of the Classes fail to meet ICon-2P-unb.
Eg, with an RPSE_min=0.3 ICon-2P-unb for Class 7 (low channel conditions) is not met:

Class 7, low channel conditions, iport=1.195 i=0.784/0.412/0.784/0.412, VSupply=52.370 VPSEPI=52.003
RPSE_min = 0.250 and RPSE_max = 0.446
PPD = 62.0, VLoad = 51.08, Vpd[1-4] = 52.11 52.14 0.26 0.23 = 51.92
FAILS to meet ICon-2P-unb of 0.781

Other values of RPSE cause more errors, but all in Class 7.

*SuggestedRemedy*

Either we need to update ICon-2P-unb, or we need to update the values in Table 145-17. Input Yair is needed.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **160** *L* **39** # i-422

Darshan, Yair

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

This comment is marked as LOWER02.
In the following text:
"ICon-2P-unb and Equation (145-15) are specified for total channel common mode pair resistance RChan-2P from 0.2 ? to 12.5 ? and worst-case unbalance contribution by a PD. PSEs that support channel common mode resistance less than 0.2 ?, or if RChan is less than 0.1 ?, the PSE should meet ICon-2P-unb requirements when connected to (Rload_min - 0.5 * RChan-2P) and (Rload_max - 0.5 * RChan-2P). This can be achieved by using a lower RPSE_max or higher RPSE_min than required by Equation (145-15). Lower RPSE _max values may be obtained by using smaller constant ? or higher RPSE_min in Equation (145-15) in the form of RPSE_max = ? * RPSE_min + ?."

The following may be improved:
1. The "total" is not required.
2. To simplify and clarify the text that explains what to do when shorter cabling than 0.2 ohm is used
3. To simplify the use of " RPSE_max = ? * RPSE_min + ?"

*SuggestedRemedy*

Replaced the called out text with:
"The values for ICon-2P-unb and the relationship between RPSE_max and RPSE_min (Equation (145-15)) are valid given that RChan-2P (see 145.1.3) ranges from 0.2 ? to 12.5 ? and that the PD meets 145.3.8.10. In cases where RChan-2P is less than 0.2 ?, or RChan is less than 0.1 ?, PSE compliance with ICon-2P-unb can be evaluated using Rload_min and Rload_max both reduced by 0.5 * RChan-2P. This compliance will require a reduction in the ratio of RPSE_max to RPSE_min presented by Equation (145-15). "

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **160** *L* **39** # i-428

Darshan, Yair

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

This comment will be OBE by comment marked LOWER02 if LOWER02 will be accepted.
In the text "ICon-2P-unb and Equation (145-15) are specified for total channel common mode pair resistance RChan-2P" the word "total" is not required. Remove it.

*SuggestedRemedy*

Change from "ICon-2P-unb and Equation (145-15) are specified for total channel common mode pair resistance RChan-2P" the word "total" is not required."
To: "ICon-2P-unb and Equation (145-15) are specified for channel common mode pair resistance RChan-2P" the word "total" is not required."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **160** *L* **45** # i-109

Yseboodt, Lennart — Philips Lighting

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

"This can be achieved by using a lower R PSE_max or higher R PSE_min than required by Equation (145-15). Lower R PSE _max values may be obtained by using smaller constant a or higher R PSE_min in Equation (145-15) in the form of R PSE_max = a x R PSE_min + b."

Very long/complicated way to say that it can be achieved by decreasing the difference between Rpsemin and Rpsemax.

*SuggestedRemedy*

Change to:
"This can be achieved by decreasing the difference between R_PSE_min and R_PSE_max as defined in Equation 145-15."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **161** *L* **1** # i-110

Yseboodt, Lennart — Philips Lighting

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

Comparing Figure 145-22 with it's PD counterpart (Fig. 145-31), it contains a large amount of detail which is not relevant to the evaluation of Icon-2P-unb.

*SuggestedRemedy*

Adopt yseboodt_02_0917_Figure_145_22.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **161** *L* **2** # i-393

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

Figure 145-22. This figure is very valuable in understanding the overall problem of resistance imbalance in a PoE system, however it doesn't help with the problem of designing a PSE when one has no control of the link section or the PD.

*SuggestedRemedy*

Tutorial material that would be valuable for further work on the topic. It should be moved to an informative annex.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **161** *L* **6** # i-111

Yseboodt, Lennart — Philips Lighting

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

Figures 145-22, Figure 145-31, Figure 145A-2, and Figure 145A-3 all depict some view on unbalance. A different notation for the names of the current is used in each.

*SuggestedRemedy*

Change Figures 145-22, Figure 145-31, Figure 145A-2, and Figure 145A-3 such that:
- Currents are named "i1" through "i4".
- i1 and i2 flow to the PD (positive)
- i3 and i4 flow from the PD (negative)
- where applicable, i1 and i3 represent Alt A / Mode A
- where applicable, i2 and i4 represent Alt B / Mode B

Update text that refers to Figure labelled currents to match.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.2** *P* **161** *L* **18** # i-434

Darshan, Yair

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

In the bottom of Figure 145-22, there is an arrow with a text "End-to-end pair-to-pair resistance".
This text need to be accurate and reflect the following:
a) It is End-to-end pair to pair effective resistance and not just resistance.
b) It is the boundaries of where the system unbalance is defined. This helps to understand the boundaries of the PSE PI to the PSE power supply elements that affect the unbalance and the same for the PD and the link segment.
c) The term End to End effective resistance unbalance is describe in 145.2.8.5.1 e.g. P.158 L48 and many other places in the spec.

*SuggestedRemedy*

Change from "End-to-end pair-to-pair resistance"
To: "End-to-end pair-to-pair effective resistance unbalance boundaries"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **161** *L* **20** # i-429

Darshan, Yair

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

The title of figure 145-22 is good but not sufficiently accurate. It is system effective resistance unbalance and not just system resistance unbalance. This is in sync with the title of the clause "145.2.8.5.1 PSE PI pair-to-pair effective resistance and current unbalance" and the text all over clause 145.2.8.5.1 and 145.3.8.10 (44 occurrences).

*SuggestedRemedy*

Change from Figure 145-22--PSE PI unbalance specification and system resistance unbalance"
To: "Figure 145-22--PSE PI unbalance specification and system effective resistance unbalance"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **161** *L* **24** # i-430

Darshan, Yair

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

In the text "a) Use Rload_min and Rload_max from Table 145-17 for low channel resistance conditions.", it is the Rload_min/max components.

*SuggestedRemedy*

Change to "a) Use Rload_min and Rload_max components from Table 145-17 for low channel resistance conditions."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.2** *P* **161** *L* **26** # i-431

Darshan, Yair

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

In the text "With the PSE powered on, adjust the load to PClass_PD.", missing "at the PD PI"

*SuggestedRemedy*

Change to: "With the PSE powered on, adjust the PSE load to PClass_PD at the PD PI."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **161** *L* **26** # i-112

Yseboodt, Lennart Philips Lighting

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

In the evaluation method for Figure 145-22, item b) says:
"With the PSE powered on, adjust the load to P Class_PD ."

Which is wrong since the PSE load also comprises of the R_Ch_unb resistors.

*SuggestedRemedy*

Replace by:
"Adjust to load such that a power of PClass-PD is consumed at the PD PI."

Note: text may need adjustment based on yseboodt_02_0917_Figure_145_22.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **161** *L* **28** # i-113

Yseboodt, Lennart Philips Lighting

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

In the evaluation method for Figure 145-22, step 'e' (check the current), comes after the Rload_min/max exchange.

*SuggestedRemedy*

Swap steps d) and e) and adjust labels accordingly.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.2** *P* **161** *L* **30** # i-432

Darshan, Yair

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

In the text "Repeat steps b) through e) for Rload_min and Rload_max from Equation (145-16) and Equation (145-17) for high channel resistance conditions.", it is the Rload_min/max components."

*SuggestedRemedy*

Change to: "Repeat steps b) through e) for Rload_min and Rload_max components from Equation (145-16) and Equation (145-17) for high channel resistance conditions."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.6** *P* **161** *L* **33** # i-300

Stover, David — Analog Devices Inc.

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

We have multiple "power on" and "power up" states for the PSE. The requirements in 145.2.8.6 apply to any pairset in one of these states.

*SuggestedRemedy*

Replace "POWER_UP" and "POWER_ON" with "a power up state" and "a power on state", respectively, in all locations within 145.2.8.6 except the caption for Figure 145-23. In Figure 145-23, replace "per pairset in POWER_UP state" with "per pairset in a power up state".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.1** *P* **161** *L* **40** # i-114

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

It is unclear from Table 145-17 and Figure 145-22, that they describe a test fixture to test PSE unbalance.

Another comment improves Figure 145-22, however the title of Table 145-17 should make very clear we're describing components of a test fixture, not PD specification.

*SuggestedRemedy*

Change title of 145-17 to read: "PSE unbalance test fixture resistances".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.6** *P* **161** *L* **42** # i-115

Yseboodt, Lennart — Philips Lighting

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

original text: "The maximum inrush current sourced by the PSE per pairset shall not exceed the per pairset inrush template in Figure 145-23 and Equation (145-18)."
Figure 145-23 and Equation (145-18) are referred in the shall. That gives uncertainty about which is leading. Remove one.

*SuggestedRemedy*

Change to: The maximum inrush current sourced by the PSE per pairset shall not exceed the per pairset inrush template in Equation (145-18).

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.6** *P* **161** *L* **45** # i-116

Yseboodt, Lennart — Philips Lighting

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

"The PSE shall limit I Inrush-2P and I Inrush during POWER_UP per the requirements of Table 145-16."

Nowhere in this subclause do we explain what these parameters are and how they relate to each other.

*SuggestedRemedy*

Insert the following text after the paragraph containing the quoted text:
"IInrush-2P is the current to which the PSE limits it's pairset output current while in POWER_UP. IInrush is the total current to which the PSE limits it's output current while in POWER_UP. When connected to a single-signature PD, IInrush is the total inrush current limit, and IInrush-2P serves as the limit for 2-pair inrush, or as the inrush unbalance limit during 4-pair inrush.
When connected to a dual-signature PD, only IInrush-2P is specified and serves as the inrush limit for each pairset independently."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.6** *P* **161** *L* **45** # i-117

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

"The PSE inrush maximum limit, I PSEIT-2P , is defined by the following segments:"

We should not refer to things by relative position in the draft. We also need some pointer that Figure 145-23 depicts the Equation.

*SuggestedRemedy*

Replace by:
"The PSE inrush maximum limit, I PSEIT-2P , is defined in Equation 145-18, and is shown in Figure 145-23."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.8** *P* **162** *L* # i-22

Waters, Keith — Schneider Electric

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

I have concerns that PSE section 145.2.8.8 does not show any testing or certification listing requirements. This is a potential product and fire safety issue and needs to be addressed.

*SuggestedRemedy*

Add: Testing and a third party certification listing shall be required to verify the PSE operates per the requirements in this section.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.7** *P* **162** *L* # i-21

Waters, Keith — Schneider Electric

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

I have concerns that PSE section 145.2.8.7 does not show any testing or certification listing requirements. This is a potential product and fire safety issue and needs to be addressed.

*SuggestedRemedy*

....at least 1 second width. Testing and a third party certification listing shall be required to confirm overload current protection will operate correctly.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.6** *P* **162** *L* **1** # i-302

Stover, David — Analog Devices Inc.

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

Figure 145-23 is inserted between an equation and the variable definitions for that equation.

*SuggestedRemedy*

Move Figure 145-23 below the variable definitions for Equation (145-18).

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.6** *P* **162** *L* **1** # i-301

Stover, David — Analog Devices Inc.

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

Figure 145-23 specifies the PSE inrush upperbound template; requirements for both Iport-2P and Iport as shown apply simultaneously. In Figure 145-23, Iport is limited to Iinrush,max while Iport-2P may load step up to 50A (>>Iinrush,max). As drawn, Iport-2p is limited to the lesser of these requirements: IInrush,max.

*SuggestedRemedy*

Remove IPort axis from Figure 145-23 or specify IPort behavior during load step.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.5.3** *P* **162** *L* **10** # i-433

Darshan, Yair

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

The shape of the load need to be circle and not rectangular since it is constant power sink. All our spec is based on the fact that the PD load is constant power sink

*SuggestedRemedy*

Adopt the changes proposed in darshan_10_0917.pdf marked in BLUE.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.6** *P* **162** *L* **28** # i-118

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

"The minimum value of I Inrush-2P includes the effect of end to end pair to pair resistance unbalance when operating over 4 pairs."

Seems like a leftover sentence from earlier inrush specification. There are only min values defined (for IInrush-2P) for dual-signature, where unbalance does not play a role.

*SuggestedRemedy*

Remove sentence.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.6** *P* **162** *L* **32** # i-119

Yseboodt, Lennart — Philips Lighting

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

"The minimum inrush requirement is a function of the pairset voltage and is as follows:
a) During POWER_UP, for pairset voltages between 0 V and 10 V, the minimum I Inrush-2P requirement is 5 mA.
b) During POWER_UP, for pairset voltages between 10 V and 30 V, the minimum I Inrush-2P requirement is 60 mA.
c) During POWER_UP for pairset voltages above 30 V, the minimum I Inrush-2P and I Inrush requirement are as defined in Table 145-16."

I guess what we want to say is that these minimum capabilities apply for each powered pairset in POWER_UP.

*SuggestedRemedy*

Replace quoted text by:

"The minimum Iinrush and IInrush-2P current capability as defined in Table 145-16 applies when VPSE exceeds 30V.
During POWER_UP, the minimum supported current on each powered pairset is:
- 5mA when 0V < VPSE <= 10V
- 60mA when 10V < VPSE <= 30V"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.7** *P* **162** *L* **43** # i-120

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

Topic:SLIDING
Issue: we use the concept of 'sliding windows' in our draft very inconsistently, the SLIDING comments try to make the whole bunch consistent.
Aim: get everything in the form "measure xxx using a xx time sliding window".

"The cumulative duration of T CUT-2P is measured with a sliding window of at least 1 second width."

This one is pretty OK, minor harmonization needed (measured with => measured using).

*SuggestedRemedy*

"The cumulative duration of T CUT-2P is measured using a sliding window of at least 1 second width."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.8** *P* **162** *L* **46** # i-303

Stover, David — Analog Devices Inc.

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

We have multiple "power on" states for the PSE. The requirements in 145.2.8.8 apply to any pairset in one of these states.

*SuggestedRemedy*

Replace "POWER_ON state," with "Power on states," in Figures 145-24, 145-25. On page 165, replace "A PSE in the POWER_ON state may remove power from a pairset..." with "A PSE with a pairset in a power on state may remove power from that pairset..."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.8** *P* **162** *L* **54** # i-304

Stover, David — Analog Devices Inc.

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

"Power shall be removed from a pairset of a PSE before the pairset current exceeds the "PSE upperbound template" in Figure 145-24, and Figure 145-25." Rogue comma. Also, the "and" can be read as the intersection (in this case, the max) of the PSE upperbound templates when either 145-24 OR 145-25 apply, depending on PSE Type.

*SuggestedRemedy*

Delete comma. Replace "and" with "or" in the referenced sentence.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.8** *P* **162** *L* **54** # i-121

Yseboodt, Lennart — Philips Lighting

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

"When connected to a single-signature PD, the PSE should remove power from both pairsets before the current exceeds the "PSE upperbound template" on either pairset."

Let's say we have a PD (Class 5-8) that is operating in 4-pair mode, something occurs on one pairset only and the PSE flips to 2-pair mode.
Per Equation 145-8, the PSE is now required to support the full assigned power over 2-pairs. Not something we really want.

We can fix this by re-assigning the PD to Class 4 in case of a flip to 2-pair. That way we don't violate ICable by delivering more power over 2-pair.

*SuggestedRemedy*

- Add the following statement to SEMI_PWRON_PRI and SEMI_PWRON_SEC: "pse_allocated_pwr = min(pse_allocated_pwr, 4)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.8** *P* **164** *L* **1** # i-305

Stover, David — Analog Devices Inc.

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

Missing a comma between "Equation (145-19) Equation (145-20)"

*SuggestedRemedy*

Insert missing comma.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.8** *P* **164** *L* **5** # i-122

Yseboodt, Lennart — Philips Lighting

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

"The PSE upperbound template, I PSEUT-2P , is defined by the following segments:"

Naming of these upperbound templates has changed.

*SuggestedRemedy*

Replace by:
"The PSE upperbound templates, I_PSEUT-Type3-2P and I_PSEUT-Type4-2P, are defined by the following segments:"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.8** *P* **164** *L* **8** # i-18

Anslow, Peter — Ciena Corporation

*Comment Type* **ER** *Comment Status* **X**

Comment #19 against D2.2 resulted in many trailing zeros being removed from the draft. However, some still remain.

*SuggestedRemedy*

Remove any remaining trailing zeros from the draft. In particular:
Equation 145-19 (5 instances)
Equation 145-20 (7 instances)

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.8** *P* **164** *L* **32** # i-123

Yseboodt, Lennart — Philips Lighting

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

Topic:SLIDING
Issue: we use the concept of 'sliding windows' in our draft very inconsistently, the SLIDING comments try to make the whole bunch consistent.
Aim: get everything in the form "measure xxx using a xx time sliding window".

"The PSE shall limit a pairset current to I LIM-2P for a duration of up to T LIM-2P in order to account for PSE dV/dt transients at the pairset.
The cumulative duration of T LIM-2P may be measured with a sliding window."

Oh joy, a sliding window without any limitation on the width.

*SuggestedRemedy*

Replace the last quoted sentence by:
"The cumulative duration of T LIM-2P may be measured using sliding window of at least 1 second width."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.8** *P* **164** *L* **34** # i-124

Yseboodt, Lennart — Philips Lighting

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

"The PSE lowerbound template, I PSELT-2P , is defined by the following segments:"

Naving of these lowerbound templates has changed.

*SuggestedRemedy*

Replace by:
"The PSE lowerbound templates, I_PSELT-Type3-2P and I_PSELT-Type4-2P, are defined by the following segments:"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.8** *P* **165** *L* **7** # i-125

Yseboodt, Lennart — Philips Lighting

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

"A PSE in the POWER_ON state may remove power from a pairset without regard to TLIM-2P when the pairset voltage no longer meets the VPort_PSE-2P specification."
State name does not need extra word "state"

*SuggestedRemedy*

"A PSE in POWER_ON may remove power from a pairset without regard to TLIM-2P when the
pairset voltage no longer meets the VPort_PSE-2P specification."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.9** *P* **165** *L* **12** # i-126

Yseboodt, Lennart — Philips Lighting

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

"The specification for TOff in Table 145-16 shall apply to the discharge time from VPort_PSE-2P to VOff of a pairset with a test resistor of 320 kohm attached to that pairset."
VPort_PSE-2P is a range. The actual starting value for Toff is given in the next sentence.

*SuggestedRemedy*

"The specification for TOff in Table 145-16 shall apply to the discharge time from operating voltage to VOff of a pairset with a test resistor of 320 kohm attached to that pairset."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.9** *P* **165** *L* **13** # i-127

Yseboodt, Lennart — Philips Lighting

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

"In addition, it is recommended that the pairset be discharged when turned off."

In other places we refer to this as "power not applied" or "power removed".

*SuggestedRemedy*

"In addition, it is recommended that the pairset be discharged when power is removed."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.10** *P* **165** *L* **19** # i-306

Stover, David — Analog Devices Inc.

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

"The specification for VOff in Table 145-16 shall apply to the PI voltage in the IDLE State".
First, State is not proper case. Next, this requirement should apply to the pairset voltage for the respective PSE Alternative when in the IDLE_PRI or IDLE_SEC states.

*SuggestedRemedy*

Replace "State" with "state". Add the following statement: "The specification for VOff in Table 145-16 shall apply to the pairset voltage for the Primary or Secondary Alternative when in the IDLE_PRI or IDLE_SEC state, respectively."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.10** *P* **165** *L* **19** # i-128

Yseboodt, Lennart — Philips Lighting

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

"The specification for V Off in Table 145-16 shall apply to the PI voltage in the IDLE State."

Slew of issues:
- 'IDLE' not 'IDLE State'.
- Doesn't take 4-pair / pairsets into account
- There are more states than IDLE where this applies

*SuggestedRemedy*

Replace by:
"The voltage at the PI shall be equal or less than V_Off, as defined in Table 145-16, when the PSE is in DISABLED, IDLE, TEST_ERROR_BOTH, ERROR_DELAY.
The voltage at the corresponding pairset shall be equal or less than V_Off, as defined in Table 145-16, when the PSE is in IDLE_PRI, WAIT_PRI, ERROR_DELAY_PRI, IDLE_SEC, WAIT_SEC, or ERROR_DELAY_SEC."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.12** *P* **165** *L* **33** # i-286

Stewart, Heath — Analog Devices Inc.

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

145.6.1 states "All equipment subject to this clause shall conform to IEC 60950-1 or IEC 62368-1. In particular, the PSE shall be classified as a Limited Power Source in accordance with IEC 60950-1 or IEC 62368-1 Annex Q."
However elsewhere in 145, limited power source requirements are redundantly stated. For many reasons it is normal to avoid redundantly specifying requirements called out in referenced standards.

*SuggestedRemedy*

Remove subclause 145.2.8.12
Page 163 Figure 145-25 remove lines related to I_LPS and P_Type,max/V_PSE.
Upperbound template will thus have a value of 1.3A from 4s to infinity.
Page 164 remove lines 21 and 29 (both reference I_LPS)
Page 244 Line 17 Remove PSE82.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.12** *P* **165** *L* **37** # i-129

Yseboodt, Lennart — Philips Lighting

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

Topic:SLIDING
Issue: we use the concept of 'sliding windows' in our draft very inconsistently, the SLIDING comments try to make the whole bunch consistent.
Aim: get everything in the form "measure xxx using a xx time sliding window".

"Type 4 PSEs shall not source more power than P Type max as defined in Table 145-16 calculated with any sliding window with a width up to 4 seconds."

*SuggestedRemedy*

"Type 4 PSEs shall not source more power than P Type max as defined in Table 145-16 measured using a sliding window with a width up to 4 seconds."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.13** *P* **166** *L* **6** # i-130

Yseboodt, Lennart — Philips Lighting

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

"PSEs, when connected to a single-signature PD, shall reach the POWER_ON state within Tpon after completing detection on the last pairset. When connected to a dual-signature PD, PSEs shall reach the POWER_ON state for a pairset within T pon after completing detection on the same pairset."
Statename should not be using word "state".

*SuggestedRemedy*

Change to:
"PSEs, when connected to a single-signature PD, shall reach POWER_ON within Tpon after
completing detection on the last pairset. When connected to a dual-signature PD, PSEs shall reach POWER_ON for a pairset within T pon after completing detection on the same pairset."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.8.13** *P* **166** *L* **7** # i-307

Stover, David Analog Devices Inc.

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

"When connected to a dual-signature PD, PSEs shall reach the POWER_ON state for a pairset". Only the state names POWER_ON_PRI and POWER_ON_SEC are defined for dual-signature PDs.

*SuggestedRemedy*

Replace "shall reach the POWER_ON state for a pairset" with "shall reach the respective power on state for a pairset".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.10** *P* **166** *L* **43** # i-308

Stover, David Analog Devices Inc.

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

"If any of these conditions exist for longer than its related time limit, the power is removed from the PI." Not a true statement (for example, DC MPS on a single pairset of a dual-signature PD). Also, this statement adds little value, as the power removal specifics are defined explicitly in the PSE inrush and PSE MPS sections already.

*SuggestedRemedy*

Remove the quoted statement.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.11** *P* **166** *L* **47** # i-309

Stover, David Analog Devices Inc.

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

"A PSE, depending on the connected Type of PD and whether it is connected to a single-signature PD or a dual-signature PD, shall use the applicable IHold, IHold-2P, TMPS and TMPDO values as defined in Table 145-16." PD DC MPS behavior is not a function of PD Type; it is a function of PD assigned Class. Also missing an oxford comma.

*SuggestedRemedy*

Replace statement with "A PSE, depending on the PD assigned Class and PD signature configuration, shall use the applicable IHold, IHold-2P, TMPS, and TMPDO values as defined in Table 145-16."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.2** *P* **168** *L* **31** # i-131

Yseboodt, Lennart Philips Lighting

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

This subclause deals with what kind of input power configurations a PD must be able to handle and operate under.
It does not properly cover all of the compliant configurations a PSE can have.

*SuggestedRemedy*

Adopt yseboodt_01_0917_pdinputpower.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **168** *L* **40** # i-417

Darshan, Yair

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

In the text "Single-signature PDs that request Class 4 or less shall be able to operate if power is applied to either PD Mode A, PD Mode B, or both Modes simultaneously. All other PDs may require being supplied over Mode A and Mode B simultaneously to operate at their nominal power level."
The use of "simultaneously" in this text is that we are working over 4-pairs. Some readers interpreted it as both pairs where powered on simultaneously i.e. at the same time i.e. staggered powering is not allowed which obviously was not the intent. To clarify it, it is suggested to remove " simultaneously" in the first occurrence and replace " simultaneously" with "both Mode A and Mode B" in the 2nd occurrence.

*SuggestedRemedy*

Change text to:" Single-signature PDs that request Class 4 or less shall be able to operate if power is applied to either PD Mode A, PD Mode B, or both Modes. All other PDs may require being supplied over both Mode A and Mode B to operate at their nominal power level."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.2.5.7** *P* **168** *L* **40** # i-202

Peker, Arkadiy — Microsemi Corporation

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

"In the text ""Single-signature PDs that request Class 4 or less shall be able to operate if power is applied to either PD Mode A, PD Mode B, or both Modes simultaneously. All other PDs may require being supplied over Mode A and Mode B simultaneously to operate at their nominal power level.""
The use of ""simultaneously"" in this text is that we are working over 4-pairs. Some readers interpreted it as both pairs where powered on simultaneously i.e. at the same time i.e. staggered powering is not allowed which obviously was not the intent. To clarify it, it is suggested to remove "" simultaneously"" in the first occurrence and replace "" simultaneously"" with ""both Mode A and Mode B"" in the 2nd occurrence."

*SuggestedRemedy*

"Change text to:"" Single-signature PDs that request Class 4 or less shall be able to operate if power is applied to either PD Mode A, PD Mode B, or both Modes. All other PDs may require being supplied over both Mode A and Mode B to operate at their nominal power level."""

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.2** *P* **168** *L* **43** # i-132

Yseboodt, Lennart — Philips Lighting

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

"NOTE--PDs that implement only Mode A or Mode B are specifically not allowed by this standard."

"implementing a pairset" is ambiguous.

*SuggestedRemedy*

"NOTE--PDs that support only Mode A or Mode B are specifically not allowed by this standard."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.2** *P* **168** *L* **43** # i-327

Abramson, David — Texas Instruments Inc

*Comment Type* **ER** *Comment Status* **X**

extra comma in text.

*SuggestedRemedy*

Remove comma in sentence "PDs that are sensitive to polarity, are specifically not allowed by this standard."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.3.4** *P* **170** *L* **10** # i-133

Yseboodt, Lennart — Philips Lighting

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

Credit to Ken Bennet for finding this issue.
See bennet_01_0917_vmarkth.pdf for full problem description.

Short summary: There is no mention in our spec that a PD should implement hysteresis for V_Mark_th.
Without hysteresis it is possible to get spurious class/mark transitions due to the voltage drop of around 0.5V caused by the class current.
It is compounded by the PD state diagram listing VMark_Th in the constants section, implying the value cannot change while the state diagram is running.

*SuggestedRemedy*

- Move VReset_PD, VReset_Th, VMark_th, VOff_PD, and VOn_PD from the Constants (145.3.3.3) section to the Variable (145.3.3.4) section.
- Add the following text after the third paragraph in 145.3.6.1.1:
"Appropriate hysteresis in the VMark_th threshold voltage is required to avoid erroneous transitions between mark and class states when the PSE switches from a class voltage to a mark voltage or vica versa."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.3.4** *P* **170** *L* **25** # i-134

Yseboodt, Lennart — Philips Lighting

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

Variable nopower is used in state diagram, but not listed in variable list.

*SuggestedRemedy*

Add variable nopower to variable list as follows:
"nopower: A variable that indicates the PD has been in NOPOWER, which indicates VPD was below VOff_PD while being powered, since the last time V_PD was below V_Reset for at least T_Reset.
Values:
FALSE: PD has not been in NOPOWER
TRUE: PD has been in NOPOWER"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.3.4** *P* **170** *L* **26** # i-325

Abramson, David — Texas Instruments Inc

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

There should be a definition of the variable "nopower" here. There is no definition even though the variable is used in multiple places inside the PD state diagrams.

*SuggestedRemedy*

Add "nopower" to the variable list with the definition of "A control variable that indicates the PD has entered NOPOWER. PD may show a
valid or invalid detection signature, and may or may not draw mark current, draw any class current, and show MPS."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.3.4** *P* **170** *L* **38** # i-135

Yseboodt, Lennart — Philips Lighting

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

Variable pd_autoclass_enabled is not consistent with e.g. pse_dll_enable.

*SuggestedRemedy*

Change variable pd_autoclass_enabled to pd_autoclass_enable throughout draft.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.3.4** *P* **170** *L* **48** # i-136

Yseboodt, Lennart — Philips Lighting

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

Variable pd_current_limit in the PD state diagram.
The description of TRUE/FALSE says "The PD is (not) required to control the input current."

What this is really about is _limiting_ the input current.

*SuggestedRemedy*

Replace 'control' in the text with the TRUE/FALSE values by 'limit'.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.3.4** *P* **172** *L* **5** # i-137

Yseboodt, Lennart — Philips Lighting

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

Variable present_det_sig:
"Controls presenting the detection signature (see 145.3.4) by the PD.
Values:
invalid: A non-valid PD detection signature is to be applied to the PI.
valid: A valid PD detection signature is to be applied to the PI over each pairset.
either: Either a valid or non-valid PD detection signature may be applied to the PI."

Why does valid say 'over each pairset', but invalid does not ?

*SuggestedRemedy*

Given that this is single-signature, all of these should apply on both pairsets.
Change to:
"Controls presenting the detection signature (see 145.3.4) by the PD over each pairset.
Values:
invalid: A non-valid PD detection signature is to be applied to the PI.
valid: A valid PD detection signature is to be applied to the PI.
either: Either a valid or non-valid PD detection signature may be applied to the PI."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.3.7** *P* **174** *L* **1** # i-310

Stover, David — Analog Devices Inc.

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

pd_acs_req flag handling in "main" PD state machine has unintended behavior. For example, if pd_acs_req is set TRUE and PD is consequently reset prior to presenting Autoclass power, pd_acs_req will not be reset as FALSE.

*SuggestedRemedy*

See stover_01_0917.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.3.7** *P* **174** *L* **23** # i-138

Yseboodt, Lennart — Philips Lighting

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

The variable pd_acs_req indicates if a PD saw a long class event and must do Autoclass. This variable's description is very misleading in 145.3.3.4, moreover, we don't need it because we can use "long_class_event * pd_autoclass_enabled" to get the same effect.

I now also notice that Figure 145-27 doesn't work (eg. pd_acs_req is set to FALSE in IDLE_ACS, preventing it from being true in the arc from IDLE_ACS to WAIT_ACS).

*SuggestedRemedy*

Adopt yseboodt_07_0917_pdautoclassfix.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.3.7** *P* **175** *L* **32** # i-139

Yseboodt, Lennart — Philips Lighting

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

PD state diagram: the transition from POWER_DELAY to POWERED reads "Vpd >= VOnPD * ...".
We're already "on" here, so we should only check against Voff.
This is consistent with other POWERED states.

*SuggestedRemedy*

Change as follows:
- POWER_DELAY ==> POWERED change to VPD > VOff_PD ...
- POWERED ==> POWER_UPDATE change to VPD > VOff_PD ...

Do the same for dual-signature.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.3.7** *P* **175** *L* **38** # i-326

Abramson, David — Texas Instruments Inc

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

The variable "nopower" should be set back to FALSE in the INRUSH state as the PD can transition back to INRUSH from NOPOWER.

*SuggestedRemedy*

Add "nopower <= FALSE" to INRUSH

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.4** *P* **182** *L* **18** # i-140

Yseboodt, Lennart — Philips Lighting

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

"A PD requesting power by presenting a detection signature outside of Table 145-20 is non-compliant, while a PD that presents the signature of Table 145-21 is assured to fail detection."

Construct of the sentence is odd: first part uses 'PD requesting', second part uses 'PD that presents'.

*SuggestedRemedy*

"A PD that requests power by presenting a detection signature outside of Table 145-20 is non-compliant, while a PD that presents the signature of Table 145-21 is assured to fail detection."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.4** *P* **182** *L* **26** # i-141

Yseboodt, Lennart — Philips Lighting

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

Table 145-20 on valid PD detection signature, first parameter is R_detect.
The parameter name also mentions: "(at any 1 V or greater chord within the voltage range conditions)".

This text comes straight out of 802.3af.
What does it mean ? A resistance is a resistance and it needs to be there between 2.7 and 10.1V per the conditions.
We're on the PD side of the spec, the 1V chord is a requirement on the PSE, but irrelevant for PDs.

*SuggestedRemedy*

Delete quoted text.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.5** *P* **183** *L* **20** # i-142

Yseboodt, Lennart — Philips Lighting

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

All but a few subclause titles are singular.
145.3.5 = "PD signature configurations"

*SuggestedRemedy*

Change to "PD signature configuration"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.5** *P* **183** *L* **22** # i-143

Yseboodt, Lennart — Philips Lighting

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

"A single-signature PD shall present a valid detection signature, as defined in Table 145-20, on a given Mode when no voltage or current is applied to the other Mode, and shall present an invalid detection signature on that Mode when any voltage between 10.1 V and 57 V is applied to the other Mode. These requirements apply to both Mode A and Mode B."

The requirement only holds for corrupting voltages above 10.1V, whereas connection check entirely operates below 10.1V.
See http://www.ieee802.org/3/bt/public/may17/yseboodt_09_0517_signature.pdf for problem description.

*SuggestedRemedy*

Change first paragraph of 145.3.5 to read:
"A single-signature PD shall present a valid detection signature, as defined in Table 145-20, on a given Mode when no voltage or current is applied to the other Mode, and shall not present a valid detection signature on that Mode when any voltage between 3.7 V and 57 V is applied to the other Mode. These requirements apply to both Mode A and Mode B.
NOTE - A detection signature is only considered valid when it meets Table 145-20 over the entire PD detection voltage range of 2.7 V to 10.1 V."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.5** *P* **183** *L* **24** # i-436

Darshan, Yair

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

In the text "A single-signature PD shall present a valid detection signature, as defined in Table 145-20, on a given Mode
when no voltage or current is applied to the other Mode, and shall present an invalid detection signature on
that Mode when any voltage between 10.1 V and 57 V is applied to the other Mode. These requirements
apply to both Mode A and Mode B."

The part "and shall present an invalid detection signature on that Mode when any voltage between 10.1 V and 57 V is applied to the other Mode. These requirements apply to both Mode A and Mode B." doesn't guarantee (especially "between 10.1 V and 57 V") that for any voltage X in the range of 2.7V to 57V that is applied to the 1st pair and is higher by 1 V from the voltage applied to the 2nd pair that is being detected, will be result with invalid signature in the pair that is being detected.

*SuggestedRemedy*

Change from: "A single-signature PD shall present a valid detection signature, as defined in Table 145-20, on a given Mode
when no voltage or current is applied to the other Mode, and shall present an invalid detection signature on
that Mode when any voltage between 10.1 V and 57 V is applied to the other Mode. These requirements
apply to both Mode A and Mode B."

To: "A single-signature PD shall present a valid detection signature, as defined in Table 145-20, on a given Mode when no voltage or current is applied to the other Mode, and shall present an invalid detection signature on that Mode when any voltage between Vx and 57 V is applied to the other Mode when Vx is greater by at least 1V from the voltage applied to the other mode. These requirements
apply to both Mode A and Mode B."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6** *P* **183** *L* **34** # i-144

Yseboodt, Lennart Philips Lighting

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

All but a few subclause titles are singular.
145.3.6 = "PD classifications"

*SuggestedRemedy*

Change to "PD classification"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6** *P* **183** *L* **44** # i-145

Yseboodt, Lennart Philips Lighting

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

"The requested class of the PD is the Class the PD advertises during Physical Layer classification."

Capitalize Class. Also, expand a little bit.

*SuggestedRemedy*

"The requested Class of the PD is the Class the PD advertises during Physical Layer classification. It represents the amount of power the
PD requires for operation."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6** *P* **184** *L* **35** # i-146

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

Given all the changes to the PD classification section, it makes little sense to have Table 145-23 physically sit in 145.3.6.
It should be moved to the Multiple-Event subclause which follows.

*SuggestedRemedy*

- Move Table 145-23 to subclause 145.3.6.1
- Move Table 145-26 to before Table 145-24
- Change the text on page 183, line 54 from:
"PDs shall provide Multiple-Event Physical Layer classification as defined in 145.3.6.1 and Table 145-23."
to read:
"PDs shall provide Multiple-Event Physical Layer classification as defined in 145.3.6.1."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6.1** *P* **184** *L* **51** # i-148

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

"During Multiple-Event Physical Layer classification PDs shall present class_sig_A during DO_CLASS_EVENT1 and DO_CLASS_EVENT2 and class_sig_B during DO_CLASS_EVENT3, DO_CLASS_EVENT4, DO_CLASS_EVENT5, and DO_CLASS_EVENT6, with the corresponding classification signatures specified in Table 145-23."

Unlike in the Mark section, we don't actually refer to the state diagram in this sentence.

*SuggestedRemedy*

"During Multiple-Event Physical Layer classification PDs shall present class_sig_A during DO_CLASS_EVENT1 and DO_CLASS_EVENT2 and class_sig_B during DO_CLASS_EVENT3, DO_CLASS_EVENT4, DO_CLASS_EVENT5, and DO_CLASS_EVENT6, as shown in Figure 145-26 and Figure 145-28, with the corresponding classification signatures specified in Table 145-23."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6.1** *P* **184** *L* **51** # i-147

Yseboodt, Lennart Philips Lighting

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

"During Multiple-Event Physical Layer classification PDs shall present class_sig_A during DO_CLASS_EVENT1 and DO_CLASS_EVENT2 and class_sig_B during DO_CLASS_EVENT3, DO_CLASS_EVENT4, DO_CLASS_EVENT5, and DO_CLASS_EVENT6, with the corresponding classification signatures specified in Table 145-23."

The part 'during Multiple-Event Physical Layer classification' is redundant. The reference to state names makes this unambiguous.

*SuggestedRemedy*

Replace by:
"PDs shall present class_sig_A during DO_CLASS_EVENT1 and DO_CLASS_EVENT2 and class_sig_B during DO_CLASS_EVENT3, DO_CLASS_EVENT4, DO_CLASS_EVENT5, and DO_CLASS_EVENT6, with the corresponding classification signatures specified in Table 145-23."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6.1** *P* **185** *L* **1** # i-149

Yseboodt, Lennart Philips Lighting

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

"PDs implementing Autoclass shall present class signature '0', as defined in Table 145-23, during DO_CLASS_EVENT_AUTO as defined in 145.3.6.2."

Why is 0 quoted? Class signature 0 is defined in Table 145-23 and does not need to be quoted.

*SuggestedRemedy*

Change to:
"PDs implementing Autoclass shall present class signature 0, as defined in Table 145-23, during DO_CLASS_EVENT_AUTO as defined in 145.3.6.2."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6.1** *P* **185** *L* **7** # i-340

Jones, Chad — Cisco Systems, Inc.

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

the sentence at line 4 should be merged with the first sentence af the third paragraph (on line 7) to make one paragraph. The third paragraph would then be the remainder of the text at line 8. see proposed change where I've made the edit.
I also, gave a second option that combines to one paragraph and reorders the sentences. no change to the wording has occured, this is purely editorial.
The reason for the change is the arrangement now implies the rest of the third paragraph only applies to DS PDs.

*SuggestedRemedy*

new paragraphs:
Single-signature PDs shall advertise class signatures according to the PD Type and PD requested Class, as defined in Table 145-24. Dual-signature PDs shall advertise class signatures according to the PD Type and PD requested Class on each pairset, as defined in Table 145-25.
The PD requested Class on a pairset is the maximum amount of power requested by the PD on that pairset. Dual-signature PDs may advertise different class signatures on each pairset. A dual-signature PD that is powered over only one pairset shall present a valid class signature on the unpowered pairset.

Alternate option for rearranging:
The PD requested Class on a pairset is the maximum amount of power requested by the PD on that pairset. Single-signature PDs shall advertise class signatures according to the PD Type and PD requested Class, as defined in Table 145-24. Dual-signature PDs shall advertise class signatures according to the PD Type and PD requested Class on each pairset, as defined in Table 145-25. Dual-signature PDs may advertise different class signatures on each pairset. A dual-signature PD that is powered over only one pairset shall present a valid class signature on the unpowered pairset.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6.1** *P* **185** *L* **13** # i-150

Yseboodt, Lennart — Philips Lighting

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

"The default value of pse_power_level is 3, which corresponds with one class event."

The notion of 'default values' in state diagrams is removed. Sentence no longer adds value.

*SuggestedRemedy*

Remove quoted sentence.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6.1** *P* **185** *L* **19** # i-151

Yseboodt, Lennart — Philips Lighting

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

"The default value of pse_power_level_mode(X) is 3, which corresponds with one class event."

The notion of 'default values' in state diagrams is removed. Sentence no longer adds value.

*SuggestedRemedy*

Remove quoted sentence.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6.1** *P* **185** *L* **34** # i-152

Yseboodt, Lennart — Philips Lighting

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

First column "PD Type" in Table 145-24 needs to be left aligned, also for Table 145-25

*SuggestedRemedy*

Left align PD Type column.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6.1** *P* **186** *L* **32** # i-153

Yseboodt, Lennart — Philips Lighting

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

In Table 145-26, Item 6, we find V_Reset_PD which is a range between 0V and 2.81V.
The additional information points to 145.3.8.1, which says nothing about this parameter.

VReset_PD isn't mentioned abywhere in the document, with the exception that it is used in the state diagram.
Specifically, there is a global arc into IDLE with VPD < V_Reset_PD * other_conditions.

Because V_Reset_PD is a range, consistent with other parameters that are a range, this means the PD can choose any voltage between 0V and 2.81V and use this as the reset threshold.
This is wrong - the PD should return to IDLE and stay there whenever the voltage is less than 2.81V.

*SuggestedRemedy*

- Change the definition of VReset_PD in 145.3.3.3 to read as follows:
"VReset_PD max: The maximum PD reset voltage (see Table 145-26).
- Change all occurences of "VReset_PD" to "VReset_PD max" in the state diagrams in 145.3.3.7
- Change the additional information in Table 145-26, item 6 to read "See 145.3.6.1" (PD Multiple-Event class signature)
- Append a paragraph to 145.3.6.1 that reads as follows:
"V_Reset_PD, as defined in Table 145-26, is the voltage range in which the PD transitions to IDLE, thereby resetting the class event count."
- Make the same changes for dual-signature as appropriate.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8** *P* **187** *L* **1** # i-154

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

Table 145-28, the big PD Table, nearly every parameter has the value specified 'per the assigned Class'.
Exceptions: V_Tran_lo-2P, Voverload-2P, Tinrush_PD, Tdelay-2P, Islewrate,VNoise_PD, Von_PD, Voff_PD, TClass_PD, and Vbfd.

All of the exceptions apply to both Type 3 and Type 4.
All of the others are determined by Class.

We don't need the PD Type column in this Table at all, it doesn't tell us anything new, nor has it any technical significance.

*SuggestedRemedy*

Remove PD Type column from Table 145-28.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6.2** *P* **187** *L* **7** # i-155

Yseboodt, Lennart — Philips Lighting

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

"A PD that implements Autoclass shall change its current during the first class event to class signature '0' no earlier than TACS min and no later than TACS max, as defined in Table 145-27."
Why is 0 quoted? Class signature 0 is defined in Table 145-23 and does not need to be quoted.

*SuggestedRemedy*

Change to:
"A PD that implements Autoclass shall change its current during the first class event to class signature 0 no earlier than TACS min and no later than TACS max, as defined in Table 145-27."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.6.2** *P* **187** *L* **13** # i-329

Abramson, David — Texas Instruments Inc

*Comment Type* **ER** *Comment Status* **X**

"The PD shall not draw more power than the power consumed during the time from TAUTO_PD1 to TAUTO_PD2..."
We have a name for that amount of power, its called Pautoclass_PD as defined in the previous sentence.

*SuggestedRemedy*

Change sentence to: "The PD shall not draw more than Pautoclass_PD at any point..."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8** *P* **188** *L* **20** # i-311

Stover, David — Analog Devices Inc.

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

Parameter "Vtran_lo-2P" is defined in Table 145-28, but never referenced in the document.

*SuggestedRemedy*

Delete "Vtran_lo-2P" from Symbol column of Item 2.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8** *P* **188** *L* **21** # i-156

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

Table 145-28, item 2, V_Tran_lo-2P says in the additional information "For time duration defined in 145.2.8.3".
It is not immediately apparant that this applies to transients of no more than 250 microseconds.
In general pointing to the PSE section inside of the PD section for parameters is bad.

*SuggestedRemedy*

- Replace add. info by: "See 145.3.8.1."
- Add the following to 145.3.8.1:
"During a voltage transient, VPD may fall as low as VTran_lo-2P for up to 250 microseconds."

Note: if the other comment on KTran/VTran is accepted, the parameter name is VTran_PD-2P rather than VTran_lo-2P.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8** *P* **188** *L* **51** # i-157

Yseboodt, Lennart — Philips Lighting

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

Table 145-28, parameter Tdelay-2P.

For parameters that deal with time and are not exclusive to dual-signature, the "-2P" suffix doesn't make too much sense.

*SuggestedRemedy*

Rename Tdelay-2P to Tdelay throughout Clause 145.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8** *P* **189** *L* **7** # i-482

Bennet, Ken

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

"Table 145-28, items 10, 11 Describe input average power by class, labels it PClass_PD(-2P), and specifies it with a value in the Max Column, inferring that it has a range.

PClass_PD is a constant, and a limit. Items 8 and 9 correctly convey this. Items 10, 11 are ambiguous, and may result in misinterpretations of PClass_PD."

*SuggestedRemedy*

"1) In items 10, 11, change the description to ""Maximum""input average power..."" And 2) Either Merge the min and max cells for items 10, 11, or set both the min and the max values to the same PClass_PD value"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.9** *P* **189** *L* **42** # i-437

Darshan, Yair

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

This comment marked CLASS8_PPD. Table 145-28 item 12, Ppeak_PD: It should be 74.9 (1.05*71.3=74.865==>74.9W.

*SuggestedRemedy*

Option 1 (Recommended):
Change from 74.8W to 74.9W
Option 2:
Keep it 74.8W

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8** *P* **190** *L* **33** # i-158

Yseboodt, Lennart — Philips Lighting

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

Note 'a' under Table 145-28 says:
"a Class 6 and Class 8 PDs may exceed P Class_PD under certain conditions (see 145.3.8.2)."

The more appropriate subclause is 145.3.8.2.1.

*SuggestedRemedy*

Change 145.3.8.2 to 145.3.8.2.1.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.1** *P* **191** *L* **15** # i-328

Abramson, David — Texas Instruments Inc

*Comment Type* **ER** *Comment Status* **X**

Description of "nopower" is not in sync with state diagram which shows a transition to a new state.

*SuggestedRemedy*

Change "When the PD has reached POWER_DELAY or POWERED and VPD falls below VOff_PD, the PD may show a valid or invalid detection signature, and may or may not draw mark current, draw any class current, and
show MPS."
to: ""When the PD is in POWER_DELAY or POWERED and VPD falls below VOff_PD, the PD transitions to NOPOWER and may show a valid or invalid detection signature, and may or may not draw mark current, draw any class current, and show MPS."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.2** *P* **191** *L* **27** # i-341

Jones, Chad — Cisco Systems, Inc.

*Comment Type* **ER** *Comment Status* **X**

missing comma in this text:
including any peak power drawn per 145.3.8.4 [comma] shall be calculated over a 1 second sliding

*SuggestedRemedy*

change to: including any peak power drawn per 145.3.8.4 shall be calculated over a 1 second sliding

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.2** *P* **191** *L* **27** # i-330

Abramson, David — Texas Instruments Inc

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

"The maximum average power, PClass_PD or PClass_PD-2P in Table 145-28 or PDMaxPowerValue in 145.5.3.3.3, including any peak power drawn per 145.3.8.4 shall be calculated over a 1 second sliding window."

What/Who is this a requirement on? The PSE? The guy in the lab who is measuring it during QC?

*SuggestedRemedy*

Change to: "The maximum average power, PClass_PD or PClass_PD-2P in Table 145-28 or PDMaxPowerValue in 145.5.3.3.3, including any peak power drawn per 145.3.8.4 is calculated over a 1 second sliding window."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.2** *P* **191** *L* **27** # i-159

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

Topic:SLIDING
Issue: we use the concept of 'sliding windows' in our draft very inconsistently, the SLIDING comments try to make the whole bunch consistent.
Aim: get everything in the form "measure xxx using a xx time sliding window".

"The maximum average power, P Class_PD or P Class_PD-2P in Table 145-28 or PDMaxPowerValue in 145.5.3.3.3, including any peak power drawn per 145.3.8.4 shall be calculated over a 1 second sliding window."

*SuggestedRemedy*

"The maximum average power, P Class_PD or P Class_PD-2P in Table 145-28 or PDMaxPowerValue in 145.5.3.3.3, including any peak power drawn per 145.3.8.4 shall be measured using a 1 second sliding window."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.2** *P* **191** *L* **32** # i-160

Yseboodt, Lennart — Philips Lighting

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

"PDs that have successfull completed DLL classification, shall not exceed a power consumption of PDMaxPowerValue as defined in 145.5.3.3.3."

Needs update for dual-signature.
Note that subclause reference is wrong also.

*SuggestedRemedy*

Replace by:
"Single-signature PDs that have successfully completed DLL classification, shall not exceed a power consumption of PDMaxPowerValue as defined in 145.5.3.4.
Dual-signature PDs that have successfully completed DLL classification, shall not exceed a power consumption of PDMaxPowerValue_mode(X) on Mode X as defined in 145.5.3.7."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.2** *P* **191** *L* **32** # i-342

Jones, Chad — Cisco Systems, Inc.

*Comment Type* **ER** *Comment Status* **X**

unneeded comma:
PDs that have successfully completed DLL classification, shall not exceed a power consumption of

*SuggestedRemedy*

change to: PDs that have successfully completed DLL classification shall not exceed a power consumption of

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.2.1** *P* **191** *L* **37** # i-161

Yseboodt, Lennart — Philips Lighting

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

"For Class 6 and Class 8 single-signature PDs, when additional information is available to the PD regarding actual link section DC resistance..."

Applies to ASSIGNED Class.

*SuggestedRemedy*

Change:
"For single-signature PDs assigned to Class 6 or Class 8, when additional..."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.2.1** *P* **191** *L* **42** # i-162

Yseboodt, Lennart — Philips Lighting

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

"For Class 5 dual-signature PDs, when additional information is available to the PD regarding actual link section DC resistance..."

Applies to ASSIGNED Class.

*SuggestedRemedy*

Change:
"For dual-signature PDs assigned to Class 5, when additional..."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.3** *P* **192** *L* **29** # i-438

Darshan, Yair

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

In the text "Dual-signature PDs assigned to Class 1, 2, or 3 shall conform to PClass_PD-2P and PPeak_PD-2P within TInrush_PD max as defined in Table 145-16 on that pairset.", It is Table 145-28 and not Table 145-16.

*SuggestedRemedy*

Change to "Table 145-28".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.3** *P* **192** *L* **35** # i-163

Yseboodt, Lennart — Philips Lighting

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

"CPort in Table 145-28 is the PD input capacitance during the POWER_UP and POWER_ON states that a PSE sees as load when operating one or both pairsets, when connected to a single-signature PD. CPort-2P in Table 145-28 is the PD input capacitance during the POWER_UP and POWER_ON states that a PSE sees as load on each pairset independently, when connected to a dual-signature PD."

Statenames do not need the word "state"
Also, for CPort-2P, we need the dual-signature state names.

*SuggestedRemedy*

Change to:
"CPort in Table 145-28 is the PD input capacitance during POWER_UP and POWER_ON that a PSE sees as load when operating one or both pairsets, when connected to a single-signature PD. CPort-2P in Table 145-28 is the PD input capacitance during POWER_UP_PRI, POWER_UP_SEC, POWER_ON_PRI, and POWER_ON_SEC that a PSE sees as load on each pairset independently, when connected to a dual-signature PD."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.4** *P* **192** *L* **48** # i-164

Yseboodt, Lennart — Philips Lighting

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

"Peak operating power shall not exceed P Peak_PD."

It is not stated that this applies to single-signature PDs only.

*SuggestedRemedy*

"Peak operating power for single-signature PDs shall not exceed P Peak_PD."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.4** *P* **192** *L* **52** # i-165

Yseboodt, Lennart — Philips Lighting

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

"Peak operating power shall not exceed P Peak_PD-2P."

It is not stated that this applies to dual-signature PDs only.

*SuggestedRemedy*

"Peak operating power for dual-signature PDs shall not exceed P Peak_PD-2P."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.4** *P* **193** *L* **29** # i-166

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

Topic:SLIDING
Issue: we use the concept of 'sliding windows' in our draft very inconsistently, the SLIDING comments try to make the whole bunch consistent.
Aim: get everything in the form "measure xxx using a xx time sliding window".

"NOTE - The duty cycle of the peak current is calculated using any sliding window with a width of 1 s."

*SuggestedRemedy*

Change to normal text:
"The duty cycle of the peak current is measured using a sliding window with a width of 1 second."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.4** *P* **193** *L* **31** # i-439

Darshan, Yair

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

In the text "The equations in Table 145-28 are used to approximate the ratiometric peak powers of Class 1 through Class 8." . The equations are not in Table 145-28 and are missing for this clause.

*SuggestedRemedy*

1. Change from "The equations in Table 145-28 are used to approximate the ratiometric peak powers of Class 1 through Class 8."
To: "Equations 145-X and Equation 145-Y are used to approximate the ratiometric peak powers of Class 1 through Class 8."
2. Add the following text and equations at the end of this paragraph:
PPeak_PD = 1.05 * PDMaxPowerValue (145-X)
PPeak_PD-2P = 1.05 * PDMaxPowerValue_mode(X) (145-Y)
Where
PDMaxPowerValue as defined in Table 145-22
PDMaxPowerValue_mode(X) as defined in Table 145-22

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.4** *P* **193** *L* **34** # i-440

Darshan, Yair

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

In the text "These equations may be used to calculate PPeak_PD or PPeak_PD-2P for Data Link Layer classification by substituting PClass_PD or PClass_PD-2P with PDMaxPowerValue and for Autoclass by substituting PClass_PD with PAutoclass_PD." Missing "or PDMaxPowerValue_mode(X)"

*SuggestedRemedy*

Change from: "These equations may be used to calculate PPeak_PD or PPeak_PD-2P for Data Link Layer classification by substituting PClass_PD or PClass_PD-2P with PDMaxPowerValue and for Autoclass by substituting PClass_PD with PAutoclass_PD."

To: "These equations may be used to calculate PPeak_PD or PPeak_PD-2P for Data Link Layer classification by substituting PClass_PD or PClass_PD-2P with PDMaxPowerValue or DMaxPowerValue_mode(X) and for Autoclass by substituting PClass_PD with PAutoclass_PD."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.4.1** *P* **193** *L* **39** # i-167

Yseboodt, Lennart Philips Lighting

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

"For Class 6 and Class 8 single-signature PDs and for Class 5 dual-signature PDs, ..."

Applies to assigned Class.

*SuggestedRemedy*

Change:
"For single-signature PDs assigned to Class 6 or Class 8, and for dual-signature PDs assigned to Class 5,..."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.4.1** *P* **193** *L* **41** # i-483

Bennet, Ken

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

"This comment addresses all statements in this paragraph that reference Pport_PD (and Pport_PD-2P). One example is: ""the peak power shall not exceed PPort_PD for...."".

""Pport_PD"" is the input average power. The statements should reference the MAXIMUM input average power to be correct. "

*SuggestedRemedy*

For each occurrence of Pport_PD and Pport_PD-2P, either preceed it with "maximum", or add a "_max" suffix.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.6** *P* **194** *L* **4** # i-484

Bennett, Ken

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

"The sentence starting with ""A single-signature PD includes CPort..."" leads into a listing of PD Types and Cport values that ""Intrinsically meet the requirements in this subclause"". These are informative statements, and are not entirely correct:

1) A type 4 PD with 360uF can be assigned a class corresponding to Type 3 limits. The Type 3 limit is 180uF, so the Type 4 limit of 360uF is not true in this case.

2) It's conceivable for any of the cases that a transient could cause a power surge and/or fault in a PD for reasons other than just Cport."

*SuggestedRemedy*

Delete the text starting at line 4 ("A single signature PD includes...") and ending at line 17, just after the list of PD types and capacitances.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.6** *P* **194** *L* **30** # i-315

Stover, David Analog Devices Inc.

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

*** Comment submitted with the file 94179800003-i_tr_3.png attached ***

Math for TR3 doesn't pencil out given the input cap requirements listed in this section. See attachment for simulation showcasing the problem statement. As a result, I_TR_LIM,max for assigned Class >= 5 needs slightly increased.

*SuggestedRemedy*

Modify I_TR3,max for single-signature PDs assigned Class >= 5 from "3" to "3.1"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.6** *P* **194** *L* **37** # i-338

Lemahieu, Joris ON Semiconductor

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

The PD state diagram states that does not need to implement a current limit in the POWERED state.
(pd_current_limit <= FALSE)

This new ITR_LIM spec now seems to indicate the opposite.

*SuggestedRemedy*

Suppress the ITR_LIM requirement:
- Delete "the peak current shall not exceed ITR_LIM, as defined in Table 145-30, and"
- Delete Table 145-30

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.6** *P* **194** *L* **40** # i-168

Yseboodt, Lennart Philips Lighting

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

"These requirements apply to each pairset individually if the PD is a dual-signature PD."

*SuggestedRemedy*

Shorter:
Change to:
"These requirements apply to each pairset individually for a dual-signature PD."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.7** *P* **195** *L* **11** # i-343

Jones, Chad Cisco Systems, Inc.

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

Chair notes... lines 11- 15, this is not information that helps ensure interoperability. It may cause more confusion to the reader than help. This was discussed in previous meetings but deferred to 3.0.

*SuggestedRemedy*

delete: Limits are provided to preserve data integrity. To meet EMI standards, lower values may be needed. NOTE--The worst-case condition is when both PSE and PD generate the maximum noise allowed by Table 145-16 and Table 145-28, which may cause a higher noise level to appear at the PI than the standalone case as specified by this clause.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.8** *P* **195** *L* **17** # i-331

Abramson, David — Texas Instruments Inc

*Comment Type* **ER** *Comment Status* **X**

Why is classification stability time in the PD power section? Why not in the classification section?

*SuggestedRemedy*

Move 145.3.8.8 to 145.3.6.1.2. Also move item 19 in Table 145-28 to Table 145-26

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.8** *P* **195** *L* **18** # i-169

Yseboodt, Lennart — Philips Lighting

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

"After entering a DO_CLASS state, the PD Physical Layer class signature shall be valid within TClass_PD as defined in Table 145-28 and remain valid for the remainder of the class event."

State name can be more specific.

*SuggestedRemedy*

Change to:
"After entering a DO_CLASS_EVENT state, the PD Physical Layer class signature shall be valid within TClass_PD as defined in Table 145-28 and remain valid for the remainder of the class event."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.10** *P* **195** *L* **42** # i-171

Yseboodt, Lennart — Philips Lighting

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

Equation 145-26, uses Ohm symbol inside equation which is not needed.

*SuggestedRemedy*

Remove Ohm symbol inside of Eq. 145-26.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.10** *P* **195** *L* **42** # i-170

Yseboodt, Lennart — Philips Lighting

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

Equation 145-26, for R_PD_min and _max, refers to eg. 'for PD Type 3, Class 6'.

Since unbalance requirements change with ICon-2P-unb, ans thus with assigned Class, the equation should make this obvious.

*SuggestedRemedy*

Replace in Equation 145-26:
"for PD Type 3, Class 5" with "for assigned Class 5"
"for PD Type 3, Class 6" with "for assigned Class 6"
"for PD Type 4, Class 7" with "for assigned Class 7"
"for PD Type 4, Class 8" with "for assigned Class 8"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.8.10** *P* **196** *L* **7** # i-313

Stover, David — Analog Devices Inc.

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

Icon-2p-unb has no maximum; this statement ("Single-signature PDs shall not exceed ICon-2P-unb for longer than TCUT-2P min and 5% duty cycle") does not enforce any current limitation on the PD.

*SuggestedRemedy*

Change "Icon-2p-unb" to "Icon-2p-unb,min"

*Proposed Response* *Response Status* **O**

Cl **145** SC **145.3.8.10** P **196** L **18** # i-172

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

Topic:SLIDING
Issue: we use the concept of 'sliding windows' in our draft very inconsistently, the SLIDING comments try to make the whole bunch consistent.
Aim: get everything in the form "measure xxx using a xx time sliding window".

"NOTE - The duty cycle of the peak current is calculated using any sliding window with a width of 1 s."

*SuggestedRemedy*

Change to normal text:
"The duty cycle of the peak current is measured using a sliding window with a width of 1 second."

*Proposed Response* *Response Status* **O**

Cl **145** SC **145.3.8.10** P **196** L **41** # i-332

Abramson, David — Texas Instruments Inc

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

Vsource would be a better description of the thevenin equivalent we are using (Vsource + Rsource). Vin + Rsource makes no sense.

*SuggestedRemedy*

Change all occurances of Vin in section 145.3.8.10 (and any related annexes) to Vsource

*Proposed Response* *Response Status* **O**

Cl **145** SC **145.3.8.10** P **197** L **1** # i-173

Yseboodt, Lennart — Philips Lighting

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

Calculations using the model in Figure 145-31, Equation 145-27, and Equation 145-26 show that pair currents often exceed ICon-2P-unb, even though line 39 on page 195 promises: "PDs that meet Equation (145-26) intrinsically meet unbalance requirements."

I guess... that changes in earlier drafts to power parameters require us to update the magic numbers in Equation 145-26.

*SuggestedRemedy*

Don't know how to fix this... Yair ?

*Proposed Response* *Response Status* **O**

Cl **145** SC **145.3.9** P **197** L **16** # i-333

Abramson, David — Texas Instruments Inc

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

"A PD shall have TMPS_PD measured with a series resistance representing the worst case cable resistance between the measurement point and the PD PI."

Sentence places requirement on measurer rather than PD, needs to be reworded.

*SuggestedRemedy*

Replace with: "A PD shall meet the TMPS_PD requirement with a sereis resistance representing the worst case cable resistance between the measurement point and the PD PI."

*Proposed Response* *Response Status* **O**

Cl **145** SC **145.3.9** P **198** L **10** # i-287

Stewart, Heath — Analog Devices Inc.

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

All other tables carefully describe whether an item or row is attributable to single-signature or dual-signature PDs.
Table 145-31 does not follow this convention

*SuggestedRemedy*

Change Table 145-31 as follows
Item 1
Change "Class 1 to 4" to "Single-signature PD, Class 1 to 4"
Change "Class 5 to 8" to "Single-signature PD, Class 5 to 8"
Change "Class 1 to 5" to "Dual-signature PD, Class 1 to 5"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.3.9** *P* **198** *L* **25** # i-174

Yseboodt, Lennart — Philips Lighting

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

"NOTE--PDs may not be able to meet the IPort_MPS or IPort_MPS-2P specification in Table 145-31 during the maximum allowed port voltage droop (VPort_PSE-2P max to VPort_PSE-2P min with series resistance RCh). Such a PD should increase its IPort min or IPort-2P or make other such provisions to meet the Maintain Power Signature." Should not be IPort min but just IPort.

*SuggestedRemedy*

Change "IPort min" to "IPort".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.1** *P* **199** *L* **10** # i-380

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

This clause confuses system requirements and element requirements. Only system requirements (and references to element requirements) should appear here. Conversely there should be element specifications in 145.2, 145.3 and link segment so that when each item is independently developed and sold it supports meeting the system requirement. Alternatively, the requirements could be stated as general requirements with no reference to element names (i.e. PSE, PD, link section) so that it can be referred to by the element clauses.

*SuggestedRemedy*

See comment.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.2** *P* **200** *L* # i-23

Waters, Keith — Schneider Electric

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

I have concerns that section 145.4.2 does not show any testing or certification listing requirements in regard to fault tolerance. This is a potential product and fire safety issue and needs to be addressed.

*SuggestedRemedy*

Add to standard: Testing and a third party certification listing shall be required.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.2** *P* **200** *L* **29** # i-382

Thompson, Geoffrey — Individual

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

System fault tolerance specifications should be specified here.

*SuggestedRemedy*

Change the opening text to read: "Each conductor pair of the link section or a PI of a PoE system shall meet the fault tolerance requirements of ...

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.2** *P* **200** *L* **29** # i-381

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

This text is PSE specification text, not system requirements.

*SuggestedRemedy*

Move the text to the PSE specification clause, 145.2.

*Proposed Response* *Response Status* **O**

*Cl* **33** *SC* **33.4.2** *P* **200** *L* **30** # i-247

Zimmerman, George — Aquantia, ADI, Comm

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

New relevant phy clauses need to be added to the list- "shall meet the fault tolerance requirements of the appropriate specifying clause. (See 14.3.1.2.7, 25.4, and 40.8.3.4.)" Missing clauses 55 and 126 which are added in 802.3bt

*SuggestedRemedy*

Add 33.4.2 to the draft and change (end of) first sentence from: "shall meet the fault tolerance requirements of the appropriate specifying clause. (See 14.3.1.2.7, 25.4, and 40.8.3.4.)" to "shall meet the fault tolerance requirements of the appropriate specifying clause. (See 14.3.1.2.7, 25.4, 40.8.3.4, 55.8.2.3, and 126.8.2.4"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.2** *P* **200** *L* **30** # i-246

Zimmerman, George — Aquantia, ADI, Comm

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

Not all the relevant phy clauses are listed - "shall meet the fault tolerance requirements of the appropriate specifying clause. (See 14.3.1.2.7, 25.4, and 40.8.3.4.)" Missing clauses 55 and 126 which are added in 802.3bt

*SuggestedRemedy*

Change (end of) first sentence in 145.4.2 from: "shall meet the fault tolerance requirements of the appropriate specifying clause. (See 14.3.1.2.7, 25.4, and 40.8.3.4.)" to "shall meet the fault tolerance requirements of the appropriate specifying clause. (See 14.3.1.2.7, 25.4, 40.8.3.4, 55.8.2.3, and 126.8.2.4"

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.4.2** *P* **201** *L* **1** # i-175

Yseboodt, Lennart — Philips Lighting

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

Figure 145-32 reference broken.

*SuggestedRemedy*

Fix the reference.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.4.3** *P* **201** *L* **19** # i-383

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

Is this a PSE spec or a PD spec? Which PI is it measured at. Is this a controlling spec (it has a "shall") or a resultant spec that is a check of other specs? If this is not met where do you go to fix it?

*SuggestedRemedy*

Define what portion of the system this applies to and where to measure it. If it is an element spec then move it into the element that it is related to. If it is a system check spec then remove the shall and refer to the controlling element specs that will remedy any failure.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.4.4** *P* **202** *L* **26** # i-384

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

This is a PSE output specification thus should be part of the PSE spec.

*SuggestedRemedy*

Move this requirement to cl. 145.2.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.4.5** *P* **204** *L* **44** # i-385

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

This is a PSE output specification thus should be part of the PSE spec.

*SuggestedRemedy*

Move this requirement to cl. 145.2.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.4.6** *P* **205** *L* **31** # i-386

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

This is a PSE output specification thus should be part of the PSE spec.

*SuggestedRemedy*

Move this requirement to cl. 145.2.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.6** *P* **205** *L* **42** # i-219

Mcclellan, Brett — Marvell Semiconducto

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

E_d_out is a time domain peak to peak voltage but the formula defines E_d_out as varying across frequency. E_d_out isn't measured at individual frequencies.

*SuggestedRemedy*

delete formula (145-31) and the text defining f and fmax
change text on line 38 from:
"shall not exceed the requirements Equation (145-31)" (note the missing 'of')
to "shall not exceed 10 mV peak-to-peak when measured in the band from 1 MHz to 10 MHz and shall not exceed 1mV peak-to-peak when measured in the band from 10 MHz to 100 MHz for 2.5GBASE-T, 10 MHz to 250 MHz for 5GBASE-T, and 10 MHz to 500 MHz for 10GBASE-T"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.7** *P* **205** *L* **51** # i-387

Thompson, Geoffrey — Individual

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

It is unclear whether this is a spec for the cabling or a load spec for the PSE. It needs to have a more complete requirement and be moved to the PSE or link segment clause. Expressing it in terms of the "PHY" and the "MDI" causes further confusion as which MDI is not specified nor is what to be done for a midspan system.

*SuggestedRemedy*

Clarify and place as appropriate.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.8** *P* **206** *L* **11** # i-388

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

This clause is a PSE spec that belongs in a further subsection of the PSE sub-clause for mid-spans.

*SuggestedRemedy*

Move to appropriate new midspan sub-clause within 145.2

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.8** *P* **206** *L* **14** # i-176

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

"Alternative A Midspan PSEs that support 100BASE-TX shall enforce link-section intra-pair current unbalance (see 145A.1) less than or equal to Iunb (see 145.2.8.11) or meet 145.4.9.3."

The words 'link section' are redundant in this sentence.

*SuggestedRemedy*

Change to:
"Alternative A Midspan PSEs that support 100BASE-TX shall enforce intra-pair current unbalance (see 145A.1) less than or equal to I unb (see 145.2.8.11) or meet 145.4.9.3."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9** *P* **206** *L* **22** # i-389

Thompson, Geoffrey — Individual

*Comment Type* **ER** *Comment Status* **X**

This clause is properly a set of specifications for the implementation of a PSE option, as such it belongs in 145.2 in its own sub-clause directly under 145.2.

*SuggestedRemedy*

Move to appropriate new midspan sub-clause within 145.2

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9** *P* **206** *L* **22** # i-391

Thompson, Geoffrey — Individual

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

Reduce the midspan aspects of the spec to two simple statements, the effect a midspan can have on the acceptance test for a permanent link and effect a midspan can have on the acceptance test for a cord that meets standards allowances.

*SuggestedRemedy*

Prune the text so that the cabling acceptance tests (to be called out by reference) are the control.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9** *P* **206** *L* **22** # i-390

Thompson, Geoffrey Individual

*Comment Type* **ER** *Comment Status* **X**

Much of the text in this clause is superficial, unnecessary and/or redundant.

*SuggestedRemedy*

Clean up the text and remove any text that is not an additional requirement specific to midspans.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.1.1** *P* **208** *L* **9** # i-226

Mcclellan, Brett Marvell Semiconducto

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

Most of the text and formulas in 145.4.9.1.x and 145.4.9.2.x are identical to 33.4.9.1.x and 33.4.9.2.x. Rather than repeat the same requirements, 145.4.9.1.x and 145.4.9.2.x should just reference Clause 33 instead of duplicating text and formulas.

*SuggestedRemedy*

For each subclause 145.4.9.1.x and 145.4.9.2.x delete redundant text and formulas and place a reference to the requirements in 33.4.9.1.x and 33.4.9.2.x.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.1.1** *P* **208** *L* **31** # i-237

Zimmerman, George Aquantia, ADI, Comm

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

NEXT loss on PSE midspan for 2.5G/5GBASE-T should be based on Category 5e, not on Clause 40 requirements which predate Category 5e. same change made in another comment in clause 33.4.9.1.1)

*SuggestedRemedy*

Change "40" to "43" in equation 145-32

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.1.1** *P* **208** *L* **31** # i-220

Mcclellan, Brett Marvell Semiconducto

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

NEXT loss for PSE midspan is 40dB at 100MHz, however 2.5/5GBASE-T budgets 43dB for connectors.

*SuggestedRemedy*

change "40" to "43"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.1.3** *P* **209** *L* **37** # i-240

Zimmerman, George Aquantia, ADI, Comm

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

Return loss on PSE midspan for 2.5G/5GBASE-T shoudl be based on Cat 5e not on clause 40 requirements predating cat 5e. Return loss limit at 20MHz violates the RL spec in 126.7.2.3 for 2.5G and 5G ( 17dB). Make consistent with Cat 5e connector return loss specifications.

*SuggestedRemedy*

Delete "or 2.5G/5GBASE-T" from 2nd row of 1st column of Table 145-35.
Insert new row "2.5G/5GBASE-T" between 10/100/1000BASE-T row and 5GBASE-T row, with frequency ranges of:
1<f<= 31.5 MHz at a return loss value of 30 dB, and
31.5 MHz<f<=100MHz at a return loss value of 20 - 20log10(f/100) dB
Change 5GBASE-T row return loss value (100 MHz<= f<= 250 MHz) from 14 dB to 20 dB

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.1.3** *P* **209** *L* **41** # i-221

Mcclellan, Brett Marvell Semiconducto

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

The return loss limit at 20MHz violates the RL spec in 126.7.2.3 for 2.5G and 5G ( 17dB).

*SuggestedRemedy*

create a separate table entry for 2.5GBASE-T with the following limits based on Cat5E:
1 MHz<f<=31.5 MHz 30 dB
31.5 MHz<f<=100 MHz 20-20log10(f/100)

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.1.3** *P* **209** *L* **42** # i-222

Mcclellan, Brett — Marvell Semiconducto

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

at 100MHz the limit of 14dB is only 4dB margin vs the 2.5/5G spec

*SuggestedRemedy*

create a separate table entry for 5GBASE-T with the following limits based on Cat6:
1 MHz<f<=50 MHz 30 dB
50 MHz<f<=250 MHz 24-20log10(f/100)

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.1.3** *P* **209** *L* **45** # i-19

Anslow, Peter — Ciena Corporation

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

Minus signs should be an en-dash (Ctrl-q Shift-p)

*SuggestedRemedy*

Change to an en-dash:
bottom row of Table 145-35
Table 145-37
Table 145-38

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.2** *P* **210** *L* **19** # i-336

Maguire, Valerie — The Siemon Company

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

Support of 2.5GBASE-T with category 5e and support of 5GBASE-T with category 6 is only in the case that the cabling meets the additional requirements specified in clause 126.7 of 802.3bz.

*SuggestedRemedy*

Add a footnote referencing back to the 2.5GBASE-T and 5GBASE-T column rows that says, "For defined uses cases (refer to IEEE Std 802.3bz(TM)-2016). Category 6A cord in ISO/IEC 11801-1 or ANSI/TIA-568-C.2 recommended."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.2.3** *P* **210** *L* **41** # i-177

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

"Midspan PSEs intended for operation with 2.5G/5G/10GBASE-T (variants 5 through 10 in 145.4.9.1) are additionally required to meet the following parameters for coupling signals between ports relating to different link segments."

Variant list has been split.

*SuggestedRemedy*

Change as follows:
"Midspan PSEs intended for operation with 2.5G/5G/10GBASE-T (variants 3 through 5 in 145.4.9.1 and 145.4.9.2) are additionally ..."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.2.3** *P* **210** *L* **41** # i-223

Mcclellan, Brett — Marvell Semiconducto

*Comment Type* **ER** *Comment Status* **X**

(variants 5 through 10 in 145.4.9.1) there are only 5 variants

*SuggestedRemedy*

change "(variants 5 through 10 in 145.4.9.1)" to "(variants 3 through 5 in 145.4.9.1)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.2.3** *P* **210** *L* **41** # i-20

Anslow, Peter — Ciena Corporation

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

This says "Midspan PSEs intended for operation with 2.5G/5G/10GBASE-T (variants 5 through 10 in 145.4.9.1)" but there are only 5 variants in 145.4.9.1

*SuggestedRemedy*

Change "variants 5 through 10 in 145.4.9.1" to "variants 3 through 5 in 145.4.9.1"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.2.4** *P* **210** *L* **51** # i-243

Zimmerman, George — Aquantia, ADI, Comm

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

"for all specified frequencies", The frequency range in Table 145-37 exceeds the frequency requirements for 2.5GBASE-T and 5GBASE-T and may be reduced. (same change in 33.4.9.2.4 in another comment))

While we were trying to manage simplicity with too many midspan variations, we gave the midspan Cat 6a connector PSANEXT requirements for 2.5G/5GBASE-T. This isn't an error, but more style. A more inclusive specification would only have the required frequencies.

*SuggestedRemedy*

Identical changes in 145.4.9.2.4: delete "for all specified frequencies"
insert "For other than 5GBASE-T or 10GBASE-T operation, PSANEXT loss for Midspan PSE devices shall meet the values determined by Table 145-37 from 1 MHz to 100 MHz. For 5GBASE-T capable midspans, PSANEXT loss for Midspan PSE devices shall meet the values determined by Table 145-37 from 1 MHz to 250 MHz. For 10GBASE-T capable midspans, PSANEXT loss for Midspan PSE devices shall meet the values determined by Table 145-37 from 1 MHz to 500 MHz."
Delete the frequency column of Table 145-37

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.2.4** *P* **210** *L* **51** # i-224

Mcclellan, Brett — Marvell Semiconducto

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

"for all specified frequencies", The frequency range in Table 145-37 exceeds the frequency requirements for 2.5GBASE-T and 5GBASE-T and may be reduced.

*SuggestedRemedy*

delete "for all specified frequencies"
insert "For other than 5GBASE-T or 10GBASE-T operation, PSANEXT loss for Midspan PSE devices shall meet the values determined by Table 145-37 from 1 MHz to 100 MHz. For 5GBASE-T capable midspans, PSANEXT loss for Midspan PSE devices shall meet the values determined by Table 145-37 from 1 MHz to 250 MHz. For 10GBASE-T capable midspans, PSANEXT loss for Midspan PSE devices shall meet the values determined by Table 145-37 from 1 MHz to 500 MHz."
Delete the frequency column of Table 145-37

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.2.4** *P* **211** *L* **5** # i-192

Lewis, Jon — Dell EMC

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

In Table 145-37--PSANEXT Loss the text "1 MHz f 500 MHz" is at a different vertical position in the table cell than the text "70.5 - 20 log10 (f/100)"

*SuggestedRemedy*

Vertically center the text in both columns to the same height

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.2.5** *P* **211** *L* **11** # i-225

Mcclellan, Brett — Marvell Semiconducto

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

"for all specified frequencies", The frequency range in Table 145-38 exceeds the frequency requirements for 2.5GBASE-T and 5GBASE-T and may be reduced.

*SuggestedRemedy*

"for all specified frequencies"
insert "For other than 5GBASE-T or 10GBASE-T operation, PSAFEXT loss for Midspan PSE devices shall meet the values determined by Table 145-38 from 1 MHz to 100 MHz. For 5GBASE-T capable midspans, PSAFEXT loss
for Midspan PSE devices shall meet the values determined by Table 145-38 from 1 MHz to 250 MHz. For 10GBASE-T capable midspans, PSAFEXT loss for Midspan PSE devices shall meet the values determined by Table 145-38 from 1 MHz to 500 MHz."
Delete the frequency column of Table 33-20c

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.2.5** *P* **211** *L* **19** # i-245

Zimmerman, George — Aquantia, ADI, Comm

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

line 11 "for all specified frequencies", The frequency range in Table 145-38 exceeds the frequency requirements for 2.5GBASE-T and 5GBASE-T and may be reduced.

*SuggestedRemedy*

delete "for all specified frequencies"
insert "For other than 5GBASE-T or 10GBASE-T operation, PSAFEXT loss for Midspan PSE devices shall meet the values determined by Table 145-38 from 1 MHz to 100 MHz. For 5GBASE-T capable midspans, PSAFEXT loss for Midspan PSE devices shall meet the values determined by Table 145-38 from 1 MHz to 250 MHz. For 10GBASE-T capable midspans, PSAFEXT loss for Midspan PSE devices shall meet the values determined by Table 145-38 from 1 MHz to 500 MHz."
Delete the frequency column of Table 145-38

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.4.9.2.5** *P* **211** *L* **19** # i-193

Lewis, Jon — Dell EMC

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

In Table 145-38--PSAFEXT Loss the text "1 MHz f 500 MHz" is at a different vertical position in the table cell than the text "67 - 20 log10 (f/100)"

*SuggestedRemedy*

Vertically center the text in both columns to the same height

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5** *P* **212** *L* **0** # i-376

Thompson, Geoffrey — Individual

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

There is no parallel in cl. 145 to cl. 33.5. Although the group agreed that no one (that they knew of) had implemented MDIO in cl. 33 devices and, therefore, they didn't want to include it in cl. 145, there is a clear requirement in the project paperwork to do so. See Objectives: - 4PPoE PSEs will be backwards compatible with IEEE 802.3-2012 PDs.
- Update management parameters."

*SuggestedRemedy*

Define a parallel and optional equivalent to cl. 33.5 in cl. 145.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5** *P* **212** *L* **0** # i-374

Thompson, Geoffrey — Individual

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

There is no parallel in cl. 145 to cl. 33.5. Although the group agreed that no one (that they knew of) had implemented MDIO in cl. 33 devices and, therefore, they didn't want to include it in cl. 145, there is a clear requirement in the project paperwork to do so. See Scope: "The scope of this project is to augment the capabilities of the IEEE Std 802.3 standard with 4-pair power and associated power management information."

*SuggestedRemedy*

Define a parallel and optional equivalent to cl. 33.5 in cl. 145.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5** *P* **212** *L* **0** # i-375

Thompson, Geoffrey — Individual

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

There is no parallel in cl. 145 to cl. 33.5. Although the group agreed that no one (that they knew of) had implemented MDIO in cl. 33 devices and, therefore, they didn't want to include it in cl. 145, there is a clear requirement in the project paperwork to do so. See Scope: "5 Criteria - Compatibility: All enhancements will be backward compatible with IEEE Std 802.3-2012 Clause 33."

*SuggestedRemedy*

Define a parallel and optional equivalent to cl. 33.5 in cl. 145.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5** *P* **212** *L* **25** # i-377

Thompson, Geoffrey — Individual

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

The entire text for "Management function requirements" is missing, either as complete text or by reference to cl. 33.5.

*SuggestedRemedy*

Add text to specify how to control and/or read the management functions to the draft.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5** *P* **212** *L* **30** # i-178

Yseboodt, Lennart — Philips Lighting

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

"Single-signature PDs advertising a Class 4 signature or higher and dual-signature PDs support Data Link Layer classification (see 145.3.6). Data Link Layer classification is optional for all other devices."

Incorrect statement about dual-sig devices.
Also, it is better to talk about 'requested Class' than use the old term 'advertise class signature'.

*SuggestedRemedy*

Replace by:
"Single-signature PDs requesting Class 4 or higher and dual-signature PDs that request Class 4 or higher on either Mode support Data Link Layer classification (see 145.3.6). Data Link Layer classification is optional for all other devices."

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.5.3** *P* **213** *L* **8** # i-179

Yseboodt, Lennart — Philips Lighting

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

Variable naming convention in the DLL section has lost cohesion due to many changes. There is a mix of CamelCase, lower_case_underscore, AND_ALL_CAPS.

Specifically, the use the ALL_CAPS variable names can lead to confusion with state names when they are used in text.

*SuggestedRemedy*

Rename DLL variables per the following rules, for Clause 145 only:
- Use CamelCase for variables linked to Clause 30 objects
- Use lower_case_underscore for DLL state diagram internal variables and constants

This will mostly affect the ALLCAPS variables that will be turned into lowercase.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.5.3.3.1** *P* **215** *L* **27** # i-180

Yseboodt, Lennart — Philips Lighting

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

Space is missing between two variable names.
Alignment on PSE_INITIAL_VALUE values is not enough to the right.

*SuggestedRemedy*

Add space or tab between variable names.
Also more tabs before the PSE_INITAL_VALUE values.

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.5.3.3.3** *P* **217** *L* **19** # i-461

Darshan, Yair

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

Missing parenthesis in the exit from RUNNING to PD_POWER_REQUEST in the part"
MirroredPDRequestedPowerValue NE TempVar"

*SuggestedRemedy*

Change from "MirroredPDRequestedPowerValue NE TempVar"
To: (MirroredPDRequestedPowerValue NE TempVar)

*Proposed Response* *Response Status* **O**

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*Cl* **145** *SC* **145.5.3.4.4** *P* **220** *L* **48** # i-181

Yseboodt, Lennart — Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

TOPIC: and/or
The Chicago Manual of Style says the following about the use of 'and/or':
"Avoid this Janus-faced term. It can often be replaced by 'and' or 'or' with no loss in meaning.
Where it seems needed, try 'or ... or both'. But also think of other possibilities."

In the 'pd_power_review' function:
"This function evaluates the power requirements of the PD based on local system changes and/or changes in the PSE allocated power value."

*SuggestedRemedy*

"This function evaluates the power requirements of the PD based on local system changes or changes in the PSE allocated power value."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5.3.6.3** *P* **226** *L* **2** # i-441

Darshan, Yair

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

This comment is marked LLDP?_ADHOC_1.
In the LLDP adhoc we made some changes to the PSE DLL state machine to reflect the changes made in the concept of how to fill in the TLV values of the pse_allocated_power and pse_allocated_power_alt(X) fields.

*SuggestedRemedy*

Adopt yseboodt_04_0917_LLDP.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5.3.6.3** *P* **226** *L* **5** # i-442

Darshan, Yair

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

This comment is marked LLDP?_ADHOC_2.
This comment and proposed remedy depend on the outcome of the LLDP adhoc recommendations regarding the question if pse_dll_ready_alt(X) need to be specified per alternative as currently is or need to be pse_dll_ready. In case that it is going to be pse_dll_ready, see the proposed remedy.

*SuggestedRemedy*

1. Change from: " (!pse_dll_enable_alt(X) + !pse_dll_ready_alt(X)) * (sig_type = dual)"
To: (!pse_dll_enable_alt(X) + !pse_dll_ready * (sig_type = dual)
2. In page 224 line 41 to change the pse_dll_ready_alt(X) variable definition to:
"pse_dll_ready
An implementation-specific control variable that indicates that the PSE has initialized Data Link Layer classification. This variable maps into the aLldpXdot3LocReady attribute (30.12.2.1.20).
Values:
FALSE: Data Link Layer classification has not completed initialization.
TRUE: Data Link Layer classification has completed initialization.
3. Delete aLldpXdot3LocReadyA and aLldpXdot3LocReadyB from Table 30-7.
4) Delete 30.12.2.1.18a aLldpXdot3LocReadyA content.
5) Delete 30.12.2.1.18b aLldpXdot3LocReadyB content.
6) In Table 145-50 page 222 in the PSE section: Change from "aLldpXdot3LocReadyA" to "aLldpXdot3LocReady" and from "pse_dll_ready_alt(X=A)" to "pse_dll_ready)" .
7) In Table 145-50 page 222 in the PSE section: Delete "aLldpXdot3LocReadyB" and "pse_dll_ready_alt(X=B)".

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5.3.7.3** *P* **228** *L* **38** # i-182

Yseboodt, Lennart Philips Lighting

*Comment Type* **ER** *Comment Status* **X**

TOPIC: and/or
The Chicago Manual of Style says the following about the use of 'and/or':
"Avoid this Janus-faced term. It can often be replaced by 'and' or 'or' with no loss in meaning.
Where it seems needed, try 'or ... or both'. But also think of other possibilities."

In the 'pd_power_review_mode(X)' function:
"This function evaluates the power requirements of the PD based on local system changes and/or changes in the PSE allocated power value."

*SuggestedRemedy*

"This function evaluates the power requirements of the PD based on local system changes or changes in the PSE allocated power value."

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5.3.7.4** *P* **229** *L* **2** # i-443

Darshan, Yair

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

This comment is marked LLDP?_ADHOC_3.
In the LLDP adhoc we made some changes to the PD DLL state machine to reflect the changes made in the concept of how to fill in the TLV values of the pd_requested_power and pd_requested_power_mode(X) fields.

*SuggestedRemedy*

Adopt yseboodt_04_0917_LLDP.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5.3.7.4** *P* **229** *L* **5** # i-444

Darshan, Yair

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

This comment is marked LLDP?_ADHOC_4.
In the condition (!pd_dll_enable_mode(X) + !pd_dll_ready_mode(X)) to the IDLE state the pd_dll_ready_mode(X) need to be pd_dll_ready In order to allow progressing to the INITIALIZE state in case PD want power on the unpowered pairset.

*SuggestedRemedy*

1. Change from: "(!pd_dll_enable_mode(X) + !pd_dll_ready_mode(X))"
To: (!pd_dll_enable_mode(X) + !pd_dll_ready)
2. In page 228 line 28 to change the pd_dll_ready_mode(X) variable definition to:
"pd_dll_ready
An implementation-specific control variable that indicates that the PD has initialized Data Link Layer classification. This variable maps into the aLldpXdot3LocReady attribute (30.12.2.1.20).
Values:
FALSE: Data Link Layer classification has not completed initialization.
TRUE: Data Link Layer classification has completed initialization."
3) In Table 145-40 page 222, PD section: Change from "aLldpXdot3LocReadyA" to "aLldpXdot3LocReady" and from "pd_dll_ready_mode(X=A)" to "pd_dll_ready)".
4. In Table 145-40 page 222, PD section delete the row "aLldpXdot3LocReadyB" , "pd_dll_ready_mode(X=B)"

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5.4.1** *P* **230** *L* **36** # i-183

Yseboodt, Lennart Philips Lighting

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

"During normal operation, the PSE is in the RUNNING state. If the PSE wants to initiate a change in the PD
allocation, the local_system_change is asserted and the PSE enters the PSE_POWER_REVIEW state, where
a new power allocation value, PSE_NEW_VALUE, is computed. If the PSE is in sync with the PD or if
PSE_NEW_VALUE is smaller than PSEAllocatedPowerValue, it enters the MIRROR_UPDATE state
where PSE_NEW_VALUE is assigned to PSEAllocatedPowerValue. It also updates PDRequestedPowerValueEcho and returns to the RUNNING state.
If the PSE's previously stored MirroredPDRequestedPowerValue changes, a request by the PD to change its
power allocation is recognized. It entertains this request only when it is in sync with the PD. The PSE
examines the request by entering the PD_POWER_REQUEST state. A new power allocation value,
PSE_NEW_VALUE, is computed. It then enters the MIRROR_UPDATE state where PSE_NEW_VALUE
is assigned to PSEAllocatedPowerValue. It also updates PDRequestedPowerValueEcho and returns to the
RUNNING state."

Don't use the word "state" when using state name.

*SuggestedRemedy*

Replace 'the YYY state' by 'YYY'.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.5.4.2** *P* **231** *L* **1** # i-184

Yseboodt, Lennart — Philips Lighting

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

"During normal operation, the PD is in the RUNNING state. If the PD's previously stored MirroredPSEAllocatedPowerValue is changed or local_system_change is asserted by the PD so as to change
its power allocation, the PD enters the PD_POWER_REVIEW state. In this state, the PD evaluates the
change and generates an updated power value called PD_NEW_VALUE. If PD_NEW_VALUE is less than
PDMaxPowerValue, it updates PDMaxPowerValue in the PD_POWER_REALLOCATION1 state. The PD
then finally enters the MIRROR_UPDATE state where PD_NEW_VALUE is assigned to PDRequestedPowerValue. It also updates PSEAllocatedPowerValueEcho and returns to the RUNNING
state.
In the above flow, if PD_NEW_VALUE is greater than PDMaxPowerValue, the PD waits until it is in sync
with the PSE and the PSE grants the higher power value. When this condition arises, the PD enters the PD
POWER_REALLOCATION2 state. In this state, the PD assigns PDMaxPowerValue to PDRequestedPowerValue and returns to the RUNNING state."

Do not use the word "state" when state names are used.

*SuggestedRemedy*

Replace 'the YYY state' by 'YYY'.

*Proposed Response* *Response Status* **O**

*Cl* **145** *SC* **145.7.3.3** *P* **250** *L* **16** # i-339

Lemahieu, Joris — ON Semiconductor

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

Error

*SuggestedRemedy*

Change 'Transient TR2 applied' to 'Transient TR3 applied'.

*Proposed Response* *Response Status* **O**

*Cl* **145A** *SC* **145A.2** *P* **261** *L* **39** # i-185

Yseboodt, Lennart — Philips Lighting

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

Rdiff is defined in equation 145A-3 but nowhere used.

*SuggestedRemedy*

Remove equation 145A-3 + the sentence above.

*Proposed Response* *Response Status* **O**

*Cl* **145A** *SC* **145A.2** *P* **262** *L* **14** # i-186

Yseboodt, Lennart — Philips Lighting

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

"NOTE--Each conductor in this Figure is the equivalent of two conductors in parallel."

It's a drawing of a resistor, not a conductor.

*SuggestedRemedy*

Change to:
"NOTE--Each resistor in this Figure represents two conductors of a pair in parallel."

*Proposed Response* *Response Status* **O**

*Cl* **145A** *SC* **145A.3** *P* **262** *L* **21** # i-445

Darshan, Yair

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

In the text "The end to end pair-to-pair effective current unbalance is equal..." there is no need to use "effective for the current unbalance due to the fact that "current" is always effective value which is incorrect for resistance unbalance in which we use "effective resistance unbalance"

*SuggestedRemedy*

Change from "The end to end pair-to-pair effective current unbalance is equal..."
To "The end to end pair-to-pair current unbalance is equal..."

*Proposed Response* *Response Status* **O**

*Cl* **145A** *SC* **145A.3** *P* **262** *L* **25** # i-187

Yseboodt, Lennart — Philips Lighting

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

"Current unbalance can occur in positive and negative powered pairs when a PSE uses all four pairs to deliver power to a PD."

We use the terms 'source power' (7x) and 'deliver power' (2x).

*SuggestedRemedy*

Replace "deliver power" by "source power" in the quoted sentence.

*Proposed Response* *Response Status* **O**

*Cl* **145A** *SC* **145A.2** *P* **262** *L* **33** # i-188

Yseboodt, Lennart — Philips Lighting

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

"Equation (145-15) is described in 145.2.8.5.1, specified for the PSE, assures that end to end pair-to-pair effective resistance unbalance will be met in the presence of all compliant unbalanced loads (Rload_min and Rload_max) attached to the PSE PI."
Current unbalance should be met, not effective resistance unbalance.

*SuggestedRemedy*

Change to:
"Equation (145-15) is described in 145.2.8.5.1, specified for the PSE, assures that pair-to-pair current unbalance requirements will be met in the presence of all compliant unbalanced loads (Rload_min and Rload_max) attached to the PSE PI."

*Proposed Response* *Response Status* **O**

*Cl* **145A** *SC* **145A.3** *P* **262** *L* **44** # i-446

Darshan, Yair

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

In the text "If pair-to-pair balance is actively controlled in a manner that changes effective resistance to achieve balance,
then the current unbalance measurement method described in 145.2.8.5.1 is suitable." the use of "suitable" is not sufficiently strong to say that there is not other choice in this use case but to use the method in 145.2.8.5.1. (by the way, the use of "should" is allowed and is being used more than 33 occurrences in 802.3bt)

*SuggestedRemedy*

Change from: "If pair-to-pair balance is actively controlled in a manner that changes effective resistance to achieve balance, then the current unbalance measurement method described in 145.2.8.5.1 is suitable."

To: "If pair-to-pair balance is actively controlled in a manner that changes effective resistance to achieve balance, then the current unbalance measurement method described in 145.2.8.5.1 should be used."

*Proposed Response* *Response Status* **O**

*Cl* **145A3** *SC* **145A3.1** *P* **262** *L* **51** # i-447

Darshan, Yair

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

In the text: "The effective resistance is the measured voltage Veff, divided by the current through the path e.g. the effective value of RPSE_min for i1 is RPSE_min=Veff1 / i1 as shown in Figure 145A-2.". The effective resistance of what?

*SuggestedRemedy*

Change the mentioned text to (**):
"The effective resistance **Rpse_min or RPSE_max** is the measured voltage Veff, divided by the current through the path e.g. the effective value of RPSE_min for i1 is RPSE_min=Veff1 / i1 as shown in Figure 145A-2.

*Proposed Response* *Response Status* **O**

*Cl* **145A3** *SC* **145A3.2** *P* **262** *L* **52** # i-448

Darshan, Yair

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

The verification procedure of the measurements of Rpse_min and Rpse_max is missing from 145A.3

*SuggestedRemedy*

Add the following text after line 54 in page 262:
"Rpse_min and RPSE_max effective resistance verification procedure is described below:
1) With the PSE powered on and connected to a constant power sink in the PD section through the elements shown in Figure 145A-2, which is set to PClass_PD measured at the PD PI, measure the currents i1, i2, i3 and i4 and the voltages Veff1, Veff2, Veff3 and Veff4.
2) Calculate the RPSE_min and RPSE_max values of each pair of the same polarity by calculating the following:
For the positive pairs:
R1=RPSE_min=Veff1/i1
R2=RPSE_max=Veff2/i2
For the negative pairs:
R3=RPSE_min=Veff3/i3
R4=RPSE_max=Veff4/i4
3) Verify that on each pair of the same polarity, RPSE_min and RPSE_max meets Equation 145-15.
4) Repeat steps 1 to 3 with the RCh_unb_min, RPD_min swapped location with RCh_unb_max, RPD_max. "

*Proposed Response* *Response Status* **O**

*Cl* **145A3** *SC* **145A3.2** *P* **263** *L* **5** # i-449

Darshan, Yair

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

Figure 145A-2 needs some improvements and corrections:
a) It needs to be in sync with Figure 145-22 regarding the separation of Rload_min/max to its components in order to allow setting Pclass_PD at the PD PI.
B) To describe the PSE load in a clear way.
C) Adding the borders of the link section
d) defining from what Rpse_min and Rpse_max consist of?
e) Clear definition of the measurements point of Veff_i
f) To correct the left border of the End to End pair to pair resistance arrow.

*SuggestedRemedy*

Replace Figure 145A-2 with the new proposal in darshan_07_0917.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145A** *SC* **145A.4** *P* **263** *L* **32** # i-189

Yseboodt, Lennart Philips Lighting

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

Missing space between "(e.g. V f1 -V f3 ).The common mode effective"

*SuggestedRemedy*

Add space.

*Proposed Response* *Response Status* **O**

*Cl* **145B** *SC* **145B.1.1** *P* **266** *L* **7** # i-450

Darshan, Yair

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

Figure 145B-3, CC_DET_SEQ=0 for dual-signature is parallel detection and not staggered detection nor staggered power on.
This drawing should be deleted since it doesn't fit to the definition of CC_DET_SEQ=0 for dual-signature in page 109 line 41.

*SuggestedRemedy*

Options:
1. Delete Figure 145-3 since it doesn't fit the definitions in Page 109 line 41 for dual-signature.
2. Update the definition for CC_DET_SEQ=0 for dual-signature to parallel and staggered detection and verify that state machine support it.

*Proposed Response* *Response Status* **O**

*Cl* **145B** *SC* **145B.1.2** *P* **266** *L* **20** # i-190

Yseboodt, Lennart Philips Lighting

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

"Figure 145B-4 illustrates a PSE implementing CC_DET_SEQ=1 when the connection check result is single.The power up timing may not be aligned as shown in the Figure."
Space missing between the two sentences.

*SuggestedRemedy*

Add space.

*Proposed Response* *Response Status* **O**

*Cl* **145B** *SC* **145B** *P* **267** *L* **7** # i-451

Darshan, Yair

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

Figure 145B-6 for the staggered option for the dual signature for CC_DET_SEQ=1, shows that the second alternative
DETECTION starts only after the Power up of the primary alternative which is OK but not limited just to this use case. The detection can starts also after the detection of the primary alternative. We need show it by additional drawing (145-6A), or drawing that shows all possibilities.

*SuggestedRemedy*

Adopt darshan_11_0917.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145B** *SC* **145B.1.2** *P* **267** *L* **11** # i-452

Darshan, Yair

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

The title of Figure 145B-6 is "Figure 145B-6--PSE implementing CC_DET_SEQ=1, do_cxn_chk result is dual,
staggered power on" which is correct per the drawing description however per the definition of CC_DET_SEQ=1 for dual-signature in page 109 line 43, CC_DET_SEQ is about Connection check and detection sequences while if it is staggered power on or not in dual-signature PD, is not the main issue to emphasis.

*SuggestedRemedy*

Change the title of Figure 145b-6 from:
"Figure 145B-6--PSE implementing CC_DET_SEQ=1, do_cxn_chk result is dual, staggered power on"
To : "Figure 145B-6--PSE implementing CC_DET_SEQ=1, do_cxn_chk result is dual, staggered detection and staggered power on"

*Proposed Response* *Response Status* **O**

*Cl* **145B** *SC* **145B.1.3** *P* **268** *L* **13** # i-453

Darshan, Yair

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

The title of Figure 145B-9 is "Figure 145B-9--PSE implementing CC_DET_SEQ=2, do_cxn_chk result is dual,
staggered power on" which is correct per the drawing description however per the definition of CC_DET_SEQ=2 for dual-signature in page 109 line46, CC_DET_SEQ is about Connection check and detection sequences while if it is staggered power on or not in dual-signature PD, is not the main issue to emphasis.

*SuggestedRemedy*

Change the title of Figure 145B-9 from :
"Figure 145B-9--PSE implementing CC_DET_SEQ=2, do_cxn_chk result is dual, staggered power on"
To : "Figure 145B-9--PSE implementing CC_DET_SEQ=2, do_cxn_chk result is dual, staggered detection and staggered power on"

*Proposed Response* *Response Status* **O**

*Cl* **145B** *SC* **145B.1.4** *P* **268** *L* **46** # i-454

Darshan, Yair

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

The title of Figure 145B-11 is "Figure 145B-11--PSE implementing CC_DET_SEQ=3, do_cxn_chk result is dual", missing the remain fact that it is staggered detection per the definition of CC_DET_SEQ=3 for dual-signature in page 109 line 48.

*SuggestedRemedy*

Change the title of Figure 145B-9 from :
"Figure 145B-11--PSE implementing CC_DET_SEQ=3, do_cxn_chk result is dual"
To : "Figure 145B-11--PSE implementing CC_DET_SEQ=3, do_cxn_chk result is dual, staggered detection and staggered power on"

*Proposed Response* *Response Status* **O**

*Cl* **145B** *SC* **145B.1.4** *P* **268** *L* **268** # i-455

Darshan, Yair

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

CC_DET_SEQ=3 means: Connection check is followed by staggered detection. Figure 145B-11 for dual-signature PD shows that CC_DEC_SEQ=3 is only possible when the Detection of the 2nd pairset starts after Tpon +Tx of 1st pairset which is possible but not the only possibility per CC_DET_SEQ=3 definition.
We need clearly to show that first we see CC, and then staggered detection, and then the classification and power_on can be staggered or not. We need to add Figure 145B-11A to show this possibility that shows all possibilities.

*SuggestedRemedy*

Adopt darshan_08_0917.pdf

*Proposed Response* *Response Status* **O**

*Cl* **145B** *SC* **145B.3** *P* **270** *L* **42** # i-191

Yseboodt, Lennart Philips Lighting

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

"PD may switch current level to class_sig_0 if it requests Autoclass
PD to maintain class signature '0' if it requests Autoclass for the duration of the class event"
Quotes around 0 are not needed.

*SuggestedRemedy*

Change to:
"PD may switch current level to class_sig_0 if it requests Autoclass
PD to maintain class signature 0 if it requests Autoclass for the duration of the class event".

*Proposed Response* *Response Status* **O**