Cl **00** *SC* **0** *P* *L* # 2

Anslow, Pete — Ciena

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

Not all changes in the draft have an associated editing instruction

SuggestedRemedy

Go through the draft making sure that all changes have an associated editing instruction. This includes at least 33A.5, Annex 33B, Annex 33C, Annex 33D, Annex 33E

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # 1

Anslow, Pete — Ciena

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

In general, for amended clauses, only the text of subclauses that are being changed are included.
Understanding that for Clause 33, the Task Force has decided to replace the whole Clause, this does not apply to other amended clauses.

SuggestedRemedy

In preperation for a request to proceed Working Group Ballot, go through the entire draft and for all amended clauses (except Clause 33) and remove all subclauses that are not being changed.
For Clause 25 this involves:
Leave heading for 25.4 but remove text
Remove heading and content for 25.4.1 through 25.4.4
Change editing instruction to: "Change text of 25.4.5 as follows:" (we do not use the term "section")
Remove heading and content for 25.4.5.1 through 25.4.6
Below heading for 25.4.7 add editing instruction: "Change text of 25.4.7 as follows:"
Remove heading and content for 25.4.5.1 through to the ned of the clause.

Proposed Response *Response Status* **O**

Cl **33** *SC* *P* *L* # 19

Darshan, Yair — Microsemi

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

For the next draft, it is preferred to show the new editorial marks (insertions and deletions) in addition to the changing bars. It helps to see the changes without the need to compare two documents.

SuggestedRemedy

For next Drafts: show the new editorial marks (insertions and deletions) in addition to the changing bars.

Proposed Response *Response Status* **O**

Cl **1** *SC* **1** *P* **1** *L* **1** # 201

Yseboodt, Lennart — Philips

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

Do you want me to reset the change bars in Clause 33 for D1.8 ?

SuggestedRemedy

Indicate YES/NO.

Proposed Response *Response Status* **O**

Cl **1** *SC* **1** *P* **1** *L* **1** # 202

Yseboodt, Lennart — Philips

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

As we are preparing for D2.0 in July, we need to be getting rid of all Editor's Notes.

SuggestedRemedy

Remove all Editor's Notes that do not specifically say "remove prior to publication".

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.12.2.1.18a** *P* **37** *L* **22** # 3

Anslow, Pete Ciena

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

Adding 30.12.2.1.18a, 30.12.2.1.18b, 30.12.2.1.18c, 30.12.2.1.18d means that Table 30-7 should be modified with new rows.
Similarly for 30.12.3.1.18a, 30.12.3.1.18b, 30.12.3.1.18c, 30.12.3.1.18d

SuggestedRemedy

Show additions to Table 30-7 for new subclauses.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.1.3** *P* **46** *L* **1** # 135

Yseboodt, Lennart Philips

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

"It should be noted that the cable references use "DC loop resistance," which... "

Wordy.

SuggestedRemedy

Less wordy:

"The cable references use "DC loop resistance," which... "

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.1.3.2** *P* **46** *L* **30** # 136

Yseboodt, Lennart Philips

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

"Within Clause 33 and its annexes, "channel", as defined in 1.4.134, refers to the electrical path on which the power signal passes, i.e., the link section."

'Power signal' seems strange.

SuggestedRemedy

"Within Clause 33 and its annexes, "channel", as defined in 1.4.134, refers to the electrical path on which the power is transferred, i.e., the link section."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.1** *P* **47** *L* **10** # 9

Bennett, Ken Sifos Technologies, In

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

Table 33-2, 3rd column header states "Range of maximum Classes supported".
The entries in the column are not ranges; they only show the maximum.

SuggestedRemedy

Change the column heading to:
"Maximum Class Supported."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5** *P* **47** *L* **10** # 67

Lukacs, Miklos Silicon Labs

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

It is hard to understand the column header of column 3 "Range of maximum classes supported."

SuggestedRemedy

Change it back to "Maximum Class Supported"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.1** *P* **47** *L* **10** # 66

Lukacs, Miklos Silicon Labs

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

In the column header of table 33-2: the meaning of "Short MPS support" is not clear at this point in the document.

SuggestedRemedy

Add a note under table 33-2:
Note 1: TMPS min = 6ms, see table 33-17 line 23, clause 33.3.5.2 and table 33-29 for more details.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.1.3.2** *P* **47** *L* **12** # 137

Yseboodt, Lennart Philips

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

Table 33-2. We made a change last time to show the "Range of maximum Classes supported".
But no ranges have been defined, only a maximum class.

SuggestedRemedy

Change 'Range of maximum Classes supported' data from:
"Class 3, Class 4, Class 4, Class 4, Class 6, Class 8" to:
"Class 3, Class 4, Class 4, Class 3 to 4, Class 3 to 6, Class 8"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.2** *P* **47** *L* **31** # 138

Yseboodt, Lennart Philips

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

"Midspan PSE." period is inside quotes.

SuggestedRemedy

Change to "Midspan PSE".

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5** *P* **56** *L* **7** # 218

Yseboodt, Lennart Philips

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

Updates to the PSE State Diagram

SuggestedRemedy

Adopt yseboodt_11_0516_psestatedia.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5** *P* **56** *L* **13** # 83

Schindler, Fred Seen Simply, Broadco

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

Variable parameter_type is used in legacy text to indicate the PSE type powering the system so that the electrical parameters (ILIM) may be set based on the PSE Type. The value of parameter_type is not a constant (p61, L53) and is determined by mutual identification of the PSE and PD. The function set_parameter_type is used to set the electrical values based on table values. New Types have these same parameters (ILIM) set based on class rather than Type. The Type 3 and 4 state diagrams (SDs) do not facilitate setting parameters based on class or Type. Comment D1.6 #278 turn the Type 3 and 4 parameter_type variable into a constant. The Type 3 and 4 SD do not use this name to perform a purpose.

New PSE Types are required to do physical classification so the facility to change electrical parameters is not required or included in the Type 3 and 4 SD. Remove the unnecessary use of parameter_type in new text. This comment may be covered in schindler_3bt_01_05_16.

SuggestedRemedy

Strike lines 40 to 45 on page 65.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.1.1** *P* **57** *L* **1** # 140

Yseboodt, Lennart Philips

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

original text: "Editors Note (remove D2.0): Text is needed to introduce the specifics of the Type 3 and Type 4 state diagram.
Specifically the structure and nomenclature (primary, secondary semi-independent state diagrams)."

SuggestedRemedy

Adopt yseboodt_06_0516_sdintro.pdf
Remove Note.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.4** *P* **57** *L* **1** # 139

Yseboodt, Lennart Philips

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

Values are written on same line after word "values:"
This is hard to read.

SuggestedRemedy

Move values to next line and use tabs, like we did for the Type 3+4 variable list.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.3** *P* **57** *L* **13** # 141

Yseboodt, Lennart Philips

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

Type still has underline.

SuggestedRemedy

Remove underline.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.8** *P* **65** *L* **39** # 64

Lukacs, Miklos Silicon Labs

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

A timing diagram showing the cconnection check sequences would help in understanding the text and would make the intent more clear.

SuggestedRemedy

See timing diagrams presentation (Lukacs)

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.8** *P* **65** *L* **40** # 219

Yseboodt, Lennart Philips

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

original text: "parameter_type: Values:
3: Type 3 PSE parameter values
4: Type 4 PSE parameter values"

The legacy SD, uses PSE_TYPE for the purpose we
are now using parameter_type in the new SD.
We did this, because parameter_type is used in the DLL state machine. The link however between the DLL SM and the PSE SM needs to be properly looked at anyway and revised.

SuggestedRemedy

- Rename parameter_type to PSE_TYPE.
"PSE_TYPE
A constant indicating the Type of the PSE.
Values:
3: Type 3 PSE
4: Type 4 PSE"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.8** *P* **65** *L* **40** # 65

Lukacs, Miklos Silicon Labs

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

constant named "parameter_type" is written in small caps, while the other constant "CC_DET_SEQ" is ALL CAPS

SuggestedRemedy

They should be written similarly, and preferably ALL CAPS:
PARAMETER_TYPE

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **66** *L* **18** # 142

Yseboodt, Lennart — Philips

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

alt_pri_pwrd and alt_sec_pwrd do not follow our convention of putting _pri and _sec at the end of the variable name.

Same for tinrush_pri_timer and tinrush_sec_timer.

SuggestedRemedy

Rename alt_pri_pwrd => alt_pwrd_pri
Rename alt_sec_pwrd => alt_pwrd_sec
Rename tinrush_pri_timer => tinrush_timer_pri
Rename tinrush_sec_timer => tinrush_timer_sec

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **66** *L* **39** # 70

Picard, Jean — Texas Instruments

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

"A variable indicating if the PSE generates 3 class events to..."
this is about primary alternate, it should be mentioned.

SuggestedRemedy

Replace with:
"A variable indicating if the PSE generates 3 class events on the primary alternate to... "

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **66** *L* **39** # 102

Stover, David — Linear Technology

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

"dual-signature" is hyphenated and not capitalized, per our convention. There are 4 locations where this convention is not followed.

SuggestedRemedy

Global search and replace "dual signature" with "dual-signature".

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **66** *L* **46** # 69

Picard, Jean — Texas Instruments

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

The class_4PID_mult_events_sec variable is missing from the list of variables although it is used in the SM

SuggestedRemedy

Add the following variable from "Picard_03_0316.pdf" page 1:

"class_4PID_mult_events_sec:
A variable indicating if the PSE generates 3 class events on the secondary alternate to determine if the dual signature PD is a candidate for 4-pair power.
TRUE: the PSE generates at least 3 class events to determine if the PD is a candidate for 4-pair power.
FALSE: the PSE does not need to generate 3 class events to determine if the PD is a candidate for 4-pair power."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **67** *L* **44** # 103

Stover, David — Linear Technology

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

The variable dll_4PID is redundant with pd_dll_power_type.

SuggestedRemedy

Remove dll_4PID. Replace logic in POWER_ON state as follows:
From: (dll_4PID + ((pd_req_pwr > 4) * (pse_avail_pwr > 4)) + (mr_pse_ss_mode = 1))
To: ((pd_dll_power_type > 2) + ((pd_req_pwr > 4) * (pse_avail_pwr > 4)) + (mr_pse_ss_mode = 1))

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **68** *L* **10** # 43

Johnson, Peter — Sifos Technologies

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

The definitions for Iport-2P-pri and Iport-2P-sec each finish with (see 33.2.8.6), but there is no mention of these variables in 33.2.8.6.

SuggestedRemedy

Remove the references to 33.2.8.6

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **68** *L* **12** # 220

Yseboodt, Lennart Philips

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

highest_2p is written with a small letter p.

SuggestedRemedy

Change to highest_2P.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **68** *L* **17** # 239

Yseboodt, Lennart Philips

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

"mps_sum
A variable indicating that the PSE uses the method consisting of measuring the sum of IPORT-2P of both pairsets to determine if the DC MPS component is present."

This does not highlight that mps_sum may only be TRUE in case of a single-signature PD.

SuggestedRemedy

"mps_sum
A variable indicating that the PSE uses the method consisting of measuring the sum of IPORT-2P of both pairsets to determine if the DC MPS component is present. mps_sum may only be set to TRUE when connected to a single-signature PD."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **69** *L* **11** # 143

Yseboodt, Lennart Philips

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

Comment #262 / D1.6 attempted to fix this but was only partially adopted.
The description of variable mr_pse_enable duplicates bit assignments already listed in 33.5.1.

SuggestedRemedy

Remove all the "This value corresponds with..." sentences from mr_pse_enable.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **70** *L* **18** # 144

Yseboodt, Lennart Philips

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

pd_cls_4PID_pri:
This variable indicates that 4PID has been established by confirming that both pairsets have a valid detection signature and that a device classified as a Type 3 or Type 4 PD.

Does not mention on which Alternative.

SuggestedRemedy

pd_cls_4PID_pri:
This variable indicates that 4PID has been established on the Primary Alternative by confirming that both pairsets have a valid detection signature and that a device classified as a Type 3 or Type 4 PD.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **70** *L* **19** # 104

Stover, David Linear Technology

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

Definition of pd_cls_4PID_pri is inconsistent with assignment in PSE SD: "This variable indicates that 4PID has been established by confirming that both pairsets have a valid detection signature and that a device classified as a Type 3 or Type 4 PD."

SuggestedRemedy

Replace variable definition as follows: "This variable indicates that a device on the primary pairset classified as a Type 3 or Type 4 PD."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **70** *L* **25** # 173

Yseboodt, Lennart Philips

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

pd_cls_4PID_sec:
This variable indicates that 4PID has been established by confirming that both pairsets have a valid detection signature and that a device classified as a Type 3 or Type 4 PD.

Does not mention on which Alternative.

SuggestedRemedy

pd_cls_4PID_sec:
This variable indicates that 4PID has been established on the Secondary Alternative by confirming that both pairsets have a valid detection signature and that a device classified as a Type 3 or Type 4 PD.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **70** *L* **25** # 105

Stover, David Linear Technology

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

Definition of pd_cls_4PID_sec is inconsistent with assignment in PSE SD: "This variable indicates that 4PID has been established by confirming that both pairsets have a valid detection signature and that a device classified as a Type 3 or Type 4 PD."

SuggestedRemedy

Replace variable definition as follows: "This variable indicates that a device on the secondary pairset classified as a Type 3 or Type 4 PD."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **70** *L* **39** # 221

Yseboodt, Lennart Philips

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

original text: "Editors Note: Mutual identification will require a variable pd_power_type similar to pd_dll_power_ type."

SuggestedRemedy

Remove Editors note and replace it by:
pd_power_type
A control variable output by the PSE power control state diagram (Figure 33-49) that indicates the Type of PD as advertised through Physical Link Layer classification.
Values:
1: PD is a Type 1 PD or a Type 3 PD (default)
2: PD is a Type 2 PD, a Type 3 PD, or a Type 4 PD
3: PD is a Type 3 PD
4: PD is a Type 4 PD

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **70** *L* **48** # 174

Yseboodt, Lennart Philips

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

Why use the negation "power_not_available"?
In state diagram is written then (not power_not_available) and is double negation.

SuggestedRemedy

- Change to "power_available"
- Reverse False/True meaning
- add/remove "!" in the state diagram where it is used.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **73** *L* **32** # 106

Stover, David Linear Technology

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

"Shall" statement potentially in conflict with optional PSE behavior.

SuggestedRemedy

Replace: "PSEs shall issue no more Class events than the Class they are capable of supporting."
With: "Type 3 and Type 4 PSEs shall issue no more Class events than the Class they are capable of supporting unless a class reset event clears the PD class and mark event counts."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.10** *P* **73** *L* **43** # 107

Stover, David Linear Technology

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

tcc_timer is defined but never used in PSE SD. I believe we intentionally removed this from SD in review of D1.6.

SuggestedRemedy

Remove tcc_timer from list of Type 3 and Type 4 timers.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.10** *P* **73** *L* **44** # 15

Darshan, Yair Microsemi

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

Missing link to Table 33-7 in the following text:
"tcc_timer
A timer used to monitor the duration of Connection Check."

SuggestedRemedy

Change from:
"tcc_timer
A timer used to monitor the duration of Connection Check."

To:
"tcc_timer
A timer used to monitor the duration of Connection Check. See Table 33–7."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.10** *P* **75** *L* **31** # 222

Yseboodt, Lennart Philips

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

The Type 3/4 State diagram does not use or need a tpdc_timer, but it is defined in 33.2.5.10.

SuggestedRemedy

Remove tpdc_timer from 33.2.5.10

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.11** *P* **75** *L* **50** # 61

Lukacs, Miklos Silicon Labs

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

There is a typo here (if) and the text is not precise enough:
"pd autoclass is set to True when a class signature if '0' is detected, otherwise it is set to False."

SuggestedRemedy

pd autoclass is set to True when a class signature of '0' is detected during the TACS window (no earlier than TACS min and no later than TACS max, as defined in Table 33–27), otherwise it is set to False.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.11.** *P* **76** *L* **2** # 62

Lukacs, Miklos Silicon Labs

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

mr pd autoclass refers to the signature seen during the first (long) class event, before the TACS window.

SuggestedRemedy

The PD classification signature seen before TACS min during the long first class event.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.11** *P* **76** *L* **10** # 63

Lukacs, Miklos — Silicon Labs

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

A timing diagram showing the classification part of Autoclass would help in understanding the text and would make the intent more clear.

SuggestedRemedy

See timing diagrams presentation (Lukacs)

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.11** *P* **76** *L* **17** # 108

Stover, David — Linear Technology

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

Propose we add an additional connection check result to express, for example, that the status of the link segment has changed during do_cxn_chk.

SuggestedRemedy

Add a result to sig_type: "Invalid: Neither open circuit, nor single-signature PD, nor dual-signature PD connection check signature has been found."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **79** *L* **1** # 223

Yseboodt, Lennart — Philips

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

Entry arc into IDLE:
pse_reset + error_condition * (mr_pse ...) can be ambiguous
I have not found any mention of a defined order of operation. Convention is for AND to take precedence over OR, but this is not a universal truth.

SuggestedRemedy

Use brackets whenever ambiguity is possible.
pse_reset + (error_condition * (mr_pse ...)).

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **79** *L* **35** # 71

Picard, Jean — Texas Instruments

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

The IF(CC_DET_SEQ ≠ 2) statement is missing, seems to have been deleted from previous Draft.

SuggestedRemedy

Re-instate the IF(CC_DET_SEQ ≠ 2) statement. Refer to "Picard_02_0316.pdf" page 1

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **80** *L* **9** # 109

Stover, David — Linear Technology

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

Transition logic in conflict: Out of DETECT_EVAL, PSE can be required to follow arcs "A" and "A1" simultaneously.

SuggestedRemedy

Replace: "(mr_pse_alternative != both) * (sig_pri = valid) + (det_temp = both_neither) * (sig_sec = valid)"
With: "(mr_pse_alternative != both) * (det_temp = only_one) * (sig_pri = valid) + (det_temp = both_neither) * (sig_sec = valid)"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **80** *L* **9** # 175

Yseboodt, Lennart — Philips

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

Figure 33-15, arc from DETECT_EVAL to A1
(mr_pse_alternative [?] both) * (sig_pri = valid) + (det_temp = both_neither) * (sig_sec = valid)

Missing brackets.

SuggestedRemedy

((mr_pse_alternative [?] both) * (sig_pri = valid)) + ((det_temp = both_neither) * (sig_sec = valid))

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **80** *L* **24** # 176

Yseboodt, Lennart Philips

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

Figure 33-15, arc from CXN_CHK_DETECT_EVAL to A:
Brackets are not consistently used => what was the intent here ?

SuggestedRemedy

TFTD.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **80** *L* **30** # 179

Yseboodt, Lennart Philips

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

Figure 33-15, arc from DETECT_EVAL to A:
(...) + (mr_pse_alternative is not both) * (sig_pri is not valid)
is ambiguous

SuggestedRemedy

use brackets... probably meant:
(...) + ((mr_pse_alternative is not both) * (sig_pri is not valid))
could also be
((...) + (mr_pse_alternative is not both)) * (sig_pri is not valid)

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **80** *L* **30** # 178

Yseboodt, Lennart Philips

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

Figure 33-15, arc from DETECT_EVAL to A:
(noth_neither) is misspelled.

SuggestedRemedy

Change to both_neither.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **80** *L* **30** # 72

Picard, Jean Texas Instruments

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

2nd line of equation: sig ≠ valid should read sig_pri ≠ valid. Also "noth" should be "both"

SuggestedRemedy

Replace 2nd line with ((det_temp = only_one) * (sig_pri ≠ valid) + (det_temp = both_neither) * (sig_sec ≠ valid) +

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **80** *L* **30** # 177

Yseboodt, Lennart Philips

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

Figure 33-15, arc from DETECT_EVAL to A:

(mr_pse_alternative = both) * ((det_temp = only_one) * (sig [?] valid) + (det_temp = noth_neither) * (sig_sec [?] valid) + ((CC_DET_SEQ = 0) + (CC_DET_SEQ = 3) * (det_temp = only_one) * tdet2det_timer_done)) + (mr_pse_alternative [?] both) * (sig_pri [?] valid)

"sig" doesn`t exist. sig_pri is meant ?

SuggestedRemedy

Change sig to sig_pri.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **81** *L* **8** # 110

Stover, David Linear Technology

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

Conditional logic in SS state diagram (POWER_UP) may be simplified with no change to function.

SuggestedRemedy

Replace: "IF (mr_pse_alternative = both) * (mr_pse_ss_mode = 1) + ((pd_req_pwr > 4) * (pse_avail_pwr > 4)) THEN"
With: "If (mr_pse_alternative = both) * (mr_pse_ss_mode = 1) + (pd_req_pwr > 4) THEN"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **81** *L* **9** # 73

Picard, Jean Texas Instruments

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

A parenthesis is missing and another is at the wrong location.

SuggestedRemedy

Replace with this
IF (mr_pse_alternative = both) * ((mr_pse_ss_mode = 1) +
((pd_req_pwr > 4) * (pse_avail_pwr > 4))) THEN

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **81** *L* **18** # 74

Picard, Jean Texas Instruments

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

A parenthesis is missing

SuggestedRemedy

Insert a parenthesis between IF and "dll_4PID"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **81** *L* **20** # 111

Stover, David Linear Technology

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

Conditional logic in SS state diagram (POWER_ON) may be simplified with no change to function.

SuggestedRemedy

Replace: "IF dll_4PID + ((pd_req_pwr > 4) * (pse_avail_pwr < 4)) + (mr_pse_ss_mode = 1)) THEN"
With: "IF dll_4PID + (pd_req_pwr > 4) + (mr_pse_ss_mode = 1) THEN"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **81** *L* **39** # 112

Stover, David Linear Technology

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

Transition logic from POWER_ON into POWER_DENIED is (power_not_available * !tmpdo_timer_done * etc); Transition logic from POWER_ON into IDLE is (!power_not_available * tmpdo_timer_done * etc). When power_not_available and tmpdo_timer_done are simultaneously TRUE, PSE state machine cannot transition to either IDLE or POWER_DENIED states.

SuggestedRemedy

Remove "!tmpdo_timer_done" from transition logic between POWER_ON and POWER_DENIED.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **83** *L* **32** # 113

Stover, David Linear Technology

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

Transition logic from POWER_ON_PRI into POWER_DENIED_PRI is (power_not_available_pri * !tmpdo_timer_done_pri * etc). Transition logic from POWER_ON_PRI into IDLE_PRI is (!power_not_available_pri * tmpdo_timer_pri_done * etc). When power_not_available_pri and tmpdo_timer_pri_done are simultaneously TRUE, primary alt state machine cannot transition into either IDLE_PRI or POWER_DENIED_PRI states.

SuggestedRemedy

Remove "!tmpdo_timer_pri_done" from transition logic between POWER_ON_PRI and POWER_DENIED_PRI.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **85** *L* **30** # 114

Stover, David — Linear Technology

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

Transition logic from POWER_ON_SEC into POWER_DENIED_SEC is (power_not_available_sec * !tmpdo_timer_done_sec * etc). Transition logic from POWER_ON_SEC into IDLE_SEC is (!power_not_available_sec * tmpdo_timer_sec_done * etc). When power_not_available_sec and tmpdo_timer_sec_done are simultaneously TRUE, secondary alt state machine cannot transition into either IDLE_SEC or POWER_DENIED_SEC states.

SuggestedRemedy

Remove "!tmpdo_timer_sec_done" from transition logic between POWER_ON_SEC and POWER_DENIED_SEC.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.9** *P* **85** *L* **35** # 240

Yseboodt, Lennart — Philips

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

We adopted a new MPS state diagram last cycle.
It works great for single-signature, but does not address dual-signature, which need independent MPS.

SuggestedRemedy

Adopt yseboodt_07_0516_dsmps.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **86** *L* **1** # 115

Stover, David — Linear Technology

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

Per 33.2.7.2, the PSE shall return to the IDLE state in the event any measured IClass is equal to or greater than IClass_LIM. This is not reflected in the PSE SD.

SuggestedRemedy

Add transition arcs to the appropriate idle state out of all CLASS_EV states as defined in 33.2.7.2, page 98, Line 25. Transition logic to read, "IClass >= IClass_LIM".

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **86** *L* **52** # 224

Yseboodt, Lennart — Philips

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

Figure 33-19, arc from MARK_EV_LAST to C1 has no condition.

SuggestedRemedy

Add condition: "tme2_timer_done".

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **86** *L* **53** # 180

Yseboodt, Lennart — Philips

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

C1 exit arrow not readable.

SuggestedRemedy

Widen arrow to better fit text.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **87** *L* **17** # 116

Stover, David — Linear Technology

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

Transition logic from CLASS_EV2_PRI to MARK_EV_LAST_PRI redundantly performs a check for !class_4PID_mult_events_pri (was already checked out of CLASS_EV1_LCE_PRI).

SuggestedRemedy

Strike the transition arc from CLASS_EV2_PRI to MARK_EV_LAST_PRI.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **87** *L* **19** # 117

Stover, David — Linear Technology

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

Transition logic from CLASS_EV2_PRI to MARK_EV2_PRI may be simplified.

SuggestedRemedy

Change transition logic from CLASS_EV2_PRI to MARK_EV2_PRI as follows:
"tcle2_timer_pri_done * (mr_pd_class_detected = temp_var_pri)"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **87** *L* **36** # 118

Stover, David — Linear Technology

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

State CLASS_EV1_LCE_PRI should read CLASS_EV1_LCE_RESET_PRI as described in 33.2.7.2

SuggestedRemedy

Change state name "CLASS_EV1_LCE_PRI" to "CLASS_EV1_LCE_RESET_PRI"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **87** *L* **40** # 79

Picard, Jean — Texas Instruments

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

CLASS_EV1_LCE_PRI title is already used somewhere else

SuggestedRemedy

Replace with this
CLASS_EV1_LCE_RESET_PRI. Refer to Picard_02_0316.pdf page 10

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **88** *L* **16** # 119

Stover, David — Linear Technology

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

Transition logic from CLASS_EV2_SEC to MARK_EV_LAST_SEC redundantly performs a check for !class_4PID_mult_events_sec (was already checked out of CLASS_EV1_LCE_SEC).

SuggestedRemedy

Strike the transition arc from CLASS_EV2_SEC to MARK_EV_LAST_SEC.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **88** *L* **18** # 120

Stover, David — Linear Technology

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

Transition logic from CLASS_EV2_SEC to MARK_EV2_SEC may be simplified.

SuggestedRemedy

Change transition logic from CLASS_EV2_SEC to MARK_EV2_SEC as follows:
"tcle2_timer_pri_done * (mr_pd_class_detected = temp_var_sec)"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **88** *L* **35** # 121

Stover, David — Linear Technology

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

State CLASS_EV1_LCE_SEC should read CLASS_EV1_LCE_RESET_SEC as described in 33.2.7.2

SuggestedRemedy

Change state name "CLASS_EV1_LCE_SEC" to "CLASS_EV1_LCE_RESET_SEC"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **88** *L* **40** # 80

Picard, Jean — Texas Instruments

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

CLASS_EV1_LCE_SEC title is already used somewhere else

SuggestedRemedy

Replace with this
CLASS_EV1_LCE_RESET_SEC. Refer to Picard_02_0316.pdf page 10

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **89** *L* **3** # 181

Yseboodt, Lennart — Philips

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

Figure 33-22, entry arcs into IDLE_MPS_*
"higest_2p" is misspelled.

SuggestedRemedy

Change to "highest_2P"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **89** *L* **14** # 78

Picard, Jean — Texas Instruments

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

missing parentheses

SuggestedRemedy

Middle flowchart: (highest_2p = pri)
Right flowchart: (higest_2p = sec)

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **89** *L* **21** # 77

Picard, Jean — Texas Instruments

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

"!" should NOT be there in the left column of Figure 33-22

SuggestedRemedy

Remove the "!" symbol to read "mr_mps_valid_sum"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **89** *L* **23** # 76

Picard, Jean — Texas Instruments

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

PSE MPS monitor State Diagram for DS PD is missing

SuggestedRemedy

See yseboodt_07_0516_dsmps.pdf presentation

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **89** *L* **23** # 75

Picard, Jean — Texas Instruments

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

Figure 33-22 only shows the case of SS PD

SuggestedRemedy

Indicate in the description that this is applicable to SS PD

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **89** *L* **33** # 122

Stover, David Linear Technology

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

When PSE is in the POWER_ON state, both alt_xxx_pwrd and pwr_app_xxx are TRUE and the PSE inrush state diagram cycles through IDLE_INRUSH and MONITOR_INRUSH states, starting and stopping tinrush_xxx_timer indefinitely.

SuggestedRemedy

Replace transition logic from IDLE_INRUSH_PRI to MONITOR_INRUSH_PRI with "alt_pri_pwrd * !pwr_app_pri".
Replace transition logic from IDLE_INRUSH_SEC to MONITOR_INRUSH_SEC with "alt_sec_pwrd * !pwr_app_sec".

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **89** *L* **48** # 14

Darshan, Yair Microsemi

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

In comment 202 from D.16 regarding overload.
At the response, the comment editor wrote:
"As of right now, we have multiple optional behaviors in the SD, how do we want to handle those cases?"
This should be converted to editor note to be addressed by the group.
The above was meant to increase PSE design flexibility.

SuggestedRemedy

Add the following Editor Note at the end of the SM clause:
Editor Note: "We have multiple optional behaviors in the SD, how do we want to handle those cases?"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.6** *P* **90** *L* **5** # 33

Darshan, Yair Microsemi

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

In the following text:
"Also, a PSE may successfully detect a PD but then opt not to power the detected PD."

The following case is not covered:
PSE may successfully detect and classify a PD but then opt not to power the detected PD.

To add text that PSE may detect and not continue and go to IDLE or detect and classify and not go to POWER_UP or detect and classify and POWER_UP and not continue to POWER_ON.
To find the location with the existing text and update it.

SuggestedRemedy

Change to:
"Also, a PSE may successfully detect and classify a PD but then opt not to power the detected PD."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.6** *P* **90** *L* **6** # 123

Stover, David Linear Technology

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

Allowable detection behavior is inconsistent between CC_DET_SEQ variants. Particularly, CC_DET_SEQ 3 is unique in that an invalid detection signature on alt_pri prevents PSE from investigating alt_sec.

SuggestedRemedy

Add the following text: "A Type 3 or Type 4 PSE detecting an invalid PD signature on either alternative may perform detection on the other alternative."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.6.1** *P* **90** *L* **15** # 182

Yseboodt, Lennart Philips

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

Vvalid(max) uses brackets, this is not convention

SuggestedRemedy

Change to Vvalid max.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.6.1** *P* **90** *L* **39** # 124

Stover, David Linear Technology

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

tcc_timer has been intentionally removed from PSE SD, but Tcc remains in Table 33-7.

SuggestedRemedy

Remove reference to Tcc on line 27, Table 33-7, and accompanying NOTE on Tcc min.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.6.1** *P* **90** *L* **40** # 41

Darshan, Yair Microsemi

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

Table 33-7 item 3 and the note below.

From the note it appears that before we will start connection check we need to wait until full mated MDI exists Tcc minimum. And then item 3 requires Tcc_min=200msec min from start to completion which can be interpreted that total Tcc_min is higher than 200msec.
The requirement is not clear.
The note doesn't explain the Tcc_min.

SuggestedRemedy

"NOTE-When a link segment is connected to an MDI, not all contacts are made simultaneously. Therefore, a minimum total time (Tcc_min) is required to complete connection check that includes the time required for full mated MDI and the time required to perform the connection check function."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.6.1** *P* **90** *L* **52** # 40

Darshan, Yair Microsemi

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

In the text:
"If the voltage on either pairset rises above Vvalid max (defined in Table 33–8) during connection check, the PSE shall reset the PD by bringing the voltage at the PI below Voff max (defined in Table 33–17) for at least
TReset (defined in Table 33–15) before performing classification."

We need to define the time in which we consider the voltage is above Vvalid to be imuuned for noise.

SuggestedRemedy

Change to:
"If the voltage on either pairset rises above Vvalid max (defined in Table 33–8) **for more than TBD msec** during connection check, the PSE shall reset the PD by bringing the voltage at the PI below Voff max (defined in Table 33–17) for at least TReset (defined in Table 33–15) before performing classification."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.6.1** *P* **90** *L* **52** # 203

Yseboodt, Lennart Philips

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

"If the voltage on either pairset rises above Vvalid max (defined in Table 33-8) during connection check, the PSE shall reset the PD by bringing the voltage at the PI below Voff max (defined in Table 33-17) for at least TReset (defined in Table 33-15) before performing classification."

This way of referring to Tables is used nowhere else in the Draft.

SuggestedRemedy

"If the voltage on either pairset rises above Vvalid max, as defined in Table 33-8, during connection check, the PSE shall reset the PD by bringing the voltage at the PI below Voff max, as defined in Table 33-17, for at least TReset, as defined in Table 33-15, before performing classification."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.6.4** *P* **93** *L* **11** # 204

Yseboodt, Lennart Philips

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

original text: "CAUTION
In a multiport system, the implementer should maintain DC isolation through the termination circuitry to eliminate cross-port leakage currents."
Format and position of this note is inconsistent with 802.3-2015.

SuggestedRemedy

Follow same style as 802.3-2015.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.6.7** *P* **93** *L* **51** # 183

Yseboodt, Lennart Philips

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

4PID in PSE section is named 4P-ID in PD section.
Make this consistent.

SuggestedRemedy

Change "4P-ID" to "4PID" throughout the doc.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **94** *L* **32** # 84

Schindler, Fred Seen Simply, Broadco

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

Clause 33 is designed to permit understanding of the requirements of the network device after reading mainly the relevant PSE or PD subsections. To aid the reader in understanding of the PSE classification section add references to the PD section that provides details on classification event response interpretation.

SuggestedRemedy

Modify existing text,
“The assigned Class is the results of the PDs requested Class and the number of class events produced by the PSE as shown in Table 33–11 and Table 33–12.”

with,

“The assigned Class is the results of the PDs requested Class shown in Table 33-24 for single-signature PDs and Table 33-25 for dual-signature PDs, and the number of class events produced by the PSE as shown in Table 33–11 and Table 33–12.”

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **94** *L* **33** # 241

Yseboodt, Lennart Philips

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

"When a PD requests a higher Class than a Type 3 or Type 4 PSE can support, the PSE assigns the PD Class 3, 4, or 6, whichever is the highest that it can support."

Doesn`t take dual-signature PDs into account.

SuggestedRemedy

"When a single-signature PD requests a higher Class than a Type 3 or Type 4 PSE can support, the PSE assigns the PD Class 3, 4, or 6, whichever is the highest that it can support. When a dual-signature PD requests a higher Class than a Type 3 or Type 4 PSE can support, the PSE assigns the PD Class 3 or 4, whichever is the highest that it can support."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **95** *L* **25** # 225

Yseboodt, Lennart Philips

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

"... with a maximum value defined in Table 33-11 of the corresponding PD Class and a minimum of 4.0 Watts."

SuggestedRemedy

Should be assigned Class to be completely clear.
"... with a maximum value defined in Table 33-11 of the Class assigned to the PD and a minimum of 4.0 Watts."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **95** *L* **43** # 184

Yseboodt, Lennart Philips

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

Table 33-11, some ranges are very small, maybe better to make it explicit.

SuggestedRemedy

Change "2 to 3" into "2, 3".

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **96** *L* **1** # 125

Stover, David Linear Technology

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

There is no indication in Table 33–12 that the PSE may, for example, issue 3 class events to a dual-signature PD for Type discovery, perform class reset, then issue a number of events consistent with PSE available power.

SuggestedRemedy

Add a note below Table 33–12: "Note: PSEs may issue additional class events to determine additional information about the PD and negotiate power allocation. See 33.2.7.2 for details." Reference this note in column header "Number of PSE class events".

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **96** *L* **2** # 185

Yseboodt, Lennart Philips

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

Column "Assigned Class" is missing in Table 33-12.

SuggestedRemedy

Add this column, values: 1, 2, 3, 3, 4, 5.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **96** *L* **12** # 187

Yseboodt, Lennart Philips

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

Table 33-12, ranges are very small, maybe better to make it explicit.

SuggestedRemedy

Change "1 to 3" into "1, 2, 3".
Do this for all ranges in this Table for the "Number of PSE class events" column.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **96** *L* **12** # 186

Yseboodt, Lennart Philips

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

Ranges are used with keyword "to" and not a dash.

SuggestedRemedy

Change "4-5" into "4 to 5".

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **96** *L* **13** # 242

Yseboodt, Lennart Philips

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

Table 33-12 uses two dashes in the first column, rows 4 and 5.

SuggestedRemedy

Replace dash by the word 'to'.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **96** *L* **17** # 126

Stover, David Linear Technology

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

There is a note below Table 33–11, power classifications for single-signature PDs: "Data Link Layer classification takes precendence over Physical Layer classification." Table 33–12, power classification for dual-signature PDs, does not have such a note.

SuggestedRemedy

Add a note below Table 33–12: "Note: Data Link Layer classification takes precendence over Physical Layer classification."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **96** *L* **29** # 226

Yseboodt, Lennart Philips

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

We removed the PD equivalent of Table 33-13 in the PD section, because the text already covered that information. The same is true in the PSE section.
We can get rid of the table.

SuggestedRemedy

Remove Table 33-13.

Change the text on page 97, line 4-12 as follows:
"Subsequent to successful detection, all Type 2 PSEs ***shall*** perform classification using at least one of the following: Multiple-Event Physical Layer classification; Multiple-Event Physical Layer classification and Data Link Layer classification; or Single-Event Physical Layer classification and Data Link Layer classification.
Subsequent to successful detection, all Type 3 and Type 4 PSEs ***shall*** perform classification using at least one of the following: Multiple-Event Physical Layer classification; or Multiple-Event Physical Layer classification and Data Link Layer classification. Both pairsets attached to a dual-signature PD shall be classified by Type 3 and Type 4 PSEs that will deliver 4-pair power."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7** *P* **97** *L* **16** # 127

Stover, David Linear Technology

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

Unclear if PSE is allowed to investigate classification result on valid pairsets of a port outside behavior defined in PSE SD; behavior described in PSE SD addresses valid cases for powering a PD, does not address PSE simply investigating both pairsets of the link.

SuggestedRemedy

Add the following text: "A Type 3 or Type 4 PSE connected to a dual-signature PD may perform classification on any pairset presenting a valid detection signature prior to returning to the IDLE state."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.1** *P* **97** *L* **32** # 243

Yseboodt, Lennart Philips

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

"All measurements of I Class shall be taken after the minimum relevant class event timing in Table 33-15."

We now have T_Class for this.

SuggestedRemedy

"All measurements of I Class shall be taken after T_Class, as defined in Table 33-15."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.1** *P* **97** *L* **38** # 39

Darshan, Yair — Microsemi

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

The requirement:
"If the measured IClass is within the range of IClass_LIM, a Type 1 PSE shall either return to the IDLE state or classify the PD as Class 0; a Type 2 PSE shall return to the IDLE state."
Is not covered by the state machine.
There are probably other requirements that are not covered by the state machine and have shall's.
Do we have rule that that force us to describe shall in SM?
I believe we don't. We can decide according to the cost effectiveness of it in regards to SM simplicity and readability.

SuggestedRemedy

Add the following Editor Note:

"Editor Note: To address in the state machine the case of what should Type 1 do if the measured IClass is within the range of IClass_LIM or use text only (preffered)."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.1** *P* **97** *L* **40** # 59

Lukacs, Miklos — Silicon Labs

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

A timing diagram showing the single event classification would help in understanding the text and would make the intent more clear.

SuggestedRemedy

See timing diagrams presentation (Lukacs)

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **97** *L* **41** # 244

Yseboodt, Lennart — Philips

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

The specification of Autoclass in the Multiple-event section can be improved.

SuggestedRemedy

Adopt yseboodt_08_0516_autoclass4.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **97** *L* **41** # 128

Stover, David — Linear Technology

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

There are inconsistencies between Tpdc, autoclass, and mutiple-event classification.

SuggestedRemedy

See stover_01_0516.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **97** *L* **48** # 205

Yseboodt, Lennart — Philips

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

"PD classification signature measurements of I Class are specified in Table 33-11, Table 33-12 and Table 33-14."

Tables 33-11 and 33-12 are not relevant to the IClass to class signature mapping.

SuggestedRemedy

"PD classification signature measurements of I Class are specified in Table 33-14."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **98** *L* **4** # 129

Stover, David — Linear Technology

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

Requirements and allowances for 4PID, class, and mutual identification are unclear.

SuggestedRemedy

Replace sentence: "Type 3 and Type 4 PSEs may issue a class reset event to perform mutual identification."
With: "Type 3 and Type 4 PSEs may issue up to 3 class events to determine PD Class. Type 3 and Type 4 PSEs incapable of supporting negotiated PD Class may issue a class reset event to clear the class and mark event counts."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.5.12** *P* **98** *L* **4** # 27

Darshan, Yair Microsemi

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

We need to address the following use case (as an example):
When Type 3 PSE with available power of Type 1 or Type 2 connected to single signature PD class 5 or above and we need to report to the host what is the actual PD class and yet to supply the correct number of fingers (1 in case of 15.4W) to indicate the available PSE power.
For this purpose we need to allow class reset after 3 class event and issuing one class event.

SuggestedRemedy

1. To add the following text at page 98 line 4:
"Type 3 and Type 4 PSEs may issue up to 3 class events to determine PD Class.
Type 3 and Type 4 PSEs incapable of supporting PD Class may issue a class reset event to clear the class and mark event counts and may issue the lowest number of class events that is corresponding to the PSE available power."

2. No need to update PSE SM since it is optional feature similar to the text that "PSE can detect and not power" or PSE can use Type 4 class 7 current settings when operating Type 3 class 6 PDs or may other examples in the current spec including IEEE802.3-2012 version.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **98** *L* **25** # 206

Yseboodt, Lennart Philips

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

On p.98, line 25 we have:
"In the states CLASS_EV1, CLASS_EV1_LCE, CLASS_EV1_LCE_PRI, CLASS_EV1_LCE_SEC,CLASS_EV2,CLASS_EV2_PRI,CLASS_EV2_SEC,CLASS_EV3,CLASS_EV3_PRI,CLASS_EV3_SEC,CLASS_EV4,CLASS_EV4_PRI,CLASS_EV4_SEC,CLASS_EV5,CLASS_EV1_LCE_RESET_PRI, and CLASS_EV1_LCE_RESET_SEC, the PSE shall measure I Class after T Class and classify the PD based on the observed current."

Followed on p99, line 5:
"All measurements of I Class shall be taken after T Class , as defined in Table 33-15. This measurement is referenced from the application of V Class min to ignore initial transients."

Long and tedious to read. Also, "classify the PD based on the observed current" is no longer really true.

SuggestedRemedy

Replace both by inserting on p98, line 25:
"In all CLASS states except CLASS_EV1_AUTO, the PSE shall measure I Class after T Class. This measurement is referenced from the application of V Class min to ignore initial transients. "

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **98** *L* **38** # 207

Yseboodt, Lennart Philips

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

"When the Type 2 PSE is in the state MARK_EV2, the PSE shall provide to the PI or pairset V Mark . The timing specification shall be as defined by T ME2.

When the PSE is in the state MARK_EV_LAST, MARK_EV_LAST_PRI and MARK_EV_LAST_SEC, the PSE shall provide to the PI or pairset V Mark . The timing specification shall be as defined by T ME2."

Can be merged without changing meaning.

SuggestedRemedy

"When the PSE is in the state MARK_EV2, MARK_EV_LAST, MARK_EV_LAST_PRI and MARK_EV_LAST_SEC, the PSE shall provide to the PI or pairset V Mark . The timing specification shall be as defined by T ME2."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **99** *L* **1** # 130

Stover, David — Linear Technology

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

"If any measured IClass is equal to or greater than IClass_LIM min, a Type 2, Type 3 or Type 4 PSE shall return to the IDLE state." Most importantly, this list is missing a serial comma. Failing that, SISM state machines experiencing class overcurrent should likely return to their resident IDLE_PRI/IDLE_SEC state, and not the global IDLE state.

SuggestedRemedy

"If any measured IClass is equal to or greater than IClass_LIM min, a Type 2 PSE shall return to the IDLE state. If any measured IClass is equal to or greater than IClass_LIM min, a Type 3 or Type 4 PSE shall return to the appropriate idle state."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **99** *L* **1** # 32

Darshan, Yair — Microsemi

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

The following requirement is not described by the state machine.
"If any measured IClass is equal to or greater than IClass_LIM min, a Type 2, Type 3 or Type 4 PSE shall return to the IDLE state. The PSE shall limit class event currents to IClass_LIM and shall limit mark event currents to IMark_LIM."

SuggestedRemedy

Add the following Editor Notes:
"Editor Note: To address existing "shall" requirements that are not covered in the state machine."

"Editor Note: To address in the state machine the case of what should Type 2, 3 and 4 do if the measured IClass is within the range of IClass_LIM or use text only (preffered)."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **99** *L* **9** # 34

Darshan, Yair — Microsemi

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

"The PSE shall complete Multiple-Event Physical Layer classification and transition to the POWER_ON state without allowing the voltage at the PI or pairset to go below VMark min, unless in the CLASS_RESET_PRI or CLASS_RESET_SEC states."

Missing POWER_UP state as well.

SuggestedRemedy

Change to:
"The PSE shall complete Multiple-Event Physical Layer classification and transition to the POWER_UP and POWER_ON state without allowing the voltage at the PI or pairset to go below VMark min, unless in the CLASS_RESET_PRI or CLASS_RESET_SEC states."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **99** *L* **11** # 245

Yseboodt, Lennart — Philips

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

"If the PSE returns to the IDLE state, it shall maintain the PI voltage at VClass for a period of at least TReset min before starting a new detection cycle."

- VClass should be VReset
- Also, that same requirement holds for PSEs that are in the CLASS_RESET states.

SuggestedRemedy

"If the PSE returns to the IDLE state, it shall maintain the PI voltage at VReset for a period of at least TReset min before starting a new detection cycle. If the PSE is in any of the CLASS_RESET states, it shall maintain the PI or pairset voltage at VReset for a period of at least TReset min."

- Remove the sentence on page 99, line 26 which says:
"When the PSE is in the state CLASS_RESET_PRI or CLASS_RESET_SEC the PSE shall provide to the PI V Reset , subject to the T Reset timing specification."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **99** *L* **20** # 217

Yseboodt, Lennart Philips

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

original text: "Classification events may appear on one or both pairsets."

True for single-signature, not for dual.
Also problematic for Type 1 and Type 2 PSEs.

The original intent of that sentence was to allow:
- "4-pair" class events for single-sig PDs
- alternating class events between pairsets
- other creative classification games

The sentences that deal with applying Vclass already say "to the PI or pairset", granting leave to do all of this.

SuggestedRemedy

We no longer need the quoted sentence. Remove it.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **99** *L* **28** # 60

Lukacs, Miklos Silicon Labs

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

A timing diagram showing the multiple event classification would help in understanding the text and would make the intent more clear.

SuggestedRemedy

See timing diagrams presentation (Lukacs)

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **99** *L* **30** # 209

Yseboodt, Lennart Philips

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

Itemcount is wrong in Table 33-15, item 6 is listed twice.

SuggestedRemedy

Fix.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **99** *L* **30** # 208

Yseboodt, Lennart Philips

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

The item sorting in Table 33-15 has become confusing and seems arbitrary.

SuggestedRemedy

Sort Table 33-15 in the following way:
Voltages: VClass, VMark, VReset
Currents: IClass_LIM, IMark_LIM,
Timing: TReset, TClass, TClass_LCE, Tpdc, TLCE, TCLE1, TCLE2, TCLE3, TME1, TME2

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **99** *L* **50** # 16

Darshan, Yair Microsemi

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

Table 33-15 item 6 and 7 use the same number (6).

SuggestedRemedy

To renumber Table 33-15 items.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.2** *P* **100** *L* **17** # 188

Yseboodt, Lennart Philips

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

Table 33-15, Item 10 and 11, say "See section 33.2.7.2".

SuggestedRemedy

Change to "See 33.2.7.2".

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.3** *P* **101** *L* **10** # 210

Yseboodt, Lennart Philips

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

"If the PSE implements Autoclass and the connected PD performs Autoclass, ...". Performs seems a weird word here.

SuggestedRemedy

"If the PSE supports Autoclass and the connected PD requests Autoclass during classification,.."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.3** *P* **101** *L* **13** # 246

Yseboodt, Lennart Philips

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

"TAUTO_PSE1 and TAUTO_PSE2 timing is referenced from the transition of the POWER_UP or SET_PARAMETERS state to the POWER_ON state."

SET_PARAMETERS state no longer exists.

SuggestedRemedy

"TAUTO_PSE1 and TAUTO_PSE2 timing is referenced from the transition of the POWER_UP state to the POWER_ON state."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.3** *P* **101** *L* **33** # 189

Yseboodt, Lennart Philips

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

Autoclass margin formula is not described but is defined in this section.

SuggestedRemedy

"P_ac_margin is the minimum amount of power the PSE must add to P_Autoclass in order to allocate enough power to cope with increases in channel resistance due to heating. P_ac_margin is defined in Equation (33-4)."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.7.3** *P* **101** *L* **43** # 190

Yseboodt, Lennart Philips

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

"PAutoclass in Watts" dimension should not be plural.

SuggestedRemedy

Change to "PAutoclass in Watt"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8** *P* **101** *L* **51** # 131

Stover, David Linear Technology

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

Guidance on how to handle dual-signature PDs with mismatched Class/Type combinations is unclear for some defined PSE implementations.

SuggestedRemedy

Insert the sentence "PSEs powering dual-signature PDs may enforce on both pairsets the values in Table 33-17 corresponding to the pairset of that PD identified as the highest PD Class."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8** *P* **102** *L* **32** # 4

Beia, Christian STMicroelectronics

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

Table 33-17, Item6
Icon-2P-unb is relevant to SS PD only.

SuggestedRemedy

Add "Single Signature PD" on each line of Item6, column Parameter, before the Class.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8** *P* **102** *L* **49** # 29

Darshan, Yair Microsemi

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

1. Table 33-17 item 7 approved baseline additional information column was implemented incorrectly.
2. Some adjustment to Iinrush for dual-signature PD class 0-4 is required to address worst case operating conditions when PD using constant power sink that operates at minimum Von. Same applies to Table 33-28.
3. Some adjustments are required to clause 33.2.8.5.1 due to (2) + fixing PD type error.

SuggestedRemedy

See darshan_01_0516.pdf for proposed remedy.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8** *P* **103** *L* **30** # 35

Darshan, Yair Microsemi

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

Table 33-17 item 12 class 4 row, min value 0.684.
The foot note 2 that was attached to the 0.684A for Type 3 and 4 was lost after updating this item.

SuggestedRemedy

Change "0.684A" to "0.684^2".
Add the following text after Table 33-17:
"^2 Unbalance at class 4 is not restricted. The ILIM-2P value is higher than the value for class 5 for Type 3 and 4 PSEs operating with 4-pairs."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3** *P* **103** *L* **30** # 85

Schindler, Fred Seen Simply, Broadco

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

Table 33-17, item 12, was edited to address D1.6 comment 254. However, the footnote referenced on the Class-4 row, Min. column is missing.

SuggestedRemedy

Add the missing footnote,
“Unbalance at Class 4 is not restricted. The ILIM-2P value is higher than the value for Class 5.”

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8** *P* **104** *L* **13** # 211

Yseboodt, Lennart Philips

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

Additional info for Table 33-17, item 17, TRise is too long for this field causing vertical wastage.

SuggestedRemedy

- Add the following to 33.2.8.1
"TRise is referenced from 10 % to 90 % of the voltage difference at the PI in POWER_ON state from the beginning of POWER_UP."
- Replace additional information field by "See 33.2.8.1"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8** *P* **105** *L* **32** # 23

Darshan, Yair Microsemi

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

Delete Editor Note #1. It was addressed in D1.7.

SuggestedRemedy

Delete Editor Note #1.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8** *P* **105** *L* **36** # 36

Darshan, Yair Microsemi

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

Editor Note #2. This item is important for the integrity and protection reliability of the PSE under unbalance condition.
Due to lake of time, this subject was not resolved yet.
To be discussed with the group how to continue with this item and yet meet our time table.

SuggestedRemedy

See darshan_04_0516.pdf for discussion details and possible remedy

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8** *P* **105** *L* **44** # 22
Darshan, Yair Microsemi

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

Delete Editor Note #3. It was adressed in D1.7.

SuggestedRemedy

Delete Editor Note #3. It was addressed in D1.7.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.1** *P* **106** *L* **1** # 191
Yseboodt, Lennart Philips

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

Class 1-4 is not allowed.

SuggestedRemedy

Change to: "Class 1 to 4"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.2** *P* **106** *L* **12** # 7
Beia, Christian STMicroelectronics

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

The resolution of comment 324 of Draft1.6 was only partially implemented, and some text is missing.

SuggestedRemedy

Replace :

The minimum PD input capacitance CPort min or CPort-2P min defined in Table 33–28, allows a PD to operate for input voltage transients which cause VPD to drop as low as 0 V, lasting less than 30 µs.

With:

The minimum PD input capacitance CPort min or CPort-2P min defined in Table 33-28, allows PDs of any Type to operate for input voltage transients which cause VPD to drop as low as 0V lasting less than 30µs as specified in 33.3.7.6.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.4** *P* **106** *L* **25** # 247
Yseboodt, Lennart Philips

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

There are several inconsistencies/errors identified in the PSE power section.

SuggestedRemedy

Adopt yseboodt_02_0516_power.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.4** *P* **106** *L* **27** # 50
Johnson, Peter Sifos Technologies

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

This comment may be OBE by presentation.

One area where 33.2.8.4 is written for 4-Pair (Type 3/4) PSE's only:

The terms Iport-2P and Iport-2P-other are defined using terms from the Type 3/4 state diagram. These terms have no meaning for 2-Pair powering cases. Iport-2P is then later used as vertical axis to current templates including those applicable to Type 1/2 PSEs.

Iport is defined earlier with the Type 1 and Type 2 state machine in 33.2.5.4. that in turn references 33.2.8.6.

SuggestedRemedy

One remedy is to add a specificity to Iport-2P definition:

Iport-2P
= Iport for Type 1 and Type 2 PSE's
= Iport-2P-pri for the Primary Alternative of Type 3 and Type 4 PSEs
= Iport-2P-sec for the Secondary Alternative of Type 3 and Type 4 PSEs

Iport-2P-other
= Iport-2P-sec for the Primary Alternative of Type 3 and Type 4 PSEs
= Iport-2P-pri for the Secondary Alternative of Type 3 and Type 4 PSEs

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.4** *P* **106** *L* **28** # 17

Darshan, Yair Microsemi

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

Comment #196 from D1.6 was not implemented correctly

"IPort-2P and IPort-2P-other are the currents on the pairs with the same polarity of the two pairsets and are defined in Equation (33–5) **in and** Equation (33–6).

SuggestedRemedy

Change to:
"IPort-2P and IPort-2P-other are the currents on the pairs with the same polarity of the two pairsets and are defined in Equation (33–5) and in Equation (33–6)."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.4** *P* **106** *L* **46** # 51

Johnson, Peter Sifos Technologies

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

This comment may be OBE by presentation.

This comment may be OBE by presentation.

Equation 33-7 defines Icon-2P = Pclass / Vpse when in 2-pair mode. Table 33-17 (item 5) defines Icon = Pclass / Vport-PSE-2P. If we assume Vpse (defined in 1.4) is the really the same thing as Vport-PSE-2P (defined in Table 3-17), then Icon-2P is really the same as Icon.

Also, Pclass and Pclass-2P are really defined in EQ 33-2 and EQ 33-3 respectively, not Tables 33-11 and 33-12.

SuggestedRemedy

Change Equation 33-7 to:

Icon-2P
= Icon when in 2-pair mode
= min(.....) when 4-pair powering a single signature PD
= Pclass-2P / Vpse when 4-pair powering a dual signature PD

where
Pclass is defined in Equation 33-2
Pclass-2P is defined in Equation 33-3

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.4** *P* **107** *L* **7** # 52

Johnson, Peter Sifos Technologies

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

This comment may be OBE by presentation.

Another area where 33.2.8.4 is written for 4-Pair (Type 3/4) PSE's only:

"A PSE is not required to support Icon-2P values greater than Icon-2P-unb. Icon is the total current of both pairs with the same polarity that a PSE supports. Icon-2P_unb is the maximum current the PSE supports over one of the pairs of the same polarity..."

SuggestedRemedy

Replace this text.

(New Paragraph)
"When a Type 3 or Type 4 PSE is powering 4 pairs, that PSE is not required to support Icon-2P values greater than Icon-2P-unb. Icon is the total current of both pairs with the same polarity that a PSE supports. Icon-2P_unb is the maximum current the PSE supports over one of the pairs of the same polarity..."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.4** *P* **107** *L* **12** # 53

Johnson, Peter — Sifos Technologies

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

This comment may be OBE by presentation.

Another area where 33.2.8.4 is written for 4-Pair (Type 3/4) PSE's only:

"In addition to ICon, ICon-2P and ICon-2P-unb as specified in Table 33–17 and Equation (33–7), the PSE shall support the following AC current waveform parameters, while within the operating voltage range of VPort_PSE-2P:

IPeak, IPeak-2P-unb, and IPeak-2P minimum for TCUT-2P minimum and 5 % duty cycle minimum, where"

SuggestedRemedy

This section needs some work. It probably should be re-written to individually address the three fundamental cases:

1) 2-Pair Powering:
Only need to define Ipeak-2P using (Rchan) in quadratic

2) 4-Pair Powering Single Signature PD(where Ipeak-2P-unb applies):
Define Ipeak, Ipeak-2P, Ipeak-2P_unb using (Rchan/2) in the quadratic

3) 4-Pair Powering Dual Signature PD
Define Ipeak-2P using (Rchan) and (PPeak_PD-2P) in the quadratic

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.4** *P* **107** *L* **33** # 54

Johnson, Peter — Sifos Technologies

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

This comment may be OBE by presentation.

There are 2 different equations for Ipeak-2P_unb: EQ 33-9 and EQ 33-11.

EQ 33-9 describes IPeak-2P_unb as a function of Ipeak that is in turn a function of PSE port voltage and PD load.

EQ 33-11 describes IPeak-2P_unb as a function of ILIM-2P, but ILIM-2P is not a function of PSE port voltage or PD load - it is a fixed value greater than ILIM-2P_min. Also, my sample calculation of Ipeak-2P_unb for Class 6 (828mA) produces a figure well higher than ILIM-2P_min (702 mA) for Class 6.

Is EQ 33-11 indicating that ILIM-2P_min must be higher than what is in Table 33-17 ??????

SuggestedRemedy

Not sure what to do here.

One option is to just eliminate EQ 33-11. However, if it is adding information relevant to PSE behavior, we need to better capture that.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.4** *P* **107** *L* **45** # 37

Darshan, Yair — Microsemi

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

In 33.1.3 we have new definitions: Rchan and Rchan-2P.
Equation 33-10 must use the Rchan-2P, so it is not required to use Rchan/2 while Rchan is not sufficiently specific and Rchan-2P is specific per 33.1.3.

SuggestedRemedy

1. Change from "Rchan/2" to "Rchan-2P" in Equation 33-10 in 4 locations.
2. Change "RChan is the channel DC loop resistance as defined in 33.1.3"
To "RChan-2P is the channel DC loop resistance as defined in 33.1.3 per pairset.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.4.1** *P* **108** *L* **30** # 192

Yseboodt, Lennart Philips

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

"Type 3 and Type 4 PSEs operating over 4-pair are subject to unbalance requirements in this section."

SuggestedRemedy

"This section describes unbalance requirements for Type 3 and Type 4 PSEs that operate over 4-pair."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.4.1** *P* **108** *L* **39** # 193

Yseboodt, Lennart Philips

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

"Icon-2P-unb is specified for total channel common mode pair resistance from ..."

SuggestedRemedy

Change to:
"Icon-2P-unb applies for the total channel common mode pair resistance ranging from ..."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.4.1** *P* **109** *L* **1** # 44

Johnson, Peter Sifos Technologies

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

Rpse_max is defined as "the maximum PSE common mode effective resistance..." and Rpse_min is defined as "the minimum PSE common mode effective resistance".

This is slightly confusing and may infer that there are some maximum and minimum absolute values in some table somewhere.

SuggestedRemedy

Change to:

Rpse_min is the lowest possible effective resistance in the powered pairs of the same polarity.

For a given Rpse_min,

Rpse_max is the highest possible effecive resistance in the powered pairs of the same polarity.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.5** *P* **109** *L* **10** # 194

Yseboodt, Lennart Philips

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

"POWER_UP mode occurs on each pairset between the PSE's transition to the POWER_UP state on that pairset and either the expiration of T Inrush-2P or, for Type 1 and Type 2 PSEs that make use of legacy powerup, the conclusion of PD inrush currents on that pairset (see 33.3.7.3 and legacy_powerup in 33.2.5.4)."

The term "POWER_UP mode" is only used 3 times in the doc, all in this section, and seems to be identical to the POWER_UP state. Is there a difference ?
If not => replace by POWER_UP.

SuggestedRemedy

Change "POWER_UP mode" to "POWER_UP".
Change 33.2.8.5 section title to "Output current during POWER_UP"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.5** *P* **109** *L* **16** # 81

Picard, Jean — Texas Instruments

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

The following statement is incorrect in case where the PD is class 0-4, in which case a type 3 PSE is allowed to do inrush with only one 2P channel.

"Type 3 and Type 4 PSEs that apply power to both pairsets when connected to a single-signature PD shall reach the POWER_ON state on both pairsets within TInrush-2P max, starting with the first pairset
transitioning into the POWER_UP state. The second pairset may transition to POWER_UP anytime within this time period."

SuggestedRemedy

Replace with this:

"Type 3 and Type 4 PSEs that have assigned Class 5 to 8 to a single-signature PD shall reach the POWER_ON state on both pairsets within TInrush-2P max, starting with the first pairset transitioning into the POWER_UP state, whereas the second pairset transitions to POWER_UP anytime within this time period."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.5** *P* **109** *L* **20** # 28

Darshan, Yair — Microsemi

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

In the following text, it is not clear when the PSE is following the template:
"The PSE shall limit IInrush-2P and IInrush during POWER_UP per the requirements of Table 33-17. The maximum inrush current sourced by the PSE per pairset shall not exceed the per pairset inrush template in Figure 33-26 and Equation (33-13)."
in Figure 33-26 and Equation (33-13) some PD implementations start to show Iinrush only after significant time (10-30msec) after the application of Vpd but still within Tinrus_min time duration but the template in figure 33-26 looks that it is relevant to iinrush appearance at t=0 only.

SuggestedRemedy

Change from:
"The PSE shall limit IInrush-2P and IInrush during POWER_UP per the requirements of Table 33-17. The maximum inrush current sourced by the PSE per pairset shall not exceed the per pairset inrush template in Figure 33-26 and Equation (33-13)."

to:
"The PSE shall limit IInrush-2P and IInrush during POWER_UP **state** per the requirements of Table 33-17. The maximum inrush current sourced by the PSE per pairset shall not exceed the per pairset inrush template in Figure 33-26 and Equation (33-13) **for the duration of POWER_UP state**."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.5** *P* **110** *L* **9** # 195

Yseboodt, Lennart — Philips

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

Equation 33-14 uses variable y1.
Since there is neither a y0 or a y2, we can also rename it to 'i'.

SuggestedRemedy

Rename 'y1' to 'i' in Equation and variable list.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.5.1** *P* **110** *L* **32** # 212

Yseboodt, Lennart Philips

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

"A Type 4 PSE, when connected to a single signature PD with assigned Class 7 or Class 8, may implement a minimum I Inrush lower than defined in Table 33-17, but not less than 0.4A respectively. When a Type 4 PSE is connected to a single-signature PD with assigned Class 7 or Class 8 and uses a lower I Inrush than which is defined in Table 33-17, it shall successfully power up a single-signature PD comprised of a parallel combination of 360 mF and a Class 2 load within T Inrush-2p min without startup oscillations during the POWER_UP period, when connected to the PD through a channel resistance of 0.1ohm to 12.5ohm per pairset."

First two sentences are very repetitive.

SuggestedRemedy

Shorter:

"A Type 4 PSE, when connected to a single signature PD with assigned Class 7 or Class 8, may implement a minimum I Inrush lower than defined in Table 33-17, but not less than 0.4A respectively. Such a PSE shall successfully power up a single-signature PD comprised of a parallel combination of 360 mF and a Class 2 load within T Inrush-2p min without startup oscillations during the POWER_UP period, when connected to the PD through a channel in the range of 0.1 ohm to Rch per pairset."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.5.1** *P* **110** *L* **32** # 132

Stover, David Linear Technology

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

"single-signature" is hyphenated and not capitalized, per our convention. There are 2 locations where this convention is not followed.

SuggestedRemedy

Global search and replace "single signature" with "single-signature".

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.5.1** *P* **110** *L* **37** # 196

Yseboodt, Lennart Philips

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

"during the POWER_UP period".

SuggestedRemedy

Shorter:
"... during POWER_UP ..."
Also on line 44

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.5.1** *P* **110** *L* **39** # 213

Yseboodt, Lennart Philips

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

"A Type 4 PSE, when connected to a dual signature PD with assigned Class 5, may implement a minimum I Inrush and I Inrush-2P lower than defined in Table 33-17, but not less than 0.4A and 0.2A respectively. When a Type 4 PSE is connected to a dual-signature PD with assigned Class 5 and uses a lower I Inrush-2P than thosedefined in Table 33-17, it shall successfully power up a dual-signature PD comprised of a parallel combination of 110 mF and a Class 2 (TBD) load within T Inrush-2p min without startup oscillations during thePOWER_UP period, when connected to the PD through a channel resistance of 0.1ohm to 12.5ohm per pairset."

First two sentences are very repetitive.

SuggestedRemedy

Shorter:
"A Type 4 PSE, when connected to a dual signature PD with assigned Class 5, may implement a minimum I Inrush and I Inrush-2P lower than defined in Table 33-17, but not less than 0.4A and 0.2A respectively. Such a PSE shall successfully power up a dual-signature PD comprised of a parallel combination of 110 mF and a Class 2 (TBD) load within T Inrush-2p min without startup oscillations during the POWER_UP period, when connected to the PD through a channel resistance of 0.1ohm to Rch per pairset."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.5.1** *P* **110** *L* **40** # 227

Yseboodt, Lennart — Philips

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

"When a Type 4 PSE is connected to a dual-signature PD with assigned Class 5 and uses a lower IInrush-2P than those defined in Table 33-17, it shall successfully power up a dual-signature PD comprised of a parallel combination of 110 uF and a Class 2 (TBD) load within TInrush-2p min without startup oscillations during the POWER_UP period, when connected to the PD through a channel resistance of 0.1ohm to 12.5ohm per pairset."

Unclear that this requirement applies per pairset.

SuggestedRemedy

Replace by:

"When a Type 4 PSE is connected to a dual-signature PD with assigned Class 5 and uses a lower IInrush-2P than those defined in Table 33-17, it shall successfully power up a dual-signature PD comprised of a parallel combination of 110 uF and a Class 2 (TBD) load ***on each pairset*** within TInrush-2p min without startup oscillations during the POWER_UP period, when connected to the PD through a channel resistance of 0.1ohm to 12.5ohm per pairset."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.6** *P* **110** *L* **48** # 45

Johnson, Peter — Sifos Technologies

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

Iport-2P is defined in two places, 33.2.8.4 and then again in 33.2.8.6. It should have only one definition, and given the present structure of the standard, that definition needs to be universal to all PSE types and powering modes. Both 33.2.8.4 and 33.2.8.6 infer a relationship between Iport-2P and Type 3/4 PSEs.

Suggestion is to broaden the Iport-2P definition in 33.2.8.4 - that is covered in a separate comment. Then move the Iport definition to 33.2.8.4 along side of the Iport-2P definition.

SuggestedRemedy

Modify 33.2.8.4:
Add first sentence:
"IPort is the total current supplied by the PSE to the PI."

Modify 33.2.8.6:

Revise:
"If IPort, the current supplied by the PSE to the PI, exceeds ICUT-2P for..."
to
"If IPort exceeds ICUT-2P for...."

Revise:
"If IPort-2P, the current supplied on a pairset by the PSE to the PI, exceeds ICUT-2P for longer..."
to
"If IPort-2P exceeds ICUT-2P for longer..."

Modify Iport definition in 33.2.5.4:

Revise:
"IPort Output current (see 33.2.8.6)."
to
"IPort Output current (see 33.2.8.4)."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.7** *P* **111** *L* **9** # 82

Picard, Jean — Texas Instruments

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

There is an issue with allowing a Type 4 PSE to apply a 1.3A Upperbound template for as long as 4 seconds over 2P when powering a SS PD with Class 6 or lower or DS PD with class 4 or lower. That level of stress for so long can damage components that are not selected for this amount of energy, for example the data transformers of Mag Jacks.

SuggestedRemedy

Require Type 4 PSEs to apply the "Type 3 operating current template" when powering a Type 1-3 PD .

This means the following sentence:
"For Type 4 PSEs, Figure 33–29, Equation (33–17) and Equation (33–20) apply when connected to Type 4 PD, otherwise Figure 33–28, Equation (33–16) and Equation (33–19) apply. "

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.7** *P* **111** *L* **14** # 25

Darshan, Yair — Microsemi

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

Referring to the text (see darshan_05_0516.pdf for details):
"[**Part-1**] Power shall be removed from a pairset PI of a PSE before the pairset PI current exceeds the "PSE upperbound template" in Figure 33-14, Figure 33-14a, and Figure 33-14b.
[**Part-2**] When connected to a single signature PD, a Type 3 or Type 4 PSE should (TBD) remove power from both pairsets before the current exceeds the "PSE upperbound template" on either pairset."

Due to the fact that for single-signature PD:
a)Each pairset is already protected by [**part-1**].
b)Shutting off both pairset doesn't add extra protection to the PD.
c)Forcing the PSE to shut off both pairset in case of fault, kills PD applications that was designed to work at lower power in case of fault when 4-pairs is required for full power.

We don't need [**Part-2**] due to the fact that in single-signature PD if current over a pairset approaches the upper bound template, this pairset will be powered off, if the PD was not designed to handle lower power mode, the whole current will flow through the remaining pairset and it will be disconnected as well, so there is no need for the redundant text in [**Part-2**].

SuggestedRemedy

Option 1:
Delete:
"When connected to a single signature PD, a Type 3 or Type 4 PSE should (TBD) remove power from both pairsets before the current exceeds the "PSE upperbound template"

Option 2: To address solution proposed by Chritian to be discussed by the group.
The solution may be described in darshan_05_0516.pdf if we get a consensus on the wording of it prior the meeting.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.7** *P* **111** *L* **14** # 228

Yseboodt, Lennart — Philips

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

"When connected to a single-signature PD, a Type 3 or Type 4 PSE should (TBD) remove power from both pairsets before the current exceeds the "PSE upperbound template" on either pairset."

SuggestedRemedy

See/adopt yseboodt_04_0516_pse4p.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.7** *P* **111** *L* **14** # 6

Beia, Christian — STMicroelectronics

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

The following sentence,

When connected to a single-signature PD, a Type 3 or Type 4 PSE should (TBD) remove power from both pairsets before the current exceeds the "PSE upperbound template" on either pairset.

has severel weak points:

- the (TBD) to be removed
- the "should" makes nobody happy: those who want the PSE to be able to go past a failure working on single pairset would ignore a reccomendation, and those who want the power to be removed from both pairsets don't have the assurance it will be implemented.
- the timing requirements for power removal can increase PSE complexity.

The main goal here should be avoiding that a PD that failed to work over 4-pairs, when powered on 2-pairs would exceed the current originally intended to flow on one pairset, potentially overstressing the magnetics.

So, the requirement should allow the PSE to disconnect only one pairset only if the current of thesecond pairset is below one-half of the assigned power (i.e. the current that was originally supposed to flow in that pairset). It ensures that the PD is still keeping control of its own current, and no damage occurred.

See also Darshan_05

SuggestedRemedy

Replace:
When connected to a single-signature PD, a Type 3 or Type 4 PSE should (TBD) remove power from both pairsets before the current exceeds the "PSE upperbound template" on either pairset.

With:
When connected to a single-signature PD, a Type 3 or Type 4 PSE may remove power from one pairset and maintain power on the other pairset only if the PD power consumption is below one half of the assigned Pclass (0.5*Pclass).

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.7** *P* **112** *L* **12** # 46

Johnson, Peter Sifos Technologies

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

Figures 33-28 and 33-29 include an ILIM parameter on the right vertical axis. But there is no ILIM definition any more.

Presumably, these should be removed.

SuggestedRemedy

Remove ILIM from Figures 33-28 and 33-29.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.7** *P* **112** *L* **48** # 47

Johnson, Peter Sifos Technologies

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

References to equations are all off by one.

SuggestedRemedy

Replace with:

"...described by Equation (33-15), Equation (33-16), Equation (33-17)..."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.7** *P* **113** *L* **31** # 48

Johnson, Peter Sifos Technologies

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

The list of variables beneath Equations 33-15, 33-16, and 33-17 include 3 terms not used in those equations: PType max, VPSE, and Iport-2P-other.

SuggestedRemedy

Remove these terms.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.7** *P* **114** *L* **16** # 49

Johnson, Peter Sifos Technologies

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

The list of variables beneath Equations 33-18, 33-19, 33-20 includes the term Icon-2P but it is 'Icon-2P min' that is used in the equations.

The definition for Icon-2P is okay.

SuggestedRemedy

Replace Icon-2P with 'Icon-2P min'.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.7** *P* **114** *L* **22** # 197

Yseboodt, Lennart Philips

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

"A PSE in the POWER_ON state may remove power from a pairset without regard to T LIM when the pairset voltage no longer meets the V Port_PSE-2P specification."

T LIM does not exist.

SuggestedRemedy

"A PSE in the POWER_ON state may remove power from a pairset without regard to T LIM-2P when the pairset voltage no longer meets the V Port_PSE-2P specification."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.8.13** *P* **115** *L* **37** # 198

Yseboodt, Lennart Philips

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

"Type 3 and Type 4 PSEs, when connected to a single-signature PD, both pairsets shall reach the POWER_ON state within T pon after detection on last pairset."

Bad English.

SuggestedRemedy

"Type 3 and Type 4 PSEs, when connected to a single-signature PD, shall reach the POWER_ON state within T pon after completing detection on the last pairset."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.10** *P* **116** *L* **14** # 214

Yseboodt, Lennart Philips

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

"Figure 33-20 shows the PSE monitor state diagrams."
Bad reference.

SuggestedRemedy

"Figure 33-14 shows the PSE monitor state diagrams for Type 1 and Type 2 PSEs. Figure 33-22 and Figure 22-23 show the PSE monitor state diagrams for Type 3 and Type 4 PSEs."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.10.1.1** *P* **117** *L* **25** # 199

Yseboodt, Lennart Philips

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

Table 33-18 is formatted differently from every other Table in the doc.

SuggestedRemedy

- Remove 'bold' from subtable headers (eg. "AC signal parameters")
- Fix item numbering to be numerical (1, 2, 3, ...)

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.10.1.2** *P* **118** *L* **26** # 248

Yseboodt, Lennart Philips

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

"A PSE, depending on the connected Type of PD, shall use the applicable I Hold min, I Hold max, T MPS and T MPDO values as defined in Table 33-17."

Needs to mention I_Hold-2P.

SuggestedRemedy

"A PSE, depending on the connected Type of PD and whether it is a single-, or dual-signature PD, shall use the applicable I Hold, I Hold-2P , T MPS and T MPDO values as defined in Table 33-17."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.10.1.2** *P* **118** *L* **30** # 55

Johnson, Peter Sifos Technologies

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

It seems that this section is not accounting for a Type 3 PSE that powers 2-pair (Class 1-3). The rules for Type 3 and Type 4 PSEs are written for 4-Pair powering of single signature and dual signature PDs.

SuggestedRemedy

Revise:
"A Type 1 and Type 2 PSE:" to
"A PSE powering with 2 pairs:"

Revise:
"A Type 3 or Type 4 PSE, when connected to a single-signature PD:" to
"A PSE powering a single signature PD with 4 pairs:"

Revise:
"A Type 3 or Type 4 PSE, when connected to a dual-signature PD:" to
"A PSE powering a dual signature PD with 4 pairs:"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.10.1.2** *P* **118** *L* **32** # 200

Yseboodt, Lennart Philips

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

The DC MPS Type 1 and Type 2 requirements (the dashed list), still say "the applicable" in the first 3 items (line 32, 34 and 36/37).
This is already stated above and is not needed here.

SuggestedRemedy

Remove "the applicable" three times.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.10.1.2** *P* **118** *L* **40** # 229

Yseboodt, Lennart Philips

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

"A Type 1 and Type 2 PSE: - shall not remove power from the PI when I Port is greater than or equal to I Hold-2P max continuously for at least T MPS every T MPS + T MPDO , as defined in Table 33-17."

This final shall is inconsistenly worded compared to the "do not remove power" shalls for Type 3 and Type 4.
See: hstewart_01_0116_DC_MPS_Template_v8.pdf for what the intent was.

SuggestedRemedy

Replace by:
"- shall not remove power from the PI when DC MPS has been present within the T_MPS + TMPDO window."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.10.1.2** *P* **118** *L* **40** # 230

Yseboodt, Lennart Philips

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

"A Type 1 and Type 2 PSE: - shall not remove power from the PI when I Port is greater than or equal to I Hold-2P max continuously for at least T MPS every T MPS + T MPDO , as defined in Table 33-17."

"A Type 3 or Type 4 PSE, when connected to a single-signature PD: -shall not remove power from the PI when DC MPS has been present within the T MPS + T MPDO window. This allows a PD to minimize its power consumption."

"A Type 3 or Type 4 PSE, when connected to a dual-signature PD: -- shall not remove power from a pairset when DC MPS has been present on both pairsets every T MPS + T MPDO ."

These shalls are essentially meaningless. PSEs may remove power for any reason. The PSE shall remove power in the case of overcurrent, or Vport-2P being out of spec.

This is to protect against bad MPS implementations that remove power when they shouln`t.

SuggestedRemedy

Add a condition 'unless there is a non-MPS related reason to do so':

"A Type 1 and Type 2 PSE: - shall not remove power from the PI, unless there is a non-MPS related reason to do so, when I Port is greater than or equal to I Hold-2P max continuously for at least T MPS every T MPS + T MPDO , as defined in Table 33-17."
(Note: merge the above with the other comment that touches this if adopted).

"A Type 3 or Type 4 PSE, when connected to a single-signature PD: -shall not remove power from the PI, unless there is a non-MPS related reason to do so, when DC MPS has been present within the T MPS + T MPDO window. This allows a PD to minimize its power consumption."

"A Type 3 or Type 4 PSE, when connected to a dual-signature PD: -- shall not remove power from a pairset, unless there is a non-MPS related reason to do so, when DC MPS has been present on both pairsets every T MPS + T MPDO ."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.10.1.2** *P* **118** *L* **52** # 249

Yseboodt, Lennart Philips

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

For Type 3 and 4 PSEs, connected to a single-signature PD, there are 2 'shalls' and a 'may' that determine if DC MPS component is either PRESENT, ABSENT or PRESENT OR ABSENT. These requirements should not overlap, ie, only one of those 3 conditions can be true at the same time.

The 'may' statement overlaps with the two shalls for certain combinations of current.
For example, if the Iport-2P currents are 1mA and 6mA respectively, the first 'shall' says MPS is PRESENT.
The may statement however is also True, indicating that MPS may be PRESENT OR ABSENT.

To avoid overlap, the two shall statements need to be made more narrow.

SuggestedRemedy

The 'or' in the first two shall statements for "A Type 3 or Type 4 PSE, when connected to a single-signature PD" needs to become and 'and':
- change "or" to "and" on page 118, line 46
- change "or" to "and" on page 118, line 49

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.10.1.2** *P* **119** *L* **19** # 231

Yseboodt, Lennart Philips

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

"A Type 3 or Type 4 PSE, when connected to a dual-signature PD: -may maintain power on a pairset if DC MPS has been present on that pairset every T MPS + T MPDO."

Is inconsistent in describing the timing requirements.

SuggestedRemedy

"-may maintain power on a pairset _when_ DC MPS has been present on that pairset _within_ the T MPS + T MPDO _window_."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.10.1.2** *P* **119** *L* **22** # 26

Darshan, Yair Microsemi

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

False disconnect or false maintain power as a result of Short MPS under PSE transient need to be adrressed.
We need to allow PSE system to decide what to do in this case when a PSE dv of up to 2V for a dt of 0.8ms to 20ms which result with distored of the short MPS pulse for at least one cycle of MPS+TMPDO for a specific time window.

SuggestedRemedy

Add the following text to the end of section 33.2.10.1.2:
Option 1:
Type 3 and Type 4 PSE when supporting short MPS may fail to detect presence or absence of a short MPS pulse as a result of PSE dv/dt that may cancel or distorted or add MPS pulse. Type 3 and Type 4 PSE when supporting short MPS during PSE dv/dt for PSE voltage change dv of up to 2V and time duration dt of 0.8msec to 10msec for a sliding time window of 3 sec (TBD) may maintain the power or disconnect the power when presence or absence of short MPS pulse is not possible under the above conditions.

Option 2:
A PSE may ignore the current MPS status of a short MPS pulse once every 3 seconds, which permits PSEs to deal with seldom occurring transients that may distort the MPS signal.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.1** *P* **119** *L* **41** # 145

Yseboodt, Lennart Philips

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

"Type 3 and Type 4 PDs shall be capable of accepting power on either pairset and shall be capable of accepting power on both pairsets."

SuggestedRemedy

Shorter:
"Type 3 and Type 4 PDs shall be capable of accepting power on either pairset and both pairsets."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.2** *P* **120** *L* **31** # 146

Yseboodt, Lennart Philips

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

Table 33-20, column "Other optional capabilities"
The word "other" in the header is obsolete.

SuggestedRemedy

Remove "other" in header.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.3** *P* **121** *L* **13** # 232

Yseboodt, Lennart Philips

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

Updates to the PD State Diagram

SuggestedRemedy

Adopt yseboodt_12_0516_pdstatedia.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.3.5** *P* **124** *L* **1** # 147

Yseboodt, Lennart Philips

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

The PD legacy state machine has the issue that it is incapable of leaving the IDLE state.

SuggestedRemedy

See yseboodt_05_0516_pdsmlegacy.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.3.5** *P* **124** *L* **3** # 86

Schindler, Fred Seen Simply, Broadco

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

The remedy to D1.6, comment 248 may not be completely implemented. I believe the request should apply to legacy state diagrams.

SuggestedRemedy

Implement the accepted solution,
“Replace all square brackets with parenthesis in state diagrams.”

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.2.3.8** *P* **127** *L* **38** # 87

Schindler, Fred Seen Simply, Broadco

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

Existing sentence, "tpowerdly_timer
A timer used to prevent Type 2 and Type 3 PDs from drawing more than Type 1 power and Type 4
PDs from drawing more than Class 2 power during the PSE’s inrush period; see Tdelay-2P in Table
33–28." Incorrectly covers Type 2 PDs in the Type 3 and 4 section. Type 2 PDs are covered by legacy text on p123.

SuggestedRemedy

Replace the sentence with,"tpowerdly_timer
A timer used to prevent Type 3 PDs from drawing more than Type 1 power and Type 4
PDs from drawing more than Class 2 power during the PSE’s inrush period; see Tdelay-2P in Table
33–28."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.3.10** *P* **129** *L* **8** # 42

Darshan, Yair Microsemi

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

It is not clear that the state machine permits Tdelay also for Type 1.
Technically there is no need for it since Type 1 current always < PSE Inrush_min however to simplify future PD chip designs we need to allow same behavior for all PD types regarding delaying the load current consumption by Tdelay.

SuggestedRemedy

See darshan_07_0516.pdf for proposed remedy.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.3.10** *P* **129** *L* **41** # 18

Darshan, Yair Microsemi

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

Title of figure 33-33 need to be 33-2

SuggestedRemedy

Change fig number to 33-2

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.3.11** *P* **130** *L* **3** # 38

Darshan, Yair Microsemi

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

To add dual sig PD state machine.

SuggestedRemedy

See proposal for dual-signature state machine in darshan_06_0516.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.4** *P* **131** *L* **1** # 250

Yseboodt, Lennart Philips

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

A PD is either a single-, or a dual-signature device. The determination of single/dual impacts nearly every requirement.
Yet the PD section offers zero guidance or requirements on what a PD needs to meet to be guaranteed to be correctly identified by connection check.

SuggestedRemedy

Adopt yseboodt_03_0516_pdsig.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.4** *P* **131** *L* **9** # 251

Yseboodt, Lennart Philips

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

"A Type 2 PD presents a non-valid detection signature when in a mark event state per Figure 33-32."

SuggestedRemedy

Change to:
"A Type 2, Type 3 or Type 4 PD ..."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.4** *P* **131** *L* **9** # 88

Schindler, Fred Seen Simply, Broadco

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

Existing sentence, "A Type 2 PD presents a non-valid detection signature when in a mark event state per Figure 33–32." should apply to all PDs that respond to multievent classfication. Note that the reference figure is incorrect and on reference is missing.

SuggestedRemedy

Replace the sentence with, "A Type 2, 3 and 4 PDs presents a non-valid detection signature when in a mark event state per Figure 33–31and Figure 33-33."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.4** *P* **132** *L* **3** # 89

Schindler, Fred — Seen Simply, Broadco

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

Tables 33-21 and 33-22 do not use the same style as other tables.

SuggestedRemedy

Recommend Table 33-26 be used as a guide to add missing columns, Item, and Symbol. Column Unit should also be relocated to match style. Provide editor with license to fill in other columns. Thank the Editor for exception this. This is related to comment marked COMMENT-1.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.4** *P* **132** *L* **5** # 91

Schindler, Fred — Seen Simply, Broadco

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

Related to a comment marked COMMENT-1. Tables 33-21 and 33-22 use Rdetect as a Symbol (indirectly) as a reference for different conditions.

SuggestedRemedy

Replace the Rdetect in Table 33-22 with Rdetect_invlaid.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.4** *P* **132** *L* **11** # 148

Yseboodt, Lennart — Philips

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

Table 33-21, column widths are too narrow.

SuggestedRemedy

Format properly.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.4** *P* **132** *L* **12** # 90

Schindler, Fred — Seen Simply, Broadco

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

Fix the last two rows of Table 33-21 so that Min and Max columns are wide enough to accommodate the numbers within each cell.

SuggestedRemedy

See comment for the solution.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.5** *P* **133** *L* **22** # 149

Yseboodt, Lennart — Philips

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

"Type 1 PDs and Class 1 to 3 Type 3 PDs" is hard to read.

SuggestedRemedy

Change to:
"Type 1 PDs and Type 3 Class 1 to 3 PDs"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.5.1** *P* **133** *L* **23** # 150

Yseboodt, Lennart — Philips

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

"Type 2 PDs, Class 4 to 6 Type 3 PDs, Type 4 PDs, and dual-signature PDs shall provide DLL classification."

Better to mention Type first, then Class.

SuggestedRemedy

"Type 2 PDs, Type 3 Class 4 to 6 PDs, Type 4 PDs, and dual-signature PDs shall provide DLL classification."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.5.1** *P* **133** *L* **41** # 151

Yseboodt, Lennart Philips

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

"Type 2, Type 3, and Type 4 PDs operating with a maximum power draw corresponding to Class 4 or higher, respond to Single-Event classification with a Class 4 signature."

Class 4 signature == class signature `4`.

SuggestedRemedy

"Type 2, Type 3, and Type 4 PDs operating with a maximum power draw corresponding to Class 4 or higher, respond to Single-Event classification with class signature `4`."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.5.3** *P* **136** *L* **44** # 152

Yseboodt, Lennart Philips

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

"VPD rises above VPort_PD min" in column "Additional information" had larger font size (2x)

SuggestedRemedy

Change font size.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.6** *P* **137** *L* **1** # 233

Yseboodt, Lennart Philips

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

"The default value of pse_power_level is 3. After a successful Multiple-Event Physical Layer classification has completed the pse_power_level is set to either 3, 4, 6, or 8. After a successful Data Link Layer classification has completed, the pse_power_level is set to either 1, 2, 3 or 4."

Obviously impossible.

SuggestedRemedy

Change last sentence to:
"After a successful Data Link Layer classification has completed, the pse_power_level is set to either 3, 4, 6 or 8."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7** *P* **138** *L* **29** # 234

Yseboodt, Lennart Philips

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

Table 33-28, item 8 and 9 say "single-signature PD only" and "dual-signature PD only"

SuggestedRemedy

Remove the word 'only'.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.1** *P* **140** *L* **4** # 153

Yseboodt, Lennart Philips

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

"Note, VPD = VPSE - (R Chan x I Port-2P)"
VPD has smaller font size than the rest of equation.

SuggestedRemedy

Change to correct font size.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.2.1** *P* **140** *L* **36** # 11

Bennett, Ken — Sifos Technologies, In

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

Until recently, Pport_PD only existed in 33.3.7.2.1. Pport_PD and Pport_PD_2P are now symbols for the input average power in Table 33-28 and in 33.3.7.2.

The definitions of the Pport_PD and Pport_PD_2P variables in Section 33.3.7.2.1 are in conflict with the average power variables in the PClass_PD specification. They use a static (fixed) Vport_PD_2P value which is incorrect; The PD input Voltage changes dynamically with power variations in the PD (due to channel resistance).

Section 33.3.7.2.1 also doesn't seem to make sense. It is a subsection of 33.3.7.2-Input Average Power, and is entitled:

"System Stability Test Conditions During Start-up and Steady State."

The content states Pport_PD and Pport_PD_2P "shall be defined by" ..., and that's it. There IS no test condition mentioned. Pport_PD isn't even used anywhere else in the existing (.at) standard.

Section 33.3.7.2.1 should be deleted. Alternatively, different symbols should be used for average power in table 33-28.

SuggestedRemedy

Delete section 33.3.7.2.1.
OR
Change Pport_PD and Pport_PD_2P in table 33-28 to Pavg_PD and Pavg_PD_2P.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.2.1** *P* **140** *L* **50** # 154

Yseboodt, Lennart — Philips

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

PPort_PD-2P in equation 33-24 font size is larger than e.g. equation 33-23.

SuggestedRemedy

Change to correct font size. [Note to self: all Eqs must be medium-size].

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.3** *P* **141** *L* **7** # 133

Stover, David — Linear Technology

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

PD input inrush current requirements are inconsistent with other sections of the text.

SuggestedRemedy

See stover_02_0516.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.3** *P* **141** *L* **7** # 215

Yseboodt, Lennart — Philips

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

The PD inrush section is particularly troublesome. How many times have we tweaked this text. It doesn`t seem to improve.

SuggestedRemedy

Completely new text, adopt yseboodt_10_0516_pdinrush.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.3** *P* **141** *L* **8** # 68

Picard, Jean — Texas Instruments

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

PD inrush section needs to be cleaned up to remove contradicting sentences and make the spec simpler and clearer.

SuggestedRemedy

See yseboodt_10_0516_pdinrush.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.3** *P* **141** *L* **16** # 30

Darshan, Yair Microsemi

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

Addressing comments # 179 and others related to this clause as elaborated below from D1.6:
The following proposed modifications are addressing the following questions:
1.Does PDs that are internally limiting their inrush current are required to end Inrush period within TInrush-2P min per Table 33-17?
2.How we prevent that PD internal load during Iinrush period is less than Inrush current setting value to ensure successful POWER_UP?
3.Adding a note that explains why the PD PI current is not equal to the DC load current during POWER UP.
4.Adding text that addresses the new 110uF value for dual-signature class 1-4.

SuggestedRemedy

See darshan_02_0516.pdf for proposed remedy.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.3** *P* **141** *L* **22** # 155

Yseboodt, Lennart Philips

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

"T delay-2P for each pairset starts when V PD crosses the PD power supply turn on voltage, V On_PD ."
V PD has smaller font size than V On_PD.

SuggestedRemedy

Change to correct font size

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.3** *P* **141** *L* **23** # 156

Yseboodt, Lennart Philips

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

"This delay is required so that the Type 2, Type 3 and Type 4 PD does not enter ...".
Use "or" instead of "and".

SuggestedRemedy

"This delay is required so that the Type 2, Type 3 or Type 4 PD does not enter ...".

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.3** *P* **141** *L* **35** # 92

Schindler, Fred Seen Simply, Broadco

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

Text previously corrected was changed back to the same undesirable form. It is incorrect to state that a thing has human properties, liking seeing.

SuggestedRemedy

Existing text:
CPort in Table 33–28 is the total 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 33–28 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.

Corrected:
A PSE is connected to CPort in Table 33–28 during POWER_UP and POWER_ON states, when connected to a single-signature PD. A PSE is connected to CPort-2P in Table 33–28, on each pairset, during POWER_UP and POWER_ON states, when connected to a dual-signature PD.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.4** *P* **141** *L* **49** # 56

Johnson, Peter Sifos Technologies

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

This commment is a recommendation to separate concepts of extended power to class 6 and class 8 PDs and associated requirements to meet *PSE* output power rather than *PD* input power requirements from other more general and more widely applicable PD requirements. We also need to better qualify the cases where Class 6 and Class 8 PDs are not subject to Pclass_PD and Ppeak_PD limits.

Rationale is that extended power will be applicable only in specialized systems that are engineered to allow certain PD's to operate above Pclass_PD and interoperate with standard compliant PSE's.

SuggestedRemedy

Create new sub-sections 33.7.2.1 and 33.3.7.4.1.

Re-locate Class 6 / Class 8 extended power text, formulas, and current templates into those respective sections.

I will separately provide a document (baseline text) showing what this would look like in johnson_01_0516_Extended_Pwr_baseline_v1.docx.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.3** *P* **142** *L* **2** # 8

Bennett, Ken — Sifos Technologies, In

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

Figure 33-37 is an Inrush section figure, but it appears within the Ppeak_PD section

SuggestedRemedy

Place the figure within the Inrush section

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.3** *P* **142** *L* **2** # 93

Schindler, Fred — Seen Simply, Broadco

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

It is incorrect to state that a thing has human properties, liking seeing.

SuggestedRemedy

Figure 33-27 text uses “PSE sees”. Replace with, “PSE load capacitance is”.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.4** *P* **142** *L* **22** # 12

Bennett, Ken — Sifos Technologies, In

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

The statement below, which is in the Peak Power section, "allows" an RMS current. Its limit in equation 33-26 is based upon average power and a fixed voltage, which is inconsistent with Ppeak_PD. It's not clear that the "Allowed" RMS current still must meet the Ppeak_PD requirement.

Existing text:
"Ripple current content (IPort_ac) superimposed on the DC current level (IPort_dc) "IS ALLOWED" if the total input power is less than or equal to PClass_PD max, or PClass at the PSE PI for Class 6 and Class 8 PDs."

SuggestedRemedy

Insert the quoted text as shown:

Ripple current content (IPort_ac) superimposed on the DC current level (IPort_dc) is allowed if "Ppeak_PD requirements are met" and the total input power is less than or equal to PClass_PD max, or PClass at the PSE PI for Class 6 and Class 8 PDs.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.4** *P* **142** *L* **27** # 10

Bennett, Ken — Sifos Technologies, In

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

"Iport" is defined as the RMS current in this section.

The symbol "Iport" is now used extensively in the standard in ways that are not consistent with an RMS Current definition. (Including instantaneous values, limits, time-limited, etc.)

The RMS Current definition should be apparent in the symbol to distinguish it from other instances of Iport.

SuggestedRemedy

In section 33.3.7.4,

Change Iport to IportRMS and change Iportmax to IportRMSmax

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.4** *P* **142** *L* **35** # 57

Johnson, Peter — Sifos Technologies

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

This comment may be OBE by another comment I'm submitting for 33.3.7.4.

Certain phrases are written as if all Class 6 and Class 8 PDs will benefit from extended power. This is contradictory with 33.3.7.2 and needs to be corrected.

Examples:
Line 35
"The maximum IPort value for all PDs except those in Class 6 or Class 8..."

Line 47
"The maximum IPort value for all PDs in Class 6 or Class 8, over the operating VPort_..."

SuggestedRemedy

Revise these phrases.
Line 35
"The maximum IPort value for PDs that operate across all possible channels, over the operating VPort_PD-2P range..."

Line 47
"The maximum IPort value for Class 6 or Class 8 PDs that are aware of actual channel DC resistance, over the operating VPort_PD-2P range..."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.4** *P* **143** *L* **6** # 58

Johnson, Peter — Sifos Technologies

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

The final sentence in this section is *really* hard to comprehend:

"....These equations may be used to calculate PPeak_PD or PPeak_PD-2P for Data Link Layer classification and for Autoclass by substituting PClass_PD with PDMaxPowerValue and PAutoclass_PD respectively."

SuggestedRemedy

Make it easier to understand:

"....These equations may be used to calculate PPeak_PD and PPeak_PD-2P from PClass_PD and PClass_PD-2P respectively, or from PDMaxPowerValue utilized in Data Link Layer classification, or from PAutoclass_PD utilized in Autoclass."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.5** *P* **143** *L* **46** # 157

Yseboodt, Lennart — Philips

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

"NOTE--PDs are required to meet Equation (33-2) which results in a slightly lower power and current than results from Figure 33-38, Figure 33-39, Equation (33-27) , Equation (33-28) and Equation (33-29) ."
Font size fluctuates in Note.

SuggestedRemedy

Make font size consistent.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.6** *P* **145** *L* **11** # 235

Yseboodt, Lennart — Philips

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

The PD transients section contains many duplicate requirement text blocks which can be merged and the differences captured in a Table.
We love Tables.

SuggestedRemedy

Adopt yseboodt_09_0516_pdtransient.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.6** *P* **145** *L* **23** # 158

Yseboodt, Lennart — Philips

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

"A single-signature Type 4 PD with peak power draw that does not exceed P Class PD max and has an input capacitance of 360mF or less requires no special considerations with regards to transients at the PD PI."

"P Class PD" has no underline between "P Class" and "PD".

SuggestedRemedy

Add underline.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.6** *P* **145** *L* **25** # 31

Darshan, Yair Microsemi

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

We need to address the fact that we change dual-signature class 1-4 PD capacitance value from 180uF to 110uF

SuggestedRemedy

See proposed remedy in darshan_03_0516.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.6** *P* **145** *L* **30** # 24

Darshan, Yair Microsemi

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

Per comment #193 in D1.6 according to approved remedy DARSHAN_06_0316.PDF the "a)" should be deleted in the following text:

"a) A Type 1 PD input current shall not exceed the PD upperbound template (see Figure 33-38) after TLIM min (see Table 33-17 for a Type 1 PSE) when the following...."

SuggestedRemedy

Change to:
1. "A Type 1 PD input current shall not exceed the PD upperbound template (see Figure 33–38) after TLIM min (see Table 33–17 for a Type 1 PSE) when the following...."
2. Align the paragraph to the next paragraph starting with "A Type 2 or single-signature Type 3 PD...."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.6** *P* **145** *L* **31** # 159

Yseboodt, Lennart Philips

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

"A Type 1 PD input current shall not exceed the PD upperbound template (see Figure 33-38) after T LIM min (see Table 33-17 for a Type 1 PSE) when the following input voltage is applied."
"T LIM" does not exist anymore.

SuggestedRemedy

Change to "T LIM-2P"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.6** *P* **145** *L* **40** # 95

Schindler, Fred Seen Simply, Broadco

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

Related to a comment marked COMMENT-1.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.6** *P* **145** *L* **42** # 94

Schindler, Fred — Seen Simply, Broadco

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

Presentation, schindler_1_0915, provides an over view of this section and the details used to add new Types to this section. This section was created to prevent a PSE disconnecting a PD by providing requirements for PDs being subject to PSE transients. Legacy devices used associated Type with a class, and the PSE Type determined ILIM and TLIM limits that the PD need to remain below. New Types support legacy classes using different ILIM and TLIM values. It would be better to base operational requirements of ILIM and TLIM based on assigned PD class.

However, since D1.2, when the requirements we first created, the values of ILIM have changed. Type-3 ILIM moved down from 817 mA to 702 mA. Type-4 moved down from 1.162 A to 0.990 A. A rerun of the SPICE simulation for the Type-3 Extended PD using a 2,250V ramp shows the time to reach a point where the system current is below its limit has increased from 3.5 ms to 8 ms, which is acceptable. A rerun of the SPICE simulation for the Type-4 PD using a 2,250V ramp shows the time to reach a point where the system current is below its limit has increased from 1.7 ms to 5.7 ms, which is acceptable. A rerun of the SPICE simulation for the Type-4 Extended PD using a 2,250V ramp shows the time to reach a point where the system current is below its limit has increased from 4.1 ms to a value that exceeds significantly TLIM, which is NOT acceptable.

SuggestedRemedy

Replace text on line 42 on page 145, line 1 on page 146, line 12 on page 146, line 24 on page 146, and line 36 on lpage 146. “The PD shall not exceed the PD upperbound template beyond TLIM-2P min under worst-case current draw under the following conditions.” , with

“The PD shall not exceed the PD upperbound template beyond TLIM-2P min and under worst-case current draw for the assigned PD class under the following conditions.”

TFT discuss how to deal with the problem with Type-4 Extended power compliance. This could be called out as a concern that these PDs need to deal with by lowering PD bulk capacitance (~240uF appears to work). Recommend that the following sentence be added on page 145 line 24 before the sentence that starts with "A dual-signature..." with, "Type-4 single-signature PDs that consume more than class-8 PClass_PD, see 33.3.7.2, shall meet these requirements for the PD bulk capacitance utilized.

Delete the Editor’s note at the start of this section.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.9** *P* **147** *L* **16** # 160

Yseboodt, Lennart — Philips

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

"When V Port_PD -2P max is applied across the PI at either polarity specified on the conductors for Mode A according to Table 33-19, the voltage measured across the PI for Mode B with a 100 kOhm load resistor connected shall not exceed V bfd max as specified in Table 33-28. When V Port_PD-2P max is applied across the PI at either polarity specified on the conductors for Mode B according to Table 33-19, the voltage measured across the PI for Mode A with a 100 kohm load resistor connected shall not exceed V bfd max."

These two lines can be merged.

SuggestedRemedy

"When V Port_PD -2P max is applied across the PI at either polarity specified on the conductors of either Mode A or Mode B according to Table 33-19, the voltage measured across the PI for the other Mode with a 100 kOhm load resistor connected shall not exceed V bfd max as specified in Table 33-28."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.10** *P* **147** *L* **25** # 161

Yseboodt, Lennart — Philips

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

Section title "33.3.7.10 PD PI pair-to-pair resistance and current unbalance"

SuggestedRemedy

More apt title: "PD pair-to-pair current unbalance"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.10** *P* **147** *L* **26** # 13

Bennett, Ken — Sifos Technologies, In

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

The first two paragraphs are ambiguous. It's not clear whether the ICon_2P_unb, ICon_2P requirements must be met for a single set of RSource and Vport_PSE values that fall within the ranges mentioned, or if ICon_2P_unb, ICon_2P must be met over the full Rsource and Vport_PSE_2P ranges.

The requirements for ICon apply to the full Rsource and Vport ranges, which correspond to compliant ranges of PSE and Channel characteristics. (PDs can fail Icon_unb at short or long channels, and at any length for extended power.)

SuggestedRemedy

See bennett_1_0516.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7.10** *P* **148** *L* **1** # 162

Yseboodt, Lennart — Philips

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

Figure 33-40 has unclear title

SuggestedRemedy

New title "PD PI pair-to-pair current unbalance test setup"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.8** *P* **148** *L* **26** # 163

Yseboodt, Lennart — Philips

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

"A PD that does not maintain the MPS components mentioned above may have its power removed within the limits of T MPDO as specified in Table 33-17."

"mentioned above" is a historic positional reference that no longer makes sense.

SuggestedRemedy

Remove "mentioned above".
Change to:
"A PD that does not maintain the MPS components may have its power removed within the limits of T MPDO as specified in Table 33-17."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.8** *P* **148** *L* **41** # 164

Yseboodt, Lennart — Philips

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

"Type 3 and Type 4 PDs that detect a long first class event in the range of T LCE_PD may reduce T MPS_PD in order to draw a lower standby MPS power."

Does not say where to find T LCE_PD.

SuggestedRemedy

"Type 3 and Type 4 PDs that detect a long first class event in the range of T LCE_PD, as defined in Table 33-26, may reduce T MPS_PD in order to draw a lower standby MPS power."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.8** *P* **149** *L* **29** # 252

Yseboodt, Lennart — Philips

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

"NOTE--PDs may not be able to meet the IPort_MPS specification in Table 33-29 during the maximum allowed port voltage droop (VPort_PSE max to VPort_PSE min with series resistance RCh). Such a PD should increase its IPort min or make other such provisions to meet the Maintain Power Signature."

We also need to mention IPort-MPS-2P for dual-signature PDs.

SuggestedRemedy

"NOTE--PDs may not be able to meet the IPort_MPS or Iport_MPS-2P specification in Table 33-29 during the maximum allowed port voltage droop (VPort_PSE max to VPort_PSE min with series resistance RCh). Such a PD should increase its IPort min or make other such provisions to meet the Maintain Power Signature."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.4.1.1.2** *P* **151** *L* **11** # 5

Beia, Christian STMicroelectronics

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

In order to successfully detect DS PDs with a common ground, PSEs that support 4-pair operation have to switch the more negative conductor at least. This is already specificed for Environment A PSEs, but not for Environment B.

SuggestedRemedy

Add after the second paragraph of 33.4.1.1.2 the following sentence:

An Environment B PSE that supports 4-pair power shall switch the more negative conductor. It is allowable to switch both conductors

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.4.2** *P* **151** *L* **26** # 253

Yseboodt, Lennart Philips

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

"The PSE PI shall withstand without damage the application of short circuits of any wire to any other wire within the cable for an indefinite period of time. The magnitude of the current through such a short circuit shall not exceed I LIM max as defined in Table 33-17."

No longer correct for the new Types.

SuggestedRemedy

Replace second sentence by:
"The magnitude of the current through such a short circuit:
- shall not exceed I LIM-2P max, as defined in Table 33-17, for Type 1 and Type 2 PSEs
- shall not exceed 0.85A for Type 3 PSEs
- shall not exceed I_LPS for Type 4 PSEs"

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.4.2** *P* **151** *L* **28** # 96

Schindler, Fred Seen Simply, Broadco

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

The concerns of D1.6 comments 272 remain unaddressed.

The Fault tolerance section covers cases where a PSE is subjected to faults like link section conductor shorts. This section should contain similar requirements for new PDs so that they continue operating after a link segment conductor open fault has been removed.

SuggestedRemedy

Add the following text before the third paragraph of the called out section.

"Type-3 and Type-4 PDs shall withstand one or more conductor open failures within the link section without damage when powered by any PSE."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.4.9.1.5** *P* **161** *L* **26** # 236

Yseboodt, Lennart Philips

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

Both sections are new text.

33.4.9.1.5 Maximum link delay says "The propagation delay contribution of the Midspan PSE device shall not exceed 2.5 ns from 1 MHz to the highest referenced frequency."

33.4.9.1.6 Maximum link delay skew says "The propagation delay contribution of the Midspan PSE device shall not exceed 1.25 ns from 1 MHz to the highest referenced frequency."

The requirement is the same, with different value, and it seems that 33.4.9.1.6 should say something on skew ?

SuggestedRemedy

TFTD

Is this correct ?

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.4.9.2** *P* **162** *L* **30** # 20

Darshan, Yair Microsemi

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

The Editor Note is not required anymore. All the necessary parameters were defined.

SuggestedRemedy

Delete Editor Note.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.6.2** *P* **169** *L* **6** # 165

Yseboodt, Lennart Philips

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

"Type 2, 3, and 4 PSEs shall send an LLDPDU containing..."

PSEs contains underline.

SuggestedRemedy

Remove underline.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.6.3.2** *P* **169** *L* **44** # 166

Yseboodt, Lennart Philips

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

LLDP can support extended power in a better way.

SuggestedRemedy

Adopt yseboodt_01_0516_lldpext.pdf

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.6.3.2** *P* **170** *L* **33** # 134

Tremblay, David Hewlett Packard Enter

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

Inconsistent spelling of PD_DLLMAX_VALUE on line 170:

Variables PD_DLL_MAX_VALUE, PD_INITIAL_VALUE, and PSE_INITIAL_VALUE, are quantized to fit the available resolution.

SuggestedRemedy

Change PD_DLL_MAX_VALUE to PD_DLLMAX_VALUE

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.6.3.3** *P* **172** *L* **35** # 97

Schindler, Fred Seen Simply, Broadco

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

Editor's notes use comment number references without reference to which draft was commented on.

SuggestedRemedy

From now on, please reference using style D1.6 #48, where this example references Draft 1.6 comment #48.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.6.3.5** *P* **175** *L* **9** # 98

Schindler, Fred — Seen Simply, Broadco

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

The San Antonio 2014 meeting presentation, Mutual_ID_PD_updated, change variable pse_dll_power_type to pse_dll_power_level and added variable pse_power_level for Type 3 and 4 state diagrams. This was probably done because Type no longer indicates the power being provided.

Unfortunately, this change:
1. Broke legacy DLL power control.
2. Broke DLL classification for new Types.

LLDP and the SD on p175 work together to provide LLDP field values. To reported PSE Type and not class, we need access to variable that reports Type.

SuggestedRemedy

This comment may be covered in schindler_3bt_01_05_16.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.6.4.1** *P* **176** *L* **31** # 99

Schindler, Fred — Seen Simply, Broadco

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

It is incorrect to state that a thing has human properties, liking seeing.

SuggestedRemedy

Existing text:
If the PSE sees a change to the previously stored MirroredPDRequestedPowerValue, it recognizes a request by the PD to change its power allocation.

Corrected:
If the PSE previously stored MirroredPDRequestedPowerValue changes, a request by the PD to change its power allocation is recognizes.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.6.4.1** *P* **176** *L* **44** # 100

Schindler, Fred — Seen Simply, Broadco

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

It is incorrect to state that a thing has human properties, liking seeing.

SuggestedRemedy

Existing text:
If the PD sees a change to the previously stored MirroredPSEAllocatedPowerValue or local_system_change is asserted by the PD so as to change its power allocation, it enters the PD POWER REVIEW state.

Corrected:
If the PD previously stored MirroredPSEAllocatedPowerValue is changed or local_system_change is asserted by the PD so as to change its power allocation, it enters the PD POWER REVIEW state.

Proposed Response *Response Status* **O**

Cl **79** *SC* **79.3.2** *P* **203** *L* **27** # 101

Schindler, Fred — Seen Simply, Broadco

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

Accepted draft 1.4 comments broke extended power operation using LLDP and DLL. An ad hoc meeting reviewed these concerns during D1.5 review cycle and a very busy person was not able to complete a solution for the D1.6 review cycle.

SuggestedRemedy

A solution should appear in schindler_3bt_02_05_16 or other related presentation for this review cycle.

Proposed Response *Response Status* **O**

Cl **79** *SC* **79.3.2** *P* **203** *L* **29** # 167

Yseboodt, Lennart Philips

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

"These entities allow devices to draw/supply power over the sample generic cabling as used for data transmission."

'sample' should be 'same' ?

SuggestedRemedy

"These entities allow devices to draw/supply power over the same generic cabling as used for data transmission."

Proposed Response *Response Status* **O**

Cl **79** *SC* **79.3.2** *P* **203** *L* **36** # 168

Yseboodt, Lennart Philips

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

Figure 79-3 uses a different font than 79-2.

SuggestedRemedy

Change font and drawing style to match 79-2.

Proposed Response *Response Status* **O**

Cl **79** *SC* **79.3.2** *P* **203** *L* **53** # 169

Yseboodt, Lennart Philips

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

The second paragraph of 79.3.2 explains that Figure 79-3 is a revision of the original TLV defined in 802.1AG-2009 Annex F.3.
We have now further revised this TLV with new capabilities.

SuggestedRemedy

Add the following after page 204, line 7:
"The TLV in Figure 79-3 has been further revised to support additional capabilities offered by Type 3 and Type 4 PSEs and PDs as defined in Clause 33.
Type 3 and Type 4 PSEs and PDs may use these additional fields."

Proposed Response *Response Status* **O**

Cl **79** *SC* **79.3.2.6** *P* **206** *L* **49** # 170

Yseboodt, Lennart Philips

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

The Editing instruction is missing the word 'Insert'.
(At one point something removed all the words "insert" from the draft it seems).

SuggestedRemedy

Add 'Insert' before 'sections'.

Proposed Response *Response Status* **O**

Cl **79** *SC* **79.3.2.6a.2** *P* **207** *L* **37** # 237

Yseboodt, Lennart Philips

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

The PSE power class field is described as:
"The power class field shall contain an integer value for PSE Classes defined by 33.2.6. A TLV generated by a PD shall set the field to 0000."

This doesn`t say if it should be assigned or requested Class. Assigned Class seems logical.

SuggestedRemedy

- Remove the underline and strikethrough
- Change to read:
"The power class field shall contain an integer value for the assigned Class by the PSE as defined in 33.2.6. A TLV generated by a PD shall have the field set to 0000."

Proposed Response *Response Status* **O**

Cl **79** *SC* **79.3.2.6b.3** *P* **208** *L* **31** # 238

Yseboodt, Lennart Philips

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

In Table 79-6b and section 79.3.2.6b.3 the "PD PI" bit is described. Given the recent evolutions we made in defining single and dual signature PDs, this bit no longer serves any purpose. It can however be repurposed to make LLDP support dual-signature PDs in a proper way.

SuggestedRemedy

- Rename "PD PI" to "PD Mode selection"
- Change value of item 2 in Table 79-6b to read:
"1 = PD requested power applies to Mode A pairset
0 = PD requested power applies to Mode B pairset"
- Change text in 79.3.2.6b.3 to read:
"This field shall be set according to Table 79-6b to select the Mode for which the PD is requesting power when the power type is PD. This field shall be set to 0 when the power type is PSE."

Proposed Response *Response Status* **O**

Cl **79** *SC* **79.3.7.1** *P* **211** *L* **23** # 171

Yseboodt, Lennart Philips

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

In Table 79-6f on PD measurements, Item 92:91 it refers to "Pairset Alternative A" and "B".

SuggestedRemedy

Since this is the PD, it should be "Pairset Mode A" and likewise for B.

Proposed Response *Response Status* **O**

Cl **33** *SC* **33.3.7** *P* **231** *L* **52** # 216

Yseboodt, Lennart Philips

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

"Selected resistance values for RPSE_max and RPSE_min which provide adequate verification to Equation (33-13) or control ICon-2P-unb value are dependent upon PSE circuit implementation and as such are left to the designer."

PARSE_ERROR.

SuggestedRemedy

I don`t know where to begin. What does this mean ?

Proposed Response *Response Status* **O**

Cl **33** *SC* **Annex B** *P* **232** *L* **28** # 21

Darshan, Yair Microsemi

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

In the text:
"Verification of ICon-2P_unb in step 6 and 7 confirms PSE RPSE_max and RPSE_min are in conformance to this specification."

replace "PSE" with "that"

SuggestedRemedy

Change to:
"Verification of ICon-2P_unb in step 6 and 7 confirms that RPSE_max and RPSE_min are in conformance to this specification."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33B** *P* **232** *L* **34** # 254

Yseboodt, Lennart Philips

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

"I Con_2P_unb max and Equation (33-13) are specified for total channel common mode pair resistance from 0.1 O to 12.5 O and worst case unbalance contribution by a PD."

ICon-2P-unb is a minimum.

SuggestedRemedy

"I Con-2P-unb and Equation (33-13) are specified for total channel common mode pair resistance from 0.1 O to 12.5 O and worst case unbalance contribution by a PD."

Proposed Response *Response Status* **O**

Cl **33** *SC* **33B** *P* **232** *L* **36** # 172

Yseboodt, Lennart Philips

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

"When the PSE is tested for channel common mode resistance less than 0.1 O, i.e. 0 O < R ch_x < 0.1 O, the PSE shall be tested with (R load_min - R ch_x) and (R load_max - R ch_x) to meet I Con-2P-unb requirements and R PSE_min and R PSE_max conformance to Equation (33-13)."

Rch is the maximum channel resistance. Rchan is the actual channel resistance. Rch_x is simply confusing.

SuggestedRemedy

Replace Rch_x by Rchan.

Proposed Response *Response Status* **O**