*Cl* **33** *SC* **33.2.7.5** *P* **67** *L* **19** # 1

Bennett, Ken — Sifos Technologies, In

*Comment Type* **T** *Comment Status* **X** *PSE Power*

There is a recommendation that POWER_UP mode persist for the complete duration of TInrush in section 33.2.7.5 of the existing standard. Commensurately, there is a recommendation against using LEGACY POWER_UP in section 32.2.4.4. This is because legacy power-up can end POWER_UP mode prior to the end of PD Inrush.

The result of an early exit of POWER_UP mode is that current is not limited to the levels in figure 33-13, and inrush current could exceed expected values for a PD, potentially damaging an existing Type 1 or Type 2 PD. Type 3 and Type 4 PSE's could deliver higher currents during PD Inrush in this scenario, increasing the probability of damage to a legacy PD.

The recommendations used in the existing standard have been applied to Type 3 and Type 4 PSE's in the draft. The suggested remedy makes it a requirement for Type 3 and Type 4 PSE's. For reference, the existing text is shown below:

However, for practical implementations, it is recommended that the POWER_UP mode on a pair set persist for the complete duration of TInrush-2P, as the PSE may not be able to correctly ascertain the conclusion of a PD's inrush behavior.

*SuggestedRemedy*

Change the text to:

However, for practical implementations, it is recommended that POWER_UP mode in Type 1 and Type 2 PSE's persist for the complete duration of TInrush-2P, as the PSE may not be able to correctly ascertain the conclusion of a PD's inrush behavior. Type 3 and Type 4 PSE's shall remain in POWER_UP mode until the Tinrush_2P period in table 33-11 is met.

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

This should be discussed by the group as there was a comment looking to remove this statement completely.

*Cl* **33** *SC* **33.2.4.6** *P* **41** *L* **51** # 3

Beia, Christian — STMicroelectronics

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

To cover all the possible cases, and allow maximum design flexibility, the signature variable should also have a definition for a PSE which detected a PD requesting power on a single alternative.

*SuggestedRemedy*

To add two more definition of the signature variable:
Valid_AltA: A Type 3 or Type 4 PSEs has detected a PD requesting power on Alternative A.
Valid_AltB: A Type 3 or Type 4 PSEs has detected a PD requesting power on Alternative B.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 229.

*Cl* **33** *SC* **33.3.7** *P* **88** *L* **20** # 5

Beia, Christian — STMicroelectronics

*Comment Type* **TR** *Comment Status* **D** *Table 33-18*

Table 33-18
The maximum input guaranteed available power for Class 8 PDs cannot be 71.3W, since in a perfectly balanced system it would result into a 0.5*71.3W/41.1V=0.867A current per pair-set.
This value is larger than Icon-2P min defined at PSE output in Table 33-11. The calculated value for Pclass min and Vport_PSE_2P min is: Icon_2P min= 0.5*90W/52V=0.865A.
So I suggest modifying Pclass_PD to 71.0W for Class8 which results into 0.5*71W/41.1V=0.864A.

*SuggestedRemedy*

Modify Table 33-18
Item: 4, Parameter: Input guaranteed available average power, Class8
with the following value:
Max: 71.0

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.7.8** *P* **70** *L* **33** # 6

Beia, Christian STMicroelectronics

*Comment Type* **TR** *Comment Status* **D** *PSE Power*

As done in the rest of the document, also for the Turn off time paragraph it is needed to refer to the pair set in place of the PI.

*SuggestedRemedy*

Replace "PI" with "pair set" in the whole paragraph, to read:

The specification for TOff in Table 33–11 shall apply to the discharge time from VPort_PSE to VOff of a pair set with a test resistor of 320 kOhm attached to that pair set. In addition, it is recommended that the pair set be discharged when turned off. TOff starts when VPSE drops 1 V below the steady-state value after the pi_powered variable is cleared(see Figure 33–9). TOff ends when VPSE<=VOffmax. The PSE remains in the IDLE state as long as the
average voltage across the pair set is VOff. The IDLE state is the state whenthe PSE is not in detection, classification, or normal powering states.

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.3.8** *P* **94** *L* **40** # 10

Beia, Christian STMicroelectronics

*Comment Type* **TR** *Comment Status* **D** *PD MPS*

In table 33-13a there is a column which describes the MPS options "high" and "low". The note below refers to section 33.3.8 for details but there is nothing there which gives extra information.
In Table 33-17 there is also reference to 33.3.8 but no explanation there.

*SuggestedRemedy*

Add the following sentence after first paragraph of 33.3.8:

Types 3 and 4 PDs which detect a long first class event in the range of TLCF_PD may reduce TMPS_PD in order to draw a lower standby MPS power. In absence of a long first class event the minimum TMPS_PD is higher, and the standby MPS power is also higher.

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.3.2** *P* **76** *L* **7** # 11

Beia, Christian STMicroelectronics

*Comment Type* **TR** *Comment Status* **D** *PD Types*

Type 3 and Type 4 are described in the same sentence and it is not clear what clesses are relevant to each Type.

*SuggestedRemedy*

Replace the following sentence:
Type 3 and Type 4 PDs operating with a maximum power draw corresponding to Class 4 or greater implement both multiple-Event Physical Layer classification (see 33.3.5.2)and Data Link Layer classification (see 33.6)and advertise a class signature of 4, 5, 6, 7 or 8.

With:
Type 3 PDs operating with a maximum power draw corresponding to Class 4 or greater implement both multiple-Event Physical Layer classification (see 33.3.5.2)and Data Link Layer classification (see 33.6)and advertise a class signature of 4, 5, 6.
Type 4 PDs implement both multiple-Event Physical Layer classification (see 33.3.5.2)and Data Link Layer classification (see 33.6)and advertise a class signature of 7,8.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 250.

*Cl* **33** *SC* **33.3.7** *P* **87** *L* **28** # 12

Beia, Christian STMicroelectronics

*Comment Type* **TR** *Comment Status* **D** *Table 33-18*

Table 33-18
As defined in Table 33-16a the PD Type 4 is only defined for classes 7, 8.
So in Table 33-18 the input voltage definition for classes 0-3 is relevant to PD Types 1,3; for class 4 it is relevant to Type 2,3; for classes 5,6 it is relevant to Type 3 only.

*SuggestedRemedy*

Remove PD Type 4 into PD type column, rows 1-6 of Table 33-18 Item 1 as follows:

Parameter Input voltage per pair set, Class1 | PD Type 1,3
Parameter Input voltage per pair set, Class2 | PD Type 1,3
Parameter Input voltage per pair set, Class0,3 | PD Type 2,3
Parameter Input voltage per pair set, Class4 | PD Type 1,3
Parameter Input voltage per pair set, Class5 | PD Type 3
Parameter Input voltage per pair set, Class6 | PD Type 3

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33** *P* **1** *L* **1** # 20

Yseboodt, Lennart Philips

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

Bulkcomment to consistently reference to ISO/IEC 11801 without year.
We have references on:
- page 19, line 53
- page 22, line 15
- page 22, line 19
- page 22, line 22
- page 23, line 10
- page 23, line 32
- page 102, line 27
- page 103, line 33
- page 104, line 45
- page 104, line 49
- page 105, line 9
- page 107, line 17
- page 137, line 45
- page 138, line 19

*SuggestedRemedy*

Replace reference (with year) to "ISO/IEC 11801".

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

PROPOSED ACCEPT IN PRINCIPLE.

Are references without years ok?

*Cl* **33** *SC* **33.2.4.6** *P* **42** *L* **42** # 31

Yseboodt, Lennart Philips

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

"... electrical requirements of PSE Type that corresponds to the connected PD Type."

*SuggestedRemedy*

"… electrical requirements of a PSE Type that corresponds to the connected PD Type."

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

PROPOSED ACCEPT IN PRINCIPLE.

Possible OBE by comment # 187

If 187 not accepted, replace with:

"… electrical requirements of the PSE Type that corresponds to the connected PD Type."

*Cl* **33** *SC* **33.2.4.7** *P* **45** *L* **8** # 34

Yseboodt, Lennart Philips

*Comment Type* **E** *Comment Status* **D** *PSE State Diagram*

Most of the state names have an abbreviated name. This increases complexity.
Especially the abbreviation for POWER_DENIED, PD is highly confusing.

*SuggestedRemedy*

Pick 1 name for a state and do not abbreviate.

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.4.7** *P* **45** *L* **8** # 35

Yseboodt, Lennart Philips

*Comment Type* **E** *Comment Status* **D** *PSE State Diagram*

The overview diagram should not mix container boxes for sub state machines with actual states.

*SuggestedRemedy*

Only show container boxes (dashed) in the overview and the details go in the sub state machines.

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.5.1** *P* **52** *L* **21** # 39

Yseboodt, Lennart Philips

*Comment Type* **E** *Comment Status* **D** *PSE Detection*

"The PSE shall not be damaged by up to 5 mA backdriven current over the range of V oc as specified in Table 33-4."
Voc is not a range, only lists a maximum.

*SuggestedRemedy*

Change to:
"The PSE shall not be damaged by up to 5 mA backdriven current over the range of 0V to V_oc as specified in Table 33-4."

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

PROPOSED REJECT.

This is text that we are not changing as part of the .3bt project.

This request can be filed as a maintenance request.

*Cl* **33** *SC* **33.2.6.3** *P* **61** *L* **34** # 47

Yseboodt, Lennart Philips

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

Section title is "(TBD) Autoclass"

*SuggestedRemedy*

Remove TBD and add space: "Auto class"

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

PROPOSED ACCEPT IN PRINCIPLE.

Remove Space but do not add space.

*Cl* **33** *SC* **33.3.3.4** *P* **78** *L* **46** # 65

Yseboodt, Lennart Philips

*Comment Type* **E** *Comment Status* **D** *PD State Diagram*

"A timer used to prevent the Type 2 PD from drawing more than inrush current during the PSE's
inrush period; see T delay in Table 33-18."

*SuggestedRemedy*

Change to "T Delay" to "Tdelay-2P"

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 112.

*Cl* **33** *SC* **33.3.7** *P* **88** *L* **50** # 75

Yseboodt, Lennart Philips

*Comment Type* **E** *Comment Status* **X** *Pres: Table 33-18*

Table 33-18, Item 9 for Type 3/4 empty.

*SuggestedRemedy*

Insert TBD.

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

Waiting for Presentation from Yair.

*Cl* **33** *SC* **33.2.4.4** *P* **39** *L* **5** # 99

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **X** *PSE Types*

A Type 4 PSE is distinct from a Type 3 PSE in ways other than power (Vpse min, polarity, must implement 4P).
We do not want to prevent Type 4 PSEs from providing also power below class 7.
Currently Table 33-3 requires a Type 4 PSE to have class_num_events = 5, possibly restricting it to Class 7 and 8.

*SuggestedRemedy*

Add class_num_events 1, 2 and 4 also for Type 4.

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

This goes to the heart of what a Type 4 PSE is. I would like to hear the group's opinion on this.

See Comment # 287.

*Cl* **33** *SC* **33.2.6** *P* **56** *L* **4** # 100

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **D** *PSE Classification*

Table 33-7, 3rd column title is "Minimum power levels at the output of the PSE (Pclass)".
Note 2 says "This is the minimum power at the PSE PI."

The output level at the PSE PI can be anything between MPS and Pclass.
Pedantic reading would seem to imply that PSE must source Pclass at all times.

*SuggestedRemedy*

Replace by "Minimum supported power level at the output of the PSE (Pclass)"
and the note by "This is the minimum supported power at the PSE PI".

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.6** *P* **56** *L* **4** # 101

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **D** *PSE Classification*

The construct "xx W or Ptype as defined in Table 33-11 whichever is less" is used.
Unless a PSE is providing more class events than its Type would allow, Ptype is always larger or equal than any class power valid for its Type.
The part "or Ptype as defined in Table 33-11 whichever is less" has no effect.

*SuggestedRemedy*

Remove "or Ptype as defined in Table 33-11 whichever is less" from each row that has it.

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

PROPOSED REJECT.

I do not believe this is correct. A Type 3 PSE that tries to power a class 8 PD, will have a Ptype of 60W but will see "90W" as the request from the PD. Thus the minimum supported power from the PSE would have to be 60W rather than 90W. In terms of the language in the draft: Ptype (60W) or 90W whichever is less.

Ptype is defined in Table 33-11 per type (class fingers have no influence on Ptype).

*Cl* **33** *SC* **33.2.6** *P* **57** *L* **27** # 102

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **D** *Table 33-8*

In Table 33-8. Type 3, 4 PDs, intersection of 'Multiple-event' and 'No DLL'.
Class 3 or below PDs are not required to support DLL.

*SuggestedRemedy*

Add a Table footnote '2' there that says:
"2 A Type 3 or 4 PD that is limited to Class 0-3 power levels may omit DLL support".

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

PROPOSED ACCEPT IN PRINCIPLE.

Add a Table footnote '2' there that says:
"Any PD that is limited to Class 0-3 power levels may omit DLL support".

*Cl* **33** *SC* **33.2.6** *P* **57** *L* **9** # 104

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **D** *Table 33-8*

There is a inadvertent content change in Table 33-8 compared to the old table format.
Two rows for Type 1 PDs have been swapped.

*SuggestedRemedy*

Change Type 1, PD, Multiple-event, No-DLL from NO to YES
Change Type 1, PD, Multiple-event, DLL from NO to YES
Change Type 1, PD, None, No-DLL from YES to NO
Change Type 1, PD, None, DLL from YES to NO

See yseboodt_Table_33_8_v100.pdf

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

PROPOSED ACCEPT IN PRINCIPLE.

Make edits as suggested, but change yes and no to valid and invalid respectively.

*Cl* **33** *SC* **33.2.7** *P* **62** *L* **1** # 106

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **D** *PSE Power*

We currently do not have a specification for the maximum delay between bringing the pair sets power up.
A PD cannot easily measure if it is getting 2P or 4P power.
If the pair sets are not brought up together, a PD could draw double the inrush, or exceed the 2P power limit
(even if it waited for Tdelay_2P).

*SuggestedRemedy*

Introduce a new parameter Tpud (T Pair set Power up delay) with a maximum value of 50ms.
A PSE that decides to 4P power a SS PD will need to transition both pair sets into inrush within Tpud.

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

PROPOSED ACCEPT IN PRINCIPLE.

Add new row "1b" to Table 33-11.

Parameter: Power up delay between pair sets
Symbol: Tpud
Unit: s
Min: Blank
Max: TBD
PSE Type: 3, 4
Additional Information: See 33.2.7.5

Add:

"Editor's Note to be removed before publication: Timing requirements for 4-pair power to be added to this section."

to beginning of section 33.2.7.5

*Cl* **33** *SC* **33.2.7.2** *P* **65** *L* **30** # 108

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **X** *PSE Power*

"The minimum PD input capacitance allows the PD to operate for any input voltage transient lasting less than
30 us. Transients lasting more than 250 us shall meet the V Port_PSE-2P specification."

This statement is not true for the higher power classes.

*SuggestedRemedy*

Option 1 (preferred):
Lower the minimum time (30us) to:
Type 3: 15us
Type 4: 10us

Option 2:
Increase the minimum capacitance of PDs to:
Type 3: 10uF
Type 4: 15uF
(double that for DS PDs)

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

This should be discussed by the group as there are two options listed in the suggested remedy.

*Cl* **33** *SC* **33.2.7.7** *P* **68** *L* **43** # 110

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **D** *PSE Power*

D0.4 and 802.3-2012 text said that power shall be removed before crossing the upperbound template.
D1.0 text says this:
"When connected to a single signature PD, a Type 3 or Type 4 PSE may remove power from both pair sets if
the current draw exceeds the â€œPSE lowerbound templateâ€ on either pair set, and shall remove power from
both pair sets if the current draw exceeds the â€œPSE upper bound templateâ€ on either pair set.

When connected to a dual signature PD, a Type 3 or Type 4 PSE may remove power from any pair set that exceeds
the â€œPSE lowerbound templateâ€ and shall remove power fromany pair set that exceeds
the â€œPSE upperbound templateâ€.
Power may be removed from both pair sets any time power is removed from one pair set."

*SuggestedRemedy*

Note: remedy does 3 things:
- insert space between "fromany"
- add references to Fig 33-14 and Eq 33-7
- change "exceeds" to "equals or exceeds"

"When connected to a single signature PD, a Type 3 or Type 4 PSE may remove power from both pair sets if
the current draw exceeds the "PSE lowerbound template", defined in Equation 33-7 and Figure 33-14, on either pair set, and shall remove power from both pair sets if the current draw equals or exceeds the "PSE upper bound template" on either pair set.

When connected to a dual signature PD, a Type 3 or Type 4 PSE may remove power from any pair set that exceeds
the "PSE lowerbound template" and shall remove power from any pair set that equals or exceeds the "PSE upperbound template".
Power may be removed from both pair sets any time power is removed from one pair set."

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

PROPOSED ACCEPT IN PRINCIPLE.

Possible OBE by comment # 238.

"When connected to a single signature PD, a Type 3 or Type 4 PSE may remove power from both pair sets if
the current draw meets or exceeds the "PSE lowerbound template", defined in Equation 33-7 and Figure 33-14, on either pair set, and shall remove power from both pair sets before the current draw equals or exceeds the "PSE upper bound template" on either pair set.

When connected to a dual signature PD, a Type 3 or Type 4 PSE may remove power from any pair set that meets or exceeds
the "PSE lowerbound template" and shall remove power from a pair set before the current draw equals or exceeds the "PSE upperbound template" on that pair set.
Power may be removed from both pair sets any time power is removed from one pair set."

*Cl* **33** *SC* **33.3.3.4** *P* **78** *L* **46** # 112

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **D** *PD State Diagram*

"A timer used to prevent the Type 2 PD from drawing more than inrush current during the PSE's
inrush period; see T delay in Table 33-18."

This also applies to Type 3 and 4.

*SuggestedRemedy*

"A timer used to prevent a Type 2, 3 or 4 PD from drawing more than inrush current during the PSE's
inrush period; see T delay-2P in Table 33-18."

This OBEs the editorial comment to change T delay to T delay-2P

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.3.7** *P* **88** *L* **48** # 114

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **X** *Pres: Table 33-18*

The Cport(min) for Type 1 and 2 was 5uF. This number should apply both in 2P mode as well as in 4P mode
for Type 1 and 2. By changing Cport to Cport_2P, a Type 2 PD with 5uF would no longer be compliant when
powered over 4P.

*SuggestedRemedy*

Since PDs cannot change their capacitance whether they are 4P or 2P powered and we cannot change Type 1, 2 I would suggest this:

Type 1,2 in 2P mode => 5uF(min) at the PI (total)
Type 1,2 in 4P mode => 5uF(min) at the PI (total)
Type 3,4 in 2P mode => 5uF(min) at the PI (total)
Type 3,4 in 4P mode, Single Sig => 5uF(min) at the PI (total)
Type 3,4 in 4P mode, Dial Sig => 5uF(min) on each pair set

Change the name Cport_2P back to Cport.

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

Waiting for Presentation from Yair.

*Cl* **33** *SC* **33.3.7** *P* **89** *L* **15** # 115

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **D** *Table 33-18*

Von and Voff are TBD for Type 3 and 4.

*SuggestedRemedy*

There is no reason to pick new numbers for the new Types.
Use Von = 42V for Type 1-4.
Use Voff = 30V for Type 1-4.

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.3.7.4** *P* **91** *L* **5** # 116

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **D** *PD Power*

"At any static voltage at the PI, and any PD operating condition, the peak power shall not exceed
P Class_PD max for more than T CUT min, as defined in Table 33-11 and 5% duty cycle. Peak operating power
shall not exceed P Peak max."

"Ripple current content (I Port_ac ) superimposed on the DC current level (I Port_dc ) is allowed if the total input
power is less than or equal to P Class_PD max."

This disallows extended power. This is the text description of Figure 33-18.

*SuggestedRemedy*

"At any static voltage at the PI, and any PD operating condition, with the exception of class 6 or class 8 PDs, the peak power shall not exceed
P Class_PD max for more than T CUT min, as defined in Table 33-11 and 5% duty cycle. Peak operating power
shall not exceed P Peak max."

"At any static voltage at the PI, class 6 or class 8 PDs in operating condition, the peak power shall not exceed
PClass at the PSE PI for more than T CUT min, as defined in Table 33-11 and 5% duty cycle. Peak operating power
shall not exceed Ipeak * Vpse at the PSE PI."

"Ripple current content (I Port_ac ) superimposed on the DC current level (I Port_dc ) is allowed if the total input
power is less than or equal to P Class_PD max, or Pclass at the PSE PI for class 6 and class 8 PDs."

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.3.7.4** *P* **91** *L* **22** # 117

Yseboodt, Lennart Philips

*Comment Type* **T** *Comment Status* **D** *PD Power*

"The maximum I Port value for all operating V Port_PD range shall be defined by the following equation:
Iportmax = Pclass_PD / Vport_PD (A) (33-11)"

This disallows extended power by limiting the current.

*SuggestedRemedy*

"The maximum I Port value for all PDs except those in Class 6 or Class 8, over the operating V Port_PD range,
shall be defined by the following equation:
Iportmax = Pclass_PD / Vport_PD-2P (A) (33-11)"

"The maximum I Port value for all PDs in Class 6 or Class 8, over the operating V Port_PD range,
shall be defined by the following equation:
Iportmax = Pclass_PD / Vport_PD-2P(min) (A) (33-11a)

where
Iportmax is the maximum DC and RMS input current
Vport_PD-2P(min) is the minimum static input voltage at PD PI
Pclass_PD is the maximum power, P Class_PD max, as defined in Table 33-18"

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.4.1.1.2** *P* **95** *L* **45** # 118

Yseboodt, Lennart Philips

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

Bulk comment to change reference to IEC 60950-1:2001 which is outdated and superseded by IEC 62368-1.
In the following places:
- page 95, line 45
- page 95, line 49
- page 95, line 50
- page 95, line 53
- page 96, line 34
- page 97, line 22

*SuggestedRemedy*

Reference to IEC 60950-1 (without date) and to IEC 62368-1 which is the successor of IEC 60950-1.

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.4.9.1.4d** *P* **107** *L* **45** # 120

Yseboodt, Lennart Philips

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

"PSANEXT loss for 10GBASE-T capable Midspan PSE devices shall meet or exceed the values determined
using the equations shown in Table 33-20a for all specified frequencies. Calculations that result in
PSANEXT loss values greater than 67 dB shall revert to a requirement of 67 dB minimum."

This number of 67dB does not seem to match with Table 33-20a.

*SuggestedRemedy*

Make consistent whichever way is right.

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

I don't understand this comment. Why does 67dB not match with Table 33-20a?

*Cl* **33** *SC* **33.6.3.2** *P* **116** *L* **4** # 121

Yseboodt, Lennart Philips

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

For PD_DLLMAX_VALUE, class 8 is listed as 900.
Type 4 has a maximum power of 99.9W, but via physical layer only up to 90W can be negotiated.
LLDP is the best/only way to negotiate higher power than 90.

*SuggestedRemedy*

Change PD_DLLMAX_VALUE / Class 8 = 999

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.3** *P* **32** *L* **31** # 124

Yseboodt, Lennart Philips

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

Table 33-2a introduces a new pinout configuration 'Alternative B(X)'.
The other polarity configuration is named 'Alternative B'.
Possible confusion can occur now when referring to 'Alternative B':
- does it mean the specific polarity configuration ?
- or to the pinout configuration ?

We need a distinct name for the "Alternative B" polarity configuration, so the term "Alternative B" refers to which pins are used independent from polarity.

*SuggestedRemedy*

Rename 'Alternative B' to 'Alternative B(S)' in the third column of Table 33-2a.
S for Straight
X for Cross

Other option:
Alternative B => Alternative B(N) N for Normal
Alternative B(X) => Alternative B(R) R for Reversed

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

PROPOSED ACCEPT IN PRINCIPLE.

Rename 'Alternative B' to 'Alternative B(S)' in the third column of Table 33-2a.
S for Straight
X for Cross

*Cl* **33** *SC* **33.5.1.1.4** *P* **111** *L* **16** # 126

Yseboodt, Lennart Philips

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

The pair control variable is not yet 4P aware.
"When read as ‘01’, bits 11.3:2 indicate that only PSE Pinout Alternative A is supported by the PSE. When
read as ‘10’, bits 11.3:2 indicate that only PSE Pinout Alternative B is supported by the PSE.

Where the option of controlling the PSE Pinout Alternative through these bits is provided, setting bits 11.3:2
to ‘01’ shall force the PSE to use only PSE Pinout Alternative A and setting bits 11.3:2 to ‘10’ shall force the
PSE to use only PSE Pinout Alternative B.

If bit 12.0 is one, writing to these register bits shall set mr_pse_alternative to the corresponding value: ‘01’ =
A and ‘10’ = B. The combinations ‘00’ and ‘11’ for bits 11.3:2 are reserved and will never be assigned.
Reading bits 11.3:2 returns an unambiguous result of ‘01’ or ‘10’ that may be used to determine the presence
of the PSE Control register."

*SuggestedRemedy*

Replace by:
"When read as ‘01’, bits 11.3:2 indicate that only PSE Pinout Alternative A is supported by the PSE. When
read as ‘10’, bits 11.3:2 indicate that only PSE Pinout Alternative B is supported by the PSE.
When read as ‘11’, bits 11.3:2 indicate that both Pinout Alternative A and Pinout Alternative B are supported by the PSE.

Where the option of controlling the PSE Pinout Alternative through these bits is provided, setting bits 11.3:2
to ‘01’ shall force the PSE to use only PSE Pinout Alternative A and setting bits 11.3:2 to ‘10’ shall force the
PSE to use only PSE Pinout Alternative B.
Setting bits 11.3:2 to '11' shall allow the PSE to use both PSE Pinout Alternative A and PSE Pinout Alternative B simultaneously.

If bit 12.0 is one, writing to these register bits shall set mr_pse_alternative to the corresponding value: ‘01’ =
A, ‘10’ = B and '11' = BOTH. The combination ‘00’ for bits 11.3:2 is reserved and will never be assigned.
Reading bits 11.3:2 returns an unambiguous result of ‘01’, ‘10’ or '11' that may be used to determine the presence
of the PSE Control register."

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

PROPOSED ACCEPT.

---

*Cl* **33** *SC* **33.2.4.4** *P* **35** *L* **20** # 129

Johnson, Peter Sifos Technologies

*Comment Type* **T** *Comment Status* **D** *4PID*

The state machine variable "maintain_4pair_power" can be reset as a result of 3 possible events including LLDP message (e.g. "PD does not want 4-pair power"), enforcement of class power draw (power policing to class?), and "vendor discretion".

As this is an interoperability specification, how is a PD designer to know what constitutes "vendor discretion"? For example, if a PSE can remove power from some flavor of dual signature (or dual load) PD, how does the PD designer know to design a PD where this won't happen?

Furthermore, there is no possible recipe by which to verify the integrity of the PSE's decision nor is there one to distinguish the power removal from what might otherwise be a faulty processing of an MPS or overload type of shutdown.

*SuggestedRemedy*

Either remove "vendor discretion" as a criteria or expand the Editor's Note to indicate that a more detailed criteria is required explaining why a PSE might decide that 4-pair powering is not advisable.

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

PROPOSED ACCEPT IN PRINCIPLE.

Add "Vendor discretion needs explanation." to endo of editor's note.

---

*Cl* **33** *SC* **33.2.7** *P* **62** *L* **51** # 130

Johnson, Peter Sifos Technologies

*Comment Type* **T** *Comment Status* **X** *PSE Power*

Item 5, Inrush-2P, allows 4 pair PSE's to limit current to 450mA PER PAIR SET as currently phrased. This behavior, that is allowing up to 900mA during inrush, would damage existing PD's that were designed to expect PSE would limit inrush current to <450mA if/when those PD's receive 4-Pair power.

*SuggestedRemedy*

The remedy to this may get involved. For now, we could create an Editor's Note on the topic.

(Perhaps PSE's that limit inrush current on a per-pair set basis will need to power pair sets asynchronously by Tinrush so inrush is fully experienced on just a single pair set.)

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

This should be discussed by the group.

Should we limit the total inrush current to 450mA for class 0-4? Should we just use one pair set for inrush for class 0-4?

---

*Cl* **33** *SC* **33.2.6** *P* **57** *L* **1** # 141

Walker, Dylan Cisco

*Comment Type* **E** *Comment Status* **D** *Table 33-8*

Table 33–8—PSE and PD classification permutations

PD permutations are in the PSE clause, but they would stand on their own in the PD clause.

*SuggestedRemedy*

(1) Rename "Table 33–8—PSE classification permutations"
(2) Move "PD Permutations" half of the table to 33.3.5, page 83, line 43
(3) Have the text on line 41 above it reference the new table number with title "PD classification permutations"

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.4.6** *P* **42** *L* **42** # 147

Walker, Dylan Cisco

*Comment Type* **ER** *Comment Status* **D** *PSE State Diagram*

"The PSE may choose to apply the electrical requirements for ICon-2P, ILIM-2P, TLIM-2P, and PType (see Table 33-11) of any Type lower than or equal to the PSE Type and greater than equal to the PD Type."

Missing "or", assuming this paragraph isn't modified per the Editor's Note anyway.

*SuggestedRemedy*

"The PSE may choose to apply the electrical requirements for ICon-2P, ILIM-2P, TLIM-2P, and PType (see Table 33-11) of any Type lower than or equal to the PSE Type and greater than or equal to the PD Type."

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

PROPOSED ACCEPT IN PRINCIPLE.

Possible OBE by comment # 187

*Cl* **33** *SC* **33.4** *P* **95** *L* **37** # 153

Walker, Dylan Cisco

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

"The requirements of 33.4 are consistent with the requirements of the 10BASE-T MAU and the 100BASE-TX and 1000BASE-T and 10GBASE-T PHYs."

Extra "and" instead of comma.

*SuggestedRemedy*

"The requirements of 33.4 are consistent with the requirements of the 10BASE-T MAU and the 100BASE-TX, 1000BASE-T and 10GBASE-T PHYs."

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

PROPOSED ACCEPT IN PRINCIPLE.

I prefer the serial comma to be included.

"The requirements of 33.4 are consistent with the requirements of the 10BASE-T MAU and the 100BASE-TX, 1000BASE-T, and 10GBASE-T PHYs."

*Cl* **33** *SC* **33.1.4.2** *P* **23** *L* **32** # 169

Zimmerman, George CME Consulting

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

Somewhere in the editing, we've made enough holes in this swiss cheese that the requirement is unclear. "Operation for all types shall meet the resistance unbalance requirements stated in ISO/IEC 11801:2002."
Operation of what, for what, what requirements? Is this a requirement on the port (PI) or on the link section. I'm assuming first its on the link section below, then on the PSE/PD.

*SuggestedRemedy*

Rephrase similar to how it is in PHY requirements: "Link sections for all Types shall comply with the resistance unbalance requirements specified in ISO/.IEC 11801:2002/"
If it is on the PSE/PD operation, then state, "PSE PI and PD PI electrical requirements in Clauses 33.2 and 33.3 shall be met over link sections with the full range of resistance unbalance specified in ISO/IEC 11801:2002."

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

PROPOSED ACCEPT IN PRINCIPLE.

Rephrase similar to how it is in PHY requirements: "Link sections for all Types shall comply with the resistance unbalance requirements specified in ISO/.IEC 11801:2002/"

*Cl* **33** *SC* **33.2.4.6** *P* **42** *L* **14** # 170

Zimmerman, George CME Consulting

*Comment Type* **ER** *Comment Status* **D** *PSE State Diagram*

definition of set_parameter_type has gotten convoluted

*SuggestedRemedy*

Recast definition as a table with permissible values for each PSE type, or reference such a table if it exists.

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

PROPOSED REJECT.

The comment and suggested remedy is not clear enough to know what should be changed.

*Cl* **33** *SC* **33.3.4** *P* **82** *L* **1** # 171

Zimmerman, George CME Consulting

*Comment Type* **ER** *Comment Status* **D** *4PID*

Editor's note has been resolved - no change to valid or non valid signatures is required by 4PID.

*SuggestedRemedy*

Remove editor's note.

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

PROPOSED REJECT.

Based on the number of comments related to 4PID and this text, I suggest we keep the editor's note there for now.

*Cl* **33** *SC* *P* **88** *L* **17** # 172

Zimmerman, George CME Consulting

*Comment Type* **ER** *Comment Status* **D** *PSE Power*

Table 33-18: 'guaranteed'? this is a requirement already. the word is redundant. Also on page 90, lines 1 and 4.

*SuggestedRemedy*

Remove the word guaranteed (4 occurances, 2 in the table and 2 on page 90)

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

PROPOSED REJECT.

I believe this word was added as part of the Extended Power work and is needed to distinguish between those classes with extended power and those without.

*Cl* **33** *SC* **33.3.8** *P* **95** *L* **8** # 173

Zimmerman, George CME Consulting

*Comment Type* **ER** *Comment Status* **D** *PD MPS*

Table 33-19 deletes the Input Current requirement to the MPS, doesn't mention the reference to 33.3.8 as strikeout in the row for input current, and, when I check 33.3.8, it is still written in terms of input current, without a requirement striken out. While the impedance may imply a current, the current remains the requirement and should be in the table, OR, should be removed from 33.3.8,which would be changing requirements on existing devices. ALSO, the text should show appropriate edits and strikeout from the base text - which it doesn't. (see earlier comment)

*SuggestedRemedy*

Reinstate strikeout text on Input current requirement, add reference to 33.3.8 back to the "additional information" column, as is in the 802.3bx D3.0 text, and renumber Input resistance and Input capacitance,

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

PROPOSED ACCEPT IN PRINCIPLE.

This line was replaced by item 1 in Table 33-19a.

Editor to add reference to Table 33-19a in text where appropriate (after mention of Iport_MPS).

Editor to add note to bottom of Table 33-19a: "See 33.3.8 for more information."

*Cl* **33** *SC* **33.1.1** *P* **19** *L* **53** # 176

Zimmerman, George CME Consulting

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

Type 2 requires 11801:1995 Class D unless we explicitly meant to change the base standard for 802.3at to delete category 5 operation.

See also on page 23, line 11

*SuggestedRemedy*

Change 'Type 2 and Type 3 operation requires ISO/IEC 11801:2002 Class D or better... and a derating...' to 'Type 2 operation requires ISO/IEC 11801:1995 Class D or better cabling, and Type 3 operation requires ISO/IEC 11801:2002 Class D or better cabling. Both require a derating...'

Make a similar change on page 23, line 11.

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.1.4.1** *P* **23** *L* **17** # 177

Zimmerman, George CME Consulting

*Comment Type* **T** *Comment Status* **D** *System Power*

Type 2 operation never has all cable pairs energized

*SuggestedRemedy*

Consider whether type 2 operation requires a 10 deg C reduction, since only half of the pairs are energized. (Delete type 2 from sentence, retain type 3)

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

PROPOSED REJECT.

This is already included in the sentence.

*Cl* **33** *SC* **33.1.4.1** *P* **23** *L* **20** # 178

Zimmerman, George CME Consulting

*Comment Type* **T** *Comment Status* **D** *System Power*

Add reference to TSB-184-A for operation on all types in this standard.
The editor's note on line 25 is insufficient, because the sentence limits the TIA document to just Type 2 and needs to be changed.

*SuggestedRemedy*

See comment.

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

PROPOSED ACCEPT IN PRINCIPLE.

Change Sentence from: "Additional cable ambient operating temperature guidelines for Type 2 operation are
provided in ISO/IEC TR 29125 [B49]1 and TIA TSB-184 [B60]."

To: "Additional cable ambient operating temperature guidelines for Type 2, Type 3, and Type 4 operation are
provided in ISO/IEC TR 29125 [B49]1 and TIA TSB-184 [B60]."

*Cl* **33** *SC* **33.2.2** *P* **25** *L* **35** # 179

Zimmerman, George CME Consulting

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

10GBASE-T Midspan PSEs may not be compatible with 10BASE-T or 100BASE-TX due to magnetics OCL required. Requires further study.

*SuggestedRemedy*

Delete 10BASE-T and 100BASE-TX from line 35, insert editor's note after description of 10GBASE-T midspan (on line 37):
"Editor's note (to be removed prior to publication) - Compatibility of 10GBASE-T midspans with 10BASE-T and 100BASE-TX requires further study, specifically, technical feasiblity of the OCL requirements for 10BASE-T /100BASE-TX interoperability in conjunction with 10GBASE-T bandwidth needs to be shown."

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.1.4** *P* **22** *L* **39** # 183

Zimmerman, George CME Consulting

*Comment Type* **TR** *Comment Status* **D** *Unbalance*

The note is incomprehensible. What is being asked of TIA? Of course, there is a temperature rise with any current. I think the question is, what is the rise, and is it acceptable - however, the question needs more precision.

*SuggestedRemedy*

Form the question for TIA and ask as a liaison. Delete the note text:
"TIA will have to tell us regarding the temperature rise if 4P total current is 2*Icable per Table 33-1; What
if total 4P current is kept but one of the pairs has the above pair with maximum Icont-2P_unb and other
pair has the rest. Do they expect temperature rise? Based on the mathematical work we did we expect that
it will not affect temperature rise over the cable."
Optionally replace the note text with a simple question and a reference to the supporting liaison document.

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

PROPOSED ACCEPT IN PRINCIPLE.

I believe we have asked TIA or others about temperature rise as a result of unbalance (we expect less temperature rise in the presence of unbalance). What is the status of that liaison?

Replace note beginning "TIA will have…" with:

"Liaison underway with TIA and others to study the effect of unbalance on temperature rise ." Add link to liaison.

*Cl* **33** *SC* **33.2.0a** *P* **24** *L* **42** # 185

Zimmerman, George CME Consulting

*Comment Type* **TR** *Comment Status* **X** *PSE Types*

New 2-pair PSEs are out of scope of the PAR. The scope of the PAR has been maintained by the Chair in many cases as limiting to 4 pair operation and associated managmeent information. Introduction of new types of 2 pair PSE and PDs is an expansion of the scope which would require an amendment to the PAR.

*SuggestedRemedy*

Remove 2 pair Type 3 PSEs (both 15.4W and 30W) from table 33-1a.

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

This should be discussed by the group.

*Cl* **33** *SC* **33.2.4.6** *P* **40** *L* **52** # 186

Zimmerman, George CME Consulting

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

do_connection_check needs a home in the state diagram. According to 33.2.5.0a it has to occur prior to classification. It also shouldn't happen significantly before detection. The Task Force has been clear that it doesn't want connection check pinned down, so the only place left is to put it inside the "DO_DETECT" state in parallel with do_detection (but not included in do_detection).

*SuggestedRemedy*

add "do_connection_check" to state START_DETECT in Figure 33-9a.

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

PROPOSED ACCEPT IN PRINCIPLE.

We need to add it to the state diagram for Types 3 and 4, but adding it to Start_Detection would require you to finish detection and the connection check within tdet.

We need to create a Type 3 and 4 state diagram that considers these issues.

Accepting this comment results in no changes to the text.

See comment # 225.

*Cl* **33** *SC* **33.2.4.6** *P* **42** *L* **41** # 187

Zimmerman, George CME Consulting

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

Text has become convoluted. There is the PSE Type, then there is the PD Type, then there are the PSE Type requirements that the PSE is applying, then there are missing words, and the fact that PSEs don't "choose", having the option 'may' is enough.
Note remedy uses _sub_ to indicate proposed subscripts.

In the process the text has gotten wrong as well, e.g., a PSE shouldn't be supplying Ptype greater than the PD type allows....

*SuggestedRemedy*

Rewrite. Replace paragraph with proposed text below:
"When a PSES powers a PD of lower Type (call this Type_sub_PD) than its own native type (Type_sub_PSE), the PSE shall meet the PI electrical requirements of the PD Type (Type_sub_PD), except for ICon-2P, ILIM-2P, TLIM-2P, and PType, for which the PSE shall meet the requirements of any PSE type Type_sub_PD <= PSE Type <= Type_sub_PSE.

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.5.0a** *P* **51** *L* **20** # 189

Zimmerman, George CME Consulting

*Comment Type* **TR** *Comment Status* **D** *Connection Check*

Connection check determines the signature type on the link segment. The architecture of the PD is a much more general thing.

*SuggestedRemedy*

change "determine the architecture of the PD" with "determine whether the a single signature or dual signature is attached to the two pair-sets in the link section."

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

PROPOSED ACCEPT IN PRINCIPLE.

change "determine the architecture of the PD" with "determine whether a single signature or dual signature is attached to the two pair-sets in the link section."

*Cl* **33** *SC* **33.3.6** *P* **87** *L* **1** # 194

Zimmerman, George — CME Consulting

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

Do we mean to restrict a Type 3 from identifying if it is connected to a Type 4 PSE? (or similarly, a Type 2 PD from identifying it is connected to a Type 3 PSE?) - that's what this text says. I think we want to specify that a PD recognizes and identifies a PSE type up to it's own type.

The text as written causes a Type 3 PSE to go unidentified or to be randomly identified as either Type 1 or Type 2 by a Type 2 PD.

*SuggestedRemedy*

Replace paragraph beginning with "A Type 2 PD" as follows:
"A PD shall identify any PSE type up to and including it's own type (e.g., a Type 2 PD shall recognize a Type 1 or Type 2 PSE (see figures 33-16), a Type 3 PD shall recognize a Type 1, Type 2 or Type 3 PSE, and a Type 4 PD shall recognize PSEs up to Type 4). A PD may identify a PSE of higher type than itself as its Type, e.g., a Type 2 PD may identify a Type 3 PSE as a Type 2."

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

PROPOSED ACCEPT IN PRINCIPLE.

This sentence should be changed, but the comment is not correct.

Type 4 PDs (class 7/8) should be able to identify all types based strickly on the number of fingers. Type 3 PDs should be able to identify the types of PSEs up to their power level. For example, a Class 3 Type 3 PD only needs to tell the difference between a Type 1 and Type 3 PSE, and even then it only cares about the difference if it will do MPS pulsing.

Change paragraph to:

A Type 2 PD shall identify the PSE Type as eiher Type 1 or Type 2 (see Figure 33-16).

A Type 3 PD shall identify the PSE Type as either Type 1 or Type 2 if it is a class 4 PD and be able to identify the PSE Type as Type 1, Type 2, or Type 3 if it is a class 5 or 6 PD. Type 3 PDs may also differentiate Type 3 PSEs from Type 1 and Type 2 PSEs by monitoring the length of the first class event.

A Type 4 PD shall identify the PSE Type as either Type 1, Type 2, Type 3, or Type 4.

*Cl* **79** *SC* **79.3.2.6b(Table 79-6b)** *P* **156** *L* **2629** # 195

Zhuang, Yan — Huawei Techologies

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

Table 79-6b
Connection check is already used to indicate PD signatures.
Revise the meaning of PD PI bit to indicate PD loads for PSEs, so as to support the dual interface PD senario described in L2 ad hoc and avoid current overloaded described in "Consideration on Connection Check" presented in Jan 2015 meeting.

*SuggestedRemedy*

Replace the existing text
"1 = Dual signature. PClass_PD is the sum of the indicated PD mode power class values.
0 = Single signature. PClass_PD is indicated by either PD mode power class values."
to:
"0= The PD is a single load. The Mode class on each pair-set shall be the same.
1= The PD is a dual load. Each Mode class power is used to determine the power to provide to the Mode."

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

This should be discussed by the group as I did not attend the L2 Ad Hoc.

Would OBE comment # 253.

*Cl* **33** *SC* **33.2.7** *P* **64** *L* **25** # 198

Bullock, Chris — Cisco Systems

*Comment Type* **T** *Comment Status* **D** *PSE MPS*

Item 18 in Table 33-11: Tmpdo

Multiport PSE implementations that utilize separate controllers for pair-sets could require more time to handle MPS for both pair-sets.

*SuggestedRemedy*

Change Tmpdo (min) from 0.354s to 0.320s

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.4.1** *P* **96** *L* **30** # 199

Bullock, Chris — Cisco Systems

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

Item 3 in Table 33-19a: Tmpdo_pd

Related to comment requesting Tmpdo to be changed from 0.354s to 0.320s. We should also adjust Tmpdo_pd in order to ensure that there is sufficient margine in the spec.

*SuggestedRemedy*

Change Tmpdo_pd (max) from 318ms to 300ms for Type 3,4 If long first class event.

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

PROPOSED ACCEPT.

---

*Cl* **33** *SC* **33.2.2** *P* **25** *L* **24** # 204

Dove, Daniel — Dove Networking Solut

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

How do we deal with some of the new technologies like 2.5G, 5G and 100T1? Should we name them based on type of technology or bandwidth rather than specific to PHY?

*SuggestedRemedy*

Spend some discussion with group deciding if we want this area to require constant update and change as new PHYs are introduced

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

PROPOSED ACCEPT IN PRINCIPLE.

Accepting this comment results in no changes to the text.

---

*Cl* **33** *SC* **33.2.2** *P* **31** *L* **50** # 205

Dove, Daniel — Dove Networking Solut

*Comment Type* **TR** *Comment Status* **D** *Definitions*

Missing descriptive illustrations for Single/Dual signature PDs

*SuggestedRemedy*

Add figure(s) showing single signature PD and dual signature PD configuration.

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

PROPOSED ACCEPT IN PRINCIPLE.

We should add definitions of single-signature and dual-signature PDs to 1.4. Figures would begin to infringe on implementations.

Add Definitions from abramson_03_0315 (shown below) to 1.4:

Single-Signature PD: A PD that shares the same detection signature, classification signature, and maintain power signature between both pair sets.

Dual-Signature PD: A PD that has independent detection signatures, classification signatures, and maintain power signatures on each pair set.

---

*Cl* **33** *SC* **33.2.3** *P* **32** *L* **38** # 206

Dove, Daniel — Dove Networking Solut

*Comment Type* **TR** *Comment Status* **D** *PSE Types*

Missing explanation for why AltA (MDI) and AltB(X) are not allowed for Type 4 PSEs

*SuggestedRemedy*

Add explanation in the text

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

PROPOSED REJECT.

No reason to add explanation to text. The requirements are the important part.

---

*Cl* **33** *SC* **33.2.4.7** *P* **46** *L* **30** # 213

Dove, Daniel — Dove Networking Solut

*Comment Type* **TR** *Comment Status* **X** *PSE State Diagram*

Missing T14A

*SuggestedRemedy*

Add T14A

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

Where?

*Cl* **33** *SC* **33.2.4.7** *P* **50** *L* **51** # 217

Dove, Daniel — Dove Networking Solut

*Comment Type* **TR** *Comment Status* **D** *PSE Detection*

The last statement in this paragraph claims to preserve clarity, but I think it actually reduces clarity

*SuggestedRemedy*

Either clarify exactly why the link is not being called out, or correct this statement to make it more clear

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

PROPOSED REJECT.

This is existing text that we are not changing as part of .3bt.

This can be filed as a maintenance request.

*Cl* **33** *SC* **33.2.4.7** *P* **46** *L* **19** # 220

Dove, Daniel — Dove Networking Solut

*Comment Type* **TR** *Comment Status* **X** *Pres: State Diagram*

The do_connection_check function needs to be added. 4PID function may also need to be added

*SuggestedRemedy*

See dove_01_0615 for specific recommendations.

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

Waiting for presentation

*Cl* **33** *SC* **33.1.4.1** *P* **23** *L* **5** # 221

Schindler, Fred — Seen Simply

*Comment Type* **ER** *Comment Status* **D** *System Power*

The added text appers to suggest that CAT-3 cables may be used for higher than class-4 power levels, which is not permitted by other specification requirements. The remainer of the sentence does not provide a requirement beyond what is already stated in the standard.

*SuggestedRemedy*

Strike the added sentence,
"The supply of power over the data connection is intended to operate with no additional requirements to the cabling that is normally installed for data usage. This is approximately true but may require some further attention. Power at Type 1 power levels may be transmitted over all specified premises cabling without further restrictions. Higher power levels may require heavier guage conductors than are found in Class C/Category 3 cabling and (more uncommonly) in some lighter guage Class D or better cable."

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

PROPOSED REJECT.

I don't interpret the sentences that way. Do you have better text?

*Cl* **33** *SC* **33.2.2** *P* **25** *L* **38** # 222

Schindler, Fred — Seen Simply

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

I do not see a reason for the added sentence. The data rate passed through a midspan does not determine whether it is 2P or 4P capable.

*SuggestedRemedy*

Strike the sentence,
"Additionally, 1000BASE-T and 10GBASE-T Midspan PSEs may be capable of 4-pair power."

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.3** *P* **33** *L* **26** # 223

Schindler, Fred Seen Simply

*Comment Type* **TR** *Comment Status* **D** *4-Pair Power*

Type 3 PSE that provide more than 30W require both Alternatives.

*SuggestedRemedy*

Replace
"Type 1, Type 2 or Type 3 PSEs shall implement Alternative A, Alternative B, or both. Type 4 PSEs shall
implement Alternative A and Alternative B."

with
"Type 1, Type 2 or Type 3 PSEs shall implement Alternative A, Alternative B, or both. Type 3 PSEs providing class 5 or 6 power levels and Type 4 PSEs shall implement Alternative A and Alternative B."

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.4.4** *P* **35** *L* **7** # 224

Schindler, Fred Seen Simply

*Comment Type* **TR** *Comment Status* **D** *4PID*

This text used may confuse readers as to what this variable accomplishes.

*SuggestedRemedy*

Strike text, "is used to do physical layer 4PID".

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.4.4** *P* **35** *L* **5** # 225

Schindler, Fred Seen Simply

*Comment Type* **TR** *Comment Status* **X** *4PID*

Variables,
PD_4pair_candidate
maintain_4pair_power
deny_dual_sig_4pair_power

are provide without a related state diagram. Text related to these variables need to be left open for comment until the related state diagram is provided.

*SuggestedRemedy*

Keep this comment unresolved until the state diagram is provided and one subsequent comment cycle has occurred.

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

This comment to be left open.

*Cl* **33** *SC* **33.2.4.4** *P* **35** *L* **27** # 226

Schindler, Fred Seen Simply

*Comment Type* **TR** *Comment Status* **X** *4PID*

The variable and the language for deny_dual_sig_4pair_power are not required for interoperability. They appear to be implementation specific. Some dual signature PDs may accept power on both pair sets. Whether the PSE powers a PD is implementation dependent.

*SuggestedRemedy*

Use the results of the connection check, which indicates whether a PD is a single or dual signature PD to make choices already permitted by the specification.

Strike variable deny_dual_sig_4pair_power and associated text.

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

Based on the number of comments, there needs to be a big discussion about 4PID and how it is currently implemented.

I would like to hear the group's opinion on this comment.

*Cl* **33** *SC* **33.2.4.4** *P* **39** *L* **3** # 227

Schindler, Fred — Seen Simply

*Comment Type* **ER** *Comment Status* **D** *PSE State Diagram*

Table 33-3 column pse_dll_capable may be replaced by text for easier processing by the reader.

*SuggestedRemedy*

On page 38, line 8 replace text,
"See 33.6 for a description of Data Link Layer functionality and Table 33-3 for the allowed permutations of this variable with PSE Type and class_num_events." With
"See 33.6 for a description of Data Link Layer functionality. Variable pse_dll_capable shall be TRUE for Type 2 PSEs with class_num_events of 1."

Note all occurrences of Table 33-3 were considered when creating this solution. PIC text is not addressed by this comment.

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.4.6** *P* **41** *L* **48** # 229

Schindler, Fred — Seen Simply

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

Function do_detection appears to be incomplete. Some PSE implementations will power one pairset when a valid detection signature is present. The text should be written with respect to PSE behavior.

*SuggestedRemedy*

Replace "valid: The PSE has detected a PD requesting power." With
"valid_A: The PSE has detected a valid PD detection signature on ALT A.
valid_B: The PSE has detected a valid PD detection signature on power on ALT B.
valid_AB: The PSE has detected a valid PD detection signature on power on ALT A and ALT B."

Strike out text,
"both_alts_valid:A Type 3 or Type 4 PSE has detected a PD requesting power on both pair sets."

Text,
"This variable indicates the presence or absence of a PD." Should be replaced by
"This variable indicates the presence or absence of a valid PD detection signature."

…..
Flag this comment with FRS-2.

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

PROPOSED ACCEPT IN PRINCIPLE.

Replace "valid: The PSE has detected a PD requesting power." With
"valid_A: The PSE has detected a valid PD detection signature on ALT A.
valid_B: The PSE has detected a valid PD detection signature on ALT B.
valid_AB: The PSE has detected a valid PD detection signature on ALT A and ALT B."

Strike out text,
"both_alts_valid:A Type 3 or Type 4 PSE has detected a PD requesting power on both pair sets."

Text,
"This variable indicates the presence or absence of a PD." Should be replaced by
"This variable indicates the presence or absence of a valid PD detection signature."

…..
Flag this comment with FRS-2.

*Cl* **33** *SC* **33.1.3** *P* **21** *L* **39** # 230

Schindler, Fred Seen Simply

*Comment Type* **TR** *Comment Status* **D** *Editorial*

The definitions (line 39 and line 41) referenced both the IEEE 802.3-2012 and the in progress revision P802.3bx/D2.0. I do not have the private password to check the unpublished P802.3bx/D2.0 draft. I am not able to confirm if this reference is acceptable or whether it is the same as the public specification.

*SuggestedRemedy*

If the text is the same in both referenced documents then remove the P802.3bx/D2.0 reference so that there is no confusion as to what the definition is.

I am okay with the definitions in the IEEE 802.3-2012 specification. If the definition has changed we should review the definition potentially accept or change it.

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

PROPOSED ACCEPT IN PRINCIPLE.

Accepting this comment cause no changes to the draft.

*Cl* **33** *SC* **33.2.4.7** *P* **47** *L* **1** # 232

Schindler, Fred Seen Simply

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

The state diagram provided in Figure 33-9a does not include Type 3 and Type 4 PSE requirements. It is not suppose to include Type 1 and Type 2 requirements. It appears to only show Type 1 and Type 2 requirements.

*SuggestedRemedy*

Remove the state diagram on pages 47-49 and replace with,
"Editor's Note: The state diagram for Type 3 and Type 4 PSEs needs further study and participants are encouraged to provide presentations to address this need."

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

PROPOSED ACCEPT IN PRINCIPLE.

Add Editor's Note in suggested remedy below Type 3/4 PSE State Diagram.

*Cl* **33** *SC* **33.2.4.7** *P* **45** *L* **1** # 233

Schindler, Fred Seen Simply

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

The State Diagram provided in Figure 33-9a was created to be easier to follow than the existing approach. The existing approach takes two pages to cover Type 1 and Type 2 PSEs. The new approach takes 5 pages and does not yet cover classification and potentially other necessary requirements.

Other approaches should be considered and the suggested approach should be discussed to converge on a solution for Type 3 and Type 4 PSEs.

*SuggestedRemedy*

For all past PoE efforts, Task Force meeting time was devoted to discussing and refining state diagrams. I recommend that this approach is also taken during .3bt meetings and that we provide time for others to present alternative approaches to solving this problem.

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

PROPOSED ACCEPT IN PRINCIPLE.

No changes to the text result from accepting this comment.

*Cl* **33** *SC* **33.2.6.1** *P* **58** *L* **11** # 235

Schindler, Fred Seen Simply

*Comment Type* **TR** *Comment Status* **D** *PSE Classification*

The text,
"The PSE shall provide to the PI VClass with a current limitation of IClass_LIM, as defined in Table 33-10." Need to be updated to support Type 3 and Type 4 classification.

Application of the classification voltage to a pair set with an invalid detection signature may permanently damage a device. For example, Bob Smith termination resistors (0.125W typically). During detection, which is not likely to cause device damage, the PSE may provide 5mA short-circuit current and up to 30V open circuit. This permits up to 37.5 mW to device during detection. Classification permits (20.5V x 0.1A) up to 2.1W to be dissipated in a device. Legacy PSEs detect, classify and power on using the same Alternative (pair set).

New PSE may detect, classify, and power on, on all pair sets of the PI. Therefore, we need to prevent damage to network equipment.

*SuggestedRemedy*

Modify the sentence as follows,
"The PSE shall provide to a pair set VClass with a current limitation of IClass_LIM, as defined in Table 33-10 only for a pair set with a valid detection signature."

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.5.6** *P* **57** *L* **45** # 236

Schindler, Fred Seen Simply

*Comment Type* **TR** *Comment Status* **D** *DS behavior*

The text needs to be updated to support Type 3 and Type 4 classification.

*SuggestedRemedy*

Add to the end of the paragraph on line 45, the sentence,
"Both pair sets of the PI attached to a Dual Signature PDs shall be classified by Type 3 and Type 4 PSEs."

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.5.6** *P* **57** *L* **49** # 237

Schindler, Fred Seen Simply

*Comment Type* **TR** *Comment Status* **D** *4PID*

Text needs to show that a TBD state diagram may identify single signature or dual signature PDs and how to process them.

Note: This comment is flagged with comment-FRS1 for easy searching.

*SuggestedRemedy*

After the paragraph ending on line 49, add the new paragraph,

"The connection check, described in 33.2.5.0, and the results of other system information, determine the value of variable pd_4pair_candidate, defined in 33.2.4.4. PSEs shall comply with the TBD state diagram, which determines the power requirements for pair sets predetermined to be connected to a PD capable of accepting power on both pair sets, see 33.2.5.6."

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

I don't understand the suggested remedy.

This addition seems reasonable, but the placement is wrong. The suggested remedy is to go in the classification section which is not correct.

In addition, I am unsure about the phrase "which determines the power requirements for pair sets predetermined to be connected to a PD capable of accepting power on both pair sets"

*Cl* **33** *SC* **33.2.7.7** *P* **68** *L* **43** # 238

Schindler, Fred — Seen Simply

*Comment Type* **TR** *Comment Status* **D** *PSE Power*

The changed text,
'The "PSE lowerbound template" and "PSE upperbound template" are shown in Figure 33-14.

When connected to a single signature PD, a Type 3 or Type 4 PSE may remove power from both pair sets if the current draw exceeds the "PSE lowerbound template" on either pair set, and shall remove power from both pair sets if the current draw exceeds the "PSE upper bound template" on either pair set. When connected to a dual signature PD, a Type 3 or Type 4 PSE may remove power from the any pair set PI if the PI pair-set current meets or that exceeds the "PSE lowerbound template" and in Figure 33-14. Power shall be removed from the PI of a PSE before the PI current remove power fromany pair set that exceeds the "PSE upperbound template". in Figure 33-14. Power may be removed from both pair sets any time power is removed from one pair set.'

Has broke legacy requirements, places unnecessary restrictions on PSEs, adds unnecessary text, and contains typos.

This new text no longer covers legacy PSEs. Permissible operations do not need to be repeated. The existing text addresses both legacy and new Types.

*SuggestedRemedy*

Restore the original text with the following minor edit,

'A PSE may remove power from the PI if the PI current meets or exceeds the "PSE lowerbound template" in Figure 33-14. Power shall be removed from a pair set of a PSE before the pair set current exceeds the "PSE upperbound template" in Figure 33-14.'

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

PROPOSED ACCEPT IN PRINCIPLE.

Would OBE comment # 110 and all comments OBEd by comment # 110.

Change text to:

'A PSE may remove power from any pair set if the pair set current meets or exceeds the "PSE lowerbound template" in Figure 33-14. Power shall be removed from a pair set of a PSE before the pair set current exceeds the "PSE upperbound template" in Figure 33-14.'

See comment # 275 for more information.

*Cl* **33** *SC* **33.3.1** *P* **74** *L* **38** # 239

Schindler, Fred — Seen Simply

*Comment Type* **TR** *Comment Status* **D** *4PID*

The new sentence,
"Type 1 and Type 2 PDs wishing to avoid 4 pair power for longer than a minimal amount of time may signal this by a message via LLDP to the PSE setting the maintain_power_signature variable to false."

This text changes legacy behavior. PDs not identified as being capable of accepting power on both pair sets should never be exposed to voltages that exceed Vvalid, the detection voltage. Legacy PDs are required to provide an invalid detection signature on an unpowered pair set when powered on by a legacy PSE. An invalid detection signature indicates a PD does not want to be powered (33.2.5.4, 33.3.4).

*SuggestedRemedy*

Replace the sentence with, text that indicates how legacy PDs may show that they accept power on both pair sets.

"Type 1 and Type 2 PD may indicate their ability to accept power on both pair sets by providing a valid detection signature on an unpowered pairset requesting power. These PDs may indicate the ability to accept power on both pair sets using LLDP variable 4P-ID in Table 79-6b."

On page 81, line 51 replace legacy sentence,
"When a PD becomes powered via the PI, it shall present a non-valid detection signature on the set of pairs from which it is not drawing power."

With,
"When a PD becomes powered via the PI, it shall present a non-valid detection signature on the set of pairs from which it is not drawing power. A PD may present a valid detection signature on a pair set from which it is not drawing power when the PD is cable of accepting power on both pair sets. "

*Proposed Response* *Response Status* **Z**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Replaced by comment # 254

*Cl* **33** *SC* **33.3.5.3** *P* **86** *L* **27** # 240

Schindler, Fred — Seen Simply

*Comment Type* **TR** *Comment Status* **D** *Autoclass*

The requirements for the power measurement are incomplete. The period for the measurement is only (3.28 - 1.35) 1.93 ms long, which is not long enough to cancel out AC-line noise.

*SuggestedRemedy*

Change variable item 3, TAUTO_PD2 minimum of Table 33-17a from 3.28 ms to 200 ms. Note that a sliding window 100 ms wide is an integer multiple of common 50 and 60 Hz AC line voltages.

Replace the existing sentence,
"After power up, PDs implementing Auto class shall consume their maximum power draw throughout the period bounded by TAUTO_PD1 and TAUTO_PD2, measured from when VPort_PD rises above VPort_PD min. The PD shall not draw more power than the power consumed during the time from TAUTO_PD1 to TAUTO_PD2 plus TBD% at any point until VPort_PD falls below VReset_th."

With,
"After power up, PDs implementing Auto class shall consume their maximum power draw throughout the period bounded by TAUTO_PD1 and TAUTO_PD2,
averaged using a 100 ms wide sliding window,
from when VPort_PD rises above VPort_PD min. The PD shall not draw more power than the power consumed during the time from TAUTO_PD1 to TAUTO_PD2 plus TBD% at any point until VPort_PD falls below VReset_th."

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

PROPOSED ACCEPT IN PRINCIPLE.

Partial OBE by comment # 113.

The rest is requirements on the PSE on how to measure the power draw and is covered in the PSE section.

No changes result from this comment.

*Cl* **33** *SC* **33.3.8** *P* **96** *L* **10** # 242

Schindler, Fred — Seen Simply

*Comment Type* **TR** *Comment Status* **D** *PD MPS*

Table 33-19a does not cover Type 1 and Type 2 dual signature PDs but does cover Dual signature Type 3 and 4 PDs. MPS requirements for Dual signature PDs may be covered using text.

*SuggestedRemedy*

Strike Table 33-19a item 1, last row. Add the following text to 33.3.8, page 95, after line 2,

"The MPS requirements of Dual Signature PDs shall be half of the current value of Single Signature PDs."

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

PROPOSED REJECT.

The concept of dual-signature PDs was not covered by the previous standard (although they are clearly compliant to the standard). I do not believe we can add requirements Type 1 and Type 2 PDs now.

*Cl* **33** *SC* **33.4.9.1.4c** *P* **107** *L* **34** # 243

Schindler, Fred — Seen Simply

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

The text,
"Midspan PSEs intended for operation with 10GBASE-T (types 5 & 6 in Clause 33.4.9.1) are
Additionally required to meet the following parameters for coupling signals between ports relating to different link segments."

May be in error or is confusing. What are types 5 & 6?

*SuggestedRemedy*

Get an expert opinion and craft a sentence that does not confuse referenced types with PoE Types.

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

PROPOSED ACCEPT IN PRINCIPLE.

Are these Categories instead of Types?

*Cl* **33** *SC* **33.2.5.6** *P* **54** *L* **47** # 245

Schindler, Fred — Seen Simply

*Comment Type* **TR** *Comment Status* **X** *4PID*

The text "It shall be stored in the variable pd_4pair_candidate, defined in 33.2.4.4." Implies that variable pd_4pair_candidate indicates that the attached class 0 to 4 PD accepts power on both pair sets. This is incorrect.

The connection check (33.2.5.0) and detection alone are not able to determine if a legacy PD is able to accept power on both Modes. These methods reduce the likelihood of interoperability issues for PDs capable of accepting power on both Modes (single and dual signature PDs). The .3bt classification process provides a means to identify PD Types that accept power on both Modes. Classification results in the PD Type and LLDP data that indicates PD ability to accept power on both pair sets. Type 3 and Type 4 PDs are required to support power on both pair sets. Type 1 and Type 2 PDs may accept power on both pair sets.

*SuggestedRemedy*

Replace the entire text of 33.2.5.6 with,

"Type 3 and Type 4 PSEs shall determine whether an attached PD with classes 0 to 4 is a candidate to receive power on both pair sets prior to applying 4 pair power. This determination is referred to as 4PID. Classification in 33.2.6 may be used to obtain the PD Type and may be used to obtain LLDP variable PD 4P-ID in Table 79-6b. PSEs may power both PD modes of Type 3 and Type 4 PDs, and Type 1 and Type 2 PDs that have LLDP variable 4P-ID indicating that powering of both PD Modes is supported."

…..
Note that details related to the connection check and variable pd_4pair_candidate are covered in a separate comment. Flagged with comment-FRS-1.

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

Based on the number of comments, there needs to be a big discussion about 4PID and how it is currently implemented.

I would like to hear the group's opinion on this comment.

*Cl* **33** *SC* **33.2.4.4** *P* **34** *L* **40** # 246

Schindler, Fred — Seen Simply

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

New variable both_alts_valid appears to be incomplete. Some PSE implementations will power one pairset when a valid detection signature is present. Note that the legacy standard did not have a variable to indicate a valid PD detection signature.

*SuggestedRemedy*

This variable should be replaced by do_detection adjustments provided in the comment flagged by FRS-2.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 229

*Cl* **33** *SC* **33.2.6** *P* **55** *L* **13** # 247

Schindler, Fred — Seen Simply

*Comment Type* **TR** *Comment Status* **D** *PSE Classification*

Sentence,
"Physical Layer classification occurs before a PSE supplies power to a PD when the PSE asserts a voltage onto the PI and the PD responds with a current representing a limited number of power classifications."

Need to be corrected for Type 3 and Type 4 PSEs.

*SuggestedRemedy*

"Physical Layer classification occurs before a PSE supplies power to a PD when the PSE asserts a voltage onto a pair set and the PD responds with a current representing a limited number of power classifications."

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

PROPOSED ACCEPT.

Cl **33** SC **33.2.6** P **55** L **19** # 248

Schindler, Fred — Seen Simply

*Comment Type* **ER** *Comment Status* **D** *PSE Classification*

The new text,
"The minimum power output by the PSE for a particular PD class is defined by Equation (33-3).
Alternatively, PSE implementations may use VPSE = VPort_PSE-2P min and RChan = RCh max when powering using two-pairs, or RChan = RCh/2 when powering using four-pair systems and to arrive at over-margined values as shown in Table 33-7."

may be improved by terms already used in the spec. and by correct grammar.

*SuggestedRemedy*

Replace with,
"The minimum power output by the PSE for a particular PD class is defined by Equation (33-3).
Alternatively, PSE implementations may use VPSE = VPort_PSE-2P min and RChan = RCh max when powering using two pairs sets, or Rchan = RCh/2 when powering using four pair sets to arrive at over-margined values as shown in Table 33-7."

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

PROPOSED ACCEPT IN PRINCIPLE.

"The minimum power output by the PSE for a particular PD class is defined by Equation (33-3).
Alternatively, PSE implementations may use VPSE = Vport_PSE-2P min and Rchan = RCh when powering using a single pair set, or Rchan = RCh/2 when powering using two pair sets to arrive at over-margined values as shown in Table 33-7."

Cl **33** SC **33.2.6** P **55** L **26** # 249

Schindler, Fred — Seen Simply

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

The new text,
"If the PD connected to the PSE performs Auto class (see 33.3.5.3 and Annex 33-TBD), the PSE may set its minimum power output based on the power drawn during Auto class, increased by at least (TBD 5%), with a maximum value defined in Table 33-17 of the corresponding PD class and a minimum of 4.0 Watts."

has a typo and a requirement that could be removed.

*SuggestedRemedy*

Replace Table 33-17 with Table 33-7. Discuss in the room whether removing the text, "and a minimum of 4.0 Watts." is necessary. A PD using Autoclass may draw up to a valid in the Table but the lower bound is determined by MPS.

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

PROPOSED ACCEPT IN PRINCIPLE.

Replace with "Table 33-17" with "Table 33-7"

The minimum of 4W was put in to ensure interoperability, it does not mean that the PD can't draw less current, it just means that the lowest PSE guarenteed output can be 4W (class 1). At these power levels Autoclass does not save much anyways.

Cl **33** SC **33.3.2** P **76** L **7** # 250

Schindler, Fred — Seen Simply

*Comment Type* **ER** *Comment Status* **D** *PD Types*

New text,
"Type 3 and Type 4 PDs operating with a maximum power draw corresponding to Class 4 or greater implement both multiple-Event Physical Layer classification (see 33.3.5.2) and Data Link Layer classification (see 33.6) and advertise a class signature of 4, 5, 6, 7 or 8."

Conflicts with Table 33-13a. A Type 4 PD was created to support high power applications.

*SuggestedRemedy*

Replace text on page 76 with,

"Type 3 and Type 4 PDs operating with a maximum power draw corresponding to Class 4 or greater implement both multiple-Event Physical Layer classification (see 33.3.5.2) and Data Link Layer classification (see 33.6). Type 3 PDs advertise a class signature of 4, 5, or 6, while Type 4 PDs advertise a class signature of 7 or 8."

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.4.4** *P* **35** *L* **16** # 252

Schindler, Fred Seen Simply

*Comment Type* **TR** *Comment Status* **X** *4PID*

Text,

"maintain_4pair_power
This variable is provided for Type 3 and Type 4 PSEs to determine whether to continue providing a 4 pair power. It is initially set to the value of pd_4pair_candidate. It may be reset by a LLDP message, as a result of enforcement of class power draw, or at vendor discretion.
Values:False:Remove power from at least one pair set.
True: Power may be maintained on both pair sets."

Indicates a PD has been incorrectly powered on both pair sets. To avoid interoperability or damage to a network device, power should only be applied on one pair set of this PD.

*SuggestedRemedy*

A solution has been provided in the comment flagged with FRS-1 and other comments submitted.

The state machine when it is created shall prevent powering of a PD that does not accept power on all pair sets.

Strike the reference text.

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

Based on the number of comments, there needs to be a big discussion about 4PID and how it is currently implemented.

I would like to hear the group's opinion on this comment.

*Cl* **70** *SC* **79.3.2.6b** *P* **156** *L* **26** # 253

Schindler, Fred Seen Simply

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

Improve the text for Table 79-6b item 2 by removing unnecessary information and clarifying what information is being conveyed.

*SuggestedRemedy*

Replace the existing text,
"1 = Dual signature. PClass_PD is the sum of
the indicated PD mode power class values.
0 = Single signature. PClass_PD is indicated
by either PD mode power class values."

With
"1 = Physical layer PClass_PD is the sum of the indicated PD mode power class value.
0 = Physical layer PClass_PD is indicated by either PD mode power class values."

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.3.1** *P* **74** *L* **39** # 254

Schindler, Fred — Seen Simply

*Comment Type* **TR** *Comment Status* **X** *4PID*

The new sentence,
"Type 1 and Type 2 PDs wishing to avoid 4 pair power for longer than a minimal amount of time may signal this by a message via LLDP to the PSE setting the maintain_power_signature variable to false."

This text changes legacy behavior. PDs not identified as being capable of accepting power on both pair sets should never be exposed to voltages that exceed Vvalid, the detection voltage. Legacy PDs are required to provide an invalid detection signature on an unpowered pair set when powered on by a legacy PSE. An invalid detection signature indicates a PD does not want to be powered (33.2.5.4, 33.3.4).

*SuggestedRemedy*

Replace the sentence with, text that indicates how legacy PDs may show that they accept power on both pair sets.

"Type 1 and Type 2 PD may indicate their ability to accept power on both pair sets by providing a valid detection signature on an unpowered pairset requesting power. These PDs may indicate the ability to accept power on both pair sets using LLDP variable 4P-ID in Table 79-6b."

On page 81, line 51 replace legacy sentence,
"When a PD becomes powered via the PI, it shall present a non-valid detection signature on the set of pairs from which it is not drawing power."

With,
"When a PD becomes powered via the PI, it
may present a non-valid detection signature on the set of pairs from which it is not drawing power. A PD that presents a valid detection signature on the pair set from which it is not drawing power may get powered by Type 3 and Type 4 PSEs."

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

Based on the number of comments, there needs to be a big discussion about 4PID and how it is currently implemented.

I would like to hear the group's opinion on this comment.

*Cl* **33** *SC* **33.2.5** *P* **51** *L* **1** # 258

Dwelley, David — Linear Technology

*Comment Type* **E** *Comment Status* **D** *PSE Detection*

The first two sentences in this section are of questionable value and are not normative:
"The PSE is not required to continuously probe to detect a PD signature. The period of time when a PSE is not attempting to detect a PD signature is implementation dependent."

*SuggestedRemedy*

Remove the second sentence. Consider removing the first sentence. Remove "Also" from the third sentence.

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

PROPOSED REJECT.

This is text that we are not changing as part of the .3bt project.

This request can be filed as a maintenance request, but I would recommend the sentence stay as it adds clarity.

*Cl* **33** *SC* **33.2.5.3** *P* **53** *L* **24** # 259

Dwelley, David — Linear Technology

*Comment Type* **E** *Comment Status* **D** *PSE Detection*

This sentence is awful

*SuggestedRemedy*

Replace with: "A PSE shall detect a pair set within a link section with the following characteristics as a valid PD detection signature:"

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

PROPOSED REJECT.

The suggested remedy does not include an offset voltage or current.

*Cl* **33** *SC* **33.2.0a** *P* **25** *L* **1** # 261

Dwelley, David — Linear Technology

*Comment Type* **ER** *Comment Status* **D** *PSE Types*

Note 4 doesn't add any information. Class 4 power or less is always 30W or less, which falls into row 4 which allows 2-pair power. If we're trying to ensure that falling back from 4-pair power to 2-pair power is compliant behavior, that's OK - but this note is not the right place for it.

*SuggestedRemedy*

Remove note 4.

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

PROPOSED REJECT.

This note does address that 2-pair power is compliant if the power is less than 30W. If you would like it removed, please suggest an alternate place to make that clarification.

*Cl* **33** *SC* **33.2.5** *P* **50** *L* **43** # 262

Dwelley, David — Linear Technology

*Comment Type* **ER** *Comment Status* **D** *PSE Detection*

The "pair set" edits have changed the meaning of the original sentence - we still want to require the original behavior. The next (new) sentence mandates the T3/4 detection requirements adequately well by itself.

*SuggestedRemedy*

Restore original sentence: "In any operational state, the PSE shall not apply operating power to the PI until the PSE has successfully detected a PD requesting power."

Remove the word "Specifically" from line 47. Might also want to require success (not just application) in this sentence.

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

PROPOSED REJECT.

The following sentence only says the PSE shall apply the detection probe to each pair set, not that it detects a valid signature.

If we restore the original sentence a PSE could apply detection probes to both pair sets, detect a valid PD over only Alt-A and then apply 4-pair power. This is not acceptable.

*Cl* **33** *SC* **33.3.7** *P* **88** *L* **21** # 264

Dwelley, David — Linear Technology

*Comment Type* **T** *Comment Status* **D** *Table 33-18*

"71.3" watt class has too much precision. Cutting max power to 71W is only an 0.5% reduction in PD power. Rounding up runs the risk of non-interoperability with an LPS-limited PSE and a maximum-resistance cable plant.

*SuggestedRemedy*

Change to 71.3W to 71W.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 5.

*Cl* **33** *SC* **33.1.4** *P* **23** *L* **32** # 265

Dwelley, David — Linear Technology

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

This defines cabling parameters: "Operation for all types shall meet the resistance unbalance requirements stated in ISO/ IEC 11801:2002."

*SuggestedRemedy*

Replace with: "Operation is assured when the channel meets the resistance unbalance requirements stated in ISO/ IEC 11801:2002."

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.4.1** *P* **33** *L* **50** # 266

Dwelley, David — Linear Technology

*Comment Type* **T** *Comment Status* **D** *PSE Backoff*

This sentence is redundant and is not normative: "A Type 3 or Type 4 PSE that will deliver power over both Alternative A and Alternative B simultaneously...". Also, it seems like some "shalls" are missing - this is required behavior.

*SuggestedRemedy*

Remove sentence, and add the words "only" and "shall" to page 34, line 1: "A PSE performing detection using Alternative B *only* may fail to detect a valid PD detection signature. When this occurs, the PSE *shall* back off for at least Tdbo as specified..."

Consider also adding a "shall" to page 34 line 8.

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

PROPOSED ACCEPT IN PRINCIPLE.

Remove new sentence on page 33, line 50/51, and add the words "only" and "shall" to page 34, line 1: "A PSE performing detection using only Alternative B may fail to detect a valid PD detection signature. When this occurs, the PSE shall back off for at least Tdbo as specified…"

Pg 34, Line 8 should not be changed.

*Cl* **33** *SC* **33.2.4.4** *P* **37** *L* **4** # 268

Dwelley, David — Linear Technology

*Comment Type* **T** *Comment Status* **D** *PSE State Diagram*

Add "on at least one pairset" to the end of the "TRUE" value definition

*SuggestedRemedy*

Add "on at least one pairset" to the end of the "TRUE" value definition

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

PROPOSED ACCEPT IN PRINCIPLE.

Also replace all VPort_PSE references to Vport_PSE-2P.

*Cl* **33** *SC* **33.2.7** *P* **62** *L* **22** # 269

Dwelley, David — Linear Technology

*Comment Type* **TR** *Comment Status* **X** *PSE Power*

Table 33-11: Several symbols have -2p added to them. This breaks continuity with AF/AT - an AT device that claims to meet Vport_pse will not find a spec with that name anymore. New titles with "per pair set" can stay, as all valid AF/AT devices operated over a single pairset.

*SuggestedRemedy*

Remove -2p suffixes from Items 1 and 4-10.

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

This should be discussed by the group.

*Cl* **33** *SC* **33.3.7** *P* **87** *L* **36** # 270

Dwelley, David — Linear Technology

*Comment Type* **TR** *Comment Status* **X** *Table 33-18*

Table 33-18: Several symbols have -2p added to them. This breaks continuity with AF/AT - an AT device that claims to meet Vport_pd will not find a spec with that name anymore. New titles with "per pair set" can stay, as all valid AF/AT devices operated over a single pairset.

*SuggestedRemedy*

Remove -2p suffixes from Table 33-18, Items 1-3, 5, 6, and 9.

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

This should be discussed by the group.

*Cl* **33** *SC* **33.3.7** *P* **88** *L* **49** # 271

Dwelley, David — Linear Technology

*Comment Type* **TR** *Comment Status* **X** *Pres: Table 33-18*

Table 33-18, item 9: Change to "per pair set capacitance" allows 360uF. We changed this to 180uF per Straw Poll 2 in Pittsburgh.

*SuggestedRemedy*

Change back to "PD capacitance"

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

Waiting for Presentation from Yair.

*Cl* **33** *SC* **33.3.5.1** *P* **84** *L* **28** # 272

Dwelley, David Linear Technology

*Comment Type* **TR** *Comment Status* **D** *PD Classification*

If a Type 3/4 PD draws 0mA as Class 0, the line voltage may never return to Vmark and a multi-event class signature may be read incorrectly by the PSE.

*SuggestedRemedy*

Add to Parameter at line 28: "(Type 1/2)"
Add a new row below this row: "Current for Class 0 (Type 3/4)" with 1mA as the minimum, all other specs the same.

Alternately, split the Conditions column to show Type 1/2 with 0 min and Type 3/4 with 1mA min.

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

PROPOSED ACCEPT IN PRINCIPLE.

Type 4 PDs never show class 0 (only 4, 2, and 3).

Add to Parameter at line 28: "(Type 1/2)"
Add a new row below this row: "Current for Class 0 (Type 3)" with 1mA as the minimum, all other specs the same.

*Cl* **33** *SC* **33.2.7** *P* **62** *L* **42** # 273

Dwelley, David Linear Technology

*Comment Type* **TR** *Comment Status* **D** *PSE Power*

Table 33-11: this seems to imply that 45W over a single pairset is OK. This means all 45W PDs must use 45W transformers on each pairset

*SuggestedRemedy*

Add to Additional Information: "Class 4 and lower only"

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

PROPOSED ACCEPT IN PRINCIPLE.

This applies to middle row of item # 4 in Table 33-11:

Add to Additional Information: "Class 4 and lower only"

*Cl* **33** *SC* **33.2.7.7** *P* **68** *L* **50** # 275

Dwelley, David Linear Technology

*Comment Type* **TR** *Comment Status* **D** *PSE Power*

Move the "Power may be removed..." sentence to section 33.2.9 so it covers all cases

*SuggestedRemedy*

Move the "Power may be removed..." sentence to page 71 at the end of line 51.

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

PROPOSED ACCEPT IN PRINCIPLE.

Move to 33.2.7 which is power supply output. 33.2.9 is specifically about MPS.

*Cl* **33** *SC* **33.2.7.7** *P* **70** *L* **26** # 276

Dwelley, David Linear Technology

*Comment Type* **TR** *Comment Status* **X** *PSE Power*

The PSE voltage on both pair sets may drop in this case: "If IPort-2P exceeds the PSE lowerbound template, the PSE output voltage on that pair set may drop below VPort_PSE-2P min."

*SuggestedRemedy*

Remove "on that pair set" or add "or both pair sets":

"If IPort-2P exceeds the PSE lowerbound template, the PSE output voltage may drop below VPort_PSE-2P min."

"If IPort-2P exceeds the PSE lowerbound template, the PSE output voltage on that pair set or both pair sets may drop below VPort_PSE-2P min."

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

This should be discussed by the group.

It could penalize DS, DL PDs.

*Cl* **33** *SC* **33.2.4.6** *P* **41** *L* **50** # 280

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

We also need to know if the result of do_detection is valid for pair-set A or pair set B or both when 4P systems are used.

*SuggestedRemedy*

Change from: valid: The PSE has detected a PD requesting power.
To:
valid: For type 1 and Type 2 PSEs: The PSE has detected a PD requesting power.
valid_4P_A: For type 3 and Type 4 PSEs: The PSE has detected a PD requesting power on Alternative A pairs.
valid_4P_B: For type 3 and Type 4 PSEs: The PSE has detected a PD requesting power on Alternative B pairs.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 229.

*Cl* **33** *SC* **33.2.4.4** *P* **35** *L* **5** # 281

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **X** *4PID*

there has been no determination yet that the result of detection and connection check, while both pair sets are unpowered, can confirm that a dual signature PD is able to receive power over 4 pairs.

*SuggestedRemedy*

change the last sentence as following, "detection, connection check and an additional 4PID method to be defined"

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

Based on the number of comments, there needs to be a big discussion about 4PID and how it is currently implemented.

I would like to hear the group's opinion on this comment.

*Cl* **33** *SC* **33.2.4.4** *P* **35** *L* **17** # 282

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **X** *4PID*

It is not appropriate to simply provide power and check through LLDP if 4-pair power is permitted, as it may take a very long time to go through that cycle (including boot-up time), which may cause damage to certain types of dual signature PDs. It is also NOT reliable to rely on LLDP boot up time to avoid damaging PDs. If power is applied without having determined that 4P power can be received, a "short term" (much shorter than LLDP cycle time) time limit to turn off the power has to be defined based on potential damage scenarios, either electrically or thermally related.

*SuggestedRemedy*

replace 3rd sentence with "if it has not been determined that 4P power can be received, this variable shall be reset within TBD ms after the 4-pair power has been applied."

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

Based on the number of comments, there needs to be a big discussion about 4PID and how it is currently implemented.

I would like to hear the group's opinion on this comment.

*Cl* **33** *SC* **33.2.4.4** *P* **35** *L* **27** # 283

Picard, Jean Texas Instruments

*Comment Type* **T** *Comment Status* **X** *4PID*

The variable and the language for deny_dual_sig_4pair_power are not required for interoperability. They appear to be implementation specific.

*SuggestedRemedy*

Use the results of the connection check, indicating whether a PD is a single or dual signature PD to make choices permitted by the specification.
Eliminate the variable deny_dual_sig_4pair_power and associated text.

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

Based on the number of comments, there needs to be a big discussion about 4PID and how it is currently implemented.

I would like to hear the group's opinion on this comment.

*Cl* **33** *SC* **33.2.4.4** *P* **39** *L* **36** # 287

Picard, Jean Texas Instruments

*Comment Type* **ER** *Comment Status* **X** *PSE Types*

The paragraph below is misleading, referring to "hardware limitation", in the case of type 4 PSE.

*SuggestedRemedy*

Replace the second sentence with:
"For example, this would apply to a PSE that is oversubscribed and in power management mode or a Type 3 PSE that has a hardware limitation."

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

This goes to the heart of what a Type 4 PSE is. I would like to hear the group's opinion on this.

See Comment # 99.

*Cl* **33** *SC* **33.2.5.6** *P* **54** *L* **43** # 290

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **X** *4PID*

The statement below is vague, unclear and could be misleading, it appears that a PSE can simply apply 4-pair power and then check after if the load can accept it, which is incorrect. Also, what if there is no such system information and the PSE has to decide what to do with a dual signature PD ?

In the case of dual signature PD, the other system information needed to determine 4PID can be obtained through physical layer or LLDP, for example after a first pair set has been powered and prior to powering the second pair set.

*SuggestedRemedy*

Change the first sentence as:
Type 3 and Type 4 PSEs shall determine whether an attached PD with classes 0 to 4 is a candidate to receive power on both pair sets prior to applying power to the second pair set.

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

Based on the number of comments, there needs to be a big discussion about 4PID and how it is currently implemented.

I would like to hear the group's opinion on this comment.

*Cl* **33** *SC* **33.2.7** *P* **63** *L* **10** # 294

Picard, Jean Texas Instruments

*Comment Type* **ER** *Comment Status* **D** *PSE Power*

Table 33-11:
The max limit should be ILIM-2P

*SuggestedRemedy*

Replace ILIM with ILIM-2P

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

PROPOSED ACCEPT IN PRINCIPLE.

This applies to item # 7 in Table 33-11

*Cl* **33** *SC* **33.2.7** *P* **63** *L* **11** # 295

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **D** *PSE Power*

Table 33-11:
ICUT-2P min needs to be specified.
Should refer to ICON-2P-unb

*SuggestedRemedy*

Replace TBD with same values used for ICON-2P-unb

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 337.

*Cl* **33** *SC* **33.2.7** *P* **63** *L* **17** # 296

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **D** *Pres: ILIM*

Table 33-11:
Regarding type 3, the ILIM-2P min definition is NOT right, it does not take into account the imbalance.

*SuggestedRemedy*

Redefine Type 3 ILIM-2P min, using the unbalance factor.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 339.

*Cl* **33** *SC* **33.2.7** *P* **63** *L* **19** # 297

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **D** *Pres: ILIM*

Table 33-11:
ILIM-2P min needs to be defined for type 4

*SuggestedRemedy*

Define Type 4 ILIM-2P min starting from (1+K) x IPeak-2P, which means around 1.2A.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 337.

*Cl* **33** *SC* **33.2.7** *P* **64** *L* **25** # 299

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **D** *PSE MPS*

PSE systems need more flexibility for disconnect timing

*SuggestedRemedy*

Table 33-11:
Reduce TMPDO minimum to 320 ms for type 3 or 4

There is a corresponding request for PD.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 198

*Cl* **33** *SC* **33.3.8** *P* **96** *L* **30** # 300

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **D** *PD MPS*

PSE systems need more flexibility for disconnect timing.

*SuggestedRemedy*

Table 33-19a: Reduce TMPDO_PD maximum to 300 ms if Type 3 or 4.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 199.

*Cl* **33** *SC* **33.2.7.7** *P* **68** *L* **43** # 302

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **D** *PSE Power*

Each pair-set has its individual current limiting requirement (current and time), and if both of them are short-circuited, they will meet their individual spec, so that there is no need to link them together.

Also, the lowerbound template needs to related to the total PI current.
The PSE may check the sum of currents to apply ICUT, and that would be the minimum possible.

*SuggestedRemedy*

Remove the paragraph with:

A PSE may remove power from the PI if the PI current meets or exceeds the "PSE lowerbound template" in Figure 33-14. Power shall be removed from a pair set of a PSE before the pair set current exceeds the "PSE upperbound template" in Figure 33-14.

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

PROPOSED ACCEPT IN PRINCIPLE.

See comment # 238 for resolution.

*Cl* **33** *SC* **33.2.8** *P* **71** *L* **27** # 303

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **X** *PSE Power*

The sentence does not comply with the power demotion concept defined in mutual ID section.

*SuggestedRemedy*

Replace the sentence with:
"At the exception of the situation when it applies power demotion, a PSE does not initiate power provision to a link if the PSE is unable to provide the maximum power level requested by the PD based on the PD's class"

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

This is handled in Type 1/2 by Type 1 PSEs treating class 4 as class 0. Should we do something similar?

Add following text to classification section:

A Type 3 or Type 4 PSE shall assign a PD the highest class it can support when a PD requests a higher class than the PSE can support. This is called power demotion.

Add text in suggested remedy as well?

*Cl* **33** *SC* **33.3.1** *P* **74** *L* **39** # 304

Picard, Jean — Texas Instruments

*Comment Type* **TR** *Comment Status* **X** *4PID*

It may not be appropriate to simply provide power and check through LLDP if 4-pair power is permitted, as it may take a very long time to go through that cycle (including boot-up time), which may cause damage (ex: energy dissipated) to certain types of dual signature PDs. If there is a limit of time, it has to be short, most likely 0.5 to 1 second maximum, which is much shorter than reaction time through LLDP.
In some cases, there may be NO minimal acceptable on time at 57V when a PD does not want this power.
We cannot expect that ALL existing PDs can comply with such requirement.

*SuggestedRemedy*

Remove the second sentence from the paragraph.

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

Based on the number of comments, there needs to be a big discussion about 4PID and how it is currently implemented.

I would like to hear the group's opinion on this comment.

*Cl* **33** *SC* **33.3.2** *P* **76** *L* **7** # 306

Picard, Jean — Texas Instruments

*Comment Type* **TR** *Comment Status* **D** *PD Types*

The paragraph is incorrect and misleading relative to type 4 PD, which apply only to class 7 and 8.

*SuggestedRemedy*

Replace the paragraph with:
"Type 3 PDs operating with a maximum power draw corresponding to Class 4 or greater implement both multiple-Event Physical Layer classification (see 33.3.5.2) and Data Link Layer classification (see 33.6) and advertise a class signature of 4, 5 or 6."

Also, add this one:
"Type 4 PDs operating with a maximum power draw corresponding to Class 7 or greater implement both multiple-Event Physical Layer classification (see 33.3.5.2) and Data Link Layer classification (see 33.6) and advertise a class signature of 7 or 8."

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 250.

*Cl* **33** *SC* **33.3.5.1** *P* **84** *L* **11** # 307

Picard, Jean — Texas Instruments

*Comment Type* **ER** *Comment Status* **D** *PD Classification*

The paragraph is incorrect and misleading relative to type 4 PD, which apply only to class 7 and 8.

*SuggestedRemedy*

Replace:
Since 1-Event classification is a subset of Multiple-Event classification, Type 2, Type 3 and Type 4 PDs operating with a maximum power draw corresponding to class 4 or higher respond to 1-Event classification with a Class 4 signature

With:
Since 1-Event classification is a subset of Multiple-Event classification, Type 2 and Type 3 PDs operating with a maximum power draw corresponding
to class 4 or higher, as well as Type 4 PDs, respond to 1-Event classification with a Class 4 signature

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.3.7** *P* **87** *L* **28** # 309

Picard, Jean — Texas Instruments

*Comment Type* **T** *Comment Status* **D** *Table 33-18*

Table 33-18:
table looks too complicated, too many unnecessary choices.

*SuggestedRemedy*

simplify the table and regroup around a more limited number of alternatives.

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

PROPOSED REJECT.

I need a specific suggested remedy.

*Cl* **33** *SC* **33.2.4.7** *P* **45** *L* **1** # 312

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

the state diagram does not cover Type 3 and Type 4 PSEs and that a replacement is required before I will review it.

*SuggestedRemedy*

New Type 3-4 state diagram to be provided.

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

PROPOSED ACCEPT IN PRINCIPLE.

The PSE State diagram will be left open for comment in the next comment cycle.

See comment # 225.

Accepting this comment results in no changes to the text.

*Cl* **33** *SC* **33.2.7.7** *P* **69** *L* **1** # 313

Picard, Jean Texas Instruments

*Comment Type* **TR** *Comment Status* **X** *Pres: Type 4 Power*

A Type 4 version of figure 33-14 will be needed. There are fundamental differences between type 3 and type 4 Power on state behavior.

*SuggestedRemedy*

Figure 33-14a to be proposed.

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

Waiting for Yair's Presentation.

*Cl* **33** *SC* **33.1.4** *P* **21** *L* **50** # 315

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *Power System*

The Title of clause 33.1.4 was in the past "Type 1 and Type 2 system parameters" and was changed to System parameters".
This change and the modification in line 54 address types 3 and 4 too.

The problem is that in the current standard (IEEE802.3-2012) the text in line 50 that says: "A power system, consists of a single PSE..." that was correct for Type 1 and Type 2 PSEs, is not correct for Type 3 and 4 PSEs.
Single PSE was OK for Type 1 or 2 due to the fact that we could use ALT A PSE or ALT B PSE but not both so a "single PSE" term was correct to use.
In Type 3 or 4 PSEs, the term single PSE is confusing term due to the fact that Type 3 and 4 PSEs can use a PSE that uses ALT A and ALT B PSEs or use a PSE with two outputs connected to ALT A and ALT B pair-sets or using any other PSE implementations that do the work.
The point is that it is not just a single PSE with one output connected to two pair-sets. It is more like a single PSE system etc.

*SuggestedRemedy*

Replace "single PSE" by "single PSE system"

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

PROPOSED REJECT.

The PSE is defined as: A DTE or midspan device that provides the power to a single link section. DTE powering is intended to provide a single 10BASE-T, 100BASE-TX, or 1000BASE-T device with a unified interface for both the data it requires and the power to process these data.

link section: The portion of the link from the PSE to the PD.

The PSE specs are defined at the PI and thus the PSE is a black box and still a "single PSE".

*Cl* **33** *SC* **33.2.4.4** *P* **35** *L* **6** # 321

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *4PID*

In the following variable:
PD_4pair_candidate
This variable is provided for Type 3 and Type 4 PSEs to determine whether a connection is a candidate to receive power on both pair sets.

the phrase "a connection" is not clear.
The variable PD_4pair_candidateIt is to determine if a class 0-4 PD can recived and work with 4P power.

The text "a connection" can be "a PD" or "a device" or "a PD class 0-4".

*SuggestedRemedy*

Replace "a connection" with "a PD class 0-4"

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

PROPOSED ACCEPT IN PRINCIPLE.

Need to see associated state diagram and where/how this variable is used.

See comment # 225.

No changes to the text are required at this time.

*Cl* **33** *SC* **33** *P* **0** *L* **0** # 322

Darshan, Yair Microsemi

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

I couldnt find in the text that all requirements are relevant to a single port and it is implementation specifics to adress the operation of multi-port systems as regard to clause 33.

*SuggestedRemedy*

Add a text that syas:
Clause 33 defines the Type 1,2,3 and 4 systems requirements for a single port system. Multi-port systems requirements are implementation specific.

(or equivalen wording)

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

PROPOSED ACCEPT IN PRINCIPLE.

Add text:

"This clause defines the requirements for a single power system. Multi-port power system requirements are implementation specific."

To end of 33.1

*Cl* **33** *SC* **33.2.4.4** *P* **35** *L* **9** # 323

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **X** *4PID*

There is no reason why PD_4pair_candidate results will be ready only before classification.
It can be ready at any time prior power_up.

*SuggestedRemedy*

Change lines 9-10 from:
Values:
False: Do not proceed to 4 pair classification.
True: Proceed to 4 pair classification.

To:
Values:
False: This PD is not a candidate for powering up with power on both pair sets.
True: This PD is a candidate for for powering up with power on both pair sets.

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

PROPOSED ACCEPT IN PRINCIPLE.

Need to see associated state diagram and where/how this variable is used.

See comment # 225.

No changes to the text are required at this time.

*Cl* **33** *SC* **33.2.4.4** *P* **37** *L* **9** # 324

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

At the system level we need to know if we have over load condition over a pair set, for both pair-sets.
As a result, the variable ovld_detected text need to be updated.

*SuggestedRemedy*

Change from:
A variable indicating if the PSE output current has been in an overload condition (see 33.2.7.6) for..."

To:
A variable indicating if the PSE output current over a pair-set has been in an overload condition (see 33.2.7.6) for..."

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.4.6** *P* **41** *L* **50** # 325

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

In the system level we need to know if the result of do_detection is valid for pair-set A or pair set or both when 4P systems are used. Last time we covered the case where both pair sets result with valid signature.
We need also to know if it is valid on ALT A only or valid on ALT B only.

*SuggestedRemedy*

Change from:
valid: The PSE has detected a PD requesting power.
To:
valid: For Type 1 and Type 2 PSEs: The PSE has detected a PD requesting power.
valid_4P_A: For Type 3 and Type 4 PSEs: The PSE has detected a PD requesting power on Mode A
valid_4P_B: For Type 3 and Type 4 PSEs: The PSE has detected a PD requesting power on Mode B.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 229.

*Cl* **33** *SC* **33.2.0A** *P* **24** *L* **31** # 326

Darshan, Yair Microsemi

*Comment Type* **ER** *Comment Status* **D** *PSE Types*

It is clear from different locations in our standard that PSE that implements DLLL is also allowed to implement the maximum class events that corresponds to the maximum PSE power supported per its type and class.
It will be helpful to add such note right after Table 33-1a that summarize the permissible PSE types.

*SuggestedRemedy*

Add note 5 after note 4 below table 33-1a that says:
5-PSE that is defined as DLLL capabale and implements the maximum class events corresponds to the PSE maximum power supported is allowed according to this standard.

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

PROPOSED REJECT.

This is already contained in the table by use of the work "optional" in the DLL column.

*Cl* **33** *SC* **33.3.7.3** *P* **90** *L* **28** # 328

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *PD Inrush*

The comment addresses the following text in lines 28-40 but focused on lines 28-31):
33.3.7.3 Input inrush current
Inrush current per pair-set is drawn beginning with the application of input voltage at the pair set compliant with Vport_PD-2P requirements as defined in Table 33-18, and ending before TInrush-2P min per Table 33-11. After TInrush-2P min, the PD shall not exceed its per pair set current threshold corresponding to its class level.
---
From the current text, it is not clear that Iinrush is the response of applying voltage to a capacitor. After PD input capacitance is charged, the capacitor current is decaying to zero It is also not clear that it is possible that during POWER UP, the input current to the PD contain a resistive load component that is limited for all PD types to 350mA during POWER UP time frame
For Type2,3 and 4 PDs it is limited to 350mA for at least 80msec from STARTUP begin. As a result the PD input current is split to the PD resistive load and PD input capacitor, generating a charging current of: Icharging=Iinrush-2P_min -Type 1 maximum DC current=0.4A-0.35A=50mA which guarantees that maximum PD input capacitor=180uF is fully charged within 50.4msec for Type 1 systems and Type 1 maximum allowed DC load. Tinrush=Cpd_max*(Vpse_min-Voff)/(Iunrush_min-Iport_cont)=180uF*(44V-30V)/(0.4A-0.35A)=50.4msec. This is the reason why Tinrush max for the PD is 50msec.
In similar way for Type 2: Tinrush =180uF*(50V-30V)/(0.4A-15.4W/50V)= 180uF*20V/(0.4A-0.308A)=39.13msec <50msec which is OK.
As a result, Iinrush is observed almost immediately when PSE applies Voltage to PD (within few msec) and PD resistive load may follow it at any time during POWER UP time frame with maximum value of 350mA.
There are 2-3 main PD POWER UP profiles (1. short load, ramp, stable. 2. Flat, ramp, stable. 3. Vport, short load, ramp, stable). In all of them completion of Iinrush is possible to detect without waiting for the completion of Tinrush timer.

*SuggestedRemedy*

Add the following text after line 31:
Successful POWER UP is guaranteed by PSE supplying Inirush-2P minimum value and PD not drawing more than Type 1 maximum DC current which result with stable voltage ramping across PD input capacitor. See details in Annex A_PD_Inrush.

---
(Annex A_PD_Inrush is included in darshan_08_0615.pdf)

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

PROPOSED ACCEPT IN PRINCIPLE.

Nothing here is normative. I suggest all of this be added to a new informative annex (Annex A_PD_Inrush as you call it).

*Cl* **33** *SC* **33.3.5.2** *P* **85** *L* **27** # 329

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **X** *Pres: Dual Class*

The following is a simple proposal that doesn't add new requirements for PSE and PD and addresses classification requirements when dual signature PD is connected to Type 3 and 4 PSE.

1. No need to distinguish between Dual Signature Single Load and Dual Signature Dual load. Result with simple specification.
2. Efficient L1 power management
3. Dual signature PD (single load or dual load, doesn't matter) will use only classes 0 to 5 over each pair-set. The PD specifies the amount of power required over each pair set by using the relevant class code (from the exiting list) over each pair set. Valid class codes are 0 to 5. (5+5 = 90W, 4+4 = 60W, 4+3 = 45W and so on...).
4. A Dual Signature, single load PD is allowed to show different class codes.
If it does so, it will likely violate the current limit of one of its pair sets and get disconnected.
5. PSEs that don't want to deal with different class codes can take the larger class of the two pair sets and apply that power to both.
6. PSEs that don't want to deal with dual load PDs can opt not to power them.

See darshan_05_0615.pdf for detailed discussion and remedy.

*SuggestedRemedy*

1) Add the following text in the classification section in page 85 after line 27 before table 33-17:

Dual Signature Single Load PDs and Dual Signature Dual Load PDs shall use only class 0 to 5 power level over each pair set.
The class code advertised over each pair set is the total power requested by the PD over that pair set (The PSE will deliver to the total class power over each pair set to the PD) determine the total power that will deliver to the PD).
Dual Signature PDs may use different class signature per pair set.

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

Waiting for Yair's Presentation.

*Cl* **33** *SC* **33.2.6.2** *P* **59** *L* **53** # 330

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **X** *Pres: Dual Class*

It is not clear how PSE issues the classification events in case of Single or Dual signature.

SS PD: Classification events may apply on one of the pair-sets or on both pair sets at the same time or some of the events on first pair set and then the remaining class events on the 2nd pair-set as long as the PD receives the correct total number of class events.

DS PD: Classification events need to be applied to each pair set. Application of the events can be applied at the same time to both pair sets or in non-overlapping way.

*SuggestedRemedy*

To add the following text after the end of clause 33.2.6.2:

To add the following text at the classification section at clause TBD after line TBD:

SS PD: Classification events may apply on one of the pair-sets or on both pair sets at the same time or some of the events on first pair set and then the remaining class events on the 2nd pair-set as long as the PD receives the correct total number of class events.

DS PD: Classification events need to be applied to each pair set. Application of the events can be applied at the same time to both pair sets or in non-overlapping way.

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

Waiting for Yair's Presentation.

*Cl* **33** *SC* **33.3.7.3** *P* **90** *L* **53** # 334

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *PD Inrush*

We don't want to wait 50- 75msec in Type 3 and 4 systems for Iinrush to be ended if not required due to measuring PD voltage/current/time profile by the PSE and knowing that it was ended earlier.
In some large mutiport systems time for all ports to be ON is affected by Tinrush*N. N number of ports and PSE power supply power capability and its response to dynamic load behavior.

*SuggestedRemedy*

To add Editor Note at the end of 33.3.7.3.
To address the following issues:
1. Shortening Tinrush if PSE has the knowledge that PD is done with its Inrush.
2. Fastening Tinrush by allowing higher Iinrush_max during Tinrush time frame to shorten Tinrush with big PD capacitors.

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

PROPOSED REJECT.

This is a brand new topic that has a large techinical impact on the standard. Please give a presentation on such material if you would like it to be included in the standard.

*Cl* **33** *SC* **33.2.7** *P* **63** *L* **11** # 337

Darshan, Yair Microsemi

*Comment Type* **T** *Comment Status* **D** *PSE Power*

Table 33-11 item 7, Icut-2P for type 3,4: To replace TBD with expression.
At worst case P2P_Iunb conditions:
Icut_min-2P=Icont-2P_unb=
(Icont-2P_unb_max/Icont-2P_max)*0.5*Pclass/Vport_PSE-2P=
(0.668/0.6)*0.5*Pclass/Vport_PSE-2P=0.556*Pclass/Vport_PSE-2P for Type 3 PSE.

In similar way for Type 4:
Icont-2P_unb=(0.931/0.865)*0.5*Pclass/Vport_PSE-2P=1.076*0.5*Pclass/Vport_PSE-2P.
Icont-2P_unb=0.538*Pclass/Vport_PSE-2P

*SuggestedRemedy*

1. Split Icut-2P for two lines for Type 3 and Type 4 (see attached darshan_06_0615.pdf for details).
2. Replace TBD with:
Icut-2P_min=0.556*Pclass/Vport_PSE-2P for Type 3 PSE
Icut-2P_min=0.538*Pclass/Vport_PSE-2P for Type 4 PSE

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.7** *P* **63** *L* **24** # 338

Darshan, Yair Microsemi

*Comment Type* **T** *Comment Status* **D** *PSE Power*

Table 33-11 item 10, TLIM-2P for type 4:
We can replace the TBD with a shorter number than 10sec in order to keep the same energy content used in Type 3 in order to keep the same stress over the current limiter.
Type 3 worst case energy on current limiter over a pair set: 30W*10msec=0.3Joule
Type 4 worst case energy on current limiter over a pair set: 50W*TLIM-2P=0.3Joule.
TLIM-2P=0.3/50=6msec max.
Design margin=2msec.
TLIM-2P=4msec.

*SuggestedRemedy*

TLIM-2P minimum=0.004 for Type 4

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

PROPOSED ACCEPT IN PRINCIPLE.

There must have been margin already in the Type 3 number (directly based off Type 2), so we do not need to add more margin.

For Table 33-11, item 10:
TLIM-2P minimum=0.006 for Type 4

*Cl* **33** *SC* **33.2.7** *P* **63** *L* **17** # 339

Darshan, Yair Microsemi

*Comment Type* **T** *Comment Status* **D** *Pres: ILIM*

Table 33-11 item 9, ILIM-2P for type 3,4: To replace TBD with numbers per the the calculations shown in Darshan_06_0615.pdf.

Short summary:
ILIM-2P_MIN>=Ipeak-2P_max per figure 33-14.

Ipeak_max for Type 3 and 4 can be found by equation 33-4 at worst case conditions of K, Ppeak_PD-2P per equation 33-12 and 33-12a and Table 33-18 item

*SuggestedRemedy*

See darshan_06_0615.pdf for updated Table 33-11 item 9.

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

PROPOSED ACCEPT IN PRINCIPLE.

Waiting for Presentation.

*Cl* **33** *SC* **33.2.7** *P* **64** *L* **38** # 342

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *PSE Detection*

Table 33-11 item 22, Cout.
Cout is correct over a pair-set for type 3 and 4 as well.

*SuggestedRemedy*

Change parameter name to:
"Output capacitance during detection state over a pair set"
Change PSE Type to 1,2,3,4.

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.7.4a** *P* **66** *L* **50** # 345

Darshan, Yair Microsemi

*Comment Type* **T** *Comment Status* **D** *PSE Unbalance*

Update the constant from 0.040 to 0.042 per latest review.
Remove editor note from page 67 line 6. (Work is done.)

*SuggestedRemedy*

1. Page 66 line 50 in equation 33-4a:
Update the constant from 0.040 to 0.042.
2. Page 67 line 6: Remove the editor note.

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

PROPOSED ACCEPT.

*Cl* **33** *SC* **33.2.7.5** *P* **67** *L* **36** # 346

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *PSE Power*

It is usefull to allow higher Inrush current than 450mA after TBD time from POWER UP start for the following reasons:
a)Reducing dynamic stress on the MOSFET during POWER UP and
b)Reach faster startup with lower probability for startup oscilations
c) Handle different load behaviour during startup that is time dependent.

*SuggestedRemedy*

Add the following text after line 36.

The maximum inrush current sourced by the PSE per pair set may exceed the per pair set PSE inrush template in Figure 33–13 only TBD msec after POWER UP has started and shall not excedd ILIM-2P maximum as specified by Table 33-11 item 9.

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

PROPOSED REJECT.

Allowing higher current based on time is a brand new topic. Please create a presentation and build consensus for this idea.

*Cl* **33** *SC* **33.2.7** *P* **64** *L* **12** # 347

Darshan, Yair Microsemi

*Comment Type* **E** *Comment Status* **D** *PSE MPS*

Table 33-11 item 17, additional information column, line 12
The text: "The pair set with highest current" is not clear since we are looking at two pairs of the same polarity and we care of the pair with the highest current and not the pair-set with the highest current.

*SuggestedRemedy*

Change to "The pair with highest current"

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

PROPOSED REJECT.

All of the specifications are per pair set. Here, we are requiring that the PSE look at the pair set with the highest current, even if the PSE is only looking at one of the pairs.

*Cl* **33** *SC* **33.3.2** *P* **76** *L* **11** # 348

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *PD Power*

The text:
"The maximum power a PD expects to draw from a PSE is PClass_PD max as defined in Table 33–18." was removed and should be restored. Without it we will have interoperability issues as discussed in 802.3at.

*SuggestedRemedy*

Restore the text "The maximum power a PD expects to draw from a PSE is PClass_PD max as defined in Table 33–18."

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

PROPOSED ACCEPT IN PRINCIPLE.

Add text:

"For All PDs other than class 6 and 8, the maximum power a PD expects to draw from a PSE is Pclass_PD max as defined in Table 33–18."

to the beginning of section 33.3.7.2

*Cl* **33** *SC* **33.3.7** *P* **89** *L* **16** # 349

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *Table 33-18*

Table 33-18 item 11 Von: It is 42V for Type 3 as well.
It may be 42V for Type 4 as well.

*SuggestedRemedy*

Change PD Type to 1,2,3 and 4.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 115.

*Cl* **33** *SC* **33.3.7** *P* **88** *L* **49** # 350

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **X** *Pres: Table 33-18*

Table 33-18 item 9 Cport-2P minimum value.
Cport-2P need to be defined for Type 3 and 4.
In addition, it should be defined for Single signature PD and Dual signature PD.

*SuggestedRemedy*

(Update table 33-11 item 9 per the following (See table formate and details in darshan_08_0615.pdf)

1. Change PSE type from 1,2 to 1,2,3.
2. Add to the additional information of type 1,2,3 the following:
For Type 3 dual signatures PD.
For Type 3 single signature PD during 4P operation, the total minimum PD input capacitance is 10uF when Mode A and Mode B pairs are tied together.
3. Change PSE type from 3,4 to 4.
2. Add to the additional information of type 4 the following:
See 33.3.7.6, 33.3.7.3.
For Type 4 dual signatures PD.
For Type 4 single signature PD during 4P operation, the total minimum PD input capacitance is 10uF when Mode A and Mode B pairs are tied together.

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

Waiting for Presentation from Yair.

*Cl* **33** *SC* **33.2.6.2** *P* **60** *L* **22** # 352

Darshan, Yair Microsemi

*Comment Type* **T** *Comment Status* **D** *PSE Classification*

Table 33-9, missing the case Iclass>51.0mA.

*SuggestedRemedy*

Add new row to table 33-9 and insert the following.
Measure Iclass column: >51.0mA
Classification column: Invalid class.

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

PROPOSED REJECT.

This limit is covered in the Iclass_lim value in Table 33-10 and is refered to in the text.

*Cl* **33** *SC* **33.2.4.4** *P* **35** *L* **19** # 354

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *4PID*

The maintain_4pair_power signature current text blocks us to implement more reliable 4P-ID mechanisms.

The text says:
"It is initially set to the value of pd_4pair_candidate"

The "is" should be replaced with "may"

*SuggestedRemedy*

Replace:
"It is initially set to the value of pd_4pair_candidate"

To:
"It may initially set to the value of pd_4pair_candidate"

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

PROPOSED ACCEPT IN PRINCIPLE.

Replace:
"It is initially set to the value of pd_4pair_candidate"

To:
"It may initially be set to the value of pd_4pair_candidate"

*Cl* **33** *SC* **33.3.7** *P* **89** *L* **20** # 358

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *Table 33-18*

Table 33-18 item 11 Voff: It is 30V for Type 3 as well.
It may be 30V for Type 4 as well.

*SuggestedRemedy*

Change PD Type to 1,2,3 and 4 for Voff.

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

PROPOSED ACCEPT IN PRINCIPLE.

OBE by comment # 115.

*Cl* **33** *SC* **33.3.7.9** *P* **94** *L* **32** # 360

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *Pres: PD Unbalance*

We need to add new subclause 33.3.7.10 after 33.3.7.9 for PD PI Pair to Pair resistance and current unbalance.

In Table 33-11 item 4a, Icont-2P_unb we defined the maximum pair set current with the effect of E2EP2P_Iunb/Runb.
This current is also a limit for the PD due to the fact that it is the same current. As a result, a PD vendor will have to design his PD to not exceed under the test setup conditions specified in the proposed 33.3.7.10.

*SuggestedRemedy*

1. Add new clause with the following content:
33.3.7.10 PD PI Pair to Pair resistance and current unbalance.
Type 3 and Type 4 PDs shall not exceed Icont-2Punb as specified in Table 33-11 item 4a when tested with the test setup specified in 33.3.7.10.1.
2 Add new clause 33.3.7.10.1: Test setup and test conditions for PD PI pair to pair resistance and current unbalance.
Insert the content of PD PI baseline text proposal in darshan_01_0615.pdf to 33.3.7.10.1.

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

PROPOSED ACCEPT IN PRINCIPLE.

Waiting for presentation.

*Cl* **33** *SC* **33.3.7.6** *P* **93** *L* **28** # 361

Darshan, Yair Microsemi

*Comment Type* **E** *Comment Status* **D** *PD Power*

Lines 22-25 say:
Type 1 PD input current shall not exceed the PD upperbound template (see Figure 33–18) after TLIM min (see Table 33–11 for a Type 1 PSE) when the following input voltage is applied. A current limited voltage source is applied to the PI through a RCh resistance (see Table 33–1). The current limit meets Equation (33–14) and the voltage ramps from VPort_PSE min to VPort_PSE max at
2250 V/s.

Sentence construction makes it unclear.
The "the following input voltage is applied." can be removed.

*SuggestedRemedy*

Change to:
Type 1 PD input current shall not exceed the PD upperbound template (see Figure 33–18) after TLIM min (see Table 33–11 for a Type 1 PSE) when a current limited voltage source is applied to the PI through a RCh resistance (see Table 33–1). The current limit meets Equation (33–14) and the voltage ramps from VPort_PSE min to VPort_PSE max at 2250 V/s.

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

PROPOSED REJECT.

This is a Type 1 behavior only. This can be submitted as a maintenance request.

*Cl* **33** *SC* **33.2.7.5** *P* **67** *L* **1922** # 362

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *PSE Power*

The text:
"However, for practical implementations, it is recommended that the POWER_UP mode on a pair set persist for the complete duration of TInrush-2P, as the PSE may not be able to correctly ascertain the conclusion of a PD's inrush behavior."

The problems with this text are:
1. It is redundant. A better version of it can be found in legacy_powerup variable page 36 lines 11-15.
2. It is not accurate. The text "the PSE may not be able to correctly ascertain the conclusion of a PD's inrush behavior" is incorrect. If you do it in a wrong way than PSE may not know etc. but there is a correct way to do it so I believe that the whole text should be deleted.
3. The state machine variable legacy_powerup allows it and supply accurate instructions when it is not recommended. (It is not recommended if you look only on the voltage)
4. This text makes assumption that we can't know the inrush profile which is incorrect.
5. This text prevents good working solutions that monitor voltage and current which is important for effective low dissipation POWER-UP control for Type 3 and 4.

*SuggestedRemedy*

Remove the text "However, for practical implementations, it is recommended that the POWER_UP mode on a pair set persist for the complete duration of TInrush-2P, as the PSE may not be able to correctly ascertain the conclusion of a PD's inrush behavior."

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

PROPOSED REJECT.

This is only a recommendation and I would not recommend removing it.

*Cl* **33** *SC* **33.2.4.4** *P* **36** *L* **11** # 363

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *PSE State Diagram*

The text "... for PSEs that monitor the per pair set voltage output and use that information ...." is not accurate.
It should be (adding the word "only"):
"... for PSEs that monitor only the per pair set voltage output and use that information ...."
It is with sync to lines 13-14 that means the same and use the word "only" as well.

*SuggestedRemedy*

Repalce The text "... for PSEs that monitor the per pair set voltage output and use that information ...."
with:
"... for PSEs that monitor only the per pair set voltage output and use that information ...."

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

PROPOSED REJECT.

This is existing text and should not be changed unless we change it for 4P or HP operation.

This could be filed as a maintenance request.

*Cl* **33** *SC* **33.3.7.3** *P* **90** *L* **51** # 364

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *PD Inrush*

Definition of Cport at the PD over a pair set is not accurate.
For a single load PD, 10uF will be seen as 10uF from any pair set by the PSE.
And the intention is that we will have twice the capacitor value if we increase the power by a factor of 2.

*SuggestedRemedy*

Add Editor Note to be added after line 52 page 90:
Editor Note: Cport need to be clarified when used in single signature PD and dual signature PD.

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

PROPOSED ACCEPT IN PRINCIPLE.

Change note on line 51 to:

NOTE--Cport per pair set is the Cport seen by an attached PSE when it probes the given pair set.

*Cl* **33** *SC* **33.3.7.3** *P* **90** *L* **90** # 365

Darshan, Yair
Microsemi

*Comment Type* **TR** *Comment Status* **D** *PD Inrush*

Some of important PD factual behaviour was removed from lines 28-31 that was in IEEE802.3-2012.
The reason why they were removed is relevent to the PSE but not relevant for the PD as it is accurate phisycal behaviour of the PD i.e. Inrush current period ends when Cport is charged to 99% of its final value within a time duration of Tinrush-2P minimum per Table 33-11 etc.

*SuggestedRemedy*

Modify the text per the following instructions:
--- new text----.
Strike text XXX: (Strike XXX):
---
Inrush current per pair-set is drawn beginning with the application of input voltage at the pair set compliant with Vport_PD-2P requirements as defined in Table 33-18, and ending --- when Cport is charged to 99% of its final value within a time duration of ---- (strike "before") TInrush-2P minimum per Table 33-11. After TInrush-2P min, the PD shall not exceed its per pair set current threshold corresponding to its class level.

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

PROPOSED REJECT.

This change was made because a PD may not necessarily be done charging its capactiance by Tinrush-2p min, but it is still required to meet the rest of the text such as "After TInrush-2P min, the PD shall not exceed its per pair set current threshold corresponding to its class level."

In the field, PDs will switch over to their "nominal" current draw once their cap was charged even if it only took 10ms. This note about the cap being charged to 99% was the source of a great deal of confusion.

*Cl* **33** *SC* **33.2.7.6** *P* **68** *L* # 366

Darshan, Yair
Microsemi

*Comment Type* **TR** *Comment Status* **D** *PSE Power*

Per the current requirements PSE is allowed to remove power if PD consumes power above the advertised class or remove power as a result of overload or short circuit conditions.
Currently we have specified the ICUT, TCUT, ILIM, TLIM requirements in order to help us to decide when to remove power.
We need to make it clear that PSE may remove power based on the above current and timing thresholds and also based on the measured power consumed from the port as required by other parts of the standard regarding PSE and PD that operating in a conditions that Pclass is violated.

*SuggestedRemedy*

PSE may remove power from a pair set if the measured power delivered from that pair set or the measured power delivered from both pair sets exceeds the maximum power requested by the PD as advertised by its class.
When PSE is measuring its output power and use it to limit the power to the PD or remove power from the port, Icut and ILIM threshold may be ignored.

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

PROPOSED ACCEPT IN PRINCIPLE.
Icut and Ilim should not be ignored.

Add text:

"A PSE may remove power from a pair set if the measured power delivered from that pair set or the measured power delivered from both pair sets exceeds the maximum power requested by the PD as advertised by its class."

to end of 33.2.7.6

*Cl* **33** *SC* **33.2.5.6** *P* **54** *L* **44** # 367

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *4PID*

Adressing the text:
"Type 3 and Type 4 PSEs shall determine whether an attached PD with classes 0 to 4 is a candidate to receive power on both pair sets prior to applying 4 pair power"
Does it means that applying 4P power (all pairs at the same time) is the only choice, can I apply 2P check LLDP and then connect the 2nd pair? this is the reliable way to do it but it reads that I cant do it

*SuggestedRemedy*

Add note after line 47:
Note: Applying 4P power doesn't imply if both pair-set are powered at the same time or one pair set is powered first and later the 2nd pair is powered within the time limit specified in Tble TBD tem TBD."

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

PROPOSED ACCEPT IN PRINCIPLE.

Add Editor's Note after line 47:

"Editor's Note to be removed before publication: Need to define startup timing for both single and dual-signature PDs."

*Cl* **33** *SC* **33.3.7.3** *P* **90** *L* **43** # 369

Darshan, Yair Microsemi

*Comment Type* **TR** *Comment Status* **D** *Pres: Table 33-18*

We need to research if 180uF total for a single signature PD is sufficient or we must have total of 360uF as per the current draft.

*SuggestedRemedy*

Add Editor Note after line 48 page 90:
Editor Note: To investigate the max Cport value that ensures stable operation for 60W and up to 99.9 W under all current specification of PSE Voltage, Voltage/Current transients, channel resistance range etc.

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

PROPOSED ACCEPT.

Although the current draft limits single signature PDs to 180uF as the total capacitance is seen on each pair set.

*Cl* **33** *SC* **33.3.7.4** *P* **91** *L* **44** # 370

Darshan, Yair Microsemi

*Comment Type* **T** *Comment Status* **D** *PD Power*

I am working on ways to reduce pair maximum current due to Ppeak-PD and E2EP2P_Iunb which affects the values of Icut-2P_max and ILIM_2P_min which eventually affect the transformer design.

Working with current equation 33-12a with the 1.07 constant, is causing ILIM_2P_MIN to be too high for Type 4. In addition, since it is new standard we can ease Type 3 currents due to E2EP2P_Iunb and PD peak which doesnt have to be similar to Type 2 specifications.

*SuggestedRemedy*

1. Change equation 33-12a constant from 1.07 to 1.05.
2. Change lines 35 to 40 to:
"Peak power, PPeak_PD, for Class 0 through 4 is based on Equation (33-12).
Peak power, PPeak_PD,for Class 5 through 8 is based on Equation 33-12a.
Equation (33-12) and equation 33-12a are used to approximate the ratiometric peak powers of Class 0 through Class 8. This equation may be used to calculate peak operating power for PPeak_PD values obtained via Data Link Layer classification or Auto class."

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

PROPOSED ACCEPT.

Will OBE comment # 359 if accepted.

*Cl* **33** *SC* **33.1** *P* **19** *L* **11** # 371

Thompson, Geoff GraCaSI S.A.

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

THE TEXT: "These entities allow devices to draw/supply power using the same generic cabling as is used for data transmission." is too general. It should be restricted to twisted pair copper cabling.

*SuggestedRemedy*

CHANGE TEXT TO READ: "These entities allow devices to draw/supply power using the same generic balanced copper cabling as is used for data transmission."

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

PROPOSED ACCEPT IN PRINCIPLE.

Copper may be too specific. We call out cabling requirements specifically in Table 33-1.

CHANGE TEXT TO READ: "These entities allow devices to draw/supply power using the same generic balanced cabling as is used for data transmission."

*Cl* **33** *SC* **33.2.1** *P* **25** *L* **8** # 374

Thompson, Geoff GraCaSI S.A.

*Comment Type* **E** *Comment Status* **D** *PSE Types*

THE TEXT: "PSEs may be placed in two locations with respect to the link segment, either coincident with the DTE/ Repeater or midspan." COULD BE MORE CLEAR

*SuggestedRemedy*

REPLACE WITH: "A PSE may be placed in one of two locations with respect to the link segment, either coincident with the DTE/ Repeater or midspan."

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

PROPOSED REJECT.

This is existing text that we are not changing. This could be filed as a maintenance request.

*Cl* **33** *SC* **33.2.5.6** *P* **54** *L* **45** # 375

Thompson, Geoff GraCaSI S.A.

*Comment Type* **E** *Comment Status* **D** *4PID*

I have no idea what "initially" means in this sentence.

*SuggestedRemedy*

Remove the word "initially".

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

PROPOSED REJECT.

Better langauge is always welcome, but "initially" is a key part of the sentence as 4PID can be changed by other things than those listed as determining the initial value.

*Cl* **33** *SC* **33.2.9.1** *P* **72** *L* **7** # 376

Thompson, Geoff GraCaSI S.A.

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

Improve structure/grammar of sub-clause titles and voltage terms

*SuggestedRemedy*

Change
"33.2.9.1.1 PSE AC MPS component requirements"
to:"33.2.9.1.1 PSE MPS AC component requirements"
and:"33.2.9.1.2 PSE DC MPS component requirements"
to:"33.2.9.1.2 PSE MPS DC component requirements"
and "AC MPS component" to "MPS AC component"
and "DC MPS component" to "MPS DC component" throughout the draft

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

PROPOSED REJECT.

These are the terms used since AF. They should be left the same as I do not think the suggested remedy brings any new clarity to them.

*Cl* **33** *SC* **33.1.4** *P* **22** *L* **27** # 379

Thompson, Geoff GraCaSI S.A.

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

Note 1 points to 33.4.1.2 as well as Annex 33A. 33.4.1.2 is now effectively empty

*SuggestedRemedy*

IN LINE 27, REMOVE THE TEXT: "See Section 33.4.1.2"

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

PROPOSED REJECT.

Section 33.4.1.2 still calls out the requirement to meet unbalance requirements stated in ISO/IEC…

*Cl* **33** *SC* **33.2.5.0a** *P* **51** *L* **12** # 383

Thompson, Geoff GraCaSI S.A.

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

Sub-clause numbering (i.e., the "a" suffix) does not conform to SA Style Manual.

*SuggestedRemedy*

Conform to Style Manual 11.1

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

PROPOSED ACCEPT IN PRINCIPLE.

All subclauses should be renumbered properly.

This subclause should be 33.2.5.1 and all subsequent subclauses should be increased.

*Cl* **33** *SC* **33.2.3** *P* **33** *L* **19** # 385

Thompson, Geoff GraCaSI S.A.

*Comment Type* **T** *Comment Status* **D** *PSE Types*

It is not clear to me whether or not this change will end up disenfranchising some currently compliant PSEs. It is unacceptable to do so and I see no need to do so.

*SuggestedRemedy*

Restore deleted text or prove that no existing compliant DTE/PSEs are disenfranchised.

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

PROPOSED REJECT.

Type 1 and Type 2 PSEs are allowed to choose either Alt-A configuration (MDI, MDI-X) according to table 33-2a.

*Cl* **33** *SC* **33.1.4** *P* **21** *L* **53** # 386

Thompson, Geoff GraCaSI S.A.

*Comment Type* **TR** *Comment Status* **D** *Power System*

It is not a "link segment" that connects a PSE and a PD when there is a mid-span PSE.

*SuggestedRemedy*

Change to "link section" in line 53

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

PROPOSED ACCEPT.

This is the definition from 1.4:

link section: The portion of the link from the PSE to the PD.

*Cl* **33** *SC* **33.2.7.8** *P* **70** *L* **34** # 387

Thompson, Geoff GraCaSI S.A.

*Comment Type* **TR** *Comment Status* **D** *PSE Power*

Spec does not call out how the test resister is to be hooked to the PI in the 2 pair-set case. Is it across just one, ifso which one? Is it across either? Is it required to be hooked to both.

*SuggestedRemedy*

Specify how test resister is to be hooked to the PI in the case of Type 3 and/or Type 4.

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

PROPOSED ACCEPT IN PRINCIPLE.

Need a specific remedy.

Possible OBE by comment # 6.

*Cl* **01** *SC* **1.5** *P* **18** *L* **21** # 389

Dove, Daniel Dove Networking Solut

*Comment Type* **TR** *Comment Status* **D** *Editorial*

Missing Abbreviations

*SuggestedRemedy*

Insert "Dual Signature PD - A Powered Device that presents two signatures, one on each pair set, to the PSE.Single Signature PD - A Powered Device that presents one signature on either pair set, or both simultaneously to the PSE."

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

PROPOSED ACCEPT IN PRINCIPLE.

Are these abbreviations or definitions?

Should SSPD and DSPD be added as definitions?