Cl **33** *SC* **33.1** *P* *L* **11** # 58

Schindler, Fred — Seen Simply

Comment Type **ER** *Comment Status* **R** *Maintenance*

Several new additions use the construct choice1/choice2 to signify something that may be missinterpreted. Some of this construction are used in legacy text too.

SuggestedRemedy

Replace these constructs with words. For example,

These enitites allow devices to draw or supply ...

Response *Response Status* **C**

REJECT.

The specific text referenced on line 11 is existing text that we have not changed. This should be filed as a maintenance request.

All readers are encouraged to submit specific comments to replace "/" where appopriate.

Cl **33** *SC* **33.1.1** *P* **19** *L* **52** # 115

Yseboodt, Lennart — Philips

Comment Type **TR** *Comment Status* **A** *Cabling*

Reference to ISO/IEC 11801:1995.
In other parts of Clause 33 we refer to ISO/IEC 11801:2002 for channel parameters.
ISO/IEC 11801:1995 has been withdrawn by ISO.

SuggestedRemedy

Change ISO/IEC 11801:1995 to ISO/IEC 11801:2002

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.1.3** *P* **21** *L* **38** # 141

Jones, Chad — Cisco

Comment Type **T** *Comment Status* **A** *Definitions*

Maintenance Request #1273 on behalf of George Zimmerman, CME Consulting/LTC

Text in the existing standard is ambiguous and is inconsistent with the more precise definition in the definitions section. The imprecise language “generic term” does not point to a specific interface point necessary for the specifications attached to the PI, including a pin-out. In contrast the language in the definitions section is more precise.

SuggestedRemedy

Change: The Power Interface (PI) is the generic term that refers to the mechanical and electrical interface between the PSE or PD and the transmission medium.
To: The Power Interface (PI) is the mechanical and electrical interface between the Power Sourcing Equipment (PSE) or Powered Device (PD) and the transmission medium as defined in 1.4.324 (1.4.336 in P802.3bx/D2.0). In an Endpoint PSE and in a PD the Power Interface is the MDI as defined in 1.4.256 (1.4.268 in P802.3bx/D2.0)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change:
“The Power Interface (PI) is the generic term that refers to the mechanical and electrical interface between the PSE or PD and the transmission medium.
In an Endpoint PSE and in a PD, the PI is encompassed within the MDI.”

To:
“The Power Interface (PI) is the mechanical and electrical interface between the Power Sourcing Equipment (PSE) or Powered Device (PD) and the transmission medium as defined in 1.4.324 (1.4.336 in P802.3bx/D2.0).
In an Endpoint PSE and in a PD the Power Interface is the MDI as defined in 1.4.256 (1.4.268 in P802.3bx/D2.0)"

Add Editor's Note: "Editor to consult with staff on duplication of definitions."

Cl **33** *SC* **33.1.4** *P* **21** *L* **50** # 139

Jones, Chad Cisco

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

Maintenance Request #1271, on behalf of GEOFF THOMPSON, GRACASI S.A./LINEAR TECHNOLOGY

Move as much of the cabling specification to cabling documents as possible. (This RR was entered as a tracking mechanism for Thompson Comment #59 against P802.3REVbx/D2.0 during initial WG ballot. Resolution of this comment was given over to P802.3bt as they will have Cl 33 open.)

SuggestedRemedy

See attached sheet for proposed new text.
(http://www.ieee802.org/3/maint/requests/maint_1271.pdf, page 2)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

A number of these changes have already been adopted. The two remaining changes are:

Replacing the first sentence in 33.1.4 with:

"A power system, consists of a single PSE, a single PD and the link section connecting them. A power system is
characterized as Type 1 or Type 2 by lowest type number of the PSE or PD in the system, see Table 33–1."

and replacing the first paragraph of 33.1.4.1 with (as well as changing the title of the subclause to "Cabling requirements"):

"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 gauge conductors than are found in Class C/Category 3 cabling and (more uncommonly) in some lighter
gauge Class D or better cable. The requirements for Type 2 are met by Category 5 or better cable and components as
specified in ANSI/TIA/EIA-568-A."

Cl **33** *SC* **33.1.4** *P* **22** *L* **10** # 111

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *Cabling*

Table 33-1 lists the "Channel Pair-set maximum DC loop resistance" parameter name as "Rchan".
This is not correct, Rchan is the actual DC loop resistance in a system.

SuggestedRemedy

What is meant is Rch. In 802.3-2012 this parameter was also called Rch.
Replace Rchan by Rch.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.1.4** *P* **22** *L* **15-1** # 116

Yseboodt, Lennart Philips

Comment Type **TR** *Comment Status* **A** *Cabling*

Reference to ISO/IEC 11801:1995.
In other parts of Clause 33 we refer to ISO/IEC 11801:2002 for channel parameters.
ISO/IEC 11801:1995 has been withdrawn by ISO.

SuggestedRemedy

Change ISO/IEC 11801:1995 to ISO/IEC 11801:2002

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.1.4** *P* **22** *L* **21** # 11

Darshan, Yair Microsemi

Comment Type **T** *Comment Status* **A** *Pres Table 33-1 Cabling*

Table 33-1.
Some of the TBD parameters can be updated per the work done at page 10 of: http://www.ieee802.org/3/bt/public/mar15/darshan_01_0315_rev009a.pdf.
Table 33-1 need to be revised per the folowing proposal. Please see attached "Draft D0.4: Revised Table 33-1.pdf:
The parameters are:
Type 4 Icable: 0.962A (TIA guys will have to tell us the # of cables max etc. later)
In addition, the following TBD parameters can be updated as well:
Cable Type: same as in Type 3 and adding a text notifying number of cables per bundle TBD. This will be delivered by TIA etc.
Loop resistance: Same as for Type 3.
To add new row that specify Type 4 parameter for new and better cable that allows 100 cables per bundle. In this row, cabling Type, loop resistance is TBDs.

SuggestedRemedy

Table 33-1 to update the following Type 4 parameters (See attached "Draft D0.4: Revised Table 33-1.pdf" document":

1. Type 4 Icable: 0.962A.
2. Cable Type: same as in Type 3. Add note below table: "Number of cables per boundle TBD per TBD standard.
3. Loop resistance: Same as for Type 3.
4. To add new row that specify Type 4 parameter for new and better cable that allows 100 cables per bundle. In this row, cabling Type, loop resistance is TBDs. The current is the same as in step 1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Adopt table and editor's note from darshan_05_0515.pdf

Cl **33** *SC* **33.1.4** *P* **22** *L* **21** # 114

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *Pres Table 33-1*

Icable for Type 4 is TBD.

SuggestedRemedy

We have adopted 99.9W as the maximum allowed Ptype.
Icable = (99.9W / 52V) / 2 = 0.960 A (+footnote ref 3)
3: "In Type 4, Class 8 Operation, the current per pair-set might be impacted by pair to pair system resistance unbalance."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment #11.

Cl **33** *SC* **33.1.4** *P* **22** *L* **22** # 4

Maguire, Valerie Siemon

Comment Type **T** *Comment Status* **A** *Cabling*

Clarify type of unbalance (i.e. resistance or current)

SuggestedRemedy

Replace "inter-pair unbalance" with "inter-pair resistance unbalance"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment #50.

EZ

Cl **33** *SC* **33.1.4** *P* **22** *L* **22** # 50

Beia, Christian STMicroelectronics

Comment Type **E** *Comment Status* **A** *Cabling*

Note1 after able 33-1 refers to Annex 33A inaccurately. It is about channel pair to pair resistance unbalance, not about inter-pair unbalance

SuggestedRemedy

Replace:
See informative annex 33A for inter-pair unbalance.
With:
See informative annex 33A for Channel pair to pair resistance unbalance.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.1.4** *P* **22** *L* **23** # 12

Darshan, Yair Microsemi

Comment Type **TR** *Comment Status* **A** *Cabling*

Comment number 2 below Table 33-1.
The comment is correct for Type 3 and 4 but yet it is reffering to Type 3 only.

SuggestedRemedy

Change "In Type 3, 60W operation, the current..... See details in section TBD"

To:
"In Type 3 and 4 operation, the current..... See details in Table 33-11 item 4a"

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.1.4** *P* **22** *L* **23** # 113

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *Cabling*

Footnote 2 below Table 33-1
"In Type 3, 60W Operation, the current per pair-set might be impacted by pair to pair system resistance unbalance."
Better to refer to class.

SuggestedRemedy

"In Type 3, Class 6 Operation, the current per pair-set might be impacted by pair to pair system resistance unbalance."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment #12.

EZ

Cl **33** *SC* **33.1.4.1** *P* **22** *L* **41** # 140

Jones, Chad Cisco

Comment Type **T** *Comment Status* **A** *Cabling*

Maintenance WG Ballot comment #59 on behalf of GEOFF THOMPSON, GRACASI S.A./LINEAR TECHNOLOGY

(through line 6, i.e. the first paragraph of 33.1.4.1)
Simplify the first paragraph by updating the reference to the 2002 version of 11801 which incorporates the additional requirement.

SuggestedRemedy

33.1.4.1 Cabling requirement
Operation requires Class D, or better, cabling as specified in ISO/IEC 11801:2002. These requirements are also met by Category 5e or better cable and components as specified in ANSI/TIA-568-C.2; or Category 5 cable and components as specified in ANSI/TIA/EIA-568-A.
The second paragraph of this clause can remain unchanged unless the referenced cabling documents already cover this material.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.1.4.1** *P* **23** *L* **5** # 1

Maguire, Valerie Siemon

Comment Type **ER** *Comment Status* **A** *Cabling*

Use correct draft Standards name

SuggestedRemedy

Globally replace "TSB-184A" with "TSB-184-A" (3 locations)

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.1.4.2** *P* **23** *L* **10** # 143

Jones, Chad Cisco

Comment Type **T** *Comment Status* **A** *Cabling*

Maintenance WG Ballot comment #60 on behalf of GEOFF THOMPSON, GRACASI S.A./LINEAR TECHNOLOGY

(through line 28, i.e. the entirety of 33.1.4.2)
The first sentence should be deleted. It would be appropriately handled by updating the reference to 11801 to the 2002 edition which precisely matches this requirement with the following text: 6.4.8 Direct current (d.c.) resistance unbalance
The d.c. resistance unbalance between the two conductors within each pair of a channel shall not exceed 3 % for all classes. This shall be achieved by design.
The remainder of 33.1.4.2 should be deleted as it is purely informative/tutorial material on cabling parameter measurement. It is more appropriate to the referenced cabling documentation. If 802.3 strongly feels that it needs to be retained in our document then it should be moved to an informative annex. (Ref: 2014 Style Manual, cl. 10.1, last paragraph)

SuggestedRemedy

With both of these actions being taken, the entire sub-clause should be deleted.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Move section (with appropriate changes) to informative annex.

Cl **33** *SC* **33.2.01** *P* **24** *L* **29** # 59

Schindler, Fred Seen Simply

Comment Type **ER** *Comment Status* **A** *Types*

New text in the specification uses the word can rather than the word may.
For example,

Can operate as 2-pair under fault conditions

"May" provides permission whereas "can" states ability.

SuggestedRemedy

Replace constructs using "can" that provide permission with "may. " End notes containing these constructs with a period.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add period to end of note 1.

Replace Note 4 with: "May operate over 2 pairs under fault conditions."

Cl **33** *SC* **33.2.0a** *P* **24** *L* **24** # 38

Dwelley, David Linear Technology

Comment Type **T** *Comment Status* **A** *Types*

Table 33-1a: 75W class is missing

SuggestedRemedy

Add row for 75W class

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change 2nd column to "maximum class supported" and update entries as apporopriate.

Cl **33** *SC* **33.2.0a** *P* **24** *L* **30** # 37

Dwelley, David — Linear Technology

Comment Type **T** *Comment Status* **A** *Types*

Table 33-1a, Note 4: "Can operate as 2-pair under fault conditions" is unnecessary and suggests that 2-pair operation is specified behavior for 60W and greater PDs. 2-pair operation is not possible at these power levels, and fault behavior is not typically specified.

SuggestedRemedy

Delete note 4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace note 4 with:

"2-pair operation allowed if PSE is supplying class 4 power or less."

Would OBE part of comment #59.

Cl **33** *SC* **33.2.1** *P* **24** *L* **42** # 49

Stencel, Len — Bourns, Inc.

Comment Type **TR** *Comment Status* **A** *Types*

Need to Add 2 diagrams showing Alt A and Alt B for an End PSE. Only midspan version is shown.

SuggestedRemedy

Add 2 Additional figures:
figure 33-1a 10BASE-T/100BASE-TX Endpoint PSE Alt A and Alt B
Figure 33-2a 1000BASE-T/10GBASE-T Endpoint PSE Alt A and Alt B
or
Add Figure 33-5 to text and make these two diagrams figures 33-5a and 33-5b.

Response *Response Status* **C**

ACCEPT.

Need to create figures…

EZ

Cl **33** *SC* **33.2.1** *P* **24** *L* **46** # 10

Bustos Heredia, Jairo — Würth Elektronik eiSo

Comment Type **E** *Comment Status* **R** *Types*

PSEs may support either Alternative A, Alternative B, or both.

SuggestedRemedy

PSEs may support either Alternative A, Alternative B or both. When using Alternative A, power will be provided through pairs 2 and 3, whereas when using Alternative B, pairs 1 and 4 will be used for power provision.

Response *Response Status* **C**

REJECT.

These pin definitions are shown in Table 33-2.

Cl **33** *SC* **33.2.3** *P* **31** *L* **1** # 117

Yseboodt, Lennart — Philips

Comment Type **T** *Comment Status* **A** *Types*

"A PSE device may provide power via one of two valid four-wire connections."
Forbids 4P power.

SuggestedRemedy

"A PSE device may provide power via one or both of two valid four-wire connections."
or
"A PSE device may provide power via at least one of two valid four-wire connections."
or
"A PSE device may provide power via one or two valid four-wire connections."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace text with "A PSE device may provide power via one or both of two valid four-wire connections."

EZ

Cl **33** *SC* **33.2.3** *P* **31** *L* **8-23** # 88

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **R** *Types*

In a 4P system, the word Alternative in Table 33-2 implies that either A or B can be chosen but not both.

SuggestedRemedy

Rename "Alternative" to "Configuration".
This renaming will also affect other mentions of Alternative in the draft.

Response *Response Status* **C**

REJECT.

I do not believe that the word "alternative" is causing confusion when applied to 4-pair power.

Cl **33** *SC* **33.2.4.1** *P* **32** *L* **20** # 67

Schindler, Fred Seen Simply

Comment Type **TR** *Comment Status* **D** *4P Power*

This text permits a new Type midspan to power the PD using 4P but it does not ensure this will be the case.

Replacing this text to requiring legacy behavior permits a consistent process to be used by customers to locate this potential problem. If a midspan is placed between an end-point PSE and a PD, normally the end-point PSE will power the PD.

This undesirable operation can then be discovered remotely by looking at the end-point PSE. Upon discovery, the admin may disable the end-point PSE port to ensure the midspan always powers the PD.

If the existing text is used the configuration may be different after each power cycle.

SuggestedRemedy

Stike the added sentence.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Should we require 4P midspans to use the back-off algorithm? Maybe.

We should NOT require 4P endspans to use the back-off algorithm which striking this sentence would require.

Cl **33** *SC* **33.2.4.1** *P* **32** *L* **20** # 39

Dwelley, David Linear Technology

Comment Type **T** *Comment Status* **A** *4P Power*

Unclear text: "A Type 3 or Type 4 PSE that is capable of delivering power over both Alternative A and Alternative B simultaneously is not required to meet backoff algorithm."

SuggestedRemedy

Replace with: "A Type 3 or Type 4 PSE that intends to provide power on both Alternative A and Alternative B is not required to use the backoff algorithm."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

How about: "A Type 3 or Type 4 PSE that will deliver power over both Alternative A and Alternative B simultaneously is not required to use the backoff algorithm.

Cl **33** *SC* **33.2.4.1** *P* **32** *L* **20-2** # 118

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PSE Detection*

"A Type 3 or Type 4 PSE that is capable of delivering power over both Alternative A and Alternative B simultaneously is not required to meet backoff algorithm."
'the' misses between meet and backoff

SuggestedRemedy

"A Type 3 or Type 4 PSE that is capable of delivering power over both Alternative A and Alternative B simultaneously is not required to meet the backoff algorithm."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.4.1** *P* **32** *L* **21** # 43

Stencel, Len Bourns, Inc.

Comment Type **E** *Comment Status* **A** *PSE Detection*

text correction

SuggestedRemedy

Change "meet backoff algorithm" to "meet the backoff algorithm requirement".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment #118.

EZ

Cl **33** *SC* **33.2.4.1** *P* **32** *L* **31** # 9

Bustos Heredia, Jairo — Würth Elektronik eiSo

Comment Type **E** *Comment Status* **A** *PSE Detection*

If a PSE performing detection using Alternative A detects an invalid signature, it should complete a second detection in less than Tdbo min after the beginning of the first detection attempt.

SuggestedRemedy

As we are referring to a time value, it may bring the reader to confusion on whether "min" stands for "minimum" or "minutes". Actually, Tdbo has only one defined value in Table 33-11. Therefore I believe "min" is not needed. Thus, I would suggest the followin:

If a PSE performing detection using Alternative A detects an invalid signature, it should complete a second detection in less than Tdbo after the beginning of the first detection attempt.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.4.4** *P* **37** *L* **37-3** # 89

Yseboodt, Lennart — Philips

Comment Type **E** *Comment Status* **A** *PSE Classification*

"or a PSE that has hardware limitation."

SuggestedRemedy

"or a PSE that has a hardware limitation."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.4.4** *P* **37** *L* **8** # 13

Darshan, Yair — Microsemi

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

Table 33-3 column "class_num_events" adresses max class_num_events for describing if PSE_DLL_CAPABLE is true or false.

SuggestedRemedy

change column tytle to "max class_num_events"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

The definition of class_num_events already indicates that it is the maximum number of class events a PSE supports.

Cl **33** *SC* **33.2.4.4** *P* **39** *L* **32** # 14

Darshan, Yair — Microsemi

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

Missing pointer to do_detection details.

SuggestedRemedy

Add "See 33.2.5"

Response *Response Status* **C**

ACCEPT.

Cl **33** *SC* **33.2.4.4** *P* **40** *L* **14** # 15

Darshan, Yair Microsemi

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

Addressing the editor note of the meaning of mutual identification is not complete:
Mutual identification is not complete if the objectives of 33.2.6 are not met.
This is mentioned in line 5.
""When a Type 2 PSE powers a Type 2, Type 3 or Type 4 PD, the PSE may choose to assign a value of '1' to parameter type if mutual identification is not complete (see 33.2.6) and shall assign....."

Specifically, Mutual identification is not complete per the text in clause 33.2.6.page 47 lines 15-20.
"Mutual identification is the mechanism that allows a Type 2, Type 3 or Type 4 PD to differentiate between Type 1, Type 2, Type 3 and Type 4 PSEs. Additionally, mutual identification allows Type 2, Type 3 or Type 4 PSEs to differentiate between Type 1, Type 2, Type 3 and Type 4 PDs. PDs or PSEs that do not implement classification will not be able to complete mutual identification and can only perform as Type 1 devices."
So if PSE fail to detect the PD class than classification is not complete.
For mutual Identification to be completed, the PD needs to know who is the PSE type etc.

SuggestedRemedy

No need to define "Mutual Identification is not complete". It is already clearly defined in 33.2.6.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accepting this comment results in no changes to the text.

Leave the editor's note there for people to continue to study.

Cl **33** *SC* **33.2.4.5** *P* **38** *L* **13** # 21

Darshan, Yair Microsemi

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

It seems that there is a Typo here:
The timer name is tlcf_timer and then the text says in line 16: See Tclf in Table 33-7. So we need to decide if it is tclf or tlcf.

In addition, it is Table 33-10 and not 33-7 in lines 13, 15, 36, 40, 44.
In Table 33-10 it is Tclf.

SuggestedRemedy

Change Tlcf_timer to Tclf.
Change "..in Table 33-7" to "...in Table 33-10 and verify the link is correct.
Correct in lines 13, 15, 36, 40, 44.
Scan the draft for similar for all Tlcf and Tclf occurrences and correct accordingly.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change all occurences of Tclf to Tlcf. The "lcf" was meant to stand for long class finger.
The state diagram uses lcf and everything should match it.

EZ

Cl **33** *SC* **33.2.4.5** *P* **38** *L* **15** # 68

Schindler, Fred Seen Simply

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

Fix Typo for TCLf

SuggestedRemedy

Use TCLF

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 21.

EZ

Cl **33** *SC* **33.2.4.5** *P* **40** *L* **19-2** # 120

Yseboodt, Lennart Philips

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

"When a PSE powers a PD of a lower Type than its maximum capability, the PSE shall meet the PI electrical requirements of PSE Type that matches the PD Type, but may choose to meet the electrical requirements of a greater Type (up to its maximum capability) for I Con-2P , I LIM-2P , T LIM-2P , and P Type (see Table 33â€“11)."

Unclear and grammatically dubious sentence.

SuggestedRemedy

When a PSE powers a PD of a lower Type than its own, the PSE shall meet the PI electrical requirements
of the PSE Type that corresponds to the connected PD Type.
The PSE may choose to apply the requirements for
I Con-2P , I LIM-2P , T LIM-2P and P Type (see Table 33-11) of any Type lower than or equal to the
PSE Type and greater than or equal to the PD Type.

Response *Response Status* **C**

ACCEPT.

Type and power are not directly related and this needs further study (as the editor's note is there to remind us).

Cl **33** *SC* **33.2.4.7** *P* **42** *L* **2** # 75

Schindler, Fred Seen Simply

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

Where is entry point "A1" coming from?

SuggestedRemedy

If "A1" is just another portion of "A" replace "A1" with "A."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"A1" needs a separate entrance because it leads to a different state than "A". An "A1" exit from the main diagram needs to be added and this will be done when the state diagram is updated.

Accepting this comment does not result in any changes to the text as of now.

Cl **33** *SC* **33.2.4.7** *P* **42** *L* **27** # 32

Darshan, Yair Microsemi

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

In state diagrame figure 33-9 there is a missing exit from CLASS_EV3 to point "E" which we have in all other CLASS_EV_XX BLOCKS.

In addition, an exit is missing also from CLASS_EV3 to MARK_EV_LAST as we have it also from other CLASS_EV_XX BLOCKS.

SuggestedRemedy

1) Add exit from CLASS_EV3 to point "E": Tcle3_timer_done*(mr_pd_class_detectted=0)

2) Add exit from CLASS_EV3 to MARK_EV_LAST:
Tcle3_timer_done*(mr_pd_class_detectted=4)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

There is no need for an exit from CLASS_EV3 to E as there can be no class mismatch in CLASS_EV3 (all class signatures are valid in CLASS_EV3).

There is an exit to MARK_EV_LAST from CLASS_EV3, but "Tcle3_timer_done * " needs to be added in front of "(mr_pd_class_detected = 4)"

Cl **33** *SC* **33.2.5** *P* **43** *L* **41** # 44

Stencel, Len Bourns, Inc.

Comment Type **E** *Comment Status* **A** *PSE Detection*

Clarify text. Rewrite sentence "The PSE shall turn on power only on the same pairs as those used for two-pair detection."

SuggestedRemedy

change t: "The PSE shall only turn on power to the pairs on which a valid PD is detected."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove this sentence as it is no longer needed now that "the PI" has been replaced with "a pair-set" in the first sentence in section 33.2.5:

"In any operation state, the PSE shall not apply power to a pair-set until the PSE has successfully detected a valid signature over that pair-set."

Cl **33** *SC* **33.2.5.0a** *P* **43** *L* **52** # 40

Dwelley, David — Linear Technology

Comment Type **T** *Comment Status* **A** *Connection Check*

"In addition, only tests that result in a voltage at the PSE PI that is within the Vvalid voltage range as specified..."

Vvalid is 2.8V-10V. This line as written blocks the use of 0V (i.e., one channel detecting while the other is idle) for Connection Check. This limits the way that connection check can be run.

SuggestedRemedy

Change text to: "In addition, only tests that result in a voltage at the PSE PI that is below Vvalid(max) as specified..."

Response *Response Status* **C**

ACCEPT.

Cl **33** *SC* **33.2.5.0a** *P* **44** *L* **3** # 16

Darshan, Yair — Microsemi

Comment Type **T** *Comment Status* **A** *Connection Check*

We need to clarify what is single signature PD and Dual signature PD so it can be tested for compliance.

It can be done by applying voltage Va to mode A and checking the current Ia while applying voltage Vb on mode B and checking Ia when Vb>Va and VB<Va.

This actually verify if there is low impdenace between positive rails of Mode A and Negative rails of Mode B.
If changing Va>Vb or Vb>Va doesnt change the current reading then it is dual signature.
Base on this concept Single Signature and Dual Signature can be defined and tested.
There are many ways to do it. It is what connection check does.

SuggestedRemedy

Add the drawing and text attached in document "Single Signature and Dual Signature definition and test setup.pdf" at the end of 33.2.5.0a

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add editor's note to connection check section that states "Test setup/compliance testing needs to be defined."

Cl **33** *SC* **33.2.5.1** *P* **44** *L* **25, 4** # 92

Yseboodt, Lennart — Philips

Comment Type **E** *Comment Status* **A** *PSE Detection*

Figure numbers 33-1 and 33-2 are incorrect, also references to them incorrect.

SuggestedRemedy

Figure 33-1 => Figure 33-11
Figure 33-2 => Figure 33-12

References to fix:
Lines: 10, 29 and 44/45

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.5.1** *P* **44** *L* **49** # 48

Stencel, Len — Bourns, Inc.

Comment Type **ER** *Comment Status* **A** *PSE Detection*

incorrect table number`

SuggestedRemedy

change Table 33-1 to Table 33-4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Fix all table references in the PSE Detection sections (33.2.5.1-33.2.5.5).

EZ

Cl **33** *SC* **33.2.5.2** *P* **45** *L* **46** # 45

Stencel, Len — Bourns, Inc.

Comment Type **ER** *Comment Status* **A** *PSE Detection*

Incorrect tablenumber. link is good.

SuggestedRemedy

change table 33-1 to table 33-4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 48.

EZ

Cl **33** *SC* **33.2.5.3** *P* **45** *L* **52** # 61

Schindler, Fred — Seen Simply

Comment Type **ER** *Comment Status* **A** *PSE Detection*

"A PSE shall accept as a valid signature a pair-set within a link section with ..."

The sentence construction is incorrect.

SuggestedRemedy

Consider,

"A PSE valid signature on a pair-set within a link section shall have the following characteristics, ..."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace sentence with:
In the presence of an offset voltage up to Vos max and an offset current up to Ios max as specified in Table 33–5, a PSE shall accept as a valid PD detection signature a pair-set within a link section with both of the following characteristics:

Cl **33** *SC* **33.2.5.3** *P* **45** *L* **54** # 46

Stencel, Len — Bourns, Inc.

Comment Type **ER** *Comment Status* **A** *PSE Detection*

Incorrect table number

SuggestedRemedy

change table 33-2 to Table 33-5

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 48.

EZ

Cl **33** *SC* **33.2.5.4** *P* **46** *L* **30** # 47

Stencel, Len — Bourns, Inc.

Comment Type **ER** *Comment Status* **A** *PSE Detection*

incorrect table number

SuggestedRemedy

change table 33-3 to Table 33-6

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 48.

EZ

Cl **33** *SC* **33.2.6** *P* **47** *L* **17** # 6

Bennett, Ken — Sifos Technologies, In

Comment Type **E** *Comment Status* **D** *PD Classification*

The sentence "PDs or PSEs which do not implement classification..." suggests that PDs don't have to implement classification, which is incorrect. All PDs provide class information via class current (including 0mA). Any PD which provides a bad class current or which operates beyond their class is not a conformant PD.

SuggestedRemedy

Omit "PDs or" at the beginning of the sentence.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

This would be a maintenance request as this is existing text which I believe applies to class 0 PDs.

Cl **33** *SC* **33.2.6** *P* **47** *L* **30** # 69

Schindler, Fred — Seen Simply

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

A definition for Vport_PSE-2p needs to be created.

SuggestedRemedy

A definition for Vport_PSE-2p needs to be created.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Vport_PSE-2p is a parameter whose limits are given in Table 33-11. This sentence assigns the minimum value of this parameter to V_PSE which is defined in 1.4.423 (see line 43).

Cl **33** *SC* **33.2.6** *P* **47** *L* **30-3** # 110

Yseboodt, Lennart — Philips

Comment Type **E** *Comment Status* **A** *PSE Classification*

"Alternatively, PSE implementations may use V PSE = V Port_PSE-2P min and R Chan = R Ch max when powering
using two-pairs, or R Chan = R Ch max/2 when powering using four-pair ***systems and*** to arrive at over-
margined values as shown in Table 33â€“4."

Issue 1: ***systems and*** should be removed.
Issue 2: R_Ch max is redundant. R_Ch is the maximum DC loop resistance of a pairset.

SuggestedRemedy

1: remove "and"
2: change Rch max to Rch

"Alternatively, PSE implementations may use V_PSE = V_Port_PSE-2P min and R_Chan = R_Ch when powering
using two-pairs, or R_Chan = R_Ch/2 when powering using four-pairs to arrive at over-margined values as shown in Table 33â€“4."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.6** *P* **48** *L* **12** # 121

Yseboodt, Lennart — Philips

Comment Type **T** *Comment Status* **A** *PSE Classification*

In Table 33-7, for Class 4, the Number of Classification Events is listed as 2.
It is also possible for a PSE to produce 3 classification events and this also results in Class 4 power.

SuggestedRemedy

Replace "2" by "2 or 3"

Response *Response Status* **C**

ACCEPT.

Cl **33** *SC* **33.2.6** *P* **48-49** *L* **-** # 112

Yseboodt, Lennart — Philips

Comment Type **E** *Comment Status* **A** *PSE Classification*

Table 33-8 PSE and PD classification permutations is unduly difficult to read.

SuggestedRemedy

Replacement table suggested in yseboodt_d04_Table_33_8_v100.pdf
Content of the table identical to the one in D0.4

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replacement table suggested in yseboodt_d04_Table_33_8_v110.pdf
Content of the table identical to the one in D0.4

Will update new table further in next comment cycle.

Cl **33** *SC* **33.2.6** *P* **48-49** *L* **-** # 119

Yseboodt, Lennart — Philips

Comment Type **E** *Comment Status* **A** *PSE Classification*

Table 33-8 is incorrectly broken up over pages 48 and 49.

SuggestedRemedy

Close table on page 48.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Possibly OBE by comment # 112.

EZ

Cl **33** *SC* **33.2.6** *P* **49** *L* **34-3** # 81

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PSE Classification*

"Subsequent to successful detection, all Type 2 PSEs perform classification using at least one of the
following: 2-Event Physical Layer classification; 2-Event Physical Layer classification and Data Link Layer
classification; or 1-Event Physical Layer classification and Data Link Layer classification."

2-Event should be Multiple-Event.

SuggestedRemedy

"Subsequent to successful detection, all Type 2 PSEs perform classification using at least one of the
following: Multiple-Event Physical Layer classification; Multiple-Event Physical Layer classification and Data Link Layer
classification; or 1-Event Physical Layer classification and Data Link Layer classification."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.6** *P* **49** *L* **8** # 99

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PSE Classification*

Table 33-8, Type 2, Physical Layer Classification column, first cell says "2-Event".
Should be "Multiple-Event".

SuggestedRemedy

Replace "2-Event" by "Multiple-Event".

Response *Response Status* **C**

ACCEPT.

Possible OBE by comment # 112.

EZ

Cl **33** *SC* **33.2.6.1** *P* **50** *L* **3** # 83

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PSE Classificaiton*

"Polarity shall be the same as defined for V Port_PSE-2P in 33.2.3 and timing specifications shall be as defined
by T pdc in Table 33â€“7."
T_pdc is not defined in Table 33-7, but in 33-10.

SuggestedRemedy

"Polarity shall be the same as defined for V Port_PSE-2P in 33.2.3 and timing specifications shall be as defined
by T_pdc in Table 33-10."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.6.1** *P* **50** *L* **5-6** # 85

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PSE Classification*

"All measurements of I Class shall be taken after the minimum relevant class event timing in Table 33-7."
Wrong Table reference.

SuggestedRemedy

"All measurements of I Class shall be taken after the minimum relevant class event timing in Table 33-10."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.6.1** *P* **50** *L* **5-6** # 84

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PSE Classification*

"The PSE shall measure the resultant I Class and classify the PD based on the observed current according to
Table 33-6."
I believe Table 33-9 is meant (please check).

SuggestedRemedy

"The PSE shall measure the resultant I Class and classify the PD based on the observed current according to
Table 33-9."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.6.1** *P* **50** *L* **9-10** # 86

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PSE Classification*

"If the result of the class event is Class 4, a Type 1 PSE shall assign the PD to Class 0; a Type 2, Type 3 or
Type 4 PSE treats the PD as a Type 2 PD but may provide Class 0 power until mutual identification is complete."

This refers to Type 2 PSEs that use 1-Event Physical Layer classification and Data Link Layer classification.
This option does not exists for Type 3 or 4 PSEs, unless they are limited to Class 3 power or lower.

SuggestedRemedy

"If the result of the class event is Class 4, a Type 1 PSE shall assign the PD to Class 0; a Type 2 PSE
treats the PD as a Type 2 PD but may provide Class 0 power until mutual identification is complete."

Response *Response Status* **C**

ACCEPT.

This is indeed in the 1-Event Physical Layer Classification section.

Cl **33** *SC* **33.2.6.2** *P* **50** *L* **31** # 33

Darshan, Yair Microsemi

Comment Type **T** *Comment Status* **A** *PSE Classification*

Table 33-TBD is Table 33-9

SuggestedRemedy

Replace Table 33-TBD with Table 33-9.
Same in line 45 and 53

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.6.2** *P* **50** *L* **31** # 60

Schindler, Fred Seen Simply

Comment Type **ER** *Comment Status* **A** *PSE Classification*

a TBD table (figure etc) exists please begin using a construct like TBD-# to identify the table to be used. If the table (figure etc) needs to be created use a construct like TBD-unavailable.

SuggestedRemedy

Please consider using the above suggestion to make the text easier to review.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 33.

EZ

Cl **33** *SC* **33.2.6.2** *P* **50-51** *L* **1-54** # 87

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PSE Classification*

There are 10 references to Table 33-7, all incorrect.

SuggestedRemedy

Change every instance of Table 33-7 to Table 33-10 in 33.2.6.2

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.7** *P* **52** *L* **46** # 22

Darshan, Yair Microsemi

Comment Type **E** *Comment Status* **A** *PSE Classification*

The intention of the additional information for TME2 in Table 33-10 was meant to say that the fact that the maximum value of TME3 is not defined, doesn't mean that it can be any number, it actually limited by Tpon.
This may not be clear by the additional information however.

SuggestedRemedy

Change the additional information text from:
The time from end of detection until power-on is limited by 33.2.7.12.

Change the additional information text to:
The maximum value of TME2 is limited by the maximum allowed time from the end of detection until power-on according to 33.2.7.12.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.7** *P* **53** *L* **38** # 17

Darshan, Yair Microsemi

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

1. In previous work: 2mV was subjected to be reduced to 1mV pending final survey results. See page 4 at http://www.ieee802.org/3/bt/public/jan15/darshan_03_0115.pdf. Now we have it.

2. With 2mV currently in the specifications we have:
2.1 >10x margin. No need for it. It will never happen in real life.
2.2 >100% margin is sufficient (with 1mV).

3. Burden on PD is increased during compliance test with high current at short cable by ~1.6% with 2mV instead of 1mV. This 1.6% can be used by PD diodes at high current instead of PSE that don't need it.

4. At low current it affects MPS unbalance at short cable when Ideal diode is used. It doesn't create us problem with the proposed MPS method however for future best spec, if we will ever need low P2P_unb with Ideal diode bridge we can't go back and reduce PSE Vdiff to lower value. So it is better to kill potential problem when possible and not create new ones in the future.

5. This is all about optimizing the spec, as for who will get higher Vdiff budget at high current.

See attached Updated PSE Vdiff for 802.3bt D0.4, darshan_02_0515.pdf for details.

SuggestedRemedy

To Reduce PSE Vdiff in Table 33-11 to 1mV.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Would like to hear from system vendors (switch manufacturers) on this topic.

Cl **33** *SC* **33.2.7** *P* **54** *L* **12** # 138

Darshan, Yair Microsemi

Comment Type **ER** *Comment Status* **A** *PSE Unbalance*

Table 33-11 item 4a:
We need to remeber that Icont-2P-unb for extended power will be higher than what what specified in Table 33-11 item 4. It will be adressed in seperate work and will required two new row in Table 33-11 to defined the maximum Icont-2P_Ufor extended power.

In Extended power, Ppd at short cable will be higher than 51W (may be close to Ptype_min) and also the same case with Type 4.

We will need separate requirements for PD that want to use extended power were the burden will be on PD to limit P2P_Iunb and Ipeak PD_Peak power so total effect on current will be cost effective. This need more work.
At worst case we need to set Pclass_PD=Pclass(PSE) which I did already few month ago and waiting to finish first the typical use cases.

We have the results for extended power with the same system unbalance parameters used for the typical use cases:
Type 3: Icont-2P=600mA, Icont-2P_unb=Icable=773mA
Type 4: Icont-2P=865mA, Icont-2P_unb=Icable=1087mA.
This will need to be specified to allow transformer design at worst case condition after some new spec requirement for PD in order to reduce this numbers.
TIA will have to tell us regarding temperature rise if total 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 the other pair has the rest, if they expect increase in temperature rise. Based on mathematical work that I did, I expect that it will not affect temperature rise over the cable.

SuggestedRemedy

Add additirial note below Table 33-11 as follows:
[Editorial note: Icont-2P and Ipeak_2P need to be adressed for Extended power case were Pclass_PD is very close to Pclass. It will result with higher currents on the pair with minimum resistance but will not change the total 4P current. For the above parameters in extended power, we will have to add two new rows that will specify maximum current at this case. Total PSE power will not change]

Response *Response Status* **C**

ACCEPT.

Cl **33** *SC* **33.2.7** *P* **54** *L* **33** # 31

Darshan, Yair Microsemi

Comment Type **T** *Comment Status* **A** *PSE Power*

In Table 33-11 item 10 (TLIM), there is a missing reference at the additional information column.
In addition to 33.2.7.7, there are additional clauses that are relevant for TLIM such as 33.2.7.1 which defined behavior of power removal when pair-set voltage no longer meets Vport_PSE-2P spec.

SuggestedRemedy

Change additional information column from "See 33.2.7.7"

To:
See 33.2.7.7 and 33.2.7.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add following text to 33.2.7.7

A PSE in the POWER_ON state may remove power from a pair-set without regard to TLIM when the pair-set voltage no longer meets the Vport_PSE-2P specification.

Cl **33** *SC* **33.2.7** *P* **54** *L* **36** # 70

Schindler, Fred Seen Simply

Comment Type **TR** *Comment Status* **A** *PSE Power*

This parameter applies to all Types. So does parameter items 13, 14, 15,16, 22, and 24. See related comment on item 11.

SuggestedRemedy

List 1,2,3,4 for valid Types in the above items.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Item 11, 14, 15, and 16 should have 1,2,3,4 listed for valid Types.

Item 13, 22, and 24 left as is for now.

Editor to change boxes in table from "1,2,3,4" to "All"

Cl **33** *SC* **33.2.7** *P* **54** *L* **36** # 74

Schindler, Fred — Seen Simply

Comment Type **TR** *Comment Status* **A** *Pres Class*

Pcon is the average power of the PI. This may be equal to Pclass or it may be equal to the combined Pclass of each pair-set for dual-signature PDs. This applies to all Types.

SuggestedRemedy

Reference the section that covers these exceptions. List all Types.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add Editor's note to section 33.2.7.10:

"Effects of single signature and dual signature PDs to be considered".

Cl **33** *SC* **33.2.7** *P* **54** *L* **9** # 101

Yseboodt, Lennart — Philips

Comment Type **TR** *Comment Status* **A** *Pres Class*

Per Table 33-11: Type 3,4 PSE must deliver 0.5*Pclass / Vport_PSE-2P.
In case the the PSE power over 2P then Icon-2P is off by factor 2.

SuggestedRemedy

Split Type 3,4 up into Type 3,4 in 2P mode and Type 3,4 in 4P mode.
The 2P mode: Icon-2p(min) = Pclass / VPort_PSE-2P
The 4P mode: Icon-2p(min) = 0.5*Pclass / VPort_PSE-2P

Response *Response Status* **C**

ACCEPT.

Cl **33** *SC* **33.2.7** *P* **55** *L* # 18

Darshan, Yair — Microsemi

Comment Type **T** *Comment Status* **A** *Pres MPS*

DC MPS current Table 33-11 item 17 and 33.2.9.1.2.

Table 33-11 item 17 do not cover Ihold range for all PSE - PD class and Type combinations in the presensence of system pair to pair unbalance and/or P2P balanced conditions and for single and dual signature PDs.
Many of the PSE=PD combinations will not work with the current Ihold range specified for Type 1 and Type 2 PSEs.

There is a need to set two different sets of Ihold range for measuring total Ihold current over 4 pairs or over 2pairs in order to allow different MPS detection schemes and reduce unbalace requirements on PD as much as possible.

The proposed solution in darshan_01_0515.pdf allows the following with cost effective way:
-Support current Type 1,2 PDs and new Type 3 and 4 PDs.
-No requirements for MPS current unbalance for Type 1, 2, 3 class 0-8 PDs connected to PSE Type 3 and 4 PSEs.
-PSE with flexible MPS detection implementations to cover different PSE

The above proposal offer:
-Simple PD spec.
-Simple test setup.
-Simple PSE MPS detection implementation.

See DC Disconnect PSE and PD requirements baseline proposal presentation attched.

SuggestedRemedy

See proposal and baseline text in the attached presenttaion darshan_01_0515.pdf

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Adopt darshan_01_0515_Rev010.pdf (minus title slide) as baseline text.

Cl **33** *SC* **33.2.7** *P* **55** *L* **26** # 19

Darshan, Yair Microsemi

Comment Type **T** *Comment Status* **A** *PSE Unbalance*

Table 33-11 item Item 20, Iunb_ptp:
This parameter is redundant for PSE specification after PSE specifications was concluded on March meeting with the new items:
Table 33-11 item 4a: Icon_2P-unb and clause 33.2.7.4a.
It may be used in PD spec Table 33-18 but is not needed for PSE spec.

SuggestedRemedy

Option 1:
a) Remove Iunb_p2p from Table 33-11 item 20. OR

b) Move this parameter to Table 33-18 new item 14, with the following details:
Parameter: Pair to Pair current unbalance of pairs with the same polarity.
Symbol: Iunb_ptp
Unit: %
Value max: TBD.
Additional information:
See 33.2.7.10.
Add sub-claues 33.2.7.10:
Iunb_ptp=(I1-I2)/(I1+I2).
I1, I2 are the pairs current of the same polarity.
I1 and I2 are measured at the maximum operating PD class power for class TBD1 to Class TBD2.
Editor note: To complete the PD PI Pair to Pair Unbalance requirements and add it to this clause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove Iunb_p2p.

Cl **33** *SC* **33.2.7** *P* **55** *L* **40** # 62

Schindler, Fred Seen Simply

Comment Type **ER** *Comment Status* **A** *PSE Unbalance*

Define variable a.

SuggestedRemedy

Define variable a.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Alpha is the unbalance factor between the pair sets. It should be noted somewhere.

OBE by comment # 30

EZ

Cl **33** *SC* **33.2.7** *P* **55** *L* **41** # 29

Darshan, Yair Microsemi

Comment Type **E** *Comment Status* **A** *PSE Unbalance*

Missing full stop at the end of Note 1.

SuggestedRemedy

Insert full stop at the end of Note 1 text.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.7** *P* **55** *L* **41** # 30

Darshan, Yair Microsemi

Comment Type **T** *Comment Status* **A** *PSE Unbalance*

The parameter "a" is not explained in Note 1.
To define "a" and explain it.

SuggestedRemedy

a=The effect of the system end to end pair to pair resistance/current unbalance that is not specified in this standard explicitly.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.7.11** *P* **61** *L* **35** # 64

Schindler, Fred — Seen Simply

Comment Type **ER** *Comment Status* **A** *PSE Unbalance*

The senetence applies to Types 2,3 and 4.

SuggestedRemedy

Type 2, Type 3, and Type 4 Endpoint PSEs shall meet the requirements of 25.4.5 in the presence of (Iunb / 2).

Response *Response Status* **C**

ACCEPT.

Cl **33** *SC* **33.2.7.2** *P* **55** *L* **25** # 7

Bennett, Ken — Sifos Technologies, In

Comment Type **ER** *Comment Status* **A** *PSE Unbalance*

Table 33-11, Item 20. The specification for Iunb_ptp has been superceeded by item 4.1 and section 33.2.7.4a.

SuggestedRemedy

Remove the Iunb_ptp section from item 20.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 19

Cl **33** *SC* **33.2.7.4** *P* **56** *L* **34** # 20

Darshan, Yair — Microsemi

Comment Type **T** *Comment Status* **A** *Pres Unbalance*

Equation 33-4 parameters need some updates:
1. PPEAK_pd_2P need to be defined as 0.5*Pclass for classes 5 to 8 (It is half the total power).
2. K is different number for Type 3 and 4 systems.
3. K is derived by simulation of E2EP2PIunb with the same data base we used to define Icon-2P_Iunb but now PD power is Ppeak PD which is defined by Equation 33-12.
4. See derivation of values for K in darashan_03_0515.pdf

SuggestedRemedy

(a) Change from:
PPeak_PD-2P is the peak power a PD may draw per pair-set for its class; see Table 33–18.

To:
PPeak_PD-2P is the peak power a PD may draw per pair-set for its class; see Table 33–18. For classes 5-8, PPeak_PD-2P=0.5*Pclass_PD.

(b) Change from:
K is the related to “system end to end pair-to-pair unbalance effect”.
K=0 for two pair systems and K=TBD for four pair system.

To:
K was set at the system operating point were maximum Ipeak-2P is obtained due to “system end to end pair-to-pair unbalance effect”.
K=0 for two pair systems (Type 1 and 2).
K=0.3 for Type 3 systems.
K=0.09 for Type 4 systems.
Note: Meeting Ipeak_2P maximum value is guranteed by the PD by meeting PD PI Pair To Pair Unbalance requirements in clause TBD and by Peak_PD-2P defined by Equation 33-12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Adopt changes shown on page 4 in darshan_03_0515_REV008.pdf

Cl **33** *SC* **33.2.7.4** *P* **56** *L* **34** # 8

Bennett, Ken — Sifos Technologies, In

Comment Type **TR** *Comment Status* **A** *Pres Unbalance*

33.2.7.4 is the additional information for item 4 in table 33-11 (Icon-2P). The Icon_2P equation (0.5*PClass/Vport_2P) for type 3 and 4 in table 33-11 is based upon a perfectly balanced connection, and does not include the additional pair-set current that would be necessary to maintain PClass in an unbalanced connection (due to E2ERunb).

The additional information (Section 33.2.7.4) currently only addresses Ipeak-2P, and it does consider an unbalanced connection, using the (1+K) factor. However, Ipeak-2P described Equation 33-4 includes pair-set values for the PSE and PD, and it is unclear whether the PD pair-set value in 33-4 will also include the K factor (which would result in including K twice).

SuggestedRemedy

Change section 33.2.7.4 as follows:

33.2.7.4 Continuous output current capability in the POWER_ON state

Icon-2P in table 33-11 is specified for a balanced system. When end-to-end unbalance is present, the PSE minimum requirement is:

Icon-2P_unb = (1+K) x (Icon-2P)33-4

Where K is the factor due to the "system end to end pair-to-pair unbalance effect". K=0 for two pair systems and K=TBD for four pair systems.

In addition to ICon-2P_unb, the PSE shall support the following AC current waveform parameters, while within the operating voltage range of VPort_PSE:

IPeak-2P minimum for TCUT minimum and 5 % duty cycle:

[Editorial note: the equation below is unformatted. The only difference relative to Equation 33-4 in 802.3at is the "N" factor]

Ipeak-2P= N×{(Vpse-[SQR_ROOT[Vpse^2-4N(Rchan)(Ppeak_PD)])/(2N(Rchan))} 33-5

Where:
Ipeak-2P: is the PSE minimum peak current requirement per pair-set in a balanced system
VPSE: is the PSE voltage at the PSE PI as defined in 33.1.4
RChan: is the channel loop resistance as defined in 33.1.4; this parameter has a worst-case value of RCh, defined in Table 33-1
N: N = 1 for 2-pair power, N = 0.5 for 4-pair power
PPeak_PD: is the peak power a PD may draw for its class; see Table 33-18.

Ipeak-2P is specified for a balanced system. When end-to-end unbalance is present, minimum PSE pairset requirement is:

Ipeak-2P_unb = (1+K) x (Ipeak-2P)33-6

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 20

Cl **33** *SC* **33.2.7.4** *P* **56** *L* **43** # 3

Maguire, Valerie — Siemon

Comment Type **T** *Comment Status* **A** *PSE Power*

Clarify type of unbalance (i.e. resistance or current)

SuggestedRemedy

Replace "pair-to-pair unbalance effect" with "pair-to-pair resistance unbalance effect"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 20

Cl **33** *SC* **33.2.7.4a** *P* **57** *L* **10** # 63

Schindler, Fred — Seen Simply

Comment Type **ER** *Comment Status* **A** *Editorial*

We should determine if the IEEE has rules for variable subscripts. Sometimes we use lower case, upper case, or a combination if cases.

SuggestedRemedy

We should review the conventions and adapt variables to fit them.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Kousi to consult style guide and clean up draft where needed.

Cl **33** *SC* **33.2.7.4a** *P* **57** *L* **17** # 72

Schindler, Fred — Seen Simply

Comment Type **E** *Comment Status* **A** *PSE Unbalance*

This section only applies to Types 3 and 4.

SuggestedRemedy

Recommend calling Types out that this section applies to near the beginning of this section to reduce text that a reader must parse to discover what is covered.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add following text to beginning of 33.2.7.4a:

"Type 3 and Type 4 PSEs operating over 4 pairs are subject to unblance requirements in this section."

Cl **33** *SC* **33.2.7.7** *P* **59** *L* **19** # 90

Yseboodt, Lennart — Philips

Comment Type **E** *Comment Status* **A** *PSE Power*

"A PSE may remove power from a pair-set of a PI if the *the* pair-set current..."

SuggestedRemedy

"A PSE may remove power from a pair-set of a PI if the pair-set current..."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.7.7** *P* **59** *L* **19-2** # 123

Yseboodt, Lennart — Philips

Comment Type **T** *Comment Status* **A** *PSE Power*

"A PSE may remove power from a pair-set of a PI if the pair-set current..."

In case a PD is drawing too much current, this can double the shutdown time.
First one pairset exceeds, and gets disconnected after Tlim.
Then the full current of the PD gets transferred to the other pairset, which also goes down after Tlim. Total shutdown time is doubled.

Some textual clarifications added + distinction between single and dual signature PD.

SuggestedRemedy

"A PSE may remove power from both pair-sets of a PI if any pair-set current meets or exceeds the 'PSE lowerbound template'
in Figure 33-14, when connected to a single signature PD.
A PSE may remove power from a pair-set of a PI if its pair-set current meets or exceeds the 'PSE lowerbound template'
in Figure 33-14, when connected to a dual signature PD.
Power shall be removed from both pair-sets of a PI before any pair-set current exceeds the 'PSE upperbound template' in Figure 33-14,
when connected to a single signature PD.
Power shall be removed from a pair-set of a PI before its pair-set current exceeds the 'PSE upperbound template' in Figure 33-14,
when connected to a dual signature PD."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

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 upperbound 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 exceeds the "PSE upperbound template".

Power may be removed from both pair sets any time power is removed from one pair set.

Cl **33** *SC* **33.2.8** *P* **61** *L* **52** # 102

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PSE Power*

"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."
This is open for misinterpretation: the power 'requested by the PD' can be higher than the maximum power of
the PDs class due to power demotion.

SuggestedRemedy

A PSE does not initiate power provision to a link if the PSE is unable to provide the maximum power level
of the PDs assigned class.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add editor's note: "Text needs to be added to mutual ID section to assign PD class during power demotion."

Cl **33** *SC* **33.2.9.1.1** *P* **62** *L* **28** # 71

Schindler, Fred Seen Simply

Comment Type **TR** *Comment Status* **A** *PSE MPS*

The Task Force should determine whether new Types may use AC MPS.

If permited several parameters may need to be recheck to ensure interoperability. For example, the minimum VPSE may need to drop from 52V to a lower value.

SuggestedRemedy

Determine if the Task Force wants to have new Types use AC MPS and adjust text accordingly.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accepting this comment results in no changes to the text.

At least one member of the group wants AC disconnect.

Add editor's note: "Yair to review AC MPS for 4-Pair." in AC MPS section.

Cl **33** *SC* **33.2.9.1.1** *P* **62** *L* **30-3** # 130

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PSE MPS*

Reference to Table 33-1 wrong.

SuggestedRemedy

Replace Table 33-1 by Table 33-12.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.9.1.1** *P* **63** *L* **1** # 82

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PSE MPS*

The Table titled "PSE PI parameters for AC disconnect-detection functions" is incorrectly numbered Table 33-1.

SuggestedRemedy

Replace "Table 33-1" by Table "33-12".

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.9.1.2** *P* **63** *L* **2** # 34

Darshan, Yair Microsemi

Comment Type **ER** *Comment Status* **A** *PSE MPS*

Duplicate table 33-1 name.
We have Table 33-1 in page 22.
I belive it is 33-12 (AC disconnect parameters)

SuggestedRemedy

Change to 33-12.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.2.9.1.2** *P* **64** *L* **18** # 131

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PSE MPS*

Reference to Table 33-1 wrong.

SuggestedRemedy

Replace Table 33-1 by Table 33-12.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.3.1** *P* **64** *L* **38** # 105

Yseboodt, Lennart Philips

Comment Type **TR** *Comment Status* **A** *PD PI*

"The PD shall be capable of accepting power on either or both of two sets of PI conductors."
This statement is valid for Type 1 & Type 2.
Type 3 and 4 PDs are required to support 4P power.
This text should be in line with Table 33-13a and we should use the term pair-set.

SuggestedRemedy

Replace line by:
Type 1 and Type 2 PDs shall be capable of accepting power on either pair-set and may accept power on both pair-sets.
Type 3 and Type 4 PDs shall be capable of accepting power on either pair-set and shall be capable of accepting power on both pair-sets.

Response *Response Status* **C**

ACCEPT.

Cl **33** *SC* **33.3.1** *P* **64** *L* **38** # 104

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PD PI*

The term pair-set is only defined for the PSE, but also used and valid for a PD.

SuggestedRemedy

Insert "A pair-set in a PD refers to either of the conductor sets." after "The two conductor sets are named Mode A and Mode B."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Editor to add definition of "pair set" to 1.4. Draft should be consistent with the use of "Pair set" without a hyphen.

Add sentence to 33.1
"This clause uses several terms defined in clause 1.4."

Remove sentence defining pair set on page 31 line 1.

We agreed in the last comment cycle to add the definition of pair-set to section clause 1.4.

Section 1.4 was not updated accordinly in D0.4.

We accepted “pair set” and its definition as referring to either of the two valid 4-wire connections as listed in 33.2.3.

Cl **33** *SC* **33.3.1** *P* **64** *L* **53** # 142

Jones, Chad Cisco

Comment Type **T** *Comment Status* **D** *PD PI*

Maintenance Request #1274 on behalf of George Zimmerman, CME Consulting/LTC

Text in the existing standard is ambiguous and is inconsistent with terminations and usage commonly found in Ethernet equipment. The intent is to require PDs to be able to withstand application of common-mode PoE voltage. Application of 57V DC voltages in across the pins corresponding to the two pairs twisted differentially to form a balanced pair of the link segment would run a DC current across the transformer windings commonly found in BASE-T Ethernet equipment and burn them out.

SuggestedRemedy

Change: The PD shall withstand any voltage from 0 V to 57 V at the PI indefinitely without permanent damage.
To:The PD shall withstand any common-mode voltage from 0 V to 57 V applied to any two sets of two pins at the PI indefinitely without permanent damage. The two pins in each set shall correspond to the balanced twisted wire pairs of the connected link segment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

This should be clarified. Can we use the definition of pair-set make this simpler?

Cl **33** *SC* **33.3.1** *P* **65** *L* **6** # 97

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PD PI*

In Table 33-13, conductor 2, mistyped Positive V_p

SuggestedRemedy

Replace by "Positive V_PD"

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.3.2** *P* **65** *L* **-** # 109

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PD Types*

Table 33-13a lists the maximum PD power, but for Type 3 (51W) and Type 4 (71.3W) it does
not take extended power into account.

SuggestedRemedy

Possible solutions:
Replace power values with a "Highest Class" column (preferred).
That column would look like
PD Class
* 0-3
* 4
* 0-3
* 4 (line removed)
* 4-6
* 7-8
See replacement table suggestion in yseboodt_D04_Table_33-13a_v100.pdf

Response *Response Status* **C**

ACCEPT.

Adopt table referenced in suggested remedy.

Cl **33** *SC* **33.3.2** *P* **65** *L* **32** # 65

Schindler, Fred Seen Simply

Comment Type **ER** *Comment Status* **A** *PD Types*

Replace the Type 1 row, "May be" with "Allowed."

SuggestedRemedy

See above.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Possible OBE by comment # 109

make change if comment #109 is not resolved with a change to this text.

EZ

Cl **33** *SC* **33.3.2** *P* **65** *L* **33** # 106

Yseboodt, Lennart Philips

Comment Type **TR** *Comment Status* **A** *PD Types*

Table 33-13a, column DLL classification, Type 1 / 13W row, content = "May be".
Strange formulation, optional would be more apt.

SuggestedRemedy

Replace "May be" with "Optional".
See replacement table suggestion in yseboodt_D04_Table_33-13a_v100.pdf

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Possible OBE by comment # 109

make change if comment #109 is not resolved with a change to this text.

EZ

Cl **33** *SC* **33.3.2** *P* **65** *L* **37** # 107

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PD Types*

Table 33-13a, column DLL classification, Type 3 / 13W row, content = "Yes".
There is no reason for a Type 3 13W (Class 3 max) PD to have mandatory DLL support.

SuggestedRemedy

Replace "Yes" by "Optional" in the column "Data Link Layer Classification",
row "Type 3, 13W".
See replacement table suggestion in yseboodt_D04_Table_33-13a_v100.pdf

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 109

Cl **33** *SC* **33.3.2** *P* **65** *L* **49** # 41

Dwelley, David Linear Technology

Comment Type **T** *Comment Status* **A** *PD Types*

Table 33-13a, Note 2: "Needs 4-Pair Identification before enabling 4-pair power. See Section TBD for details."

Enabling 4-pair power is a PSE function, not a PD function.

SuggestedRemedy

Remove Note 2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Do comment 109 first.

Replace "Yes" in 4-pair Capable column with "Mandatory" for all Type 3 or Type 4 rows.

Replace "Allowed" in 4-pair Capable column with "Optional" for all Type 1 and Type 2 rows.

Remove note 2. Need to add 4PID information to PSE section.

Cl **33** *SC* **33.3.2** *P* **66** *L* **10** # 134

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PD Classification*

"Type 3 and Type 4 PDs operating with a max 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, or 7."

Class 8 missing.

SuggestedRemedy

"Type 3 and Type 4 PDs operating with a max 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."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.3.2** *P* **66** *L* **12** # 98

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PD Power*

Line 9 says: The maximum power a PD expects to draw from a PSE is P Class_PD max as defined in Table 33-18.
Purpose of this statement is unclear. If the reference point is the PSE, then the power is Pclass.
If the reference point is the PD PI, the it is Pclass_pd for class 0-5 & 7 and Pclass for classes 6 and 8.

SuggestedRemedy

Remove altogether or replace by:
The maximum power a PD expects to draw from a PSE is P_Class at the PSE PI as defined in Equation 33-3 and Table 33-7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove this sentence. This information is covered in Table 33-18 and section 33.3.7.2.

Cl **33** *SC* **33.3.2** *P* **66** *L* **4-10** # 108

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PD Types*

"Type 3 PDs operating up to a max power draw corresponding to Class 3 or less implement both 1-Event
Physical Layer Classification and Data Link Layer classification (see 33.6) and advertise a 1-Event class
signature of 0,1,2, or 3."

There is no reason for a Type 3 13W (Class 3 max) PD to require DLL support.

SuggestedRemedy

"Type 3 PDs operating up to a max power draw corresponding to Class 3 or less implement a minimum of
1-Event Physical Layer classification and advertise a 1-Event class signature of 0, 1, 2, or 3.

Response *Response Status* **C**

ACCEPT.

Agree. Class 0-3 PDs should not be required to support LLDP.

Cl **33** *SC* **33.3.2** *P* **66** *L* **4-8** # 132

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PD Types*

'Max power' should be 'Maximum power' (two instances)

SuggestedRemedy

Replace 'Max power' by 'Maximum power'

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.3.3.3** *P* **68** *L* **16-3** # 91

Yseboodt, Lennart Philips

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

Variable is renamed from pse_dll_power_type to pse_dll_power_level,
but it describes the type of the PSE connected.
pse_dll_power_type is a more apt name.

SuggestedRemedy

Rename pse_dll_power_level to pse_dll_power_type or to pse_dll_type

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Leave name as pse_dll_power_level

Change description to: "A control variable output by the PD power control state diagram (Figure 33-3) that indicates the power level of the PSE by which the PD is being powered.

Values: 1: The PSE is delivering class 3 power or less.
2: The PSE is delivering class 4 power.
3: The PSE is delivering class 5 or class 6 power.
4: The PSE is delivering class 7 or class 8 power.

Cl **33** *SC* **33.3.3.3** *P* **68** *L* **17** # 51

Beia, Christian STMicroelectronics

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

The variable name change from pse_dll_power_type to pse_dll_power_type is unnecessary and does not correspond to the name in the state diagram on page 111 (clause 33.6.3.5)

SuggestedRemedy

restore the variable name "pse_dll_power_type" instead of "pse_dll_power_level"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 91.

Cl **33** *SC* **33.3.3.3** *P* **68** *L* **34** # 136

Yseboodt, Lennart Philips

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

"4: The PSE is delivering the PD's requested power or Class 7 power, whichever is less."

Should be Class 8.

SuggestedRemedy

"4: The PSE is delivering the PD's requested power or Class 8 power, whichever is less."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.3.3.3** *P* **68** *L* **34** # 55

Beia, Christian STMicroelectronics

Comment Type **TR** *Comment Status* **A** *PD State Diagram*

pse_power_level value #4 in pse_power_level variable description should indicate the maximum power supplied by a Type4 PSE, which is Class 8.

SuggestedRemedy

Replace:
4: The PSE is delivering the PD's requested power or Class 7 power, whichever is less.
With:
4: The PSE is delivering the PD's requested power or Class 8 power, whichever is less.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment #136

EZ

Cl **33** *SC* **33.3.3.4a** *P* **69** *L* **12-1** # 94

Yseboodt, Lennart Philips

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

"Type 3 MPS: A control variable that indicates to the PD the Type of PSE to which it is connected.
This variable is used to indicate which MPS timing requirements (see 33.3.8) the PD should use.
Values:
TRUE: The PSE uses Type 3 MPS requirements.
FALSE: The PSE uses Type 1 MPS requirements."

Bad variable name. Type description incomplete.

SuggestedRemedy

"short_mps: A control variable that indicates to the PD the Type of PSE to which it is connected.
This variable is used to indicate which MPS timing requirements (see 33.3.8) the PD should use.
Values:
TRUE: The PSE uses Type 3, 4 MPS requirements.
FALSE: The PSE uses Type 1, 2 MPS requirements."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"short_mps: A control variable that indicates to the PD the Type of PSE to which it is connected.
This variable is used to indicate which MPS timing requirements (see 33.3.8) the PD should use.
Values:
TRUE: The PSE uses Type 3, 4 MPS timing requirements.
FALSE: The PSE uses Type 1, 2 MPS timing requirements."

Cl **33** *SC* **33.3.3.4a** *P* **69** *L* **8** # 53

Beia, Christian STMicroelectronics

Comment Type **ER** *Comment Status* **A** *PD State Diagram*

Function do_class_timing: the classification event timing requirements to evaluate PD MPS timings are not defined in Table 33-7. Actually they should be defined in Table 33-17 (but they aren't - another comment is addressing this)

SuggestedRemedy

Change text:
The classification event timing requirements are defined in Table 33–7
With:
The classification event timing requirements are defined in Table 33–17

Response *Response Status* **C**

ACCEPT.

Comment 56 added appropriate row.

Cl **33** *SC* **33.3.3.4a** *P* **69** *L* **8** # 93

Yseboodt, Lennart Philips

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

Bad reference to Table 33-7

SuggestedRemedy

Table 33-7 => Table 33-10

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment #56.

EZ

Cl **33** *SC* **33.3.5.1** *P* **74** *L* **14** # 135

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PD Classification*

"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, 5, 6 , or 7 respond to 1-Event classification with a Class 4 signature.

Class 8 missing.

SuggestedRemedy

"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, 5, 6, 7, or 8 respond to 1-Event classification with a Class 4 signature."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"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 or higher respond to 1-Event classification with a Class 4 signature."

EZ

Cl **33** *SC* **33.3.5.2** *P* **75** *L* **21** # 42

Dwelley, David Linear Technology

Comment Type **TR** *Comment Status* **R** *PD Classification*

Table 33-16a: class mapping will cause LT legacy PDs to motorboat. Reversing classes 7 and 8 looks weird but will improve interoperability in the field.

SuggestedRemedy

Reverse class_sig_B mappings for classes 7 and 8:
class 7: class_sig_B: 3
class 8: class_sig_B: 2

Response *Response Status* **C**

REJECT.

Cl **33** *SC* **33.3.5.2** *P* **75** *L* **33** # 56

Beia, Christian STMicroelectronics

Comment Type **TR** *Comment Status* **A** *PD Classification*

Table 33-17.
Among the PD Classification electrical requirements, the long first class event definition, used to determine the PSE MPS capability, is missing. The PD TLCF definition is necessary because it is mentioned in table 33-19a.
The Auto class signature timing in 33-17a (TACS) cannot be used, as it specifically refers to the Autoclass feature and not to MPS.
However the timing requirements are the same for both (in the range of Tpdc_max to TLCF_min as specified in table 33-10), with some grey area margin.
To keep PD design simple (5% clock accuracy) a grey area margin of 1ms is suggested.

SuggestedRemedy

Add a line in Table 33-17 for:
Item: "7"; parameter: "Long first class event timing"; Symbol: "TLCF"; Units:"ms"; Min: "76ms"; Max: "84ms"; Additional information: "See 33.3.8"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Added as much range as possible while still keeping some margin. Added PD to the symbol name to differentiate from the PSE variable.

Add a line in Table 33-17 for:
Item: "7"; parameter: "Long first class event timing"; Symbol: "TLCF_PD"; Units:"ms"; Min: "75.5ms"; Max: "84.5ms"; Additional information: "See 33.3.8"

Cl **33** *SC* **33.3.5.3** *P* **76** *L* **20** # 66

Schindler, Fred Seen Simply

Comment Type **ER** *Comment Status* **A** *PSE Classification*

Replace " the PD to which it is connected." with

SuggestedRemedy

" the connected PD."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.3.5.3** *P* **76** *L* **29** # 73

Schindler, Fred — Seen Simply

Comment Type **TR** *Comment Status* **A** *Pres Autoclass*

Some of the requirements for Autoclass need to be covered.

SuggestedRemedy

Add requirements for the time over which the measurement is averaged. Suggest a 1-second sliding window is used that is valid within TAUTO_PD1 to TAUTO_PD2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Adopt baseline text shown in yseboodt_0515_Autoclass_baseline_part2_v150.pdf

Add editor's note: "Measurment method and PSE margin still to be addressed" at end of 33.2.6

Cl **33** *SC* **33.3.5.3** *P* **76** *L* **37** # 54

Beia, Christian — STMicroelectronics

Comment Type **TR** *Comment Status* **A** *PD Classification*

Table 33-17.
The autoclass signature timing specification TACS introduces an unnecessary design burden to the PD, since +-3ms window over a 80ms timer requires a clock accuracy better than +-4%.
This is the only parameter requiring such a high accuracy of PD internal clock.
Since this PD behavior is a response to a PSE long finger, tentatively specified in table 33-11 as TLCF=85ms min, the requirement for TACS can be relaxed still maintaining a good margin (grey area) on PSE timings (1ms after Tpdc_max and before TLCF_min)

SuggestedRemedy

Change TACS min value to 76ms and max value to 84ms.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change TACS min value to 75.5ms and max value to 84.5ms.

Cl **33** *SC* **33.3.7** *P* **77** *L* **27-3** # 103

Yseboodt, Lennart — Philips

Comment Type **T** *Comment Status* **A** *Pres PD Voltage*

The minimum input voltage for a PD VPort_PD-2P(min) is based on the highest power class of the Type.
PDs in Class 1,2,5 and 7 will never see a voltage as low as currently specified.
Hence their design calls for an input voltage operating window that is unnecessarily wide.
Also, the PD Type alone does not determine the minimum input voltage: eg. a Type 3 PD/15W can still
get a 37.0V input voltage from a Type 1 PSE.

SuggestedRemedy

Base minimum PD voltage on PD assigned class rather than Type.
VPort_PD-2P(min) =
Class 1: 42.2V
Class 2: 40.8V
Class 3: 37.0V
Class 4: 42.5V
Class 5: 44.4V
Class 6: 42.5V
Class 7: 43.0V
Class 8: 41.2V

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Base minimum PD voltage on PD assigned class rather than Type.
VPort_PD-2P(min) =
Class 0: 37.0V
Class 1: 42.2V
Class 2: 40.8V
Class 3: 37.0V
Class 4: 42.5V
Class 5: 44.4V
Class 6: 42.5V
Class 7: 43.0V
Class 8: 41.2V

Cl **33** *SC* **33.3.7** *P* **77** *L* **29** # 23

Darshan, Yair Microsemi

Comment Type **E** *Comment Status* **A** *PD Power*

Typo.
Redundant 33.3.7.1 in additional informatione columnn of Table 33-18 item 1.

SuggestedRemedy

Change from 33.3.7.133.3.7.1 to 33.3.7.1.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.3.7** *P* **78** *L* **15** # 24

Darshan, Yair Microsemi

Comment Type **T** *Comment Status* **A** *PD Power*

Table 33-18 item 4: Input average power for class 5 to 8 TBDs can now be calculated and inserted instead of TBDs.
See darshan_03_0515.pdf for details

The equation to be used is:
Pclass_PD=[W]=Pclass - 6.25*(Pclass/Vpse_min)^2=:
Pclass_PD=39.94W for Pclass=45W (Class 5).
Pclass_PD=51W for Pclass=60W (Clas 6).
class_PD=62W for Pclass=75W (Clas 7).

SuggestedRemedy

Update TBDs in item 4 Table 33-18 with:

Pclass_PD=39.94W for Class 5.
Pclass_PD=51W for Class 6.
Pclass_PD=62W for ClasS 7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Correcting for typos and signifcant digits, and rounding class 5 slightly up to 40.

Update TBDs in item 4 Table 33-18 with:

Pclass_PD=40.0W for Class 5.
Pclass_PD=51.0W for Class 6.
Pclass_PD=62.0W for Class 7.

Add editor's note: "Class 5 power rounded up from 39.94W to 40W."

Cl **33** *SC* **33.3.7** *P* **78** *L* **15-1** # 100

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PD Power*

PD Powers can now be calculated from Pclass.

SuggestedRemedy

Class 5: 39.9W Pclass_pd(max)
Class 6: 51.0W Pclass_pd(max)
Class 7: 62.0W Pclass_pd(max) (note: rounded up by 1.6mW)
Class 8: 71.3W Pclass_pd(max) (note: rounded up by 22.3mW)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 24.

Cl **33** *SC* **33.3.7** *P* **78** *L* **37** # 25

Darshan, Yair Microsemi

Comment Type **T** *Comment Status* **A** *Pres PD Power*

Table 33-18 item 5 and 6.
Peak operating power for class 5 and 6. can be 1.11*Pclass_PD as well due to the fact that class 6 is 2xType 2 power and it is higher than class 5.

Class from analysis done in darshan_03_0515.pdf, class 7 and 8 may also use equation 33-12 as is.

SuggestedRemedy

Replace TBDs in Table 33-18 item 7 for class 5 -8 with 1.11*Pclass_PD.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Adopt changes shown as option 2 on page 3 of darshan_03_0515_REV008.pdf

Cl **33** *SC* **33.3.7** *P* **78** *L* **45-4** # 126

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PD Power*

Item 11, Von/Voff only listed for Type 1 and 2.

SuggestedRemedy

Add extra lines for Type 3 and 4 with TBD.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.3.7** *P* **78** *L* **45-4** # 125

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PD Power*

Items 8 and 9, Input current transient and PI capacitance are only listed for Type 1 and 2.

SuggestedRemedy

Add extra lines for Type 3 and 4 with TBD.

Response *Response Status* **C**

ACCEPT.

Cl **33** *SC* **33.3.7** *P* **79** *L* **15** # 26

Darshan, Yair Microsemi

Comment Type **T** *Comment Status* **A** *PD Power*

1)Table 33-18 item 11 Von and Voff:
PD Type need to be 1,2,3,4.
2) Typo in additional information.

SuggestedRemedy

1) Change PD Type from 1,2, to 1,2,3,4 for both Von and Voff.
2) Change 33.3.7.133.3.7.1 to 33.3.7.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Proposal "1)" is OBE by comment # 126.

accept for proposal "2)"

Cl **33** *SC* **33.3.7.3** *P* **80** *L* **46** # 27

Darshan, Yair Microsemi

Comment Type **T** *Comment Status* **A** *PD Power*

It is not clear from Table 33-18 item 9 that the Cport_min=5uF is per pair set.

SuggestedRemedy

Add the following text at the end of 33.3.7.3:
Cport_min is the the minimum value of Cport seen by an attached PSE on two twisted pairs.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Copy item 9 to item 9a in table 33-18.

Make name Cport_2p
Make PD Type 3,4

Cl **33** *SC* **33.3.8** *P* **84** *L* **24** # 95

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **D** *PD MPS*

"The MPS is made up of current draw equal to or above Iport_MPS for a ..."

SuggestedRemedy

"The MPS consists of current draw equal to or above Iport_MPS for a ..."

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

This is existing langauge and I believe it is clear enough.

Cl **33** *SC* **33.3.8** *P* **84** *L* **33** # 57

Schindler, Fred Seen Simply

Comment Type **E** *Comment Status* **A** *PD MPS*

Strike "In addition," to make the sentence more consise and powerful.

SuggestedRemedy

See above.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.3.8** *P* **84** *L* **40** # 124

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *PD MPS*

Reference to Zac2 in Table 33-1.
This should be Table 33-12, but note, Table 33-12 is erroneously listed as Table 33-1.
See other comment on this.

SuggestedRemedy

Change reference to Table 33-12.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.3.8** *P* **85** *L* **13** # 35

Darshan, Yair Microsemi

Comment Type **TR** *Comment Status* **A** *Pres MPS*

The Iport_MPS conditions for Type 1-4 are not specified.

SuggestedRemedy

In Table 33-18 item 1 for PD Type 1-4:
Add to th econdition column:
for Single Signature PD and class 0-4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 18.

Cl **33** *SC* **33.3.8** *P* **85** *L* **1-4** # 96

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *PD MPS*

The note is only correct for PDs that draw Iport continuously.
PDs that make use of duty cycling will need to take measures also with smaller capacitors.
PDs that draw just Iport_mps with the minimum duty cycle (all types) also get in trouble with even the smallest allowed Cport.

SuggestedRemedy

Replace note by:
PDs may not be able to meet the I Port_MPS specification in Table 33-19 during the maximum allowed port
voltage droop (V Port_PSE max to V Port_PSE min with series resistance R Ch).
Such a PD should increase its I Port min or make other such provisions to meet the Maintain
Power Signature.

Response *Response Status* **C**

ACCEPT.

The note is informative and thus making it broader reaching is not a problem. I think it is a good idea for PD designers to consider the effect of PSE behavior on their PD.

However, the 180uF number seems to work and I have not heard any issues with it in implemenations that use pulsing.

Cl **33** *SC* **33.3.8** *P* **85** *L* **15** # 36

Dwelley, David Linear Technology

Comment Type **T** *Comment Status* **D** *PD MPS*

Type 3/4 MPS has become more complicated and the 22mA number is obsolete

SuggestedRemedy

Rewrite spec based on results of joint presentation in May

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Will hold comment until presentation(s) on this topic.

Cl **33** *SC* **33.3.8** *P* **85** *L* **15** # 28

Darshan, Yair Microsemi

Comment Type **TR** *Comment Status* **A** *Pres MPS*

Table 33-18 do not cover MPS input current requirements for PDs that are need to be supported by Type 3 and 4 PSEs under P2P current balanced and unbalanced conditionall.

SuggestedRemedy

Updated Table 33-18 item 1 per proposal attached in darashan_01_0515.pdf.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE by comment # 18.

Cl **33** *SC* **33.4.8** *P* **92** *L* **15** # 2

Maguire, Valerie Siemon

Comment Type **T** *Comment Status* **A** *AES*

Use terminology consistent with rest of draft.

SuggestedRemedy

Replace "channel unbalance currents" with "channel current unbalance"

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.4.9.1.2** *P* **96** *L* **33-3** # 127

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *AES*

"For 10GBASE-T operation, insertion loss for **Mispan** PSE devices shall meet the values determined by
Equation (33-19a) when measured **fro** the **trasmit** and receive pairs from 1 MHz to 500 MHz."

SuggestedRemedy

Mispan -> Midspan
fro -> from
trasmit -> transmit

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.4.9.1.3** *P* **96** *L* **50** # 129

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *AES*

Reference to Table 33-1 wrong.

SuggestedRemedy

Replace Table 33-1 by Table 33-20.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.4.9.1.3** *P* **97** *L* **1** # 128

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *AES*

Table "Connector return loss" should be numbered Table 33-20.

SuggestedRemedy

Replace Table 33-1 by Table 33-20.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.4.9.13** *P* **97** *L* **5** # 137

Shariff, Masood CommScope

Comment Type **T** *Comment Status* **R** *AES*

Connector RL is not correct for Category 5 connectors.

SuggestedRemedy

Use the following for the first row:

10/100/1000BASE-T	1 MHz <=f <= 31.5 MHz	30 dB
	20 MHz < f <= 100 MHz	20 - 20 log(f/100)

Response *Response Status* **C**

REJECT.

This should be submitted as a maintenance request.

Cl **33** *SC* **33.4.9.2.1** *P* **99** *L* **23** # 52

Beia, Christian STMicroelectronics

Comment Type **ER** *Comment Status* **A** *AES*

Figure 33-1.
The figures numbering on this page till the end of clause 33 is wrong, because it restarts from 33-1, while it should continue as 33-26.

SuggestedRemedy

Renumber Figure 33-1 on page 99 as 33-26; 33-2 on page 110 as 33-27; 33-3 on page 111 as 33-28.

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.6** *P* **104** *L* **24-2** # 79

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *DLL*

"Type 2 PDs that require more than 13.0 W support Data Link Layer classification (see 33.3.5).
Data Link Layer classification is optional for all other devices."

Last scentence needs to be adjusted for Type 3 and 4.

SuggestedRemedy

Replace text by:
"Type 2, 3 and 4 PDs that require more than 13.0 W support Data Link Layer classification (see 33.3.5).
Data Link Layer classification is optional for all other devices."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.6.2** *P* **104** *L* **41** # 80

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *DLL*

"*A* Type 2, 3, and 4 PSEs shall send an LLDPDU containing..."

SuggestedRemedy

"Type 2, 3, and 4 PSEs shall send an LLDPDU containing..."

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.6.3.2** *P* **105** *L* **35-4** # 76

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *Pres DLL*

PD_DLLMAX_VALUE is still TBD for Class 5 and up. Can now be filled out since PD powers are known.
Note: pd_max_power for class 8 is still TBD pending another comment.

SuggestedRemedy

PD_DLLMAX_VALUE =
pd_max_power 5 399
pd_max_power 6 510
pd_max_power 7 620
pd_max_power 8 TBD

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

PD_DLLMAX_VALUE =
pd_max_power 5 400
pd_max_power 6 510
pd_max_power 7 620
pd_max_power 8 TBD

Cl **33** *SC* **33.6.3.2** *P* **105** *L* **35-4** # 77

Yseboodt, Lennart Philips

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

For Type 4 the Type max power is 99.9W
LLDP is a way for the PD to request power beyond what L1 classification can deliver.
A PSE that sources 99.9W (@52V) will deliver 76.8W at the PD PI (6.25 ohm channel).

SuggestedRemedy

PD_DLLMAX_VALUE =
pd_max_power 8 768

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

No real PSE will be able to supply this power as some margin is needed in the power limit.

Cl **33** *SC* **33.6.3.2** *P* **105** *L* **42-5** # 78

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *Pres DLL*

PD_INITIAL_VALUE is still TBD for Class 5 and up. Can now be filled out since PD powers are known.

SuggestedRemedy

PD_DLLMAX_VALUE =
pd_max_power 5 <= 399
pd_max_power 6 <= 510
pd_max_power 7 <= 620
pd_max_power 8 <= 713

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

PD_DLLMAX_VALUE =
pd_max_power 5 <= 400
pd_max_power 6 <= 510
pd_max_power 7 <= 620
pd_max_power 8 <= 713

Cl **33** *SC* **33.6.3.2** *P* **106** *L* **13-1** # 122

Yseboodt, Lennart Philips

Comment Type **T** *Comment Status* **A** *Pres DLL*

PSE_INITIAL_VALUE is still TBD for Class 5 and up. Can now be filled out since PD powers are known.

SuggestedRemedy

PSE_INITIAL_VALUE =
mr_pd_class_detected 5 399
mr_pd_class_detected 6 510
mr_pd_class_detected 7 620
mr_pd_class_detected 8 713

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

PSE_INITIAL_VALUE =
mr_pd_class_detected 5 400
mr_pd_class_detected 6 510
mr_pd_class_detected 7 620
mr_pd_class_detected 8 713

Cl **33** *SC* **33.6.3.3** *P* **108** *L* **38-4** # 133

Yseboodt, Lennart Philips

Comment Type **E** *Comment Status* **A** *DLL*

'Max power' should be 'Maximum power' (two instances)

SuggestedRemedy

Replace 'Max power' by 'Maximum power'

Response *Response Status* **C**

ACCEPT.

EZ

Cl **33** *SC* **33.8.3.4** *P* **127** *L* **20** # 5

Maguire, Valerie Siemon

Comment Type **T** *Comment Status* **R** *Unbalance*

Clarify type of unbalance (i.e. resistance or current)

SuggestedRemedy

Replace "PSE and PD channel unbalance" with "PSE and PD channel current unbalance"

Response *Response Status* **C**

REJECT.

This should be filed as a maintenance request.