

IEEE P802.3bu D0.2 Power over Data Lines 1st Task Force review comments

CI 200 SC 200.3 P 15 L 20 # 1

Wendt, Matthias

Philips

Comment Type TR Comment Status X

Table 200-1-System class power requirements matrix for PSE, PI, and PD

last row: Maximum allowed PD input power (W)

in conjunction with row-1 on "Minimum required PSE output power (W)" this reserves power for expected cable losses which cannot be used elsewhere. Especially in engineered systems the voltage drops in cables can be well known. So reserving for a worst-case there is not appropriate.

E.G. for Class "V (48)" the PSE has to be designed to minimally being able to deliver 72W whereas the PD is only allowed sinking 60W. So 20% of the usable power needs to be reserved.

In lighting systems often not really draw power is used for checking against building codes but the boiler plate numbers. So there the sum of all reserved power would come on top of the required power in the field. Dependent on the building type however the power used in the lighting installation per square is limited to a fixed number. So this reduces available power at the lighting units and requires more costly light sources with increased lumen efficiency.

SuggestedRemedy

I propose having a formulation not on maximally available PD power but on the maximal PI current a PD may draw.

Proposed Response Response Status O

CI 200.5 SC P 28 L 8 # 2

Wienckowski, Natalie

General Motors

Comment Type E Comment Status D

Extra comma.

SuggestedRemedy

Replace: as shown in Figure 200-6, Figure 200-7, and Figure 200-8,

With: as shown in Figure 200-6, Figure 200-7 and Figure 200-8,

Proposed Response Response Status W

PROPOSED REJECT. EZ

CI 200.5 SC Figure 200-6 P 28 L 16 # 3

Wienckowski, Natalie

General Motors

Comment Type E Comment Status D

Inconsistent writing of frequencies.

SuggestedRemedy

1000MHz in text: from 10MHz to 1000MHz for a 1000BASE-T1

1GHz in Figure: 10MHz to 1GHz for a 1000BASE-T1 transmitter

Change text to be 1GHz as this is used in other Figures as well and 1000MHz is not used anywhere else in the document.

Proposed Response Response Status W

PROPOSED ACCEPT. EZ

CI 200.6 SC P 32 L 23 # 4

Wienckowski, Natalie

General Motors

Comment Type T Comment Status D

I believe the spec should require the SCCP slave to have a charge reservoir, this requires the use of "shall" not "need".

SuggestedRemedy

Replace: Slave devices that derive their power from the master's pull-up current need a charge reservoir to store energy and a rectifier to prevent unwanted discharge from the internal VDD supply line.

With: Slave devices that derive their power from the master's pull-up current shall include a charge reservoir to store energy and a rectifier to prevent unwanted discharge from the internal VDD supply line.

Proposed Response Response Status W

PROPOSED REJECT.

This would be difficult to test. Will explain during comment resolution.

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Cl 200.6 SC P 33 L 8 # 5
 Wienckowski, Natalie General Motors

Comment Type T Comment Status D

Requirement is written without "shall".

SuggestedRemedy

Replace: All communication with a slave begins with an initialization sequence that consists of a reset pulse from the

With: All communication with a slave shall begin with an initialization sequence that consists of a reset pulse from the

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 200.6 SC P 33 L 13 # 6
 Wienckowski, Natalie General Motors

Comment Type T Comment Status D

Requirement is written without "shall".

SuggestedRemedy

Replace: During the initialization sequence the master transmits the reset pulse by pulling its PI voltage low for a minimum of 480us.

With: During the initialization sequence, the master shall transmits the reset pulse for a minimum of 480us by pulling its PI voltage low.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

This text should refer to a symbol instead of a number. Need to revise and point to table.

Cl 200.6 SC P 33 L 14 # 7
 Wienckowski, Natalie General Motors

Comment Type T Comment Status D

Requirement is written without "shall".

SuggestedRemedy

Replace: The master then releases its PI and goes into receive mode (RX).

With: The master shall then release its PI and go into receive mode (RX).

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 200.6 SC P 33 L 15 # 8
 Wienckowski, Natalie General Motors

Comment Type T Comment Status D

Requirement is written without "shall".

SuggestedRemedy

Replace: When the slave detects the subsequent rising edge at the PD PI, it waits 15us to 60us and then transmits a presence pulse by pulling its PI low

With: When the slave detects the subsequent rising edge at the PD PI, it shall wait 15us to 60us and then it shall transmit a presence pulse by pulling its PI low

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 6.

Cl 200.6 SC P 33 L 39 # 9
 Wienckowski, Natalie General Motors

Comment Type T Comment Status D

Incorrect use of "must". "Shall" should have been used.

SuggestedRemedy

Replace: time slots must be a minimum of 60us in duration with a minimum of a 1is recovery time between

With: time slots shall be a minimum of 60us in duration with a minimum of a 1is recovery time between

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 6.

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CI 200.6 SC P 33 L 44 # 10
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status D
 Incorrect use of "must". "Shall" should have been used.
 SuggestedRemedy
 Replace: the master must release its PI port
 With: the master shall release its PI port
 Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 200.6 SC P 33 L 46 # 11
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status X
 Incorrect use of "must". "Shall" should have been used.
 SuggestedRemedy
 Replace: the master must continue to hold its PI low
 With: the master shall continue to hold its PI low
 Proposed Response Response Status O

CI 200.6 SC P 33 L 53 # 12
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status X
 Incorrect use of "must". "Shall" should have been used.
 SuggestedRemedy
 Replace: the master must generate read time slots immediately
 With: the master shall generate read time slots immediately
 Proposed Response Response Status O

CI 200.6 SC P 34 L 4 # 13
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status D
 Incorrect use of "must". "Shall" should have been used.
 SuggestedRemedy
 Replace: All read time slots must be a minimum of 60us in duration
 With: All read time slots shall be a minimum of 60us in duration
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.

See comment 6.

CI 200.6 SC P 34 L 8 # 14
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status D
 Incorrect use of "will". "Shall" should have been used.
 SuggestedRemedy
 Replace: the slave will release its PI by the end of the time slot
 With: the slave shall release its PI by the end of the time slot
 Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 200.6 SC P 34 L 11 # 15
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status D
 Incorrect use of "must". "Shall" should have been used.
 SuggestedRemedy
 Replace: the master must release its PI and then sample
 With: he master shall release its PI and then sample
 Proposed Response Response Status W
 PROPOSED ACCEPT.

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CI 200.6 SC P 36 L 5 # 16
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status D
 Incorrect use of "must". "Shall" should have been used.
 SuggestedRemedy
 Replace: The master must issue an appropriate address
 With: The master shall issue an appropriate address
 Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 200.6 SC P 36 L 51 # 19
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status D
 Incorrect use of "will". "Shall" should have been used.
 SuggestedRemedy
 Replace: bus will wait for a reset pulse.
 With: bus shall wait for a reset pulse.
 Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 200.6 SC P 36 L 41 # 17
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status D
 Incorrect use of "can". "Shall" should have been used.
 SuggestedRemedy
 Replace: This command can only be used when there is one slave on the bus.
 With: This command shall only be used when there is one slave on the bus.
 Proposed Response Response Status O

CI 200.6 SC P 38 L 9 # 20
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status D
 Incorrect use of "will". "Shall" should have been used.
 SuggestedRemedy
 Replace: only slaves with a set alarm flag will respond.
 With: only slaves with a set alarm flag shall respond.
 Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 200.6 SC P 36 L 50 # 18
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status D
 Incorrect use of "will". "Shall" should have been used.
 SuggestedRemedy
 Replace: address code sequence will respond
 With: address code sequence shall respond
 Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 200.6 SC P 38 L 10 # 21
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status D
 Incorrect use of "must". "Shall" should have been used.
 SuggestedRemedy
 Replace: the bus master must return to Step 1
 With: the bus master shall return to Step 1
 Proposed Response Response Status W
 PROPOSED ACCEPT.

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CI 200A. SC P 39 L 24 # 22
 Wienckowski, Natalie General Motors
 Comment Type E Comment Status D
 incorrect numbering - the new list should start with a), not continue from the old with c)
 SuggestedRemedy
 Replace: c), d), e)
 With: a), b), c), respectively
 Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

CI 200A. SC P 39 L 24 # 23
 Wienckowski, Natalie General Motors
 Comment Type E Comment Status D
 missing space
 SuggestedRemedy
 Replace: defined in Table 96-3.Zo_ps
 With: defined in Table 96-3. Zo_ps
 Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

CI 00 SC 0 P L # 24
 Wienckowski, Natalie General Motors
 Comment Type E Comment Status D
 variable names in the text don't always match those in the table
 Some examples are:
 Vbad min in the text, Vbad_min in the table
 Vgood min in the text, Vgood_min in the table
 SuggestedRemedy
 Be consistent with the names throughout the document.
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.

CI 200.1 SC P 13 L 50 # 25
 Wienckowski, Natalie General Motors
 Comment Type E Comment Status D
 There are unneeded commas.
 SuggestedRemedy
 Replace: A 1-pair PoDL system, consisting of a master PHY, slave PHY, PSE, MDIs, link segment, and a PD is defined as type 1 or type 2. A type 1 system is compatible with 100BASE-T1 Ethernet, and a type 2 system
 With: A 1-pair PoDL system, consisting of a master PHY, slave PHY, PSE, MDIs, link segment and a PD is defined as type 1 or type 2. A type 1 system is compatible with 100BASE-T1 Ethernet and a type 2 system
 Proposed Response Response Status W
 PROPOSED REJECT. EZ

CI 200.3 SC P 15 L 41 # 26
 Wienckowski, Natalie General Motors
 Comment Type E Comment Status D
 Poor wording. A "to" is missing.
 SuggestedRemedy
 Replace: A class VI system may be required operate with any voltage in the valid PSE output voltage range.
 With: A class VI system may be required to operate with any voltage in the valid PSE output voltage range.
 Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

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CI 200.3 SC Table 200-1 P L # 27
 Wienckowski, Natalie General Motors

Comment Type T Comment Status X
 The table defines the minimum output power and the maximum input power. This means that the is a minimum power loss in the cabling, but there is not a maximum power loss in the cabling. In fact, if the input power were 0 W it would meet the requirement in the table.

SuggestedRemedy
 Replace: Maximum allowed
 PD input
 power
 (W)
 With: Minimum expected
 PD input
 power
 (W)

This will ensure a minimum amount of power at the receiver. If a maximum is required this could be defined in another row or defined to be the minimum output power.

Proposed Response Response Status W
 Need to reconcile with comment 1.

CI 200.3 SC P 15 L 43 # 28
 Wienckowski, Natalie General Motors

Comment Type T Comment Status X
 The loss percentage is not correct.
 The output is 120% of the input, but we are trying to define the input with respect to the output. The input is 83.33333% of the output.

SuggestedRemedy
 The power loss would be 100% [(output - input) / output]. This is 16.666666%, not 20%.
 100% *(12-10)/12 = 1/6 * 100% = 16.666666%
 100% *(2.4-2)/2.4 = 1/6 * 100% = 16.666666%
 etc.

Proposed Response Response Status W
 Need to reconcile with comment 1.

CI 200.3 SC P 18 L 51 # 29
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D
 Vgood min is not defined in Table 200-5, it is defined in Table 200-4.

SuggestedRemedy
 Add a reference to Table 200-4 as well so that it is known where all of the variables used can be found.

Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

CI 200.3 SC P 18 L 48 # 30
 Wienckowski, Natalie General Motors

Comment Type ER Comment Status D
 Tdet is not defined in Table 200-5, it is defined in Table 200-2.

SuggestedRemedy
 Add a reference to Table 200-2 as well so that it is known where all of the variables used can be found.

Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

CI 200.3 SC P 19 L 20 # 31
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D
 poor wording

SuggestedRemedy
 Replace: electrical requirements in Table 200-5 in order to ensure that
 With: electrical requirements in Table 200-5 to ensure that

Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

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CI 200.3 SC P 20 L 51 # 32
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status D
 Missing tolerance on resistor value
 SuggestedRemedy
 add tolerance to 320 kOhm resistor (e.g., 0.1%, 1%, 5%, etc.)
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE. Resistor value inherited from PoE.

CI 200.3 SC P 20 L 52 # 33
 Wienckowski, Natalie General Motors
 Comment Type E Comment Status D
 missing space between off. and TOff
 SuggestedRemedy
 Replace: off.TOff starts
 With: off. TOff starts
 Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

CI 200.3 SC P 21 L 1 # 34
 Wienckowski, Natalie General Motors
 Comment Type E Comment Status D
 extra comma
 SuggestedRemedy
 Replace: not in detection, classification, or normal
 With: not in detection, classification or normal
 Proposed Response Response Status W
 PROPOSED REJECT. EZ

CI 200.3 SC P 21 L 6 # 35
 Wienckowski, Natalie General Motors
 Comment Type T Comment Status X
 The loss percentage is not correct.
 The output is 120% of the input, but we are trying to define the input with respect to the output. The input is 83.33333% of the output.
 SuggestedRemedy
 The power loss would be 100% [(output - input) / output]. This is 16.666666%, not 20%.
 Proposed Response Response Status W
 Need to reconcile on note 1.

CI 200.4 SC P 24 L 3 # 36
 Wienckowski, Natalie General Motors
 Comment Type E Comment Status D
 Poor wording
 SuggestedRemedy
 Replace: A PD presents a valid detection signature while it is in the DO_DETECTION state where it accepts power
 With: A PD presents a valid detection signature while it is in the DO_DETECTION state when it accepts power
 Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 200 SC 200.4.4 P 24 L 14 # 37
 Abramson, David Texas Instruments
 Comment Type E Comment Status D
 Text: "A non-valid PD detection signature shall have one or more of the characteristics in Table200-5."
 How can a non-valid PD detection signature have both of the requirements of table 200-5?
 SuggestedRemedy
 remove "or more" from the text above.
 Proposed Response Response Status W
 PROPOSED ACCEPT.

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Cl 200 SC 200.4.6 P 25 L 17 # 38
 Abramson, David Texas Instruments

Comment Type TR Comment Status D

This comment applies to Table 200-6.

Minimum Turn on voltage of PD (Von_min) has no margin to guaranteed PSE voltage for the 5V classes. Any voltage drop between PSE and PD will cause interoperability problems.

SuggestedRemedy

Raise Minimum turn on voltage of PD or increase guaranteed PSE voltage.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Cl 200 SC 200.4.6.3 P 25 L 46 # 39
 Abramson, David Texas Instruments

Comment Type E Comment Status D

Rloop should be RLoop

SuggestedRemedy

see above.

Proposed Response Response Status W

PROPOSED ACCEPT. EZ

Cl 200 SC 200.6.4.3 P 35 L 52 # 40
 Abramson, David Texas Instruments

Comment Type ER Comment Status D

Figure 200-9 should be Table 200-9

SuggestedRemedy

see above

Proposed Response Response Status W

PROPOSED ACCEPT. EZ

Cl 200 SC 200.3.2 P 15 L 1 # 41
 Abramson, David Texas Instruments

Comment Type TR Comment Status D

This comment applies to Table 200-1 and all related references.

The minimum required PSE output voltage for class 1 (5V) and class 2 (5V) is 4.5V. This is also the minimum voltage that the PD is allowed to turn on at (maximum of 4.5 or $\sqrt{7.2 \cdot Ppd \cdot Rloop}$). There is no margin at all for voltage drops across the coupling networks or cable.

SuggestedRemedy

Margin must be added. We can either increase the minimum PSE voltage or decrease the PD turn on voltage, but the system will not work as written.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. See comment 38.

Cl 200 SC 200.3.2 P 15 L 1 # 42
 Abramson, David Texas Instruments

Comment Type TR Comment Status D

This comment applies to Table 200-1 and all related references.

Class 5 (12V) does not seem to be usable. A minimum PSE voltage of 6V (with 12A load) would only allow Rloop values below 63.6mOhm. Above this value the turn on voltage of the PD (minimum of $\sqrt{7.2 \cdot Ppd \cdot Rloop}$) would be greater than the voltage at the PD ($6 \cdot Rloop \cdot 12$).

SuggestedRemedy

Remove this class. A 12A current does not make sense with the other constraints of the system.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. This class is a placeholder and final Vmin and Iload values need to be determined.

Cl 200 SC 200.3.2 P 15 L 41 # 43
 Abramson, David Texas Instruments

Comment Type E Comment Status D

Typo: "A class VI system may be required operate with any voltage..."

SuggestedRemedy

Fix: "A class VI system may be required to operate with any voltage..."

Proposed Response Response Status W

PROPOSED ACCEPT. EZ

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Cl 200 SC 200.3.3.1 P 15 L 53 # 44
 Abramson, David Texas Instruments
 Comment Type **TR** Comment Status **D**
 Tinrush is not used in the state diagram. The state diagram shows this timer as Tpon.
 SuggestedRemedy
 Change text (and related references) to Tpon, or change state diagram to Tinrush.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE. State machine needs to be reworked.

Cl 200 SC 200.3.6.5 P 20 L 45 # 47
 Abramson, David Texas Instruments
 Comment Type **TR** Comment Status **D**
 Tinrush does not match state diagram.
 SuggestedRemedy
 Change Tinrush to Tpon (or Tpon in state diagram to Tinrush).
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE. See comment 44.

Cl 200 SC 200.3.3.1 P 16 L 1 # 45
 Abramson, David Texas Instruments
 Comment Type **TR** Comment Status **D**
 Tinrush is not used in the state diagram. The state diagram shows this timer as Tpon.
 SuggestedRemedy
 Change text (and related references) to Tpon, or change state diagram to Tinrush.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE. See comment 44.

Cl 200 SC 200.4.3 P 22 L 4 # 48
 Abramson, David Texas Instruments
 Comment Type **ER** Comment Status **D**
 This comment applies to Figure 200-5.
 In the state diagram, states exist for error delay and fault.
 I DON'T UNDERSTAND THIS
 SuggestedRemedy
 Either remove these states or add a description of this behavior to the standard.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE. See comment 44.

Cl 200 SC 200.3.6 P 20 L 20 # 46
 Abramson, David Texas Instruments
 Comment Type **T** Comment Status **D**
 This comments relates to Table 200-3.
 The MPS behavior is not defined yet. Item 13 in the table (Tmpdo) does not make sense in this context.
 SuggestedRemedy
 Remove item 13 in table 200-3 until MPS behavior is defined.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE. MPS presentation will be delivered at this meeting.

Cl 200-1 SC 200-1-3 P 12 L # 49
 Pischl, Neven Broadcom
 Comment Type **TR** Comment Status **D**
 Figures 200-1-1 and 200-2-1 incorrectly depict the relation between the PD and the PHY and how they attach to the medium.
 SuggestedRemedy
 Add a block showing PI and show a pair of lines between the PHY and the medium and a PARALLEL connection of the PI to the pair.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT. A new block diagram will be proposed at the meeting.

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Cl **200-2** SC P **14** L **4** # **50**
 Pischl, Neven Broadcom
 Comment Type **TR** Comment Status **D**
 PI does not have two terminals. It has two terminals that attach to the Link Segment.
 SuggestedRemedy
 After "The PI has two terminals" add "connected to the Link Segment".
 Proposed Response Response Status **W**
 PROPOSED ACCEPT. See comment 49.

Cl **00** SC P L # **51**
 Pischl, Neven Broadcom
 Comment Type **TR** Comment Status **X**
 Table 200-1
 The shown classification is not realistic for many applications, which would have to end-up being "VI" or "open".
 Realistic PI and link-segments (cables) have considerable DC losses, easily on the order of 10 Ohms for some critical applications like automotive cameras. Therefore the relation between the PSE power and voltage, PD power and voltage, and PI current can easily be very different fomr what the classification shows.
 SuggestedRemedy
 1) Re-consider the classification taking into accoint realistic parameters for availabkle and required voltages, powers, current, PI and channel components.
 2) In appropriate locations allow for up to 50% margin for losses in the MDIs and link segment. I believe this may be more precise if re-worded as "PIs and the link segment".
 Proposed Response Response Status **O**

Cl **200.3** SC **200.3.2** P **15** L # **52**
 Pischl, Neven Broadcom
 Comment Type **TR** Comment Status **X**
 In line with previous comment, allow up to 50% margin for losses.
 SuggestedRemedy
 Replace "20%" with "up to 50%".
 Replace "MDIs and link segment" with "PIs and the link segment"
 Proposed Response Response Status **O**

Cl **300.3** SC **200.3.6.7** P L # **53**
 Pischl, Neven Broadcom
 Comment Type **TR** Comment Status **X**
 Increase allowed margin for power losses
 SuggestedRemedy
 Replace "20%" with "up to 50%".
 Replace "MDIs and link segment" with "PIs and the link segment"
 Proposed Response Response Status **O**

Cl **200.5** SC **200-5-1** P **26** L # **54**
 Pischl, Neven Broadcom
 Comment Type **TR** Comment Status **D**
 There is no need for Isolation requirement to be here, whicis is differnt from the regular Ethernet. The envoronment is short 15m reach, in many cases Automotive, so traditional LAN considerations should not be applied as a requirement. What is needed is to specify DC-block voltage for the blocking capacitors that are in series with the data lines, to withstand the maximum applied PoDL voltage.
 SuggestedRemedy
 Delete entire section 200.5.1.
 Consider replacing it with a requirement that DC block capacitors must withstand the maximum PoDL operational voltage, level TBD - depending on the application and classification.
 Comment: with PSE voltage under 60V, it should be sufficient to specify DC-block caps rated for 50V WV each, to provide margin. But no Safety requirement etc.
 Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE. To be discussed in meeting - the concern here is the potential for ground loops that will result in substantial currents through the link segment and PoDL inductors.

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CI **200.5** SC P L # **55**
 Pischl, Neven Broadcom

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

The parameters should be tested under the relevant operating conditions. DC-current (not voltage) bias and temperature have a major impact on the PI components and consequently on the measured parameters, which must be accounted for. The diagrams as defined here do not test under proper operating conditions.

The question is whether it is practical to create the operating conditions for these test setups by somehow simulating them (current through PI but no real PoDL link), or to re-define the tests to be measured with PSE and PD linked up and using PoDL between the two.

On the other hand, if a full PoDL link is used, there will be influence of the link partner on the measured parameters. E.g., the link-partner's TX should be turned off. The other main difference is that with real PoDL circuit, the termination impedance is not a nice 100 Ohm resistor, but whatever the input impedance is, looking into the cable with the link-partner on the other end. These factors may have to be taken into account with limit lines.

For droop I would like to suggest 50% measured under the full operating condition extremes, maximum current and min/max temperatures. So this is just the absolute worst-case with maximum current AND temperature, and should normally be considerably under that level, meeting 45% with margin.

RL and TX distortion should be defined under the PI operating conditions and temperature limits.

I believe that PSD mask test could be done with non-PoDL functionality and assumed it is OK if the other limits are met with PoDL operational.

RL specifically:

In order to allow for PI components of acceptable size for some PoDL implementations, RL in the 100BASE-T1 mode at the low-frequency range with PI included may have to be relaxed from the non-PoDL 100BASE-T1 specification. Providing that without PI connected, the non-PoDL RL in 100BASE-T1 meets the requirement, a degradation TBD is allowed when PI is used. A similar consideration may apply to 1000BASE-T1, TBD.

Suggestion 1:

Relax under 1.8MHz (optionally 2MHz, should be OK), with -6dB/Oct slope between 1MHz and 1.8MHz (optionally 2MHz). This would allow using inductors that do not degrade under 22uH each (total inductance added by PI would be 44uH worst-case, measured with DC-current bias and in the operating temperature range). This means the nominal inductance is going to be considerably higher, therefore RL and Droop should be considerably better than that under most and typical operating conditions.

Suggestion 2:

Add definition for the PI components, specifically inductors, and specify them at the

component-level. That would essentially mean that the coupling inductors should be specified to have the following to be agreed upon, TBD parameters:

- a) Combined inductance <44uH
- b) SFR around 15-18MHz

The above should be measured under the MAXIMUM DC bias and at the MAXIMUM operating temperature.

With the above two definitions, we could define the electrical parameters to be measured WITHOUT current flowing through PI, and the additional spec would ensure operation under load and temperature.

Of course, with the above definition, we have made an assumption on the PI circuit to contain inductors that connect to the data lines, which maybe contradicts e.g. 200.1.4 "Designers are free to implement....". But it should be self-evident and acceptable.

SuggestedRemedy

Re-define the whole section. Possibly leave for a TC to come up with a proposal.

Proposed Response Response Status **O**

CI **200.5** SC **200.5.3.3** P **30** L # **56**
 Pischl, Neven Broadcom

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

Alien crosstalk should not be a part of PoDL specification.

SuggestedRemedy

Remove section 200.5.3.3.

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI **200.5** SC **200.5.3.4** P **31** L # **57**
 Pischl, Neven Broadcom

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

IL specification may not be needed as long as we have the other parameters such as RL, inductors, PSD specified.

SuggestedRemedy

Remove IL from the specification.

Proposed Response Response Status **W**

PROPOSED ACCEPT.

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CI 200 SC 200.1.1 P 12 L 34 # 58
 Darshan, Yair Microsemi

Comment Type T Comment Status D

In the text:
 Safety—A PSE designed to the standard does not introduce non-SELV (Safety Extra Low Voltage) power into the wiring plant.

It is voltage not power.

SuggestedRemedy
 Change to voltage:
 Safety—A PSE designed to the standard does not introduce non-SELV (Safety Extra Low Voltage) power voltage into the wiring plant.

Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 200 SC 200.1.4 P 14 L 12 # 59
 Darshan, Yair Microsemi

Comment Type T Comment Status D

Figure 200-3—1-Pair PoDL System Block Diagram.
 Why Master and Slave PHY. It may limit future implementations.
 Use just PHY.

SuggestedRemedy
 Remove from drawing the words Master and Slave relevant occurrences.

Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.

CI 200 SC 200.2 P 14 L 22 # 60
 Darshan, Yair Microsemi

Comment Type T Comment Status X

Missing physical connection to the link segment in the following text:

The PI is the portion of the MDI that allows simultaneous transmission of power and data over the link segment.

SuggestedRemedy
 To:
 The PI is the portion of the MDI that allows simultaneous transmission of power and data over the link segment and physical connection to the link segment.

Proposed Response Response Status O

CI 200 SC 200.3 P 15 L 1 # 61
 Darshan, Yair Microsemi

Comment Type T Comment Status X

Table 200-1.
 Numbers on Table required guide lines as for wire diameter to be used in order to meet table requirements,

SuggestedRemedy
 To add the equation that ties all table parameters to a wire resistance/per meter. See "wire resistance/meter requirements for Table 33-1"

Proposed Response Response Status O

CI 200 SC 200.1 P 12 L 17 # 62
 Darshan, Yair Microsemi

Comment Type TR Comment Status X

Our project addresses automotive engineered system.
 Such systems may not require detection of a PD requesting power.
 Adding detection function adds cost.

SuggestedRemedy
 Group to discuss and justify the need or delete item d.

Proposed Response Response Status O

CI 200 SC P 17 L # 63
 Thompson, Geoff GraCaSI

Comment Type E Comment Status D

Style doesn't match 1.2.1

SuggestedRemedy
 Make states 2 cell boxes.

Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

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Cl 200 SC 200.1 P 12 L 7 # 64
 Thompson, Geoff GraCaSI
 Comment Type ER Comment Status D
 Incorrect clause citation
 SuggestedRemedy
 Replace the text: "...use with the MAU defined in Clause 14 and the PHYs defined in Clauses TBD and TBD." with the text: "Replace "...use with PHYs defined in Clauses 96 and 97."
 Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

Cl 200 SC 200.1 P 12 L 9 # 65
 Thompson, Geoff GraCaSI
 Comment Type ER Comment Status D
 Incorrect mention of "generic" cabling. It isn't generic.
 SuggestedRemedy
 Delete the word "generic"
 Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

Cl 200 SC 200.1 P 12 L 13 # 66
 Thompson, Geoff GraCaSI
 Comment Type ER Comment Status D
 Doesn't mention single pair.
 SuggestedRemedy
 Change to: "100 ? single pair balanced cabling system."
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.

Cl 200 SC 200.3 P 14 L 46 # 67
 Thompson, Geoff GraCaSI
 Comment Type ER Comment Status D
 The term "Section" is not needed here. Without mid-spans link section and link segment are the same.
 SuggestedRemedy
 Change "section" to "segment" multiple places here.
 Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

Cl 200 SC 200.3 P 15 L 30 # 68
 Thompson, Geoff GraCaSI
 Comment Type ER Comment Status D
 ?
 SuggestedRemedy
 Change to: "A PSE is specified by its electrical behavior as seen via the PI"
 Proposed Response Response Status W
 PROPOSED ACCEPT. EZ

Cl 200 SC 200.2.1 P 14 L 30 # 69
 Thompson, Geoff GraCaSI
 Comment Type ER Comment Status D
 There are only two type of PI, A PSE PI and a PD PI. The behavior or speed of the PHY or PSE or PD behind the PI doesn't change the "type" of PI.
 SuggestedRemedy
 Change the text accordingly.
 Proposed Response Response Status W
 PROPOSED ACCEPT.

IEEE P802.3bu D0.2 Power over Data Lines 1st Task Force review comments

Cl **200** SC **200.1** P **12** L **14** # **70**
 Thompson, Geoff GraCaSI
 Comment Type **TR** Comment Status **D**
 It isn't "structured" cabling
 SuggestedRemedy
 Delete the word "structured"
 Proposed Response Response Status **W**
 PROPOSED ACCEPT.

Cl **200** SC **200.1** P **12** L **24** # **71**
 Thompson, Geoff GraCaSI
 Comment Type **TR** Comment Status **D**
 The term "powered portion" implies midspans which are not part of this project.
 SuggestedRemedy
 Remove the words: "...of the powered portion..."
 Proposed Response Response Status **W**
 PROPOSED ACCEPT.

Cl **200** SC **200.1.4** P **14** L **4** # **72**
 Thompson, Geoff GraCaSI
 Comment Type **TR** Comment Status **D**
 Figure 200.3 is incorrect in that it depicts both the MDI and PI as having area in the plane of the drawing. That would imply that they actually have volume in the drawing. No. An interface between two elements of a system is a plane between those elements.
 SuggestedRemedy
 The dwg needs to be fixed. It should look more like -1 and -2 connected by a twisted pair. I can work with you on this.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.