

IEEE802.3bu One Pair Power over Datalines Initial Working Group ballot comments

CI 104 SC 104.4.3.6 P 49 L 26 # 2
 Abramson, David Texas Instruments

Comment Type TR Comment Status D OK

This comment applies to Figure 104-6.
 The state diagram requires the pd_fault variable to be set to true when fault_detected occurs. What is fault_detected? How can I design a PD to do this?

SuggestedRemedy

Add appropriate definitions for fault_detected and pd_fault.

Proposed Response Response Status W

PROPOSED ACCEPT.

Change fault_detected TRUE definition to read as:
 "TRUE: the PD no longer requires power as the result of an implementation specific error condition."

Example (not for inclusion): The PD has gone offline due to a thermal overload and needs to cool off.

CI 104 SC 104.4.4 P 50 L 6 # 3
 Abramson, David Texas Instruments

Comment Type TR Comment Status D OK

This comment applies to Table 104-4.
 The PD must be capable of producing a "Vgood" shunt for a 17mA current (item 1 of the table), but must draw less than 20mA whenever the Voltage is less than Vsig_disable (Isignature_limit).
 This requires a current limit between 17mA and 20mA (+/- 8%). I believe this puts unnecessary requirements on the PD that will increase its cost.

SuggestedRemedy

Change Isignature_limit to 22mA.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comments 128.

CI 104 SC 104.3.3.3 P 37 L 51 # 7
 Abramson, David Texas Instruments

Comment Type TR Comment Status D OK

The difference between power_applied and pi_powered is not clear

SuggestedRemedy

Explain the difference or consolidate them into one variable and update state diagram accordingly.

Proposed Response Response Status W

PROPOSED REJECT.

Explain the difference better? Use new names that are unique to PoDL and are more meaningful. For example, power_stable?

PI_POWERED<=TRUE first occurs in POWER_UP state.

The definition of power_applied is:

TRUE: the PSE has begun steady state operation.
 FALSE: the PSE is either not applying full operating voltage or has begun applying full operating voltage but is still in the POWER_UP state.

These conventions were inherited from PoE.

CI 104 SC 104.3.3.6 P 40 L 16 # 10
 Abramson, David Texas Instruments

Comment Type TR Comment Status D OK

This comment applies to figure 104-4, DETECTION state.
 The "start Tdet" assignment is missing.

SuggestedRemedy

Add "start Tdet" to the DETECTION state.

Proposed Response Response Status W

PROPOSED REJECT.

Change Figure 104-5 to Figure 104-4 cont'd.

The tdet stop and start assignments were moved to the detection state machine shown in figure 104-5 on page 41.

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Cl 104 SC 104.3.3.6 P 40 L 48 # 11
Abramson, David Texas Instruments

Comment Type ER Comment Status D OK

This comment applies to Figure 104-4.
Do we need to call out values for pi_sleeping and pi_powered if they haven't changed from the previous state? I think no.

SuggestedRemedy

Remove pi_sleeping and pi_powered assignments in the sleep state. The whole state machine should be checked for this situation. The overload state has the same problem.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Remove superfluous pi_sleeping and pi_powered assignments in SETTLE_SLEEP.

Remove pi_detecting and pi_powered in IDLE state.

Remove pi_powered and pi_sleeping from SLEEP state.

Retain assignments in OVERLOAD state since the overload_detected entry arc has multiple entry points.

See commet 106.

Cl 104 SC 104.3.6 P 43 L 15 # 15
Abramson, David Texas Instruments

Comment Type ER Comment Status D OK

This comment applies to Item 3 in Table 104-3.
Section 104.3.6.1 (additional information column) doesn't mention anything about dV/dt.

SuggestedRemedy

Add section to explain these specs (if needed) and correct the section referenced. Or remove the additional information reference.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Should reference 104.3.6.3. Change subclause title to "PSE ripple and transients".

Fix cross reference to be 104.3.6.3 and see 75 (do later).

Cl 104 SC 104.3.6 P 44 L 13 # 16
Abramson, David Texas Instruments

Comment Type TR Comment Status D OK

This comment applies to Table 104-3 (continued).
The MVFS threshold is the same same as for existing AT PoE, but the operating current can by more than twice as high (1.36A according to Table 104-1).
In addition, event the new BT standard has doubled the MPS window width (4-14mA) for a maximum load current of 1.73A (1.27x larger than PoDL).
I believe PDs need to drop their current to below 2mA in sleep mode (acutally Isleep_pd is 100uA), so why not lower the minimum?

SuggestedRemedy

Increase the MVFS current range from (5mA to 10mA) to (2mA to 10mA).

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD.

2mA MFVS min may be too close lwakeup max of 1.85mA. Is 3mA OK?

Cl 104 SC 104.4.3.3 P 47 L 22 # 18
Abramson, David Texas Instruments

Comment Type TR Comment Status D OK

variable POR is poorly defined.
Is power-on reset defined somewhere? This is a data spec after all.

SuggestedRemedy

Change variable to something like "pd_reset" as in PoE. See Clause 33 for proper text.

Proposed Response Response Status W

PROPOSED ACCEPT.

Replace POR with pd_reset and define as in 802.3at:
"An implementation-specific control variable that unconditionally resets the PD state diagram to the RESET state.

Values:

TRUE: The device has been reset.

FALSE: The device has not been reset (default)."

Editorial license to fix PD state machine accordingly.

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CI 104 SC 104.4.3.3 P 47 L 26 # 19
 Abramson, David Texas Instruments

Comment Type ER Comment Status D OK

The definitions of the "present_XXX" variables are poor.

SuggestedRemedy

Change definition of TRUE and FALSE for present_det_sig, present_iwakeup, and present_mfvs from "present the xxx signature" and "do not present the xxx signature." to: "the xxx signature is to be applied to the PD PI." and "the xxx signature is not to be applied to the PD PI."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 275.

CI 104 SC 104.5.2 P 53 L 28 # 26
 Andrewartha, Mike Microsoft

Comment Type TR Comment Status D OK

This paragraph defines a requirement for the PSE to withstand short circuit current of I_LIM max indefinitely. This appears to contradict the requirements in 104.3.6.2.1 for limiting output current for a period of TLIM.

SuggestedRemedy

Remove the contradiction or clarify the intent through appropriate changes in one section or the other.

Proposed Response Response Status W

PROPOSED REJECT.

The paragraph requires that the PSE be able to survive a short for an indefinite time, but it does not require that the short circuit current flow continuously during the short. It only requires that the magnitude of the the current into the short not exceed Ilim max as defined in Table 104-3.

CI 104 SC 104.3.6.2.1 P 44 L 45 # 27
 Andrewartha, Mike Microsoft

Comment Type TR Comment Status D OK

This subclause needs clarification to indicate the required PSE behavior on an overload condition. The PSE state diagram has an overload state and there are variables and associated timers described the state diagram does not show detection of an overload condition, starting or stopping the associated timers or removing power. 104.3.6.2.1 implies that a PSE can remove power during a current limiting condition but has no rules for doing so.

SuggestedRemedy

Add appropriate language to the subclause and/or transitions to the state diagram to clearly explain the required operation in the event of a short circuit condition as well as the details of overload detection, timeout and resulting power removal

Proposed Response Response Status W

PROPOSED REJECT.

No specific remedy suggested.

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Cl 104 SC 104.5.2 P 53 L 28 # 28
Andrewartha, Mike Microsoft

Comment Type TR Comment Status D OK

The draft does not address the system level impact of a short circuit. 104.5.2 states a requirement that the PSE is not damaged if the PI is shorted for an indefinite time but it does not address the resulting temperature rise in the link segment, presumably a cable. Without knowing more about the cable construction we don't know the impact of a short.

SuggestedRemedy

Add appropriate language to ensure that a short circuit does not result in an exothermic event in the link segment. Possible remedies include:

A time limit before PSE shutdown on short circuit, rather than the current indefinite requirement.

Appropriate cable construction requirements to ensure that the worst case I_LIM current does not cause an unsafe temperature rise in the link segment.

Other solutions as may be envisioned by the task force.

Proposed Response Response Status W

PROPOSED REJECT.

A PSE is required to remove power during a current limiting event after a max delay of 75ms. The minimum overload delay is 0.75s, and then there is the minimum restart delay of 0.5s. This yields a worst case duty cycle of 6% in the event that there is a persistent short in the cable of the PD which limits average power dissipation to a safe level for the cable.

Cl 104 SC 104.7.3 P 62 L 1 # 51
Anslow, Pete Ciena

Comment Type E Comment Status D OK

The table in 104.7.3 "Major capabilities/options" is empty.

SuggestedRemedy

Either add some entries or remove the section.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD. See comments 84 and 88.

Cl 104 SC 104.6.2 P 55 L 6 # 54
Beaudoin, Denis TI

Comment Type T Comment Status D OK

: There doesn't seem to be any support for polarity inversion as supported on most other POE clauses. In previous POE clauses there is a Bridge Diode that allows either polarity operation.

SuggestedRemedy

Add support for either polarity at the slave end of the link.

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Proposed Response Response Status W

PROPOSED REJECT.

Automotive applications which are the primary target for PoDL do not require polarity inversion as the connectors are fail safe. Additional complexity required to support polarity inversion is therefore not justified.

Cl 104 SC 104.6.3.4 P 57 L 40 # 61
Carlson, Steven High Speed Design, In

Comment Type TR Comment Status D OK

Table 104-7-SCCP electrical requirements lists electrical requirements for SCCP, but no rise or fall times are specified, nor is a maximum bus capacitance.

SuggestedRemedy

Add rise and fall time, and bus capacitance specifications to Table 104-7.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See 121 and 255. During SCCP, PSE Cout and PD Cin are limited to 0.2uF (see Table 104-2 item 5 and 104-6 item 6b).

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Cl 104 SC 104.7.4 P 62 L 1 # 62
 Chabot, Craig UNH-IOL
 Comment Type ER Comment Status D OK
 Changes to the text made for D2.0 have altered Shalls throughout the text, and therefore, a PICS revision is required.
 SuggestedRemedy
 See chabot_3bu_1_0116
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 TFTD. See comments 200 and 212.

Cl 104 SC 104.3.3.6 P 40 L 5 # 63
 Chacon, ???
 Comment Type T Comment Status D OK
 BallotID 20080305GOT: Based on the convention where a pi_* signal is assigned only if a state changes its value when such state is entered, the following changes should be made for consistency. However, these changes are not required to understand the FSM.
 State: DETECTION, POWER_UP
 Remove "pi_sleeping <= FALSE"
 State: POWER_UP
 Remove "pi_discharge_en <= FALSE"
 SuggestedRemedy
 Remove the following lines from the indicated states.
 State: DETECTION, POWER_UP
 Remove "pi_discharge_en <= FALSE"
 State: POWER_UP
 Remove "pi_sleeping <= FALSE"
 State: SLEEP
 Remove "pi_sleeping <= TRUE"
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 TFTD.

Cl 104 SC 104.2 P 35 L 34 # 72
 Darshan, Yair Microsemi
 Comment Type TR Comment Status D OK
 Some of the terms in Table 104-1 are not defined.
 -Vpse_oc
 -IPI (need to be defined in Figure 104.3)
 SuggestedRemedy
 Define Vpse_oc and IPI in notes below Table 104-1
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 See comment 273. Editor given license to add definitions.

Cl 104 SC 104.2 P 35 L 18 # 73
 Darshan, Yair Microsemi
 Comment Type TR Comment Status D OK
 The DC loop resistance is defined for 12 V system but it is not defined for 24V and 48V
 SuggestedRemedy
 Define loop resistance for 24 and 48V systems.
 or defined the quadratic equation that ties between PSE voltage, PD required power and loop resistance for better deing flexibility in additio to table 104-1.
 The above requires some work that already done in previous meetings and now it is not shown in D2.0.
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 See comment 236.
 Reword 104.2 as follows:
 "The DC loop resistance of the link segment shall be less than 6 ohms for 12 V unregulated system power classes. The DC loop resistance shall be less than 6.5 ohms for 12V regulated, 24V regulated and unregulated, and 48V regulated and unregulated system power classes."
 Delete Annex 104A, move the equation from 104A to 104.2.

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CI 104 SC 104.3.6 P 43 L 41 # 74
 Darshan, Yair Microsemi

Comment Type TR Comment Status D OK

Table 104-3: Tinrush is defined however Inrush is not defined.
 10uF max is defined in the PD. Note sure it is sufficient for higher power at higher PSE voltages e.g. 48V.
 linrush_max is not defined. Does 300A at the 1st 1msec is OK?

SuggestedRemedy

Group to discuss the above concerns.
 To add editor note:
 Editor Notes:
 To address definitions of Inrush_max and profile of linrush max over time.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Define linrush as IPSE during POWER_UP state. As a practical matter IPSE can never exceed Ilim max if the MDI return loss limit is to be observed. Hence linrush can never exceed Ilim max during Tinrush.

TFTD to discuss adding normative text to 104.3.6.

CI 104 SC 104.4.6.2 P 52 L 20 # 76
 DiBiao, Eric TE Connectivity

Comment Type E Comment Status D OK

Unable to find Vsleep_max in Table 104-4 or Table 104-6 as referenced in the following sentence:

A PD that requires detection and power-up shall draw current in the range of I_wakeup_PD for at least T_wakeup_PD when Vsleep_PD_min < Vpd < Vsleep_max as specified in Table 104-4 and Table 104-6, respectively.

SuggestedRemedy

Add Vsleep_max to table 104-6

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 350.

CI 104 SC 104.3.3.6 P 40 L 20 # 81
 Donahue, Curtis UNH-IOL

Comment Type E Comment Status D OK

Exit conditions of CLASSIFICATION, CLASSIFICATION EVAL, and POWER UP states are all different but merge into a single input condition for RESTART state. Since the condition for each of these is different they cannot merge into a single state entry.

SuggestedRemedy

Draw 3 separate entrance lines into the RESTART state.

Proposed Response Response Status W

PROPOSED REJECT.

Other specs have merged lines in this way.

CI 104 SC 104.4.3.6 P 49 L 18 # 82
 Donahue, Curtis UNH-IOL

Comment Type E Comment Status D OK

Exit conditions of MDI POWER1, PD SLEEP, and DO_CLASSIFICATION states are all different but merge into a single input condition for DO_DETECTION state. Since the condition for each of these is different they cannot merge into a single state entry.

SuggestedRemedy

Draw 3 separate entrance lines into the RESTART state.

Proposed Response Response Status W

PROPOSED REJECT.

Other specs do this.

CI 104 SC 104.7.3 P 62 L 6 # 84
 Donahue, Curtis UNH-IOL

Comment Type E Comment Status D OK

Major Capabilities table is empty.

SuggestedRemedy

Populate with appropriate capabilities.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 51 and 88.

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Cl 104 SC 104.7.4.2 P 62 L 39 # 85
 Donahue, Curtis UNH-IOL
 Comment Type E Comment Status D OK
 PSE5 and PSE6 are missing "Status" and "Support" values.
 SuggestedRemedy
 Populate with appropriate value.
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 TFTD appropriate values.

Cl 104 SC 104.7.4.4 P 67 L 8 # 88
 Donahue, Curtis UNH-IOL
 Comment Type E Comment Status D OK
 COMEL2 and COMEL3 are listed as "M" (mandatory) but really should be conditionally mandatory since the 100BASE-T1 PHY return loss requirement isn't mandatory for 1000BASE-T1 PHYs (and vice versa).
 SuggestedRemedy
 Change the "Status" field of COMEL2 and COMEL3 from "M" to "xxx:M" where xxx is the appropriate "Major capability" (still needs to be added to table in 104.7.3).
 Also change the "Support" field from "Yes []" to "Yes [] N/A []"
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 TFTD. See comments 51 and 84.

Cl 104 SC 104.6 P 54 L 16 # 89
 Donahue, Curtis UNH-IOL
 Comment Type T Comment Status D OK
 It is unclear whether SCCP is mandatory or optional.
 104.1.2 states "Data may be transmitted and received between the PSE and PD prior to the application of power and subsequent to the removal of full operating voltage via the MDI using the Serial Communication Classification Protocol (SCCP) which is described in 104.6."
 104.3.3.1 states "A PSE may communicate with the PD prior to the application of normal operating voltage using SCCP."

The key word being "may" in both subclauses. Does it mean that (a) a PSE and PD 'may' communicate with each other?, (b) that when a PSE and PD communicate with each other it 'may' use SCCP to do so?, or (c) something else?
 104.3.3.3 defines the variable "sccp_enable" which seems to indicate that SCCP can be not supported, meaning it is a non-mandatory feature.

SuggestedRemedy
 Please make it clearer to the reader whether SCCP is mandatorally supported feature.
 If SCCP is truely optional then 104.7.4.7 also needs to be updated to reflect that the "shalls" are not mandatory but conditionally mandatory.

Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 TFTD. See comments 51, 84, and 88.

Cl 104 SC 104.3 P 36 L 1 # 91
 Dove, Daniel Dove Networking Solut
 Comment Type TR Comment Status D OK
 The term "Link Segment" is used extensively throughout the document. This term may create confusion relative to the term used for standardized cabling systems, for which a "link segment" is a portion of a standardized link. This does not appear to be referring to a portion of a standardized link necessarily.
 SuggestedRemedy
 I recommend the TF discuss and identify an appropriate term. Perhaps seek guidance from cabling manufacturers or automotive manufacturers.
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 TFTD.

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CI 104 SC 104.3.3.3 P 37 L 9 # 93
 Dove, Daniel Dove Networking Solut

Comment Type TR Comment Status D OK

TLIM timer not identified in 104.4.3.4 nor is there a state diagram describing how TLIM Timer gets started or causes overload_detected <= TRUE

SuggestedRemedy

See attached image with description of how this should be done.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD to discuss Dan's proposal.

CI 104 SC 104.3.3.6 P 40 L 26 # 96
 Dove, Daniel Dove Networking Solut

Comment Type TR Comment Status D OK

There is a potential race condition in CLASSIFICATION_EVAL. Going into that state, the timer is still running. So its possible that the timer could complete entering that state, and a conflict in the output direction would occur.

SuggestedRemedy

Image

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD.

CI 104 SC 104.3.3.6 P 40 L 26 # 97
 Dove, Daniel Dove Networking Solut

Comment Type TR Comment Status D OK

There is a potential conflict in the entry to OVERLOAD. The logic does not exclude the possibility that overload_detected occurs while pse_enable is false. If so, there would be a conflict on where to go. I realize this is unlikely, but its real.

SuggestedRemedy

I offer up a state diagram to address the fact that overload_detected is not defined exactly how it occurs. If that state diagram is adopted, then no need to add a logic term to the entry on this state. Otherwise, replace with overload_detected * pse_enable.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD.

CI 104 SC 104.3.3.6 P 41 L 1 # 98
 Dove, Daniel Dove Networking Solut

Comment Type TR Comment Status D OK

There is no state diagram for the overload_detected variable to show how it gets set and cleared.

SuggestedRemedy

I offer up a state diagram to address the fact that overload_detected is not defined exactly how it occurs. See attached image

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD Dan's proposal.

CI 104 SC 104.3.6 P 43 L 50 # 100
 Dove, Daniel Dove Networking Solut

Comment Type TR Comment Status D OK

Tod has no maximum value. This could lead to a compliant implementation that you could never test to determine if it works. If it fails to respond to Tod, the mfrg could claim their Tod number is just very large.

SuggestedRemedy

Add a value for maximum Tod

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD.

Add Tod max as $0.75s * 1.22 = 0.915s$?

CI 104 SC 104.4.4.4 P 49 L 42 # 101
 Dove, Daniel Dove Networking Solut

Comment Type ER Comment Status D OK

The following language "When VPD rises through Vsig_disable," seems inexact. "rises through". Does the PD only remove signature when the voltage is rising through, or does it remain removed after that?

SuggestedRemedy

Clarify this language. I suggest perhaps using "Exceeds Vsig_disable min"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD precise wording.

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Cl 104 SC 104.4.4 P 50 L 8 # 107
 Gardner, Andrew Linear Technology

Comment Type TR Comment Status D OK

There is insufficient margin between Isignature_limit max (20mA) and the maximum valid detection current (17mA) that the PD is required to support for Vgood - this may be limiting for the PD.

SuggestedRemedy

Make the range of current for Vgood the same as the valid range of PSE detection current (6mA to 16mA), and increase the Isignature_limit max from 20mA to 24mA.

Proposed Response Response Status Z

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl 104 SC 104.4.6.2 P 52 L 14 # 108
 Gardner, Andrew Linear Technology

Comment Type TR Comment Status D OK

PD input current not related to inrush is not constrained between Vsig_disable and Von.

SuggestedRemedy

Add the following baseline text to 104.4.6.2 and table 104-6: "During operation in the MDI_POWER1 state, a PD shall draw less than IPD_pwr1 max of current for a constant VPD." Add IPD_pwr1 line item to Table 104-6 with a max value of 5mA.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD.

Cl 104 SC 104.4.6.1 P 52 L 3 # 109
 Gardner, Andrew Linear Technology

Comment Type TR Comment Status D OK

At Cpd,max=10uF, a class 4 PSE may not be able to power up a class 4 PD before tpower_dly expires because of insufficient inrush current.

SuggestedRemedy

For class 4 PDs, reduce CPD max from 10uF to 5uF

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD. Assuming linrush=0.097A, CPD=10uF, VPSE=36V, and Vsig=4.05V yields an inrush time of 3.3ms which is longer than Tinrush min. So power-up for this class is not guaranteed.

Reducing CPD max to 5uF for this class reduces worst case inrush time to 1.65ms.

Cl 104 SC 104.5.3 P 53 L 32 # 110
 Gardner, Andrew Linear Technology

Comment Type TR Comment Status D OK

In order to be consistent with the PoDL 100BASE-T1 MDI return loss in subclause 104.5.3.1, the transmitter droop specification from clause 96.5.4.1 needs to be relaxed.

SuggestedRemedy

Add the following baseline text to a subclause of 104.5.3: "The test mode 1 output droop is illustrated in Figure 104-TBD. With the transmitter in test mode 1 and using the transmitter test fixture 1, the magnitude of both the positive and negative droop measured with respect to an initial peak value after the zero crossing and the value 500 ns after the initial peak, shall be less than 60%." Copy figure 96-23 into the new subclause.

Proposed Response Response Status W

PROPOSED ACCEPT.

See comment 394.

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Cl 104 SC 104.3.4.1 P 41 L 36 # 111
 Gardner, Andrew Linear Technology

Comment Type TR Comment Status D OK

The detection criteria has the potential to allow capacitors greater than 1.2uF to pass detection in the absence of a valid detection signature. The criteria should be changed so that a simple capacitance of 10uF or less is assured to fail detection when a valid PD detection signature is not present.

SuggestedRemedy

Adjust the detection timing parameters as needed in order to ensure capacitances of 10uF or less cannot pass detection in the absence of a valid PD detection signature.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Presentation gardner_3bu_x_0116.pdf to describe the proposed solution.

Cl 104 SC 104.3.6 P 43 L 35 # 112
 Gardner, Andrew Linear Technology

Comment Type TR Comment Status D OK

The +/-10% range for ILIM with respect to Iclass max is too narrow because of errors due to sense resistor value quantization error and tolerance.

SuggestedRemedy

Relax the range order to account for automotive +/-3% resistor tolerance and the limited number of discrete sense resistor values that are available. Presentation in Atlanta will summarize this.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD. See gardner_3bu_x_0116.pdf

Cl 104 SC 104.3.6 P 44 L 9 # 114
 Gardner, Andrew Linear Technology

Comment Type T Comment Status D OK

TMFVS min of 60ms may be limiting for low power applications

SuggestedRemedy

Consider changing TMFVS min to a smaller value that is consistent with max CPD and max cable resistance if possible.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Reduce PSE TMFVS min to 6ms which is consistent with bt short mps. TMFVS_PD should also be reduced but needs to allow overhead for IPSE rise time at max cable resistance and PSE output resistance and max PD capacitance. For example, assuming 10 ohms and 100uF yields a 90% rise time of 2.4ms.

Suggest TMFVS min of 6ms and TMFVS_PD min of 10ms to be safe.

Cl 104 SC 104.4.4 P 49 L 42 # 115
 Gardner, Andrew Linear Technology

Comment Type T Comment Status D OK

The words 'A PD shall present a valid detection signature when Vpd drops below Vsig_enable.' are confusing.

SuggestedRemedy

Suggest using 'A PD shall enable a valid detection signature subsequent to Vpd dropping below Vsig_enable.'

Proposed Response Response Status Z

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

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Cl 104 SC 104.4.4 P 49 L 43 # 116
 Gardner, Andrew Linear Technology
 Comment Type **TR** Comment Status **D** OK
 a PD shall removed the current draw of the detection signature.' is not quantified.
 SuggestedRemedy
 Add a limit to table 104-4 for Ipd when Vpd is greater than Vsig_disable and less than VON that can be tested for compliance (5mA max?)
 Proposed Response Response Status **W**
 PROPOSED ACCEPT.
 TFTD.

Cl 104 SC 104.4.4 P 49 L 46 # 117
 Gardner, Andrew Linear Technology
 Comment Type **T** Comment Status **D** OK
 Add Vgood before 'per Table 104-4'.
 SuggestedRemedy
 see comment
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 Change " The detection signature shall consist of a current limited, constant voltage per Table 104-4..." to " The detection signature shall consist of a current limited, voltage Vgood per Table 104-4..."

Cl 104 SC 104.6.3.4 P 57 L 40 # 121
 Gardner, Andrew Linear Technology
 Comment Type **TR** Comment Status **D** OK
 Specifications for rise time and fall time are absent from Table 104-7.
 SuggestedRemedy
 Add specifications for fall time and rise time with maximums of 100us and 230us, respectively based on timing proof from presentation stewart_3bu_1_1015.pdf.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT.
 TFTD. See 255 and 61.

Cl 00 SC 0 P 35 L 22 # 123
 Gardner, Andrew Linear Technology
 Comment Type **E** Comment Status **D** OK
 Table 104-1 should be enclosed within its own subclause 'System class power requirements'
 SuggestedRemedy
 see comment
 Proposed Response Response Status **W**
 PROPOSED ACCEPT.
 See comment 273.

Cl 00 SC 0 P 35 L 36 # 124
 Gardner, Andrew Linear Technology
 Comment Type **TR** Comment Status **D** OK
 IPI (max) can be exceeded during inrush
 SuggestedRemedy
 Add a new footnote 3 that states that IPI(max) may be exceeded during inrush.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT.
 See comment 74.

Cl 104 SC 104.3.6 P 43 L 15 # 125
 Gardner, Andrew Linear Technology
 Comment Type **TR** Comment Status **D** OK
 The max dV/dt of 22V/us for type A needs to be increased to allow more margin for the PSE's dV/dt limiter during t_inrush. This may mean compromising data integrity during power-up, but this typically a don't care.
 SuggestedRemedy
 Add line to table 104-3 for max type A dV/dt during inrush. Increase value to 40V/us or greater.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 TFTD. See presentation gardner_3bu_x_0116.pdf on this subject.

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CI 00 SC 0 P 40 L 3 # 126
 Gardner, Andrew Linear Technology

Comment Type TR Comment Status D OK

In some case, a type A PSE and PD will take longer than 5ms to power-up.

SuggestedRemedy

If max inrush dV/dt is increased, can the max t_detect, t_inrush, and t_pwr_delay values be reduced?

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Max dV/dt needs to be increased for Type A PSEs in order for fast start-up to be feasible. The existing range of dV/dt required from a PSE is too narrow. Propose sacrificing 100BASE-T1 PHY data integrity during inrush by increasing max dV/dt to 40V/ms in order to solve the problem. Presentation gardner_3bu_x_0116.pdf will detail the time budget for power-up.

CI 00 SC 0 P 35 L 39 # 127
 Gardner, Andrew Linear Technology

Comment Type TR Comment Status D OK

The max CPD for class 4 needs to be reduced in order to guarantee that the PSE with max VOUT can inrush a PD with min VON before t_power_delay expires.

SuggestedRemedy

Reduce CPD max for class 4 from 10uF to 5uF.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD. See gardner_3bu_x_01016.pdf for explanation of this change.

CI 104 SC 104.4.4 P 50 L 8 # 128
 Gardner, Andrew Linear Technology

Comment Type TR Comment Status D OK

The spread between the max current a PD signature is required to accept for Vgood (17mA) and the max current a PD is allowed to sink (20mA) is too narrow.

SuggestedRemedy

Reduce the range of current that a PD is required to accept for Vgood from 7mA/17mA to 8mA/16mA and increase the max current a PD is allowed to sink from 20mA to 24mA.

Proposed Response Response Status W

PROPOSED ACCEPT.

See comment 3.

CI FM SC FM P 9 L 32 # 181
 Hajduczenia, Marek Bright House Network

Comment Type E Comment Status D OK

The text of the frontmatter is outdated

SuggestedRemedy

Please use the latest text for the frontmatter, including the description of 802.3-2015

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Editor copied latest frontmatter D1.4. Need to verify.

CI 01 SC 1.4.5 P 16 L 19 # 184
 Hajduczenia, Marek Bright House Network

Comment Type T Comment Status D OK

Definition of "Type A+B PoDL System" is cumbersome to pronounce with the extra + in the middle: as "Type A plus B PoDL System"

SuggestedRemedy

Simplify the name to "Type AB PoDL System", which is what you really intend

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 371.

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CI 30 SC 30.14.1.1.2 P 21 L 23 # 190
 Hajduczenia, Marek Bright House Network

Comment Type T Comment Status D OK

We usually avoid the use of "will" when describing the behaviors

SuggestedRemedy

Change all instances of "will" in the draft (excluding FM) to Simple Tense, e.g., "interface will act as it would if it had no" to "interface acts as it had no"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Instances of "will" occur at the following locations in D2.0:

Clause 30
 p 21, lines 24, 26, 30
 p 22, lines 1, 18, 36
 p 23, lines 9, 23, 39
 p 24, lines 1, 15, 29

Clause 104
 page 56, line 40

CI 30 SC 30.14.1.3 P 24 L 51 # 197
 Hajduczenia, Marek Bright House Network

Comment Type E Comment Status D OK

Wording improvement for "An integer value indicating the accuracy associated with aPoDLPSEActualPower in +/- milliwatts."
 BY definition, integer value can be positive or negative, so +/- symbol is just not needed

SuggestedRemedy

Change to read: "An integer value indicating the accuracy associated with aPoDLPSEActualPower measurement, expressed in units of milliwatts."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Should the description be changed to read " A signed integer..."? It's not clear to me if an integer value is signed or unsigned by default.

CI 30 SC 30.2.5 P 19 L 1 # 200
 Hajduczenia, Marek Bright House Network

Comment Type ER Comment Status D OK

Missing PICS

SuggestedRemedy

Added text for Clause 30 carries two new "shall" statements in 30.2.5 - these need new PICS

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD to discuss use of shall in this subclause.

CI 45 SC 45.2.7a.1 P 28 L 39 # 205
 Hajduczenia, Marek Bright House Network

Comment Type T Comment Status D OK

It is not clear why two bits are assigned to PSE Enable and then only 1 bit is used effectively

SuggestedRemedy

Consider changing PSE Enable to a single bit 12.0.0 and renumbering remaining bits. Update text in subclauses 45.2.7a.1.1 and 45.2.7a.1.2, accordingly

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD.

CI 45 SC 45 P 32 L 1 # 212
 Hajduczenia, Marek Bright House Network

Comment Type ER Comment Status D OK

Missing PICS

SuggestedRemedy

Added text for Clause 45 carries a number of new "shall" and "should" statements - these need new PICS

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD. See comment 200.

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Cl 104 SC 104.3 P 36 L 1 # 218
 Hajduczenia, Marek Bright House Network

Comment Type ER Comment Status D OK

Incorrect formatting of the list

SuggestedRemedy

Please apply proper list style to lines 1 - 9

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Please suggest appropriate list style in proposed remedy.

Cl 104 SC 104.3.3.3 P 37 L 4 # 220
 Hajduczenia, Marek Bright House Network

Comment Type ER Comment Status D OK

tdet_timer_done definition is not needed - a definition of timer also includes definition of what happens when the timer expires: "All timers operate in the same fashion. A timer is reset and starts counting upon entering a state where "start x_timer" is asserted. Time "x" after the timer has been started, "x_timer_done" is asserted and remains asserted until the timer is reset. At all other times, "x_timer_not_done" is asserted."

SuggestedRemedy

Remove tdet_timer_done
 Similarly, sccp_watchdog_tmr_done, tpowerdly_timer_done are not needed in 104.4.3.3

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD appropriate timer definition syntax in 104.3.3.3 as well as PSE state diagrams.

Cl 104 SC 104.3.3.6 P 40 L 3 # 222
 Hajduczenia, Marek Bright House Network

Comment Type TR Comment Status D OK

There is no START indicator

SuggestedRemedy

Change "!pse_enable" to "START * !pse_enable"

Proposed Response Response Status W

PROPOSED REJECT.

The PSE goes to DISABLE until pse_enabled is true - it is clear.

Cl 104 SC 104.4.3.6 P 49 L 3 # 226
 Hajduczenia, Marek Bright House Network

Comment Type ER Comment Status D OK

Multiple branches merged together even though they have different transition conditions

SuggestedRemedy

Separate transitions from state DO_CLASSIFICATION to DO DETECTION, from state MDI_POWER1 to DO_DETECTION, and from state PD_SLEEP to DO_DETECTION

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD. Check with Pete Anslow about accepted practice.

Cl 104A SC 104A P 71 L 1 # 236
 Hajduczenia, Marek Bright House Network

Comment Type TR Comment Status D OK

There is only one reference to Annex 104A in the draft right now (page 53, line 2) and as it is right now, Annex 104A does not contain promised: "design guidelines regarding stable operation"

SuggestedRemedy

As it is, the purpose of Annex 104A is not clear - it seems it is largely incomplete. Consider either filling in missing information to address "design guidelines regarding stable operation" or remove content from Annex 104A and merge it into the main draft

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD. See comment 73.

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Cl 104 SC 104.3.6.3 P 45 L 18 # 239
Joseph, A

Comment Type TR Comment Status D OK

"To meet EMI standard, lower values may be needed". An automotive ethernet PHY has to be compliant to the EMI specification. Stating a lower value may be needed is very vague.

SuggestedRemedy

Adapt table 104-3 (item 4) to also include a second ripple / noise requirement that can also meet the EMI spec.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Values that meet EMI spec are implementation specific. Propose deleting " To meet EMI standards, lower values may be needed."

Cl 104 SC 104.4.6.3 P 52 L 28 # 240
Joseph, A

Comment Type TR Comment Status D OK

Same comment as above

SuggestedRemedy

Proposed Response Response Status W

PROPOSED REJECT.

Incomplete comment.

Cl 104 SC 104.5.3.1 P 53 L eq 1 # 241
Joseph, A

Comment Type TR Comment Status D OK

Change in return loss specification will effect current BroadR-reach compliant 100Mbps PHY's. It should be left to the PHY vendor to determine if the PHY's can tolerate a higher return loss at < 2Mhz and not be forced by the specification. Impact of this would be different PHY's working with different inductor values. This choice should be left to the vendors.

SuggestedRemedy

Remove degradation in return loss from 1 to 2MHz. This comment is only for 100Base-T1

Proposed Response Response Status W

PROPOSED REJECT.

This relaxation of the RL was proposed by the PHY vendor for incorporation into Clause 104. See presentation pischl_3bu_1_0315.pdf for details.

Cl 01 SC 1.4 P 16 L 5 # 247
Law, David

Comment Type E Comment Status D OK

Definitions are provided for 'PoDL Regulated PSE' and 'PoDLUnregulated PSE' (which I think should be 'PoDL Unregulated PSE') however I was able to find the use of either term in the text, not can I find any use of the terms 'regulated PSE', 'regulated power Power Sourcing Equipment', 'unregulated PSE', 'unregulated power Power Sourcing Equipment'.

SuggestedRemedy

Either use the terms or delete them from the definitions.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The terms are used in the column headers of Table 104-1 "System class power requirements matrix for PSE, PI, and PD".

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Cl 45 SC 45.2.7a P 28 L 12 # 253
 Marris, Arthur Cadence Design Syst

Comment Type T Comment Status D OK

Table 45-211e only lists PSE registers. Shouldn't there be some PD registers to advertise the class of the PD and maybe a PD control register to initiate a request for power?

SuggestedRemedy

Please explain why there are no PD registers.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD.

Cl 104.5 SC 104.5.3.1 P 54 L 10 # 254
 Moffitt, Bryan Commscope

Comment Type T Comment Status D OK

Does this pre or supercede the 802.3bp MDI RL?

Also should be greater than instead of less than.

SuggestedRemedy

converge and fix

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change less than or equal to greater than or equal in both 104-2 and 104-3.

Equation 104-3 to be when 104-3 is adopted as new 97-29 by P802.3bp. Equation 104-2 to be retained per motion adopted from pischl_3bu_1_0315.pdf

Cl 104.6 SC 104.6.3.4 P 57 L 40 # 255
 Moffitt, Bryan Commscope

Comment Type T Comment Status D OK

seems like Table 104-7 should specify some minimum risetimes to avoid alien transients (although I have no supporting data)

SuggestedRemedy

add minimum risetimes consistent with signalling needs

Proposed Response Response Status W

PROPOSED ACCEPT.

See 121 and 61.

Cl 30 SC 30.14.1.1.7 P 23 L 24 # 263
 Ran, Adeo Intel Corporation

Comment Type T Comment Status D OK

It seems odd that a counter is mapped to a bit, especially since the bit is latched-high so the counter can't even count the number of times the bit is set.

This occurs several times in the new subclause and in existing subclauses of 30.9.

Should the attribute be a single bit instead of a counter?

If it is a counter, should it say instead something like "this counter increments on every event that would cause the invalid signature bit to be set"?

SuggestedRemedy

Consider changing the attribute or rewording here and in similar places.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD.

Cl 30 SC 30.14.1.2 P 24 L 42 # 264
 Ran, Adeo Intel Corporation

Comment Type E Comment Status D OK

"Sampling frequency and averaging is vendor-defined"

Should probably be "are".

Is this sentence needed at all? Anything that is not specified is vendor-defined.

SuggestedRemedy

Change "is" to "are".

Consider deleting this sentence.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD deleting the sentence.

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Cl 45 SC 45.2.7a.1.2 P 29 L 3 # 269
 Ran, Adeo Intel Corporation

Comment Type TR Comment Status D OK

Wording suggests that "disabling by setting the bits" is a normative requirement, but the likely intent is that the effect of setting the bits is normative.

In addition, the value of me_pse_enable should probably be mapped to this register, instead of having a "shall" associated with it (I assume the variable is not observable).

SuggestedRemedy

Change to "when bits 12.0.1:0 are set to 00, the PSE function shall be disabled", and similarly for other values.

Consider mapping the variable to the register and deleting the second paragraph.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD.

Cl 104 SC 104.1.1 P 33 L 28 # 270
 Ran, Adeo Intel Corporation

Comment Type TR Comment Status D OK

"All implementations of PD and PSE systems shall be compatible at their respective Power Interfaces (PIs) when used in accordance with the restrictions of this clause where appropriate"

This is a very complex and vague statement, and it is normative ("shall", even though there is no PICS item for it). I do not understand who could commit to such a requirement ("all implementations"? As a vendor I can only make statements about my own implementation).

Implementations should be compliant to the standard - that goes without saying. _Compatibility_ (with other implementations? or with something else?) is a concern for the task force to guarantee, and is one of the criteria for standard development. We cannot require that from a specific implementation.

SuggestedRemedy

Either of the following:

1. Reword this paragraph to state that the points where compliance is required are the Power Interfaces; refer to figures 104-1, 104-2 and/or 104-3. (assuming this is what this subclause is trying to say)
2. Remove this subclause altogether (if the point of compliance is obvious).

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD rewording this subclause. See comment 304.

Cl 104 SC 104.2 P 35 L 18 # 273
 Ran, Adeo Intel Corporation

Comment Type TR Comment Status D OK

Power classes, regulation, and several parameters are mentioned here without any definition. This makes reading the clause more difficult than it should be. I assume they are discussed in detail elsewhere.

SuggestedRemedy

Add some introduction and provide cross-references, or move this subclause to a later point in the draft where these term have already been defined.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Place Table 104-1 in its own subclause titled 'System class power requirements'. Editor given editorial license to add introductory material and appropriate cross references.

See comment 123.

Cl 104 SC 104.3.3.3 P 36 L 47 # 275
 Ran, Adeo Intel Corporation

Comment Type E Comment Status D OK

Variable definitions in this subclause, with the exception of "power_applied", have FALSE meaning as simply the logical inversion of the TRUE meaning. FALSE is naturally the logical negation of TRUE, and just negating the sentence adds no information, and makes the definitions harder to read (I keep asking myself "am I missing something"?)

Comment also applies to 104.4.3.3.

SuggestedRemedy

I would suggest rephrasing most definitions to state the data type, what the variable stands for, and finally describing what TRUE and FALSE (or any other value) mean, if this is not obvious. Compare to other subclauses that list variables (for example, 73.10.1, 82.2.19.2.2).

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD rewriting variable definitions as proposed in order to make 104.3.3.3 less repetitious.

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CI 104 SC 104.3.3.3 P 36 L 48 # 276
 Ran, Adee Intel Corporation

Comment Type TR Comment Status D OK

do_classification_done definition uses past perfect to define a condition ("the PSE has concluded...") but does not state since when this condition is examined, or when the variable is cleared. I assume that something like "since the last reset" (or some other event) should apply here, otherwise the values can only change once.

Since this is a definition, it should be detailed and precise.

Comment also applies to definitions of external_wakeup, tdet_timer_done, overload_detected, pd_wakeup, power_applied, valid_class. Also applies to variables in 104.4.3.3.

SuggestedRemedy

State in each case since when the condition is checked, or what clears it.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Add "Following a valid detection sequence, the PSE..." to the definition of do_classification_done.

CI 104 SC 104.3.3.3 P 37 L 36 # 278
 Ran, Adee Intel Corporation

Comment Type TR Comment Status D OK

It is not clear if pi_detecting is an indication of a condition or is controlling some function (so that setting it causes the effect described).

Rephrasing (as suggested for all variables) is especially important in cases there the variable being set by a state diagram has some functional effect.

Also applies to pi_discharge_enable, pi_powered, pi_sleeping, perhaps others. Also in 104.4.3.3.

SuggestedRemedy

For each control variable, rephrase definition to state the effects of setting the value, e.g. "setting this variable to TRUE causes."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD rephrasing control variables in PSE and PD state machines.

CI 104 SC 104.3.3.6 P 40 L 11 # 279
 Ran, Adee Intel Corporation

Comment Type E Comment Status D OK

Variable pi_discharge_en is called pi_discharge_enable in 104.3.3.3.

SuggestedRemedy

Change either the diagram or the variable definition to match names.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change variable name to "pi_discharge_en" in 104.3.3.3. Do a search and replace to catch all instances.

CI 104 SC 104.3.3.6 P 40 L 40 # 280
 Ran, Adee Intel Corporation

Comment Type TR Comment Status D OK

tmfvdo_timer_done is used here but the timer is not started anywhere in this diagram. I see that it is started in another diagram (Figure 104-5) but there its value is not checked. This is unusual and confusing.

SuggestedRemedy

Define a new variable that will be set in the MFVS diagram (figure 104-5) and read in the PSE state diagram (figure 104-4). Make the timers be started and read in the same diagram.

Proposed Response Response Status W

PROPOSED ACCEPT.

Editor granted license to modify MFVS state diagram to add new state MFVS_TIMEOUT which is entered from DETECT_MFVS when !mfvs_valid*tmfvdo_timer_done. New variable mfvs_timeout will be set in this state and read by the PSE state diagram.

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CI 104 SC 104.3.4 P 41 L 27 # 282
 Ran, Adeo Intel Corporation

Comment Type TR Comment Status D OK

It seems that the PSE is has a normative requirement (shall complete detection within a period) but then the text discusses what happens if it doesn't (shall wait at least a period). This takes the point out of the first "shall".

Also, the requirement to complete detection within a limited time does not directly limit the time for applying power; an implementation could complete detection on time but have a delay in transitions between states.

The "shall" statements here should apply to an observable behavior.

It may be better to require that if the PSE completes detection within T_det, and does not opt not to power the detected PD, then powering shall be started with T_det; otherwise, it shall wait at least T_restart before re-attempting detection.

SuggestedRemedy

Rephrase to clearly state the observable requirement - either as suggested in the comment, or otherwise.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

A PSE that is unsuccessful in detecting a PD is required to discharge the PI voltage to the range of Vsleep before re-attempting detection, and this is the observable behavior in that case.

The PSE state diagram has no provision for a PSE that opts not to power a successfully detected PD.

Propose removing the sentence

"A PSE may successfully detect a PD but then opt not to power the detected PD."

and replacing it with

"A PSE that successfully detects a PD shall attempt power up of the PD unless SCCP is enabled." in order to remove any ambiguity behavior.

CI 104 SC 104.3.6 P 42 L 50 # 284
 Ran, Adeo Intel Corporation

Comment Type TR Comment Status D OK

Here "Under all conditions", but in table 104-5 the conditions are specific: current within a range and "PD exiting reset state". Are the current limits relevant for the PSE requirement? And does the requirement also hold with PSE is at reset?

SuggestedRemedy

Please clarify. Preferably point to a specific signature (e.g. V_bad_hi).

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD.

CI 104 SC 104.3.6.2.2 P 45 L 9 # 288
 Ran, Adeo Intel Corporation

Comment Type TR Comment Status D OK

What is the observable behavior required in the "shall" statements in this subclause?

What does "consider" cause in each case? Does the PSE have to respond in a certain way?

This "shall consider" appears in several places in the draft.

SuggestedRemedy

Rephrase so that normative requirements are made on explicitly observable behavior.

Do this across the draft.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Replace "A PSE operating in the SLEEP state shall consider a PD wakeup request valid if..." with "A PSE shall transition from the SLEEP state to the POWER_UP state when...".

Replace "A PSE operating in the SLEEP state shall consider a PD wakeup request invalid if..." with "A PSE operating in the SLEEP state shall remain in the SLEEP state if..."

Editor given license to replace other instances of "shall consider" with explicit normative requirement.

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CI 104 SC 104.4.4 P 49 L 52 # 290
 Ran, Adee Intel Corporation

Comment Type TR Comment Status D OK

The signature of table 104-5 is definitely outside of the limits set out in table 104-4. so it seems that a PD that presents the signature of table 104-5 is non-compliant?

Is a PD allowed to have a non-valid detection signature? If not - what does the "shall" in line 50 stand for?

SuggestedRemedy

If non-valid signature is allowed under some conditions, please rephrase this sentence to clarify its meaning.

If it is not allowed, delete the last two paragraph (from "A non-valid PD" to "is assured to fail detection").

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 402.

CI 104 SC 104.4.6 P 50 L 52 # 291
 Ran, Adee Intel Corporation

Comment Type T Comment Status D OK

The ripple current seems to be specified as a function of frequency. If that's the case, shouldn't the units be A/Hz?

It is more usual to have formulas to describe limitations of this kind.

SuggestedRemedy

Change units, consider adding formulas in 104.4.6.3

Proposed Response Response Status W

PROPOSED REJECT.

The units for the limit line are Amps peak to peak. The expression defines a limit line as a function frequency.

CI 104A SC 104A P 71 L 6 # 294
 Ran, Adee Intel Corporation

Comment Type E Comment Status D OK

104.4.6.5 suggests that Annex 104A provides design guidelines. This annex is quite short and does not look like design guidelines.

SuggestedRemedy

Rename the annex "Design guidelines for PSE-PD DC loop stability".

Change the title of 104A.1 to "Recommendations for link segment resistance".

Separate the last sentence of 104A.1 (starting with "For optimum") to a new paragraph.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD appropriate title for Annex 104A.

CI 104A SC 104A.1 P 71 L 13 # 295
 Ran, Adee Intel Corporation

Comment Type TR Comment Status D OK

Equation is not numbered. Also, it includes the terms P_PD(max) and L, which are not defined.

SuggestedRemedy

Add equation number and definitions of missing terms.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comments 73 and 236.

CI 00 SC 104.4.4 P 50 L 5 # 298
 Remein, Duane Huawei Technologies

Comment Type T Comment Status D OK

Undefined terms
 lconnector

SuggestedRemedy

Add as note to Tables 104-4 & 104-5.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change lconnector to IPD.

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CI 00 SC 0 P 28 L 47 # 299
 Remein, Duane Huawei Technologies

Comment Type T Comment Status D OK

The logical connection between Bit 12.0.2 and CI 104.6 seems to be missing.
 If I go to CI 104.6 the terms "power classification", "enable" and "disable" are not present in the sub-clause. I am left with a question then as to what this bit actually does and how it is used by CI 104.6.
 The only instance of "power classification" in CI 104 is on pg 36 in 104.3 which seems a bit removed from 104.6.

SuggestedRemedy

Establish an obvious logical connection between CI 45 and CI 104.6.
 For example you could define a variable in 104.6 that reflects bit 12.0.2 and then ref the variable name in the bit def in CI 45.
 Other clauses also provide a cross reference list between normative variables and CI 45 register bit (ex see 82.3.1, 84.6, 85.6 and others).

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The variable that Bit 12.0.2 maps to is defined on page 37, line 23 in subclause 104.3.3.3.

CI 104 SC 104.1.1 P 33 L 26 # 304
 Remein, Duane Huawei Technologies

Comment Type TR Comment Status D OK

104.1.1 Compatibility considerations
 Your objectives state "Ensure compatibility with IEEE P802.3bp" yet in this para you don't mention any compatibility requirements with the P802.3bp PHY types.

SuggestedRemedy

Clear state that PHYs incorporating PoDL are compatible with all 100BASE-T1 and 1000BASE-T1 PHYs (including those that do not support PoDL).

Proposed Response Response Status W

PROPOSED ACCEPT.

See comment 270.

CI 104 SC 104.2 P 35 L 45 # 305
 Remein, Duane Huawei Technologies

Comment Type ER Comment Status D OK

Footnotes 1 & 2 do not appear to be attached to Table 104-1. (See IEEE Style Manual CI 14.4 Notes and footnotes to tables & 802.3 template for guidance on normative/informative footnotes and proper styles).

SuggestedRemedy

Align with proper style. I believe these are normative and should be a & b as is typical of CI 45 tables.

Proposed Response Response Status W

PROPOSED ACCEPT. See 47.

CI 104 SC 104.4.3.6 P 49 L # 309
 Remein, Duane Huawei Technologies

Comment Type TR Comment Status D OK

The following SD variables are not formally defined.
 Disconnect_PD
 Vpd,

The following are not defined before use in a SD
 Vsig_disable
 Vsig_enable
 VOn
 VOff

SuggestedRemedy

Add definition or pointer to same in variables listing before the SD.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Editor given license to add definitions for Disconnect_PD, VPD, Vsig_disable, Vsig_enable, Von, and Voff to SD definitions.

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CI 104 SC 104.4.4 P 49 L 42 # 310
 Remein, Duane Huawei Technologies
 Comment Type E Comment Status D OK
 Missing space in "Vsig_enable.When"
 Stray comma in "Vsig_disable, a"
 SuggestedRemedy
 add space, remove comma.
 Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 104 SC 104.1.1 P 33 L 26 # 317
 Remein, Duane Huawei Technologies
 Comment Type T Comment Status D OK
 More of a question than a comment but what happens if two PSEs are connected?
 Where is this specified?
 SuggestedRemedy
 Might want to say something about the potential operating state (weather it is intentional or not it will happen).
 Proposed Response Response Status W
 PROPOSED REJECT.
 See 104.3.6, page 42 line 50.

CI 104 SC 104.7.4.2 P 62 L 39 # 319
 Remein, Duane Huawei Technologies
 Comment Type TR Comment Status D OK
 Missing status and support fields for PSE5 & PSE6
 SuggestedRemedy
 complete.
 Proposed Response Response Status W
 PROPOSED ACCEPT.
 TFTD.

CI 45 SC 45.2.7a P 28 L 1 # 325
 Remein, Duane Huawei Technologies
 Comment Type ER Comment Status D OK
 Clause 45.2.7a is already in use by EPoC.
 SuggestedRemedy
 Change headers to 45.2.1b
 Change editing instruction to:
 "Insert the following subclauses for Power Unit Registers immediately after 45.2.7a.6 (10GPASS-XR receive MER measurement registers) added by P802.3bn.
 Coordinate numbering of Tables 45-211e through 45-211h with P802.3bn editors as well as P802.3bq and bz clause editors. P802.3bn has currently assigned Table 45-211g (but starts with 211a). P802.3bn will likely finish after bz/bq but before bu and we will both need to adjust table numbering.
 Change Editors note to include: "... P802.3bq, bz, and bn ..."
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 TFTD subclause numbering.

CI 45 SC 45.2.7a.2.1 P 30 L 26 # 329
 Remein, Duane Huawei Technologies
 Comment Type TR Comment Status D OK
 The use of the term shall here implies CL 45 is mandated. Clause 45 is optional in it's entirety and cannot be made mandatory.
 "This bit shall be set to one when the PSE state diagram (Figure 104-4) enters the state 'ERROR.' The Power Denied bit shall be implemented with latching high behavior as defined in 45.2."
 Given that you've not opened the PICS for CI 45 I infer that you don't wish to include normative language here.
 SuggestedRemedy
 Change "shall be" to "is" in 12 places in 45.2.7a.2.x. For example the statements quoted above will read:
 "This bit is set to one when the PSE state diagram (Figure 104-4) enters the state 'ERROR.' The Power Removed bit is implemented with latching high behavior as defined in 45.2."
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 TFTD the use of shall in Clause 45.

IEEE802.3bu One Pair Power over Datalines Initial Working Group ballot comments

CI 45 SC 45.2.7a.2.2 P 30 L 32 # 331
 Remein, Duane Huawei Technologies

Comment Type TR Comment Status D OK

This is the only instance of "mr_valid_signature" in the draft.

SuggestedRemedy

Please provide a cross reference to where this variable is defined.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 140.

CI 45 SC 45.2.7a.2.3 P 30 L 38 # 332
 Remein, Duane Huawei Technologies

Comment Type TR Comment Status D OK

One naturally assumes that a MDIO bit set in a SD reflects some variable in the SD. In this case I see Fig 104-5 has valid_signature (which I would have thought corresponds to bit 12.1.14 but apparently does not) but is an inverted from of Valid_Signature, ... or maybe not.

SuggestedRemedy

Provide a clear reference to a SD variable for bit 12.1.13.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Bit 12.1.13 should reference the tdet_timer_done variable.

CI 45 SC 45.2.7a.2.4 P 30 L 44 # 333
 Remein, Duane Huawei Technologies

Comment Type TR Comment Status D OK

MDIO registers affected by SD's should clearly be tied to a variable in the SD and not set/reset by a state transition as in "shall be set to one when the PSE state diagram (Figure 104-4) transitions directly from the state CLASSIFICATION_EVAL to RESTART"

This issue exists for the following bit definitions; 12.1.15, 14, 13, 12, 11, 10, 9:7, 6:3 and 2:0.

SuggestedRemedy

Provide a clear reference to a SD variable for bit 12.1.12. If one does not exist in the SD create it in the SD and xref here.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Bit 12.1.12 should reference the tclass_timer_done variable.

CI 104 SC 104 P L # 339
 Schicketanz, Dieter Reutlingen University

Comment Type T Comment Status D OK

general: The power circuitry loads the signal lines. I could not find in any place of the document mentioning the necessary balance and acceptable load, The differential load should be higher than 100 ohm, The common mode load more than 75 Ohm.

SuggestedRemedy

In clause 104.5 load balancing is missing. The MDI specifications are rathe low. Will the CMC1 and L1 from page 8 do all the job? Then we need to specify it. Also a "floating" load is not very realistic. Or are we leaving the job to the implementors?

Proposed Response Response Status W

PROPOSED REJECT.

No suggested remedy.

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Cl 104 SC 104.4 P 46 L 15 # 343
 Schindler, Fred Seen Simply

Comment Type ER Comment Status D OK

The existing text,
 "A device that is capable of becoming a PD may or may not have the ability to draw power from an alternate power source and, if doing so, may or may not require power from the PI." is not clear.

SuggestedRemedy

The Task Force should discuss what the intent is and improve the sentence. My assumptions lead to this potential solution,
 "A device that is capable of becoming a PD may or may not have the ability to draw power from an alternate power source. A PD using an alternate power source may or may not require power from the PI."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD proposed wording.

Cl 104 SC 104.5 P 53 L 18 # 344
 Schindler, Fred Seen Simply

Comment Type TR Comment Status D OK

The existing requirement,
 "A PD shall provide DC isolation between all accessible external conductors, including frame ground (if any), and all MDI leads." is not complete.

SuggestedRemedy

The Task Force should sort out the appropriate isolation resistance. I have provide a suggestion. replace the text with,
 "A PD shall provide at least 100 k-ohms DC isolation between all accessible external conductors, including frame ground (if any), and all MDI leads, when measured using at least a 2V source voltage."

Proposed Response Response Status W

PROPOSED ACCEPT.

See 173.

Cl 104 SC 104.4.6.2 P 52 L 19 # 350
 Scruton, Peter University of New Ham

Comment Type E Comment Status D OK

"A PD that requires detection and power-up shall draw current in the range of IWakeup_PD for at least TWakeup_PD when Vsleep_PD min < Vpd < Vsleep max as specified in Table 104-4 and Table 104-6, respectively."
 I think the reference to 104-4 is intended to be a reference to Vsleep in 104-3.

SuggestedRemedy

change to:
 A PD that requires detection and power-up shall draw current in the range of IWakeup_PD for at least TWakeup_PD when Vsleep_PD min < Vpd < Vsleep max as specified in Table 104-3 and Table 104-6, respectively.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 76.

Cl 104 SC 104.4.6.1 P 52 L 4 # 356
 Scruton, Peter University of New Ham

Comment Type ER Comment Status D OK

"The PD shall turn off at a voltage greater than or equal to VOff."
 I think this is supposed to be less than or equal to.

SuggestedRemedy

change to:
 The PD shall turn off at a voltage less than or equal to VOff.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The correct wording should be "The PD shall turn off at a voltage greater than VOff min."

IEEE802.3bu One Pair Power over Datalines Initial Working Group ballot comments

Cl 104 SC 104.6.4.4 P 59 L 35 # 361
 Scruton, Peter University of New Ham

Comment Type T Comment Status D OK

Table 104-8-CLASS_TYPE_INFO Register Table

Missing Type A+B

SuggestedRemedy

Insert new mapping below Type B
 WXYZb - Type A+B

where WXYZ equals one of the 14 reserved 4-bit values.

Proposed Response Response Status W

PROPOSED ACCEPT.

1011 will be assigned Type AB.

Cl 104 SC 104.3.3.3 P 37 L 15 # 365
 Slavick, Jeff Avago Technologies

Comment Type ER Comment Status D OK

mfs_valid uses the defintion in 104.3.7.1 which comes after it's use in state diagrams and variable defintions

SuggestedRemedy

Add pointer to 104.3.7 to the mfs_valid definition to link the condition of when it's TRUE/FALSE

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 275.

Cl 104 SC 104.4.3.4 P 48 L 48 # 368
 Slavick, Jeff Avago Technologies

Comment Type TR Comment Status D OK

sccp_watchdog_timer is missing a duration

SuggestedRemedy

Add a timer duration of appropriate length

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Max time for valid classification sequence is ~131ms. Propose adding a spec for sccp_watchdog_timer max and min of 200ms and 150ms, respectively to Table 104-6.

Cl 1 SC 1.4.5 P 16 L 19 # 371
 Thompson, Geoff GraCaSI S. A.

Comment Type ER Comment Status D OK

The label "Type A+B PoDL System" is clumsy and sort of indicates lower status than Type A or Type B. I would hope that this type would be the designpoint of the future and that any future PHY work should be directed at the encompassing spec.

SuggestedRemedy

I strongly suggest that you relabel the "universal" PoDL system as "Type C PoDL System" in the hope that it will become the more widely known and enduring label. Also, change elsewhere throughout the draft as appropriate.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 184.

Cl 104 SC 104 P 33 L 1 # 373
 Thompson, Geoff GraCaSI S. A.

Comment Type E Comment Status D OK

The clause title is not descriptive of the technology. The title as stated could describe power over a single pair for (e.g.) 100BASE-T.

SuggestedRemedy

Change the clause title to be: "Power over Single-Pair Data Lines (PoDL)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD clause title change. Apply global search and replace for any change.

Cl 104 SC 104.3.6 P 43 L 35 # 380
 Trowbridge, Steve Alcatel-Lucent

Comment Type E Comment Status D OK

Rows where the "Type" field is left blank (rows 5-20 of Table 104-3 and rows 4a-13 of Table 104-6) presumably apply to both Type A and B

SuggestedRemedy

Change the blank cells in these rows to "A or B" or "A, B". Could merge groups of cells vertically to not make this too repetitions

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment comment 371.

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Cl 45 SC 45.2.7a P 28 L 4 # 388
 Zimmerman, George CME Consulting/LTC

Comment Type E Comment Status D OK

IEEE 802.3bq and bz insert tables have been renumbered - the last one they insert is 45-211b.

SuggestedRemedy

Change editor's note and track tables from 802.3bq (don't worry about bz since PoDL is ahead of bz). Change table numbering to begin at 45-211c and renumber tables 45-211e through 45-211h

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. See 325.

Cl 104 SC 104.3.3.4 P 38 L 29 # 393
 Zimmerman, George CME Consulting/LTC

Comment Type E Comment Status D OK

A reference to either the duration of the timers or where the value of the timer is defined would help the reader.

SuggestedRemedy

Add See (104.x.y.z) cross references to each timer's definition.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 275.

Cl 104 SC 104.5.3 P 53 L 32 # 394
 Zimmerman, George CME Consulting/LTC

Comment Type TR Comment Status D OK

This section only defines the MDI return loss. It doesn't define any other electrical characteristics of the MDI nor does it describe test fixtures for PHYs. The header section can be eliminated.

SuggestedRemedy

Delete 104.5.3 (lines 32 to 37), and promote 104.5.3.1 to 104.5.3.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 110 which proposes adding a test fixture and transmitter droop spec for 100BASE-T1 to 104.5.3.

Cl 104 SC 104.3.4.3 P 42 L 25 # 396
 Zimmerman, George CME Consulting/LTC

Comment Type T Comment Status D OK

Confusing & possibly contradictory: "when those link segments exhibit any of the following characteristics with a probe current, as specified in Table 104-2 and Table 104-5" - language appears that the the tables refer to the specification so the current, lvalid (104-2) and lconnector (104-5). lconnector is not defined elsewhere in the document. If I assume lconnector is the current at the connector, it would be the same reference as lvalid and the specification of Table 104-5 is then a superset of Table 104-2 lvalid, which makes the reference to Table 104-2 unnecessary.

SuggestedRemedy

Delete reference to Table 104-2, and define lconnector as the current at the PD connector in 104.4.4

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Shouldn't the reference to Table 104-2 be retained and the reference to Table 104-5 be deleted instead?

Change lconnector to IPD in Table 104-5.

Cl 104 SC 104.3.6 P 43 L 19 # 399
 Zimmerman, George CME Consulting/LTC

Comment Type TR Comment Status D OK

Power feeding ripple and noise are defined as a function of frequency, but the units are specified as Vp-p, and no bandwidth for the measurmeent is defined. Need to specify what filter bandwidth this Vpp is over. Same applies to item 3 in Table 104-6.

SuggestedRemedy

Change units to Vp-p/Hz. (sorry - don't know how many Hz were meant).

Proposed Response Response Status W

PROPOSED REJECT.

TFTD. Can we do a FFT on a scope?

IEEE802.3bu One Pair Power over Datalines Initial Working Group ballot comments

CI 104 SC 104.4.4 P 49 L 53 # 402
 Zimmerman, George CME Consulting/LTC

Comment Type T Comment Status D OK

"a PD that presents the signature of Table 104-5 is assured to fail detection" - reads as meeting all the characteristics - this contradicts the statement on line 50, that a non-valid signature has "at least one of the characteristics".

SuggestedRemedy

Change "presents the signature of Table 104-5", to "presents at least one of the signature characteristics of Table 104-5".

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

There are only two non-overlapping characteristics in Table 104-5. Propose changing text to "presents one of the signature characteristics of Table 104-5".

CI 104 SC 104.4.6 P 51 L 42 # 403
 Zimmerman, George CME Consulting/LTC

Comment Type E Comment Status D OK

Why is t power_dly (item 7, Table 104-6) lower-case "t" - all others seem to be upper case.

SuggestedRemedy

change tpower_dly to Tpower_dly

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment 163.

CI 104 SC 104.4.6.3 P 52 L 29 # 404
 Zimmerman, George CME Consulting/LTC

Comment Type TR Comment Status D OK

"PD shall operate correctly" isn't well specified for something that is a requirement, especially when the parameter concerned is explicitly "to preserve data integrity" - does "operate correctly" put a requirement on the PHYs?

SuggestedRemedy

Clarify - replace "a PD shall operate correctly" with "a PD shall meet the electrical requirements of Table 104-6" (or equivalent statement if something else is met. (I think something else is meant, but can't discern what - sorry!)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Delete "The PD shall operate correctly in the presence of ripple and transient voltages generated by the PSE that appears at the PD PI. These levels are specified in Table 104-3. Ripple and transient limits are provided to preserve data integrity."

Change 'voltage' on line 24 to 'current'.