

IEEE P802.3at D3.2 PoEplus comments

Cl 00 SC 00 P L # 31195
Thompson, Geoff Nortel

Comment Type TR Comment Status R

PD equipment that is covered in the Code of Conduct on Energy Consumption of Broadband Equipment (from the EUROPEAN COMMISSION DIRECTORATE-GENERAL, JOINT RESEARCH CENTRE, Institute for the Environment and Sustainability, Renewable Energies Unit) will need to stay within the bounds of Type 1 power limits.

SuggestedRemedy

Remove all specifications for Type 2 devices and reformulate the standard to only support devices which meet the EC Code of Conduct on Energy Consumption of Broadband Equipment.

Response Response Status U

REJECT.

Although some Ethernet equipment is covered under the Code of Conduct on Energy Consumption of Broadband Equipment, it is by no means comprehensive and many types of Ethernet equipment fall outside of the scope of that specific Code of Conduct. For example, equipment covered by the Code of Conduct on Data Centres, published by the same body is not expected to be covered by the Broadband Code of Conduct.

Furthermore, if the commenter examines the Code of Conduct on Energy Consumption of Broadband Equipment he will find that power delivered by the PSE is specifically excluded by section A.5 ("Power delivered to other equipment (e.g. over USB or PoE) shall not be included in power consumption assessment").

Lastly, the Code of Conduct on Energy Consumption of Broadband Equipment specifies ONU equipment that exceeds 12.95W (e.g. 10Gb/s point-to-point or point-to-multipoint interfaces). It may be expected that some implementations of such devices will include power supplied over Ethernet from the home gateway device to the optical interface at the demarcation point. As such, this is a prime application of PoE that helps justify the broad market potential for the project.

Cl 00 SC 00 P L # 146
Thompson, Geoffrey Nortel

Comment Type TR Comment Status A

D3.1 comment 16

The response to Mr Claseman is insufficient and inaccurate.

a) The "group" referred to in the response is presumably the TF/CRG, NOT the balloting group which is the Working Group.

b) There is no vote of "the group" cited regarding the response given to actually provide evidence of "the feeling of the group".

c) There was no technical rationale nor reference to approved documentation for the project to support the rejection.

Therefore, I am "piling on" to his comment.

SuggestedRemedy

Either:

Provide an appropriate technical rationale for the TF/CRG "recommendation" that Mr Claseman's comment be rejected along with a documented vote of the TF/CRG

-OR-

Accept his comment.

Response Response Status U

ACCEPT IN PRINCIPLE.

See comment 55 for resolution of the 4P comments.

Accepting this comment results in no change to the text.

This comment (D3.1 comment 16) was a comment against D3.0 that the Comment Editor inadvertently left out (actually part of a group of comments). These were carried forward into D3.1 and reviewed to ensure the commenters concerns were addressed. This comment was similar to other comments in D3.0, all of which were resolved as OBE by D3.0 comment 72. The text in the response to D3.1 comment 16 is the exact text used to close the comments in D3.0.

Perhaps it was poorly worded but the agreement in the room was that the comment resolution group agreed by voice to reject the comment as the concept was that a 4P system is twice a 2P system and the 2P standard is not yet complete. The D3.0 commenter agreed that we reject his comment and he respond as unsatisfied so it would carry forward. If D3.1 comment 16 would have been in D3.0, it would have been closed as 'REJECT OBE 72'. This is what was done in effect, except the text from D3.0 comment 72 was brought over to D3.1 comment 16 so that the reader would not have to refer back to older comments. There was one other 4P comment in D3.1, it was a straight reject with no reason (again, at the agreement of the commenter to carry it forward) so D3.1 comment 16 could point to this other 4P comment as it would give the commenter no background on why it was rejected.

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Based on the number of comments this go around, the 2P standard STILL isn't done and 4P comments will likely be rejected again and carried forward.

Cl 00 SC 00 P L # 31016
Claseman, George Micrel

Comment Type TR Comment Status R

4P operation is not described. If this is not specified in 802.3at, an industry standard or proprietary scheme could emerge displacing this amendment. It is undesirable to make another revision on PoE (PoE ++) to repair this.

SuggestedRemedy

Send this back to the TF to complete the work on 4P. This has impact on the PSE, PD, management and L2 power management. Let's do it right this time.

Response Response Status U

REJECT.

This is a comment against D3.0 that was correctly submitted but mistakenly left out of the comment DB. This is how we handled the 4P comments in D3.0:

REJECT.

The group feels that finishing 2P is the priority and 4P will be address after that time, since the concept is that 4P = 2 x 2P.

Cl 25 SC 25.4.4a.1 P19 L27 # 119
Dawe, Piers Avago Technologies

Comment Type TR Comment Status R

This is not a standard for test equipment. You are defining an 'equivalent system time constant' which you should do precisely, without 1% (or is it 2%)? ambiguity and slop. It's up to the test equipment manufacturers and customers how accurately they want to measure this, or anything else, and whether they use instruments that won't give false positives, or false negatives, or will give their best estimate.

SuggestedRemedy

Remove the '+/- 1 %' from Figure 25-1.

Response Response Status U

REJECT.

I see the same approach taken in other clauses. ex/ section 7.4.1.5 DC Common Mode Output Voltage

Piers Dawe reply to the rejection:

Yes, other clauses did it in the past. Doesn't mean we should do it again.

Cl 30A SC 30A P L # 143
Thompson, Geoffrey Nortel

Comment Type ER Comment Status R 30A

Throughout Annex 30A

None of the links for the Annex 30A text that was provided to the Seoul meeting have been updated to provide the specific pointer (with embedded link) to the attribute syntax (i.e. the argument term for "WITH ATTRIBUTE SYNTAX") nor the operator type (i.e. the argument term for "MATCHES FOR")

Without the repair of these deficiencies, the draft is not complete.

I will attempt to provide individual comments for each problem that I find before the comment deadline. This comment is being entered to cover the problem in general and for any that I may miss.

SuggestedRemedy

Provide the specific pointer (with embedded link) for each instance of "WITH ATTRIBUTE SYNTAX" that is labeled "....Where?"

Provide the specific operator type for each instance of "MATCHES FOR" that is labeled "WHAT?" and/or any appropriate modification

Response Response Status U

REJECT.

802.3 Working Group has created a PAR to create a new standard (802.3.1) consolidating management and to separate Clause 30A and 30B from 802.3. The material removed from 802.3 is to be incorporated into the new standard. The maintenance task force has voted to take over changes to what has been contained in Clause 30A and 30B and have them handled by 802.3.1. Until such time as the WG plan of record changes, P802.3at will not update Clause 30A and 30B.

Therefore this comment is being rejected.

SME response:

PROPOSED ACCEPT IN PRINCIPLE.

We welcome the specific editorial changes from the commenter and appreciate his help

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Cl **30A** SC **30A** P L # **145**
Thompson, Geoffrey Nortel

Comment Type **ER** Comment Status **R** 30A

Throughout Annex 30A

The leaf registration values for each attribute, action etc. have not been filled in (as is normal for this stage of balloting).

The document should not progress to Sponsor Ballot without these values being filled in.

SuggestedRemedy

Fill in the attribute registration values with values that are appropriately unique across 802.3 and conform to 802.3 conventions for such values. This should be done during preparation of the draft for Initial Sponsor Ballot (but not before).

Response Response Status **U**

REJECT.

802.3 Working Group has created a PAR to create a new standard (802.3.1) consolidating management and to separate Clause 30A and 30B from 802.3. The material removed from 802.3 is to be incorporated into the new standard. The maintenance task force has voted to take over changes to what has been contained in Clause 30A and 30B and have them handled by 802.3.1. Until such time as the WG plan of record changes, P802.3at will not update Clause 30A and 30B.

Therefore this comment is being rejected.

SME response:

PROPOSED ACCEPT IN PRINCIPLE.

This needs to be done as part of the changes to go to SB

Cl **33** SC **33.1.3** P**37** L**8** # **123**
Dawe, Piers Avago Technologies

Comment Type **TR** Comment Status **R**

Fig 33-3 shows a PSE in a Midspan capable of applying power to a medium. There is a PI on the right, and an interface without a name on the left, the medium continues to a PHY with no PD (which you should not apply power to). By comparison, Fig 33-6 shows two arrangements which power the right hand side but not the left. The medium is not continuous through the Midspan. D3.0 comment 380 raised this problem before.

SuggestedRemedy

Correct Fig 33-3. Show some arrangement to break the continuity within the Midspan. Could also show a PHY with PD on the left.

Response Response Status **U**

REJECT.

The reply to D3.0 comment 380 still applies "A midspan doesn't have a PHY, therefore it doesn't have an MDI. This is our best effort to illustrate a midspan. Commentor is welcome to submit his own drawing"

The comment hints at a possible lack of understand of the concept of a midspan. This is a device that applies power to a PD that sits in between a non-PoE switch and a PD. The drawing shows the PI on the right which can be thought of as the output of the midspan. This is where you connect the PD and the only place where the midspan would ever apply power (hence the label PI). The unnamed connection to the left is to the legacy non-PoE switch. The midspan will not apply power to this portion of link segment (not if it wants to be compliant).

Piers Dawe reply to the rejection:

If the PHY on the left in this Figure 33-3 is a non-powered PHY you shouldn't connect it to the PI through the Midspan, which is what you show even though you say "The midspan will not apply power to this portion of link segment (not if it wants to be compliant)".

All you need to do is add some indication of a break in the medium within the midspan, to the left of the PSE.

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Cl 33	SC 33.2.3	P44	L50	# 31034
Darshan, Yair		Microsemi Corporation		
Comment Type	TR	Comment Status	R	
Draft 3.1				
The standard should not preclude implementations that are using both alternative A and B due to the following reasons:				
a) It is out of scope of the standard to limit implementations that meets standard requirements.				
b) There are no interoperability issues if PD gets power from 2x 2 pairs power source if all pairs are coming from the same port/segment/PSE type 2. It is the load responsibility (PD) to meet the 2P specification for each 2P.				
(4P ad hoc recommendations)				
<i>SuggestedRemedy</i>				
Change from:				
"A PSE shall implement Alternative A or Alternative B, or both.				
While a PSE may be capable of both Alternative A and Alternative B, PSEs shall not operate both Alternative A and Alternative B on the same link segment simultaneously".				
To:				
"A PSE shall implement Alternative A or Alternative B, or both.				
While a PSE may be capable of both Alternative A and Alternative B, PSEs shall not deliver power on both Alternative A and Alternative B simultaneously on the same segment				
If Alternative A and Alternative B are operated from different link segments or different power systems or from Type 1 PSE.				
For Type 2 PSEs, simultaneous operation of Alternative A and Alternative B on the same link segment is out of scope of the standard."				
In addition, in 33.3.1 page 50 line 42 modify the text to be:				
"NOTE-PDs that implement only Mode A or Mode B are specifically not allowed by this standard. PDs that may simultaneously receive power from both Mode A and Mode B are out of scope of this standard."				
Response		Response Status	U	
REJECT.				
See comment 31016				

Cl 33	SC 33.2.9	P61	L16	# 31198
Thompson, Geoff		Nortel		
Comment Type	TR	Comment Status	R	
Also line 20				
It makes no sense to require different voltage ranges for Type 1 vs. Type 2 PSE supplies except to the extent required to maintain far end voltage at the supplied (larger) current.				
That design freedom should be left to the implementor. See also next comment				
<i>SuggestedRemedy</i>				
Change item 1 Vmin from "50" to "37 + (Rch + Icable)"				
Change item 2 Vmin from "50" to "37 + (Rch + Icable)"				
Response		Response Status	U	
REJECT.				
Accepting the comment has the (perhaps) unintended effect of lowering the PD power to 22W.				
Straw poll taken from room:				
are you in favor to lowering the PD power to 22W				
20 people opposed to lowering the power to 22W				
zero people in favor of lowering the power to 22W				
rationalization follows:				
The remedy appears to have errors in it. I assume the proposer wants PSEs to provide a PSE voltage (lower than present values) that the PDs need, that is dependent on system parameters (cable length, cable quality, Ipd, PD type).				
This would be very difficult to test. I suggest the task force vote to determine if they want to give the proposer time to correct their text, or reject this because these changes may significantly complicate this specification.				
----- Here is what I believe was intended -----				
The proposed remedy adds a voltage to a resistance and a current. Assume the remedy should be:				
$V_{min} = 37 + R_{ch} * I_{cable}$				
Here 37 is suppose to be the Vpd. The proposal would be incorrect for type 2 PDs.				
Type 1 PD $V_{pd} = 37$				
Type 2 PD $V_{pd} = 50 - R_{ch} * I_{cable}$				
A minimum voltage could be calculated for a type 2 PD ($V_{pd} = 50 - 12.5 * 0.6 = 42.5$ V) and then the formula used could become:				

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$V_{min} = V_{pd_min} + R_{ch} \cdot I_{cable}$.

This formula is only valid during average power demand. Different values would result when PD I_{peak} was drawn.

Type 1 PD $V_{pd} = 44 - 0.4 \cdot 20 = 36$ V

Type 2 PD $V_{pd} = 50 - 0.6 \cdot 400/350 \cdot 12.5 = 41.4$ V

This gets more complicated when I_{peak} changes and a quadratic formula needs to be used to calculate currents.

Cl 33	SC 33.2.9	P61	L 16	# 31058
Anslow, Peter		Nortel Networks		
Comment Type	TR	Comment Status R		
Requiring 50 V minimum from a Type 2 PSE means that it cannot be operated from commonly available 48 V supplies. See Thompson comment #482				
SuggestedRemedy				
Change the following:				
Table 33-11, Item 1 Vport min PSE Type 2 to 44 volts				
Table 33-11, Item 2 min value, PSE Type 2 to 44 volts				
Table 33-18, Item 1 Vport min PSE Type 2 "50" value to "44" becoming "44-(RChxICable)"				
Table 33-18, Item 3 Voverload min PSE Type 2 "50" value to "44" becoming "44-(RChxICablex400/350)"				
In addition, it makes no sense to have different voltage ranges for Type 1 vs. Type 2 PDs as each has to be able to operate with the both types of PSEs during start-up. In particular a Type 2 PSD has to operate at the low voltage of a Type 1 during start-up while establishing the Data Link Layer communication				
Response	Response Status U			
REJECT.				
See 198 for lack of support to lower the PD power. This proposal lowers the power even further than comment 198.				
show of hands for people in favor of lowering power of the PD to slightly lower than 22W: for: 0 against: 20				
You are also missing a subtle point that when a type 2 is behaving as a type 1 at boot up, it has to operate over the type 1 range; therefore there are no difference in the operating ranges of a PD.				
Additionally, the same resolution to D3.0 comment 482 applies.				
During the May 2006 Interim, the IEEE 802.3at task force voted to adopt 50 V as the minimum Vport. Y: 37 N:0 A: 1 This was done after extensive evaluation of the system tradeoffs. One result of the discussions was the revelation that battery back up systems have only supplied about 10% of their available power when the voltage has reach 44V, therefore a boost system would be required to best utilize the available power fomr the battery backup system. It was determined that boosting to 50V was no more of a burden than boosting to 44V.				
----- Mutual identification of the PSE and PD type is possible. A Type 2 PD may provide useful functionality on a legacy system or it may indicate that it is under powered.				

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general

COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

SORT ORDER: Clause, Subclause, page, line

Cl 33
SC 33.2.9

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A type 2 PD range fits within a type 1 PD operating voltage range. Therefore, a type 1 (legacy) PD can be powered by a type 2 PSE.

A PSE normally would not change its voltage range when it provides power to different PD types.

Cl 33	SC 33.2.9	P61	L 16	# 147
Thompson, Geoffrey		Nortel		

Comment Type **TR** **Comment Status** **R**

D3.1 comment 58

The response to Mr Anslow is inaccurate.

- a) There is no reasonable rationale that all power levels have to be available at all voltages. That would require the PSE to be a voltage source rather than a current source which is an implementation matter and not proper for the standard to regulate.
- b) Since the max current and power is being lowered, there is no technical reason to mandate the higher voltage.

Therefore, I am "piling on" to his comment.

SuggestedRemedy

Allow a Vport min value down to as low as 44 volts in any situation in which the remaining operating requirements of the moment are being met.

Response **Response Status** **U**

REJECT.

Vote on accepting the suggested remedy.

Y: 1 N: 16 A: 7

CRG justification for rejection:

The group contends that lowering the port voltage lowers port power. Additionally, interoperability could be compromised by having compliant ports without the ability to provide 30W.

This is a new feature request. It may be a great feature but it is a big change to the text and is best left as a proprietary solution. It is the consensus of the CRG that we achieve all of our objectives without making this change.

SME response:

The interpretation of this comment appears different from the original proposer. The new comment reduces interoperability. Only some PDs will operate at the lower voltages and/or lower power levels.

This appears to be a feature that is outside the scope of this standard.

Also see response to D3.1, 58.

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Cl 33	SC 33.2.9	P61	L16	# 149
Thompson, Geoffrey		Nortel		
Comment Type	TR	Comment Status	R	
D3.1 comment 198				
The comment DOES NOT have the effect of lowering the maximum PD power to 22 watts. The group evidently either misunderstood the intention or wishes to miscommunicate about it.				
The proposed change allows for a lower voltage to be used at lower power levels and relieves the spec from having to the highest current at the lowest voltage. Not all power levels have to be provided at all voltage levels. You would get to reduce the power from the max by reducing the voltage.				
SuggestedRemedy				
As requested in previous comment.				
Response		Response Status	U	
REJECT.				
Vote on accepting the suggested remedy from D3.1 comment 198 which is:				
Change item 1 Vmin from "44" to "37+(Rch*Icable)" [corrected typos]				
Change item 2 Vmin from "50" to "37+(Rch*Icable)" [corrected typo]				
Y: 0 N: 17 A: 5				
CRG justification for rejection:				
The group contends that lowering the port voltage lowers port power. Additionally, interoperability could be compromised by having compliant ports without the ability to provide 30W.				
This is a new feature request. It may be a great feature but it is a big change to the text and is best left as a proprietary solution. It is the consensus of the CRG that we achieve all of our objectives without making this change.				

SME response:				
The task force interpreted the text differently than the subject matter expert.				
The task force requested the proposer to resubmit a corrected remedy. This was not done.				
See the text, in the original response, below the line "--- Here is what I believe was intended ---" for the subject matter expert interpretation.				

Cl 33	SC 33.3.1	P71	L42	# 31035
Darshan, Yair		Microsemi Corporation		
Comment Type	TR	Comment Status	R	
Draft D3.1:				
The note in line 42 precludes the ability to reduce power loss over the cable and increase overall system efficiency.				
Rational:				
Using a Type 2 PD that requires a total of 24W (example) on a 2P can also take a total of 24W over all 4 pairs with simple PD implementation.				
In this case this PD can work on 2P PSE or on 2x2P PSEs with the same PD behaviour which is transparent to the user.				
In addition let's assume that in this case both pairs are coming from the same box and the same power supply. This is a classical case in which by using all pairs we effectively reduce the channel power loss and allows interoperable and reliable operation.				
If Icable meet the specification of 2P then I<Icable certainly meets the same specification so preventing feeding the current all over the 4 pairs doesn't make sense.				
This is implementation that is inline with the global effort for reducing power loss and in my opinion we are not authorized to preclude implementations that meet the numbers and state machines of this standard.				
SuggestedRemedy				
Change from:				
"NOTE-PDs that implement only Mode A or Mode B are specifically not allowed by this standard. PDs that simultaneously require power from both Mode A and Mode B are specifically not allowed by this standard."				
to:				
"NOTE-PDs that implement only Mode A or Mode B are specifically not allowed by this standard. PDs that simultaneously may receive power from both Mode A and Mode B is out of scope of the standard"				
Response		Response Status	U	
REJECT.				
1) Comment is technically incorrect. This sentence does not preclude 24W over 4 pairs.				
2) The rest of the comment glosses over a set of complex issues involving how the PSE would determine it was acceptable to power all four pairs.				
3) The comment glosses over the special considerations needed in the PD to accommodate this new mode of operation.				
4) The Task Force has specifically made it clear that 2 separate PDs per four pair cable must be accommodated.				
5) Recommended solution does not address 2, 3, 4 and is not possible to implement in the context of a standard.				

CI 33	SC 33.3.6	P76	L12	# 148
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Nortel

148

Nortel

D3.1 comment 194

The methodology is contrary to the well accepted and proven practices of 802.3

Of the the 3 systems elements, PSE, cabling, PD specify only two.

REJECT.

Vote to pursue suggested remedy from D3.1 comment (many choices, TF to pick one):

Y: 0 N: 15 A: 2

The methodology has served well since the release of 802.3af in June 2003 so it is not without precedent. Furthermore, while commenter may be correct with respect to data communications standards, this degree of specificity is not uncommon in remote powering systems.

The system is defined by a quadratic equation which has two solutions for each operating point; one of which is unstable. Our rigid specification ensures operation at the stable solution.

Additionally, this is a new feature request. The TF has adopted the stance that it will take on no new work as of July 08. New feature requests require an accompanying solution. Commenter is welcome to submit marked up sections and new text required to implement comment for consideration. This is not a trivial change as it would touch many parts of the document.

31194

Nortel

Overall comment.

I believe that the system (i.e. PSE, cabling and PD) is over specified. Given our system configuration once you specify two of the elements, you have defined the results for the third and additional "shalls" just get in the way and provide the potential for technical conflict.

A number of solutions are possible. I suggest making PSE and cabling normative and just make the PD tolerate the results. That would require changing 33.3.7, page 78, line 12 to read something like:
"The power supply of the PD shall operate within the system constraints of the specified PSE and cabling systems. Those resulting values are provided in Table 33-18 for reference."

REJECT.

The TF has purposely engineered margin into the specifications of the PSE and PD by rigidly specifying each end, with the added bonus of ensuring interoperability. The Table has worst case values and a PD that conforms will be ensured to interoperate.

Vote to reject
y- 14 n-1

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CI 33 SC 33.3.7 P78 L25 # 31199
Thompson, Geoff Nortel

Comment Type TR Comment Status R

Also, line 34

It makes no sense to have different voltage ranges for Type 1 vs. Type 2 PDs as each has to behave identically during the start-up when Data Link Layer communication is being established. Specifically a Type 2 PSD has to operate at the low voltage of a Type 1 during this phase of operation

SuggestedRemedy

In Table 33-18, item 1, eliminate the Type 2 entry and have the Vmin parameter be 37 for all PDs under all conditions.

In Table 33-18, item 2, eliminate the Type 2 entry and have the Vmin parameter be 36 for all PDs under all conditions.

Response Response Status U

REJECT.

The differing minimum input voltages ensure maximum power delivery for each PD type. Higher operating voltages result in less cable loss making the system more efficient.

Also, see comment 58 for additional arguments against this solution.

Table 33-18 item 1 is for static operating input voltages, and includes the rated input power. This is correct. However it is desirable that a type 2 PD start like a type 1 PD if installed in an ".af" worst-case environment. This appears to be covered by the following:

Section 33.3.2 (P72 I5) indicates that a type 2 PD must conform to type 1 power restrictions.

33.3.5.2 (P77 I15) states a T2 PD only seeing a T1 PSE should conform to T1 electricals of T33-18.

33.3.7.3 states that a T2 PD should behave like a T1 PD during/after inrush/poweron.

CI 33 SC 33.4.8 P87 L51 # 76
Darshan, Yair Microsemi Corporation

Comment Type TR Comment Status R

We are doing the same mistake we did in the past in which the 350uH adhoc was formed to resolve by allowing the droop method (implementation independent) as alternative to the OCL (specific implementation).

In order to achieve 350uH (or its equivalent droop numbers) operation when Type 2 100BT ALT A Midspan is connected we forced implementation (regulating lunb to Type 1 levels) instead of specifying the Midspan output TX signal requirements so legacy recivers in the Switch will work.

SuggestedRemedy

Set the Midspan ad hoc to discuss it and propose a solution.

See attached file "Midspan 100BT ALT A TX output signal template" with possible alternative.

Response Response Status U

REJECT.

The TF has reviewed the presentation and the following vote was taken on the adoption of the presentation.

Y: 4 N: 11 A: 8

26%, no consensus to change existing text and existing text stands.