

I2007 Jan 17 IEEE PoEPlus Task Force Minutes

Start at 08:40.

Agenda:

- Intros
- Appoint Recording Secretary – Derek Koonce
- Discussion of the order of the meeting
- Background stuff
- Presentations
- Approve Minutes / other motions

Meeting Order

- Wed thru Fri – 8:30-17:00

Motion to approve schedule by xx, seconded by yy
Approve – unanimous

Ground Rules – mutual respect and consideration

- Mutual Respect
- All may speak and vote
- No restrictions on presentations or materials
- No prices in any currency
- 802.3 rules apply

Rules

- Official Rules of WG on IEEE Standards page

Patent Policy read by Mike McCormack

- Links provided
- No letters of assurance to present.
- No questions or patent applications issues brought up
- Any problems with Patent Policy, contact Bob Grow or David Law

Electronic information

- Web address – www.ieee802.org/3/at/index.html
- eMail reflector – stds-802-3-poep@ieee.org
- Next meeting – watch www.ieee802.org/meeting/index.html

Presentations

Liaison and Ad-Hoc Reports

TR42.7 Update to IEEE 802.3at - Current Carrying Capacity of Cabling - Valerie Rybinski, TIA TR-42 Liaison to IEEE 802.3 (0107_TR42_1.pdf)

- 9 companies participated; 5 provided data – the data is not being shared at this time. Only worse-case and recommendation is being provided.
- 36 cables to 149 cable bundles – chart shows data scaled to 100 cables per bundle
- Worse case temp rise for 5e, 6, 6a cables
 - Right side, on top, are the coefficients for curves (b and m are reversed)
- 10 °C rise is determined in last liaison letter – 4dB insertion loss, channel length of 100 m
- 720 mA per pair up to 45 °C ambient for Cat5e, 6, 6a (12 °C rise)
- Beyond 45°C ambient de-rate
- Maximum power over any bundle should not exceed 5000 W up to 45 °C; derated above 45 °C
 - Some members say a higher W is allowed, but this is discussion within TIA.
- Discussion on the 5000 W limit was generated by Yair. TIA is holding to this value until more data is in to study.
- 720 mA was used to get the 30 W for 802.3at; the 5000 W is a constraint.
- The last note on the NOTES page is based on 51 V on the PSE side and not on the PD side. Yair commented this should be 50 V
- This may be an annex in the TIA standard.
- Tasks recommended:
 - 5000 W does not match calculations
 - Correct PSE output voltage
- Next meeting of TIA in Houston, TX and last week in March near Irvine, CA

POEP Limit Proposal - Terry Cobb, Systimax Solutions (cobb_1_0107.pdf)

- Independent testing work
- Proposed several paragraphs of baseline text for draft to address cabling issues under PoE.

Current Carrying Capacity - Analysis of TR42.7 update to IEEE802.3at - Yair Darshan, MicroSemi / PowerDsine (darshan_1_0107.pdf - updated)

- In regards to the question, “Should TR42.7 work includes sufficient margin to account for actual higher cabling ambient temperatures?” There is no answer at this time by TR42.7.

Motion to accept TIA recommendation (0107_TR42_1.pdf) and the baseline text proposal from cobb_2_0107.pdf to be circulated with the 802.3at draft for comment and to be formally included later as edited. – by Terry Cobb

Motioned by Terry Cobb

Seconded by Yair Darshan

1. Baseline text #1

Installations which use any cabling defined in ISO/IEC 11801 Ed2.0, ISO/IEC Amend. 1 to Ed2.0, TIA-568-B.2, or TIA-568-B.2-10 will safely support the installation of all powered devices defined in Clause 33. This sub-clause defines the maximum limits and is not expected to impact most installations.

When power is applied to a cable the temperature of the cable will rise due to the current flow resistance of the cable. To limit the temperature rise on an individual cable the maximum continuous current per cable pair shall be limited to 0.72 amps.

When cables are bundled together this will increase the temperature of each cable. To limit the temperature rise of a cable in a bundle the maximum power that can be applied to a cable bundle shall be 5000 watts from all PSE's connected to that cable bundle.

2. Baseline text #2

The environment of the cable bundle will affect the magnitude of the temperature rise. When the ambient temperature around the cable bundle exceeds 45°C the maximum power to the cable bundle must be reduced. The maximum power to a cable bundle shall be decreased by 500 watts per °C for ambient temperatures of 46°C or greater. For installations that use Class EA or Class F cabling the maximum power to a cable bundle shall be decreased by 900 watts per °C for ambient temperatures of 50°C or greater. The ambient temperature is defined as the temperature of the air surrounding the cable bundle when power is not being supplied to the cables.

It is required that the PSE or PD (and supporting documentation) be labeled in a manner visible to the user with the maximum aggregate power that can be supplied to all PI ports in a PSE and the maximum power that may be required by the PD.

3. Baseline text #3

These requirements are intended that the cabling installation will operate within its rated temperature. The temperature rise of the cable is related to the resistance per length of the individual wires on a cable. A higher class or category of solid copper cable, such as Class E (Category 6), will generally have a lower resistance per length and Class EA (Category 6A) or Class F, does have a lower resistance per length. For installations that power all four pairs of a cable it is recommended that a Class E or better cabling should be used.

4. Baseline text #4

To ensure sufficient air flow, cable bundles and cable trays or conduits should not be insulated, surrounded, or encased with additional material for more than 0.5 meters along the length of the cable bundle, tray, or conduit.

Motion to defer the above motion until there can be a discussion to create a liaison.

Motioned by Tim Parker

Seconded by Yakov Belopolsky

- Discussion on where this information should be placed. This motion is to see what TR42.7 would put into their document so that PoE Plus can reference; this is to avoid putting cabling information within the PoE specification.

Motion to recess for 1 hour by Wael Diab. Derek Koonce seconded. Motion passed by unanimously by voice.

- Straw poll – how many people believe the meat of initial proposal should be in the 802.3 spec : Yes – 1, Believe in being in somebody’s cabling spec – 24, Abstaining – 9

Terry withdraws his motion of adding the Baseline paragraphs. Yair agrees to the motion withdrawal.

Yair motions “Propose to accept the 360 ma, 45 °C for the maximum current as per *TR42.7 Update to IEEE 802.3at - Current Carrying Capacity of Cabling* (0107_TR42_1.pdf) at this point in time.” (need to correct to original motion)

Friendly amendment to “Propose to accept the 360 ma per conductor as a basis for the maximum current at this point in time.”

Seconded by Clay Stanford

Technical, 75% needed

Room: Yea – 34, Nay – 0, Abstain – 6

802.3 voters: Yea – 24, Nay – 0, Abstain – 1

Motion Passes

Layer 2 Power Management Proposal – Hugh Barass (barrass_02_0107.pdf)

- Communication protocol is once per 30 seconds – correction to slide 4

Motion by Hugh Barass - Move that the Task Force adopts barrass_2_0107.pdf as the baseline for the L2 management mechanism for 802.3at (not including the TLV definitions). Baseline limited to slides: 7, 8, 9, 10, 11 & 15 (as modified in version 2).

Seconded by Dan Dove

Technical, 75% needed

Room: Yea – 22, Nay – 0, Abstain – 15

802.3 voters: Yea – 18, Nay – 0, Abstain – 9

Motion Passes

(Secretary’s note 2007 Jan 25: Actual presentation file on the web is barrass_1_0107.pdf)

PoE Plus IEEE 802.3at Classification Ad Hoc Extended Classification Using Two Classification Events (stanford1 1-17-07.pdf) (*Secretary's note 2007 Jan 25: Actual presentation file is stanford_1_0107.pdf*)

Motion by Clay Stanford: Move that: The P802.3at Task Force accepts presentation "Stanford1-17-07.pdf" titled *PoE Plus IEEE 802.3at Classification Ad Hoc Extended Classification Using Two Classification Events* as the baseline definition of the layer 1 classification mechanism.

Seconded by Yair Darshan

Friendly amendment by Wael Diab to: Move that: The P802.3at Task Force accepts slides 8, 9 and 10 & 11 from presentation "Stanford1-17-07.pdf" titled *PoE Plus IEEE 802.3at Classification Ad Hoc Extended Classification Using Two Classification Events* to augment the baseline proposal "Diab_schindler_1106_1.pdf" of the classification mechanism. (*Secretary's note 2007 Jan 25: Actual presentation file is stanford_1_0107.pdf*)

Friendly amendment by Mike McCormack to adjust the 2nd Class max timing from 18 ms to 30 ms. – Accepted by C.S. & Y.D.

- Discussions on the motion:
 - Mike McCormack requests that the actual definitions of the timing edges are TBD. – Classification group must work on this definition.
 - Friendly amendment to change 1st mark maximum from 4 ms to 10 ms, and 2nd mark maximum from 4 ms to xx ms – by Tong. Amendment considered unfriendly by Yair Darshan.
 - Chair would like to have this motion held until 2pm on Friday to clarify the timing values.

Motion to postpone this motion no later than 2pm Friday – by Mike McCormack

Seconded by Clay Stanford

Friendly amendment by Wael to change to "no later than 2pm" – approved by MM & CS.

Procedural, 50%

Yes - 31, No - 0, Abstain - 3

Meeting recessed at 17:17.

2007 Jan 18 IEEE PoEPlus Task Force Minutes

Start at 08:35.

Durability of Connecting Hardware under Electrical Load for PoE Applications – Yakov Belopolsky (.pdf)

- The connector has three areas of contact – initial/final contact, wiping area, and nominal contact area. Damage is seen in the first section, but it is the final section that is of concern for the contact resistance during operation.
- Long-term concern is corrosion.
- Page 23 of presentation – Shielded connectors on the right of V2, unshielded on the left. Only 1 connector failed, but this was a mechanical failure and not due to electrical.
- Contact resistance appears to be, in general, less than 10 m Ω , if not 5 m Ω , in all test results. (20 m Ω is the limit)
- Damage appears to be seen more on the jack rather than the plug.
- Conclusions
 - Un-mating under power is when damage to contact can occur.
 - Damage area is separate from the nominal contact area when powered.
 - It is expected that the more power involved, the more damage that can occur.
 - It is possible that there are designs where the separation between disconnect zone and nominal contact zone is so small that damage due to un-mating under power becomes a problem.

Vport ad-hoc update – Fred Schindler, Cisco (schindler_1_0107.pdf)

- Presented work to date.
 - Suggested some wording to voltage transients and di/dt requirements
- Next step is to identify more specifications

PoE system operating concept - Yair Darshan, Micro semi/PowerDsine (darshan_3_0107.pdf)

- Summarize where we are at this time.

Liaison Letter for cable standards – Stephen Sedio, Foxconn

- Try to get a current per bundle instead of wattage
- Get defined to handle other cabling in the future
- Discussion on the amount of current or wattage in a cable. The TIA is for the U.S. We will need to go to ISO for international recognition
- Discussion about where cabling information should be placed – who's specification?
- Questions to answer in any letter:
 - How do we deal with the problem?
 - How do we run higher power at high temp?
 - We would like to continue to support, is .af a problem with this data?
 - Does it make sense to refer to a spec in the draft?

- Keep from overheating the cables.

IEEE 802.3at requests the chair of IEEE 802.3 to send the liaison letter in document 0107_P802_3at_1.pdf to TIA TR42 and ISO/IEC with editorial license to the chair.

We would like to reference something in the cabling standard that meets the temperature requirements for cabling, while supporting the power objective for 802.3at, without disturbing the existing specification for 802.3af.

If so, can you let us know the document to reference, current status, and expected completion schedule?

If not, can you help us by directing us to the appropriate organization?

Motion by Wael Diab.

Seconded by Stephen Sedio

Procedural

Yes - 30, No - 0, Abstain - 5

Back to timing issues from Wednesday's presentation by Clay Stanford, *PoE Plus IEEE 802.3at Classification Ad Hoc Extended Classification Using Two Classification Events*

- Define timing as to when it reaches the specified voltage range
 - Class Event 1 (15.5V -20.5V): 6 ms to 30 ms; enter to exit of 15.5V level
 - Discharge along $dt = c / I * dv = 0.66\mu\text{f} / 40\text{ma} * (20.5-10\text{V}) = 0.17\text{ms}$
 - Discharge based on I_{class} and switch over to 25k Ω discharge cycle.
 - Worse-case is all 25k Ω discharge plus, 0.25mA IC current
 - $dt = c / I * dy = 0.66\mu\text{F} / 0.25\text{ma} * (15.5-7\text{V}) = 22.4\text{ms}$
 - Mark event 1 (7V-10V):

Straw pole: accept table A or B or marks to be TBD?

Table A		
Event	Min	Max
Class events	6 ms	30 ms
mark events	2 ms	4 ms

Table B		
Event	Min	Max
Class events	6 ms	30 ms
mark events	6 ms	12 ms

Table A: 20, Table B: 16, TBD: 10

Motion: The P802.3at Task Force accepts slides 8-11 of Presentation “Stanford1 1-17-07.pdf titled PoE Plus IEEE 802.3at Classification Ad Hoc Extended Classification Using Two Classification Events to augment the baseline proposal “Diab_Schindler_1107_1” classification mechanism, changing timing per table.

By Clay Stanford

Seconded by Yair Darshan

Technical motion, 75%

All: Yes – 30, No – 0, Abstain – 6

802.3: Yes – 23, No – 0, Abstain – 5

Motion passes

(Secretary’s note 2007 Jan 25: Actual presentation file is stanford_1_0107.pdf)

Motion to adjourn by Bill Delveaux, Seconded by Andrew Smith – Motion passes unanimously by voice.

Event	Min	Max
1 st Class event	6 ms	30 ms
1 st mark event	6 ms	12 ms
2 nd Class event	6 ms	30 ms
2 nd mark event	6 ms	12 ms
Total (for ref)	16 ms	68 ms

Submitted by Derek Koonce, acting secretary

