



## TR-42 – Engineering Committee on User Premises Telecommunications Infrastructure

**Date:** Sept 27, 2007  
**To:** Bob Grow, Chair IEEE 802.3 (bob.grow@intel.com)  
**cc:** Michael McCormack, Chair IEEE 802.3at (mike\_mccormack@ti.com)  
Wael Diab, Secretary IEEE 802.3at (wdiab@broadcom.com)  
Bob Jensen, Vice-chair TIA TR-42 (robert.jensen@flukenetworks.com)  
Mariana Kramarikova, TIA (mkramarikova@tiaonline.org)  
Valerie Rybinski, TIA TR-42 Liaison to IEEE (valerie\_rybinski@siemon.com)  
Chris DiMinico, IEEE Liaison to TIA TR-42 (cdiminico@ieee.org)  
Shadi AbuGhazaleh, Chair TR42.7/TR42.1 DCTG (sabughaz@hubbell.com)  
**From:** Herb Congdon, Chair, TR-42 (hvcongdon@tycoelectronics.com)

**Subject:** Clarification of liaison responses and contributions.

Thank you for your liaison dated August 3, 2007 requesting clarification of responses to some of our prior contributions and our liaison responses. Please find responses to each question of clarification below.

### **Question 1:**

Regarding the January contribution (Please refer to the following link page 5 of [http://www.ieee802.org/3/at/public/jan07/0107\\_TR42\\_1.pdf](http://www.ieee802.org/3/at/public/jan07/0107_TR42_1.pdf)), there seems to be some confusion as to whether it is the current per cable, the total power or both that needs to be de-rated to 0mA. Some in the group have interpreted the contribution to mean that cables carrying full load at 720 mA (stated at 45C) can still operate near 60C so long as the total power in the cable bundle is under the maximum recommendation.

### **Response to question 1:**

From the experiments performed in TR-42.7 on up to four pairs, the 720 mA (stated at 45C) current carrying capacity should be de-rated on each individual cable. Upon further consideration a three degree temp rise consistent with a current carrying capacity of 350 mA at 60C ambient is considered negligible. We are working on a de-rating curve that will reflect the 350 mA current carrying capacity at 60C.

**Question 2:**

Regarding the January contribution (Please refer to the following link pages 5 and 6 of [http://www.ieee802.org/3/at/public/jan07/0107\\_TR42\\_1.pdf](http://www.ieee802.org/3/at/public/jan07/0107_TR42_1.pdf)), has there been any new work done to determine what the TBDs listed, specifically:

- a. 60C page 5 second bullet
- b. 5000W page 5 second bullet
- c. 60C page 5 third bullet
- d. 5000W page 6 third bullet

**Response to question 2:**

We use 60C because our standards specify the electrical transmission performance e.g. IL and delay. Many installed cables meeting the electrical performance of our standards are specified to a maximum operating temperature of 60C, the minimum operating temp per NEC. The TBD associated with 60C was used to reflect that there are cables that have operating temperatures greater than 60C. Referring back to question1 the 60C is no longer a TBD. For 5000 W question see responses of clarification below.

**Question 3:**

Regarding the de-rating recommendation per bundle, are you planning to include a mechanism in your TSB to allow compliance with such a recommendation? If not, how will the end customers be able to comply with such a recommendation?

- a. Are there any similar mechanisms in place that are already used in the cable plant design process?

**Response to question 3:**

The TSB is not a compliance document. It will provide appropriate guidance on usage of bundled cabling configurations including conduit usage e.g., maximum power inserted into an individual cable bundle. This will be related to maximum bundle size. Our recommendations will include the maximum number of cables that can be powered in a bundle.

As mentioned above, we are working on a de-rating curve that will reflect the 350 mA currently carrying capacity at 60C (see question 1). The de-rating of power in bundled cabling is not intended to be a separate process or step but is accommodated by the de-rating of current carrying capacity of cabling links.

**Question 4:**

We look forward to your draft on current-carrying capacity. Will the bundle power limit be included in the draft? Please clarify and/or share a draft of your work with our group?

**Response to question 4:**

See response to question 3. We will be pleased to share a draft when it's available.

**Question 5:**

Can you provide us a continuous de-rating graph that shows the amount of current a cable is capable of carrying on 4-Pairs vs. the ambient temperature, over the 25C to 60C temperature

range? If not, can you provide additional data points on the current-carrying capacity at 50C, 55C and 60C?

**Response to question 5:**

See response to question 1.

**Question 6:**

Can you provide us a continuous de-rating graph that shows the amount of power a cable bundle is capable of carrying on 4-Pairs vs. the ambient temperature, over the 25C to 60C temperature range? If not, can you provide additional data points on the power bundle capacity at 50C, 55C and 60C?

**Response to question 6:**

See response to question 1.

**Question 7:**

Can you please clarify what the 5000W number that appears in the contribution from January (Please refer to following link pages 5 and 6 of [http://www.ieee802.org/3/at/public/jan07/0107\\_TR42\\_1.pdf](http://www.ieee802.org/3/at/public/jan07/0107_TR42_1.pdf)), is this the power at the PD or at the PSE?

**Response to question 7:**

The 5000 watts refers to the power from the PSE's.

**Question 8:**

Regarding our previous communication to you, the graph that was included (reproduced below) was intended to show the power dissipation in the channel not that of the PD. To that effect, our question is repeated again. Please see the attached graph. Does this graph accurately reflect your de-rating guidance per the technical contribution (Please refer to following link [http://www.ieee802.org/3/at/public/jan07/0107\\_TR42\\_1.pdf](http://www.ieee802.org/3/at/public/jan07/0107_TR42_1.pdf))?

**Response to question 8:**

We recognize that the graph does represent the power in a single channel but it does not represent what we are recommending for de-rating. See response to question 1.