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TR-42 – Engineering Committee on User Premises Telecommunications Cabling Systems

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From: Herb Congdon, Chair, TR-42 (hvcongdon@tycoelectronics.com)

Subject: Update on telecommunications cabling to support IEEE 802.3at

The TIA TR-42 Engineering Committee is pleased to let you know that TR-42.7 has created a new project to develop a Technical Systems Bulletin (TSB) titled "Guidelines for supporting power delivery over balanced twisted-pair cabling." TR-42.7 is developing a first draft of this bulletin that is targeted for a TIA committee ballot after the first week of August 2008.

The scope of the technical systems bulletin is to support applications that deliver power over telecommunications cabling. The TSB will cover the transmission and other parameters needed to support power delivery over balanced twisted-pair cabling. The TSB will cover various installation scenarios and how these may impact the capability of telecommunications cabling to support power delivery. This TSB includes design, implementation, and testing guidelines for balanced twisted-pair cabling supporting power delivery.

We plan to send this document to you at that time for review and comment.

We have reviewed a copy of the ISO/IEC JTC 1/SC 25/WG 3 N 864, 2008-02-28 liaison report to IEEE 802.3 on telecommunications cabling issues to support IEEE P802.3at, and would like to generally support this liaison while providing further analysis and detail. Specifically the temperature vs. current capacity was updated as shown in Table 1 and further clarified below. This table represents current capacity per pair for temperature rise in a 100-cable bundle for category 5e cables with all pairs energized.

Table 1 Current capacity for a category 5e 100-cable bundle

| Temperature Rise (° C) | Current Capacity (mA) |
|------------------------|-----------------------|
| 5 | 420 |
| 7.5 | 520 |
| 10 | 600 |
| 12.5 | 670 |
| 15 | 720 |

The maximum current per pair for a given ambient temperature (t) can be approximated by using the following formula:

$$I_t = K \cdot \left(1 - \frac{t}{60} \right)^{0.5} \text{ A} \quad (1)$$

Where: $K = 1.47$ for a Category 5e cabling 100 cable bundle.

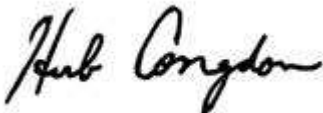
Table 2 Calculated current capacity for cat5e 100 cable bundle

| t (°C) | I _t (mA) |
|--------|---------------------|
| 55 | 424 |
| 52.5 | 520 |
| 50 | 600 |
| 47.5 | 671 |
| 45 | 735 |

Table 2 is the informative values calculated from equation 1 which are consistent with the ISO/IEC JTC 1/SC 25/WG 3 N 864, 2008-02-28 liaison report (revised) as shown in Table 1 except for t=45°C.

We look forward to continue our cooperation and will keep you informed as we make further progress. The next TR-42.7 meeting is scheduled for August 5, 2008.

Best regards,



Herb Congdon