

Report of the meeting of the IEEE 802.3.bt task force cable heating ad hoc web and teleconference meeting 3/7/14

This meeting was attended by Jeff Heath, Alan Flatman, Paul Kish, Brian Celella, Arne Keller, Rob Gould, Chris DiMinico, and Ron Tellas.

The following contributions were reviewed:

- A contribution from Chris reviewing the content of TIA TSB-184
- Alan reviewed a liaison letter from ISO, in response to a liaison letter they received from IEEE.
- A contribution from Arne on work being done in Cenelec to study cable heating

It was pointed out that most of the testing that has been done so far has been at room temperature ambient, and there is a concern the results may be different at elevated ambient temperatures. This is being studied in new tests.

There was a view expressed that a cabling DC resistance unbalance between pairs of as much as 10 % might be acceptable, since there are other elements in the system that also contribute unbalance, and it can be overcome with robust design.

It was reported that a 3 m long bundle is sufficiently long. The basis for this was a test done with a number of thermocouples spaced along the length of the bundle, which showed a plateau in the temperature in the middle of the length.

There was a discussion of testing the cable heating to the point of failure, which has not generally been done. There were some reports of connector damage under currents of 1 Amp to 5 Amps, but no reports of damage to cable. We do not seem to know what would actually happen to the cable itself if the current were arbitrarily increased until failure occurred, that is, we don't know what the failure mechanism would be. IN one instance the current per conductor was increased to 1.2 Amps, which was the limit of the test equipment capacity, and no physical damage occurred.

There was a discussion of the effects of humidity on the cable heating. There were two opinions expressed, one that elevated humidity would increase cable heating, and one that it would make no difference. We also wondered the effects of lower pressure.

Action items:

- Determine the cabling DC resistance unbalance between pairs
- Determine if the DC resistance unbalance within pairs that we have now is good enough
- Determine the difference in cable heating based on elevated ambient temperature
- Determine the effect of barometric pressure on cable heating
- (Arne) test a group of 3 bundles, and a group of 9 bundles, laid together in the same tray