

Proposed Remedy for comment #96 from George Z.  
Comment (#96 clause 31.3 page 43 line 50)

Is  $I_{cable}$  the current on one twisted pair, or is it the "Nominal Highest Current per pair" as in the header on Table 33-1?

Yair: It is the "Nominal Highest Current per pair" as in the header on Table 33-1".

For Type 1 and Type 2:  $I_{cable}$  is the maximum DC current per pair.

For Type 3 and Type 4  $I_{cable}$  is the maximum DC current per pair assuming 100% balanced system i.e. the total current is  $2 \times I_{cable}$  in a single cable.

When there is unbalance which is 99.999% of the cases,  $I_{cable}$  which is the pairset current can get values higher than what specified i.e.  $I_{con-2P\_unb}$  while the other pair will have lower current than  $I_{cable}$  so always the total current will stay  $2 \times I_{cable}$  which is thermally what is important.

So the definition in Table 33-1 is correct with the addition of note 1 explaining the above in short.

Regarding Type 4: The  $I_{cable}$  was calculated to cover the 100W max case (to include system power supply accuracy and peak power considerations) although formally Type 4 is about 90W min at the PSE and max 90W at the PD so in order not to block implementations that can squeeze more, we define the maximum possibility.

As a result, Note 1 can be further improved:

1  $I_{cable}$  is defined for 100% balanced operation where the total 4-pair current,  $I_{port}$ , is divided by half resulting with  $I_{cable}$ . In Type 3 and Type 4 operation, the current per pairset may be impacted by pair-to-pair system resistance unbalance which may cause  $I_{cable}$  on one of the pairs of the pairs with the same polarity to be higher per  $I_{con-2P\_unb}$  in Table 33-17 while the other pair will get to value lower than  $I_{cable}$  resulting with total  $2 \times I_{cable}$  over the a single 4-pair cable.  
See 33.2.8.4.1.

In the discussion in this paragraph, it appears that  $I_{cable}$  is the current per pair.

Yair: Correct (assuming 100% balanced system).

Everywhere else, it is the nominal highest current per pair (see, e.g., 33.1.3.1)

Yair: See above.

In other places it is unclear (e.g., Table 33-17, where it is part of a technical requirement)

Yair: In Table 33-17 it is clear that it is the current for unbalanced system calculated for 90W min PSE power as required.

#### **Proposed Remdy:**

Modify note 1 below Table 33-1 to:

1  $I_{cable}$  is defined for 100% balanced operation where the total 4-pair current,  $I_{port}$ , is divided by half resulting with  $I_{cable}$ . In Type 3 and Type 4 operation, the current per pairset may be impacted by pair-to-pair system resistance unbalance which may cause  $I_{cable}$  on one of the pairs of the pairs with the same polarity to be higher per  $I_{con-2P\_unb}$  in Table 33-17 while the other pair will get to value lower than  $I_{cable}$  resulting with total  $2 \times I_{cable}$  over the a single 4-pair cable. See 33.2.8.4.1.