Comment #54 (Clause 33.2.8.4, Page 107, Line 33)

Comment summary:

(1) There are 2 different equations for Ipeak-2P_unb: EQ 33-9 and EQ 33-11.

(2) EQ 33-9 describes IPeak-2P_unb as a function of Ipeak that is in turn a function of PSE port voltage and PD load.

(3) EQ 33-11 describes IPeak-2P_unb as a function of ILIM-2P, but ILIM-2P is not a function of PSE port voltage or PD load - it is a fixed value greater than ILIM-2P_min. Also, my sample calculation of Ipeak-2P_unb for Class 6 (828mA) produces a figure well higher than ILIM-2P_min (702 mA) for Class 6.

(4) Is EQ 33-11 indicating that ILIM-2P_min must be higher than what is in Table 33-17 ??????

Response:

(1) Equation 33-9 is the general case for calculation Ipeak_2P_unb. It is using Equation 33-10 to calculate Kipeak. Kipeak is calculated with Rchan-2P numbers (0.1 ohm to 12.5 ohm).
(2) Equation 33-11 is setting the worst case value in terms of fixed values to those who wants to plug fixed numbers and are not intending to use Equation 33-9.
(3) Here is the correct way to calculate it:
Ipeak-2P_unb=0.5*(1+Kipeak)*Ipeak.
Kipeak=min(0.199*12.5^-0.35, 0.3)=0.088 (Here you need to use Rch for worst case as shown in Equation 33-10 since Kipeak was curve fit to 2-pairs.)
Ipeak-2P_unb=0.5*(1+0.088)*(50V-(50V^2-4*6.25 Ω *51W*1.05)^0.5)/(2*6.25Ω)=0.6892A ➜ 0.7A
(Here you need to use Rchan max for 4 –pairs which is 6.25 Ω and use total 4-pairs power multiplied by the peak power /average power ratio=1.05)
ILIM-2P=Ipeak-2P_unb+0.002A
(4) NO. See 1,2,3.

Proposed Remedy:

1. Implement proposed remedy to comment #37 that clarifies which Rchan equation 33-10 must use. (We tried to do it in D1.6 but it looks that using the term Rchan/2 in equation 33-10 is not sufficiently clear.)
2. In 33.1.3, page 46 lines 5-6: Modify the text as follows:
R_{Chan} is the actual DC loop resistance between the PI of the PSE and the PI of the PD. Rchan has a maximum value of Rch/2 when operating over 4-pairs.
$R_{Chan-2P}$ is the actual DC loop resistance of a pairset from the viewpoint of the PSE and the PD PI and has a maximum value of Rch.