33.2.8.4 Continuous output current capability in the POWER_ON state

[Rch is already defined in Table 33-1 for a pairset.
In order that this comment can use the remedy for comment #56 for the new definitions R_Chan and R_Chan-2P, it is required that the remedy for comment #56 will be modified by replacing Rch with Rchan-2P in Table 33-1 as well and its related text.]

IPort-2P and IPort-2P-other are the currents on the pairs with the same polarity of the two pairsets ……

In addition to ICon, ICon-2P and ICon-2P unb as specified in Table 33–11, the PSE shall support the following AC current waveform parameters, while within the operating voltage range of VPort PSE-2P:

IPeak, IPeak-2P unb, and IPeak-2P minimum for TCUT-2P minimum and 5% duty cycle minimum on each powered pairset, where

1. Equation 33-8 is for Total Ipeak and using Total Ppeak-PD but using Rchan defined for 2-pairs while this equation is used for 4-pairs as well.
2. Equation 33-10 was derived for Rchan for 2-pairs i.e Ipeak-2P_unb/Ipeak-2P. This need to be specified.

$$I_{Peak} = \left\{ \frac{V_{PSE} - \sqrt{V_{PSE}^2 - 4 \times R_{Chan} \times P_{Peak\_PD}}}{2 \times R_{Chan}} \right\}_A \quad (33\text{–}8)$$

where

V_{PSE}	is the voltage at the PSE PI as defined in 1.4.426
R_{Chan}	is the channel loop resistance as defined in 33.1.3
$P_{Peak\ PD}$	is the total peak power a PD may draw for its Class; see Table 33–28.

IPeak is the total current of both pairs with the same polarity that a PSE supports. IPeak-2P unb is the minimum current due to unbalance effects that a PSE must support on a pairset as defined by Equation (33–9). IPeak-2P is the minimum current a PSE must support on each powered pairset, as defined by Equation (33–11).

$$I_{Peak\text{-}2P\_unb} = \left\{ (1 + K_{IPeak}) \times \frac{I_{Peak}}{2} \right\}_A \quad (33\text{–}9)$$

where

KIPeak	The value of KIPeak, defined in Equation 33–10, is based on a curve fit and is dimensionless.
IPeak	is the total peak current a PSE supports per Equation 33–12

$$K_{Ipeak} = \begin{cases} \min(0.214 \times R_{chan}^{-0.363}, 0.330) & \text{for Class 5} \\ \min(0.199 \times R_{chan}^{-0.350}, 0.300) & \text{for Class 6} \\ \min(0.180 \times R_{chan}^{-0.326}, 0.270) & \text{for Class 7} \\ \min(0.176 \times R_{chan}^{-0.325}, 0.260) & \text{for Class 8} \end{cases} \quad (33\text{–}10)$$

where

R_{Chan}	is the channel loop resistance as defined in 33.1.3.

Editor to divid Rchan by 2.

[See next page for more]

A comment was made for this document to add to table 33-17 a fixed value of Ipeak-2P_unb per class as we did for Icon-2P_unb in addition to the flexibility introduced by using equations 33-9 and 33-10 as function of Rch. See proposal in next page.

Group to select between the following options.

Option 1: Add to table 33-17 new parameter for Ipeak-2P_unb prior to item 12 ILIM-2P.

#	Parameter	Symbol	Units	Min	Max	PSE Type	Additional Information
11a	Pairset peak current including unbalance effect						
	Class 5	Ipeak-2P_unb	A	TBD		3	**See 33.2.8.4.** **.**
	Class 6			TBD		3	
	Class 7.			TBD		4	
	Class 8			TBD		**4**	

Option 2:

To add the following text to 33.2.8.4:

Ipeak-2P_unb can be derived from ILIM-2P at worst case condition according to equation 33-TBD.

$$I_{peak-2P\_UNB} = \{I_{LIM-2P} - 0.002\}_A \qquad \text{Equation 33-TBD}$$

Where

$I_{peak-2P\_unb}$ is the peak current per pairset including unbalance effect.

I_{LIM-2P} is the minimum output current per pairset under short condition as specified in Table 33-17.