

# Extended Power baseline proposal

v270

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# Goal

Objective:  $P_{\text{Class}} - P_{\text{Class\_PD}}$  is power reserved for cable losses. The goal is to make this power available to the PD if it has additional information about actual channel losses. The amount of power available depends on actual channel losses & PSE power allocation policy.

Several things are needed:

- Table 33-18 Item 4 forbids PDs from exceeding  $P_{\text{class\_PD}}$
- PD may not cause PSE to source  $> P_{\text{class}}$
- Extended power is only possible for Class 6 and 8 PDs

# Table 33-18 -- PD power supply limits

Change in Table 33-18

Item	Parameter	Symbol	Unit	Min	Max	PD Type	Additional information
4	Input average power, Class 0 and Class 3	Pclass_PD	W		13	1	See 33.3.7.2, Table 33-1
	Input average power, Class 1				3.84	1	
	Input average power, Class 2				6.49	1	
	Input average power, Class 4				25.5	2	
	Input average power, Class 5				TBD	3	
	Input guaranteed available average power, Class 6				TBD	3	
	Input average power, Class 7				TBD	4	
	Input guaranteed available average power, Class 8				TBD	4	

# 33.3.7.2 Input average power

Add to section 33.3.7.2

## 33.3.7.2 Input average power

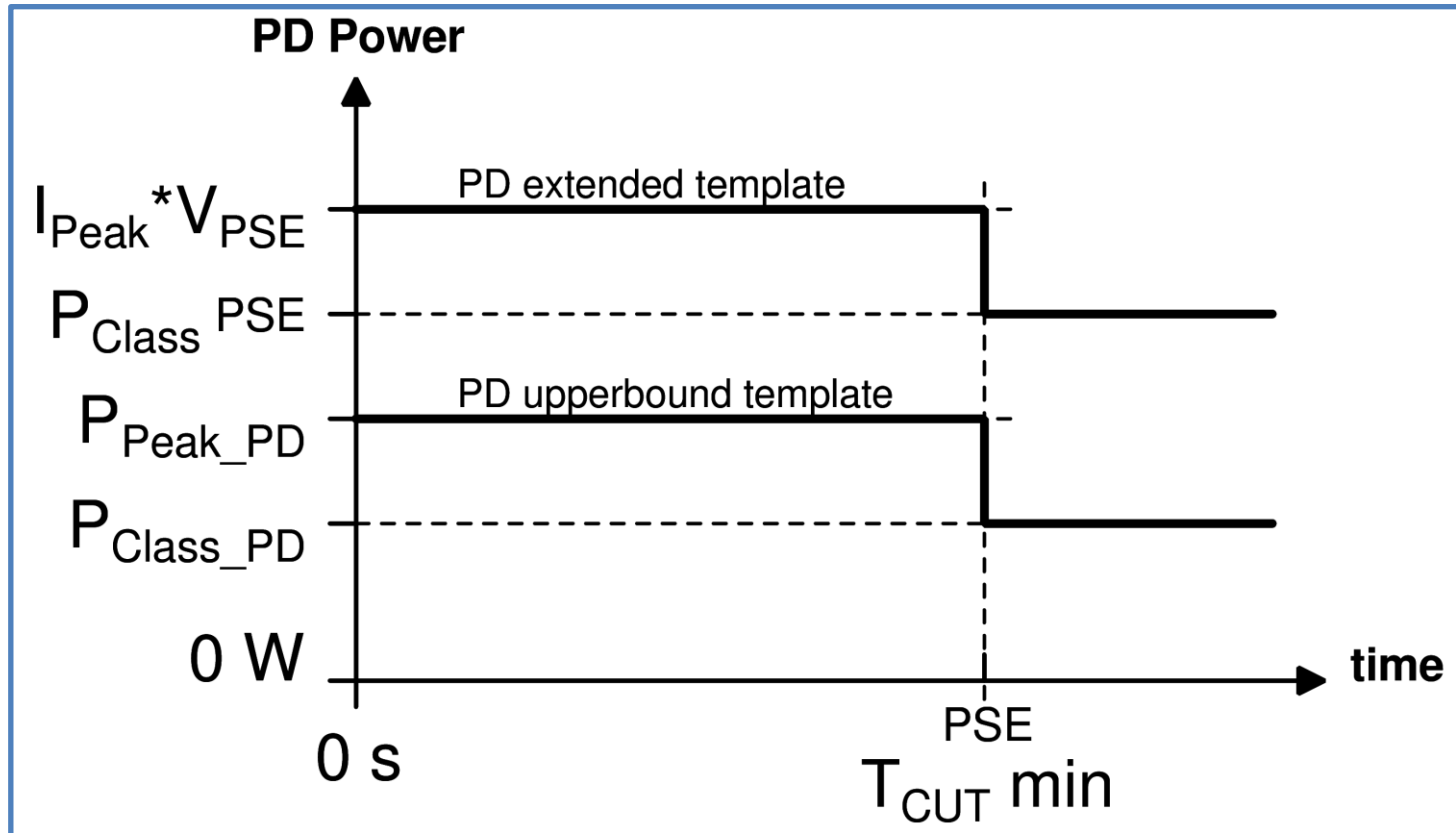
The maximum average power,  $P_{\text{Class\_PD}}$  in Table 33–18 or `PDMaxPowerValue` in 33.6.3.3, is calculated over a 1 second interval. PDs may dynamically adjust their maximum required operating power below  $P_{\text{Class\_PD}}$  as described in 33.6.

NOTE—Average power is calculated using any sliding window with a width of 1 s.

For Class 6 or 8 PDs, the input guaranteed available average power is the maximum power the PD shall consume when no additional information is available to the PD regarding actual channel DC resistance. If such a PD has additional information and does not cause the PSE to source more than  $P_{\text{Class}}$  it may exceed the maximum input guaranteed average power.

# 33.3.7.5 Peak transient current

Replace Figure 33-18



Info: The extended template is based on PSE PI parameters. At  $R_{chan} = R_{ch}$  the extended and upperbound template lines are fully overlapping.

# 33.3.7.5 Peak transient current

Replace:

Under normal operating conditions when there are no transients applied at the PD PI, the PD shall operate below the PD upperbound template defined in Figure 33–18.

By:

Under normal operating conditions when there are no transients applied at the PD PI, Class 6 or Class 8 PDs, shall operate below the PD extended template defined in Figure 33-18. PDs of all other classes shall operate below the PD upperbound template defined in Figure 33-18.

Clarification: this text & figure do not allow the PD the exceed the upperbound template unconditionally. The condition is that the PSE shall not be caused to source more than  $P_{class}$ . This restriction is handled in section 33.3.7.2.

# 33.3.7.5 Peak transient current

Add after description of  $P_{PDUT}(t)$  in 33.3.7.5

The PD extended template in Figure 33-18,  $P_{PDET}$ , is described by Equation (33-xx):

$$P_{PDET}(t) = \left\{ \begin{array}{l} I_{Peak} \times V_{PSE} \text{ for } (0 \leq t \leq T_{cut \text{ min}}) \\ P_{Class} \text{ for } (T_{cut \text{ min}} \leq t) \end{array} \right\}^W$$

where

$t$  is the duration in seconds that the PD sinks  $I_{port}$   
 $P_{Peak\_PD}$  is the peak operating power,  $P_{peak\_Pd}^{max}$ , as defined in Table 33-18  
 $P_{Class\_PD}$  is the maximum power,  $P_{Class\_PD}^{max}$ , as defined in Table 33-18  
 $P_{Class}$  is the minimum power output by the PSE, as defined in Table 33-7 and section 33.2.6