Autoclass margin (D3.1) v100

Info (not part of baseline)

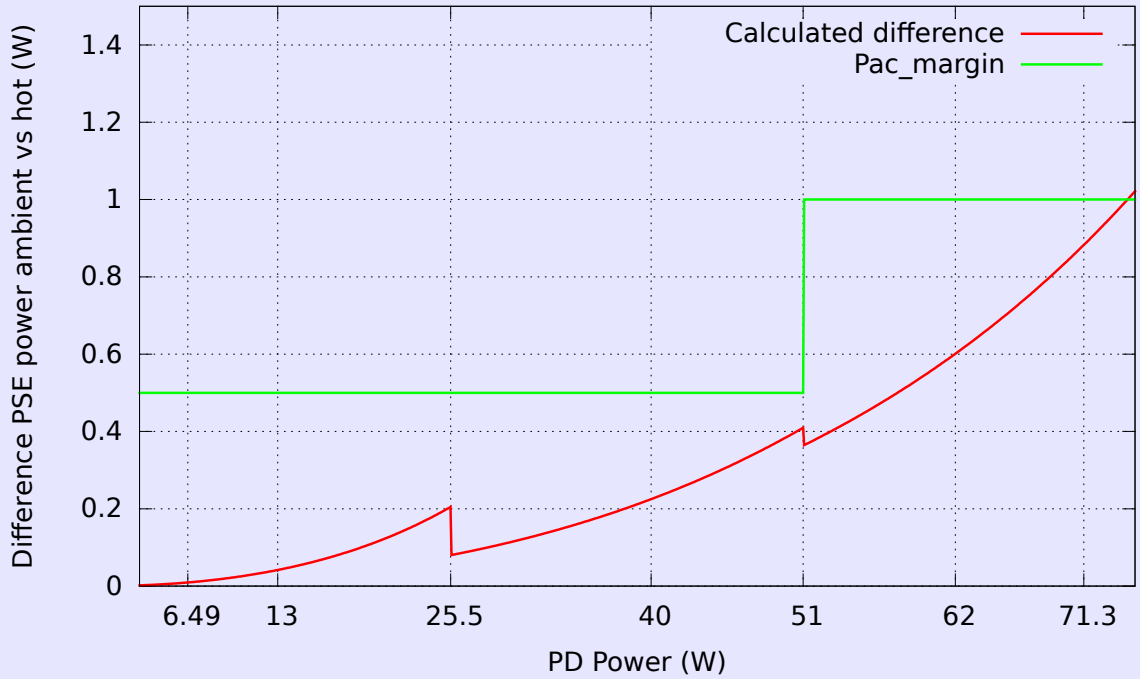
The parameter P_{ac_margin} is the amount of power (expressed in Watts) that a PSE must add to the power it measures during Autoclass, $P_{Autoclass}$. P_{ac_margin} is derived from $P_{Autoclass}$ using a curve fit described in Equation (145–4). This was adopted by means of baseline ➠yseboodt_1_0915_baseline_v101.pdf

This baseline contains a copying error against the presentation outlining the Autoclass margin calculations: ➠yseboodt_1_0915_v100.pdf.

Recent better understanding of real-world worst-case cable conditions and heating led to recalculating and discovering that the minimum Autoclass margins can both be simplified, getting rid of the quadratic curve-fit equation, and be significantly reduced. In the revised calculation the following assumed:

- PSE voltage at minimum (50V for Class 1 through 6, 52V for Class 7 through 8).
- The link section is comprised of 90 meters of AWG 24 and 10 meters of AWG 26
- Two pair power is used up to Class 4
- Ambient temperature is set to 45 °C, and increased by 15 °C over the entire length of the cable.

Which leads to the following results:



The line 'calculated difference' is difference in power between the cables at 45°C versus the cables at 60°C. The line 'Pac_margin' is the new proposed value for P_{ac_margin}.

145.2.7 PSE classification of PDs and mutual identification

. . .

If the PD connected to the PSE performs Autoclass (see 145.2.7.2 and 145.3.6.2), the PSE may set the minimum supported output power based on $P_{Autoclass}$, the power drawn during the Autoclass measurement window. $P_{Autoclass}$ shall be increased by at least P_{ac_margin} ~~calculated from the measured power by Equation (145–4)~~ , as defined in Table 145–15, in order to account for potential increase in link section resistance due to temperature increase, up to the value defined in Table 145–11 of the Class assigned to the PD, and with a minimum power allocation of Class 1. ~~PSEs that have additional information about the actual link section DC resistance or temperature conditions may choose to use a lower Autoclass margin than that defined by Equation (145–4).~~

Info (not part of baseline)

Given that the Autoclass margin is now very modest, the exception to lower this further when additional information is available, is no longer required.

145.2.7.2 Autoclass

PSEs may implement an extension of Physical Layer classification known as Autoclass. The purpose of Autoclass is to allow the PSE to determine the actual maximum power draw of the connected PD. See Fig- ure 145B–15 for Autoclass timing diagrams.

If the PSE implements Autoclass it shall measure $P_{Autoclass}$ when it reaches the POWER_ON state and pd_autoclass is TRUE. $P_{Autoclass}$ is the power provided by the PSE measured throughout the period bounded by T_{AUTO_PSE1} and T_{AUTO_PSE2}, defined in Table 145–15. P_{ac_margin} , defined in Table 145–15, is the minimum amount of power the PSE must add to $P_{Autoclass}$ in order to allocate enough power to cope with increases in the link section resis- tance due to temperature increase. ~~P_{ac_margin} is defined in Equation (145–4).~~ T_{AUTO_PSE1} and T_{AUTO_PSE2} timing is referenced from the transition of the POWER_UP state to the POWER_ON state. The power con- sumption shall be defined as the highest average power measured throughout the period bounded by T_{AUTO_PSE1} and T_{AUTO_PSE2}. Average power is measured using a sliding window with a width in the range of T_{AUTO_Window} as defined in Table 145–15.

Add new item 4 into Table 145–15 and change title as follows:

Table 145–15 — Autoclass ~~timing~~ electrical requirements

Item	Parameter	Symbol	Units	Min	Max	Additional information
4	Autoclass power margin per the assigned Class					—
	Class 1 to 6	P_{ac_margin}	W	0.5		
	Class 7 to 8			1		

Remove Equation (145–4) and associated variable description.