PD Classification text v100

> **Info (not part of baseline)**
>
> The introduction of Clause 145 combined with ➡hstewart_01_0117_33_3_6_PD_Class_opt2_markup_rev2.pdf significantly changed the PD classification section. Some revision is needed.

Change 145.3.6 and 145.3.6.1 as follows:

145.3.6 PD classification~~s~~

A PD may be classified by the PSE based on the Physical Layer classification, Data Link Layer (DLL) classification, or a combination of both provided by the PD. The intent of PD classification is to provide information about the maximum power required by the PD during operation. Additionally, classification is used ~~to establish mutual identification between Type 2, Type 3 and Type 4 PSEs and Type 2, Type 3 and Type 4 PDs~~ by the PSE and the PD to discover each others' Type.

See 145.2.7 for a general description of classification mechanisms. See 145.2.7.2 and 145.3.6.2 for a description of the optional Autoclass mechanism.

> Type 3 and 4 PSEs can differentiate between dual-sig legacy and Type 3/4 PDs

> **Info (not part of baseline)**
>
> The description of the requested Class has quite a few issues. A PD will always request the same Class, regardless of which PSE it is connected to. The introductory text should also no so explicitly point out that DLL can be used to exceed the requested Class, but you actually can't use the power. This is hardly relevant. Finally, the second and last bullet say the same thing.

~~The requested Class of the PD:~~

— ~~is the Class a PD advertises during Physical Layer classification when connected to a Type 4, Class 8 PSE;~~
— ~~is the maximum power that a PD draws across all input voltages and operational modes;~~
— ~~does not limit the maximum amount of power the PD may request from the PSE during Data Link Layer classification (see 33.5) but continues to limit the maximum power that the PD draws;~~
— ~~is the maximum power that a Type 3 or Type 4 PD shall draw.~~

The requested Class of the PD is the Class the PD advertises during Physical Layer classification, and represents the maximum power, as defined in Table 145–24 and Table 145–25, that a PD shall draw across all input voltages.

Depending on the number of class events produced by the PSE, the assigned Class is equal to or lower than the requested Class. The PD shall conform to the assigned Class, regardless of its requested Class. After a successful DLL classification, the assigned Class changes depending on the value of PDMaxPowerValue variable, as defined in Table 145–22.

PDs shall provide Multiple-Event Physical Layer classification as defined in 145.3.6.1 and Table 145–23. ~~Type 3 and Type 4 PDs shall implement Multiple-Event classification as defined in 145.3.6.1 and Table 145–23.~~

Single-signature PDs that request Class 1, 2, or 3 ~~to 3 PDs optionally~~ may provide Data Link Layer classification (see 145.5). Single-signature PDs that request Class 4 or higher and dual-signature PDs shall provide DLL classification.

> **Info (not part of baseline)**
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> The third bullet is duplicate with a shall in the Multiple-Event section, hence removed.

Convert the following bullet list back into a single sente~~nce~~

> Change to the same concept as in single-signature with the border line that we have discussed. Talk to me if it is not clear what to do.

PD classification behavior:

— shall conform to the state diagram in Figure 145–26, and Figure 145–29;
— shall conform to the electrical specifications defined in Table 145–23 and Table 145–26;
— ~~shall return class_sig_A or class_sig_B in accordance with the PDs requested Class, as specified in Table 145–24 and Table 145–25, with the corresponding classification signatures specified in Table 145–24 and Table 145–25.~~

A PD that is assigned to a Class lower than the Class it requested shall provide the user with an active indication if underpowered. The method of active indication is left to the implementer.

> Missing addressing dual-sig state machines Figures

145.3.6.1 PD Multiple-Event class signature

PDs ~~implementing Multiple-Event Physical Layer classification~~ shall present class_sig_A during DO_CLASS_EVENT1 and DO_CLASS_EVENT2 and class_sig_B during DO_CLASS_EVENT3, DO_CLASS_EVENT4, DO_CLASS_EVENT5

and DO_CLASS_EVENT6, as defined in Table 145–24 and Table 145–25. PDs implementing Autoclass shall present class_sig_0 during DO_CLASS_EVENT_AUTO as defined in 145.3.6.2.

Single-signature PDs shall advertise class signatures according to the PD Type and PD requested Class, ~~based on PD Type,~~ as defined in Table 145–24.

Dual-signature PDs shall advertise class signatures according to the PD Type and PD requested Class on each pairset, as defined in Table 145–25. The requested Class on a pairset is the maximum amount of power requested by the PD on that pairset. Dual-signature PDs may advertise different class signatures on each pairset. A dual-signature PD that is powered over only one pairset shall present a valid classification signature on the unpowered pairset.

A single-signature PD shall identify the PSEs assigned Class, as defined in Table 145–11. The default value of pse_power_level is 3, which corresponds with one class event. After a successful Multiple-Event Physical Layer classification has completed, the pse_power_level variable is set to either 3, 4, 6 or 8. Based on the value of pse_power_level and the PDs requested Class, pd_req_class, the assigned Class is derived in the variable pse_assigned_class.

A dual-signature PD shall identify the PSEs assigned Class, as defined in Table 145–11. The default value of pse_power_level_mode(M) is 3, which corresponds with one class event. After a successful Multiple-Event Physical Layer classification has completed, the pse_power_level_mode(M) variable is set to either 3, 4, or 5. Based on the value of pse_power_level_mode(M) and the PDs requested Class, pd_req_class_mode(M), the assigned Class is derived in the variable pd_max_power_mode(M).