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Classification of single and dual interface PD

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Motivation

- With new classes, discuss classification of single interface PD and dual interface PD.

1. Three new classes for higher power levels

Table 33–7—Physical Layer power classifications (P_{Class})

Class	Minimum power levels at output of PSE (P_{Class})
0	15.4 Watts
1	4.00 Watts
2	7.00 Watts
3	15.4 Watts
4	30W or P_{Type} as defined in Table 33–11 whichever is less
5 (4/4/1)	45W or P_{Type} as defined in Table 33–11 whichever is less
6 (4/4/2)	60W or P_{Type} as defined in Table 33–11 whichever is less
7 (4/4/3)	90W or P_{Type} as defined in Table 33–11 whichever is less

NOTE 1—This is the minimum power at the PSE PI. For maximum power available to PDs, see Table 33–18.

NOTE 2—Data Link Layer classification takes precedence over Physical Layer classification.

2. Besides, we'd have new class(es) for Autoclass feature

Straw Poll 1

- The .bt project should support Autoclass. Do you agree with this statement ?
- Yes: 24 No: 0

We propose to have 5 new Autoclasses to make efficient on power allocation on PSE in presentation “Consideration on classes for Autoclass”.

- As a result, there will be class 0~7 and Autoclass 0~4 in bt standard.
- With these classes, what is the classification for single interface PD and dual interface PD?

Single interface PD classification

- Since there is only one PD interface, each pair-set asks for the total PD power with the same class.
- According to Connection Check, $P_{\text{class}} = P_{\text{class_pair-set1}} = P_{\text{class_pair-set2}}$

No	Class	Power Level
1	0	$\leq 15\text{W}$
2	1	$\leq 4\text{W}$
3	2	$\leq 7\text{W}$
4	3	$\leq 15\text{W}$
5	4	$\leq 30\text{W}$
6	5	$\leq 45\text{W}$
7	6	$\leq 60\text{W}$
8	7	$\leq 90\text{W}$
9	Autoclass 0	$\leq 15\text{W}$
10	Autoclass 1	$\leq 30\text{W}$
11	Autoclass 2	$\leq 45\text{W}$
12	Autoclass 3	$\leq 60\text{W}$
13	Autoclass 4	$\leq 90\text{W}$

- Classification of single interface PD **is as simple as AT**;
- Each pair-set asks for the total PD power with the same class on each pair-set.

Dual interface PD classification

- Since there are two PD interfaces, each pair-set has its class respectively.
- According to Connection Check, $P_{\text{class}} = P_{\text{class_pair-set1}} + P_{\text{class_pair-set2}}$.

No	Pair-set 1	Pair-set 2	Class	PD Type	Power Level at PSE output
1	Class 0	Class 0	0+0	3	≤ 30W
2	Class 1	Class 1	1+1	3	≤ 8W
3	Class 2	Class 2	2+2	3	≤ 14W
4	Class 3	Class 3	3+3	3	≤ 30W
5	Class 4	Class 4	4+4	3	≤ 60W
6	Class 5	Class 5	5+5	4	≤ 90W
7	Class 6	Class 6	6+6	??	≤ 120W
8	Class 7	Class 7	7+7	??	≤ 180W
9	Autoclass 0	Autoclass 0	Autoclass 0 + Autoclass 0	3	≤ 30W
10	Autoclass 1	Autoclass 1	Autoclass 1 + Autoclass 1	3	≤ 60W
11	Autoclass 2	Autoclass 2	Autoclass 2 + Autoclass 2	4	≤ 90W
12	Autoclass 3	Autoclass 3	Autoclass 3 + Autoclass 3	??	≤ 120W
13	Autoclass 4	Autoclass 4	Autoclass 4 + Autoclass 4	??	≤ 180W

•For class 6&7 and Autoclass 3&4, the dual interface PD could ask for power more than the cable can support. This shall not be allowed.

Summary

➤ We have more classes in bt which are 3 new classes for high power and 5 new classes for Autoclass.

➤ **In order to provide a simple classification:**

When work with new classes, the PSE should allocate the power requested by the PD during classification which is assumed to the total power for all 4 pairs, that is

$$P_{\text{class}} = P_{\text{class_pair-set1}} = P_{\text{class_pair-set2}}.$$

Thank you!