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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	≤ 15W
2	1	≤ 4W
3	2	≤ 7W
4	3	≤ 15W
5	4	≤ 30W
6	5	≤ 45W
7	6	≤ 60W
8	7	≤ 90W
9	Autoclass 0	≤ 15W
10	Autoclass 1	≤ 30W
11	Autoclass 2	≤ 45W
12	Autoclass 3	≤ 60W
13	Autoclass 4	≤ 90W

- 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, $P_{class} = P_{class_pair-set1} + P_{class_pair-set2}$.

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!