Microsemi

Analysis and baseline proposal for
Dual Signature PD Classification Requirements.

IEE802.3bt
June 2015
Rev 005

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Objectives

- To propose baseline text for classification requirements for Dual Signature classification PDs

  - Simple

  - Make use of existing PD class code

  - No need to distinguish between Dual Signature single load and Dual signature Dual load

    – Same requirements ➜ Simple.

  - Allows different class codes

    – Improved power management over L1

  - Can be supported by any PSE

Use case analysis - Dual signature with *single load*

- Each pair set will show any class code any of class 0 to class 5.

- Class 5 is equivalent to 45W so in this case PD will get maximum 90W i.e. each signature could be any of:

- Less than 15W: class signature 0, 1, 2 or 3

- Maximum 30W: class signature 4

- Maximum 45W: class signature 5.

  - Classes 6-8 can't be used for dual signature due to no need and it simplifies the spec. No calculations are required as per previous discussions.

  - In this case it makes sense that both pair sets will show same class code, any of class 0 to class 5, HOWEVER In this concept, the possibility to require that both pair sets will show same class code is not used and adds no value.

    - If a Dual Signature, single load PD is using different class codes it will likely violate the current limit of one of its pair sets and get disconnected. PSEs that don't want to deal with different class codes can take the larger class of the two pair sets and apply that for each pair set.

- PSEs that don't want to deal with different class codes can take the larger class of the two pair sets and apply that for each pair set.

- As a result, different class code may be used for Dual signature single load but we don't know if it is dual signature with single load or dual load PD.

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Use case analysis - Dual signature with *dual load*

- Same requirements as previous case.
  - Using only any of class 0-5 over each pair set.
  - We don't need to know if it is dual signature single load or dual load.
  - It is plug & play.

Summary

- Dual signature PD (single load or dual load, doesn't matter) will use only classes 0 to 5 over each pair-set. The PD specifies the amount of power required over each pair set by using the relevant class code (from the exiting list) over each pair set.

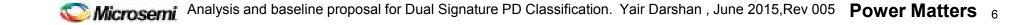 Valid class codes are 0 to 5. (5+5 = 90W, 4+4 = 60W, 4+3 = 45W and so on...).

- A Dual Signature, single load PD is allowed to show different class codes.

  If it does so, it will likely violate the current limit of one of its pair sets and get disconnected

- PSEs that don't want to deal with different class codes can take the larger class of the two pair sets and apply that power to both.

- PSEs that don't want to deal with dual load PDs can opt not to power them.
  - Simple
  - Make use of existing PD class code
  - No need to distinguish between Dual Signature single load and Dual signature Dual load
    - Same requirements ➜ Simple implementation.
  - Allows different class codes
    - Improved power management over L1
  - Can be supported by any PSE

Baseline text – PD side

1) Add the following text in clause 33.3.5.2, page 85 after line 27 before table 33-17:

Dual Signature Single Load PDs and Dual Signature Dual Load PDs shall use only class 0 to 5 power level over each pair set.

The class code advertised over each pair set is the total power requested by the PD over that pair set

Dual Signature PDs may use different class signature per pair set.

Baseline text – PSE side

1) Add the following text in clause 33.2.6, page 57 after line 51.

When dual signature PD is detected, the PSE shall supply the requested power over a per set per the class code detected over that pair set.

If PSE detects different class codes, it may support the highest class codes

PSEs that don't want to deal with different class codes can take the larger class of the two pair sets and apply that for each pair set.

PSEs that don't want to power Dual signature PDs with dual load may opt not to power them.