# IEEE802.3at Task Force
## Vport Ad Hoc

# Multiple Classification Attempts (MCA) Recommendations

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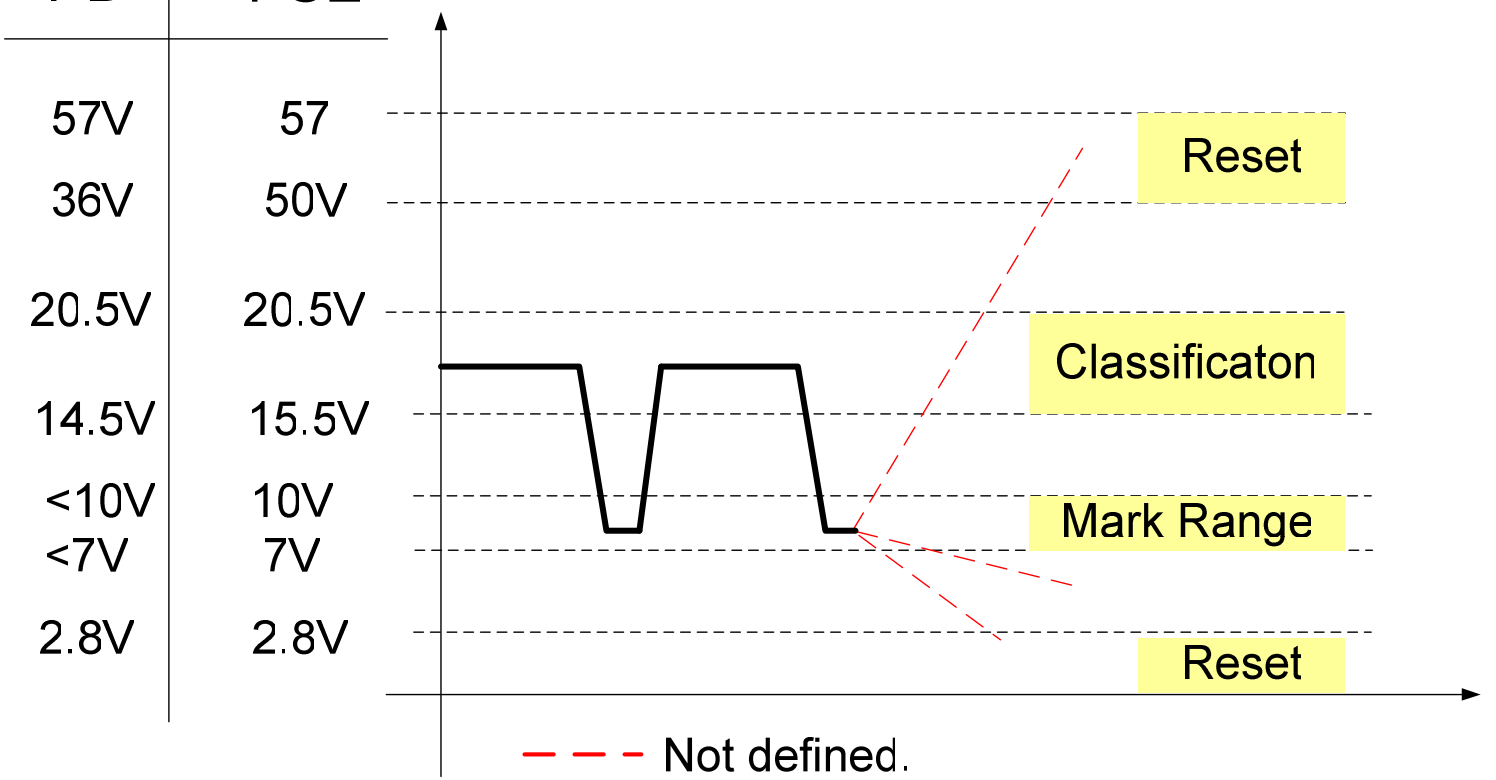
# Objective

- To suggest voltage, current and timings requirements for the Multiple Classification Attempts concept.
- Based on detailed analysis presented to the Classification Ad Hoc group.

# PSE and PD voltages during enhanced classification

| PD | PSE |
|---|---|
| 57V | 57 |
| 36V | 50V |
| 20.5V | 20.5V |
| 14.5V | 15.5V |
| <10V | 10V |
| <7V | 7V |
| 2.8V | 2.8V |



# PSE Timings

| Recommended PSE Timing Specifications | | | |
|---|---|---|---|
| Classification Wave form Section | Minimum [ms] | Maximum [ms] | Notes |
| 1st classification attempt | 10 | 30 (Recommended) | See note 3 |
| 1st and 2nd voltage mark rise/fall time, tr+tf. | | 1.5 | Informative only. See note 1 |
| 1st and 2nd voltage mark duration | 2 | 4 | |
| 2nd classification attempt | 10 | 30 | See note 3 |
| | | | |
| **Total classification time** | **24** | **68** | See note 2 |

# Notes

1. Tf should not be part of the standard due to the fact that it is determined by Iclass1_min, Cport_max and maximum voltage chance from Vclass_max to Vmark_low.

2. 2nd finger need to end below 10V to allow PD to recognize that two classification attempts were done and any other Vmark phenomena should be ignored.

3. 30ms may be reduced to get total classification time of 75ms if 3rd finger is going to be used. We may need to evaluate effects on multi-port system cost related timing issues.

# Voltage and Current requirements

| Recommended Voltage and current Specifications | | | | |
|---|---|---|---|---|
| Classification Wave form Section | PSE | | PD | |
| | Minimum [V] | Maximum [V] | Minimum [V] | Maximum [V] |
| Classification attempt | 15.5 | 20.5 | 14.5 | 20.5 |
| Classification Current | Iclass 1 | Iclass 4 | Iclass 1 | Iclass 4 |
| Mark voltage range | 7 | 10 | 4.37 | 10 |
| Mark Voltage transition range | 10 | 15.5 | 10 | 14.5 |
| Classification Current prior to transition detection. | NA | NA | Iclass 1 | Iclass 4 |
| Classification Current after transition detection. | | | 2mA | Iclass 4 |
| Reset classification circuitry – Lower range | 0 | 2.8 | 0 | 2.8 |
| Reset classification circuitry – Upper Range | TBD (50V?) | 57 | TBD (30?, 36V?) | 57 |

# Additional requirements for 802.3at PD

- During detection phase, classification circuitry and other circuitry should not consume more than 10uA in addition to Rsig, forming total 25K+/-5%. (Similar to 802.3af)

- After 1st classification attempt, PD should consume at least Iclass_1 current until PD detects that Voltage across PI is less then 10V. Resetting from this state will occur on Reset voltage range (low and/or high range)

# Classification Table

- 2 Classification attempts allow
  - 4 x 802.3af classes and
  - 9 x 802.3at new classes covering up to 30W per 2P and
  - 3 x 802.3at new classes for covering future use up to 50W per 2P.
  - Total of 16 classes for layer 1
- Hence 2 fingers is enugh.
- 802.3at PSE need to perform 2 attempts for determine PD type.
- 802.3at need to count number of attempts to determine if af or at PSE is present.

# Summary and Recommendations

- To accept the MCA concept as base line to the 802.3at draft
- To accept the voltage, current and timing tables as base line for the 802.3at draft