IEEE802.3 4P Study Group

2-Level Classification

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Goal of this Presentation

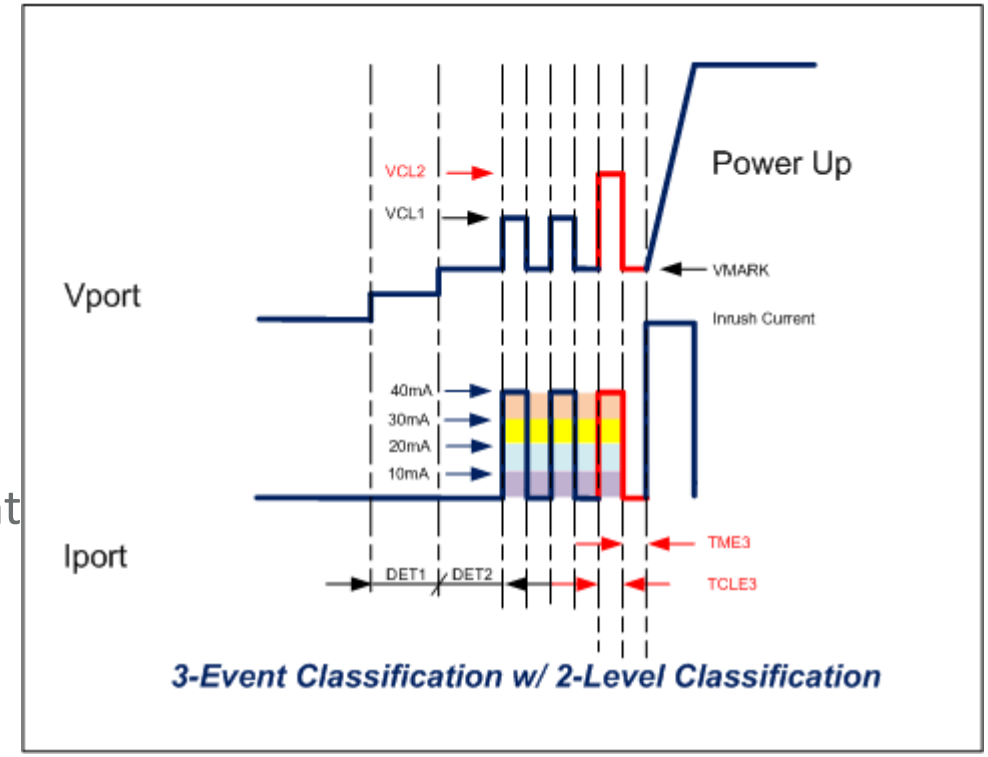
- Propose 2-Level Classification to provide the mutual-ID for 3bt PoE
- Address the concerns from Classification Current Width Modulation (CCWM) (presented in Norfolk, San Diego) and Re-classification on power stage (presented in Beijing).

Glossaries

- 2-Level Classification:
  - > 1st Level, Class Event Voltage between 15.5~20.5V→3af/3at
  - > 2nd Level, Class Event Voltage between 25.5~29.5V→3bt
- VCLE1: Voltage of 1st Level Class Event;
- VCLE2: Voltage of 2nd Level Class Event;
- TME3: Mark Event Timing of 3-Event;
- TCLE3:Classification Timing of 3-Event;
- Type3: Output power between 0~60W at PSE
- Type4: Output power between 0~100W at PSE
- Class5: Classification of Type3 PoE;
- Class6 :Classification of Type4 PoE.

3-Event w/ 2-Level Classification

- Type3 PD needs to provide 40mA in first 2-Event classification as 3at.
- Type3 PSE probes 2nd Level Classification Voltage between 25.5~29.5V
- Type3 PSE uses the same Classification Event Timing and Mark Event Timing as in 2-Event
- w/ different classification current, the type3 PD could provide different power granularity signature (TBD).



3-Event Classification w/ 2-Level Classification

Factors to Select 2nd Level Classification Voltage

PSE Side

- The lower limit of 25.5V
  - > Classification Disable Threshold at PD side
  - > 2xVF of the input bridge.
- The upper limit of 29.5V
  - > PD power supply turn off voltage Voff (30V in 3at standard),
  - > Very minimum of VF at an active bridge.

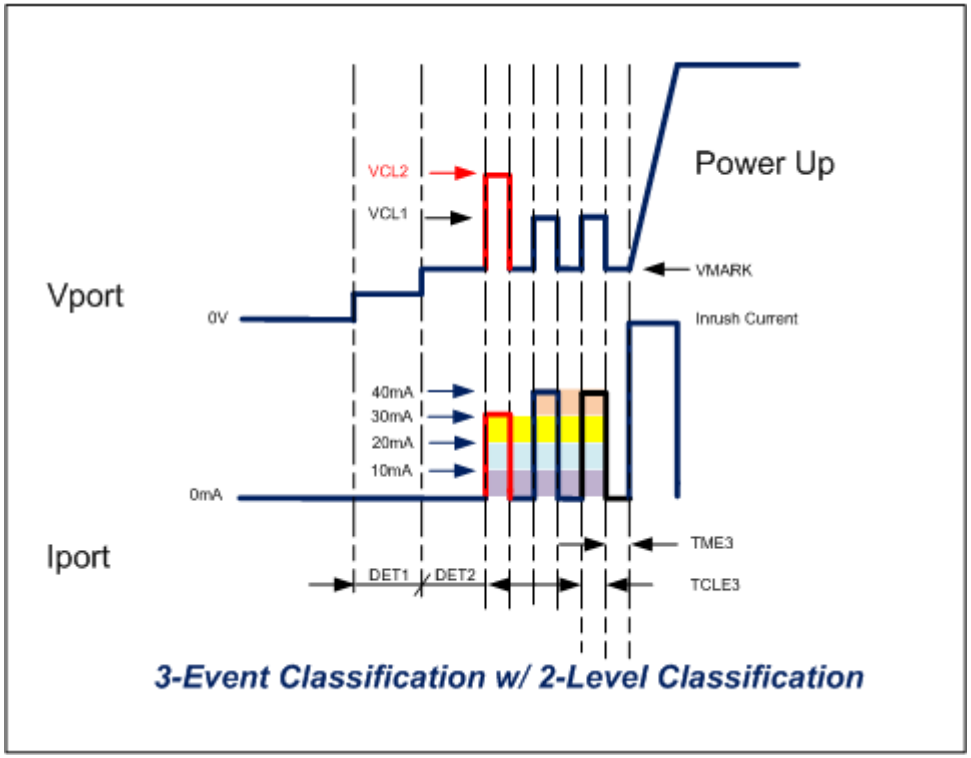
PD Side

- The lower limit of 24.5V
  - > The min of PSE VCLE
  - > 2xVF at the input diode bridge
- The upper limit of 29.5V
  - > The max of PSE VCLE
  - > Very minimum of VF at active bridge

Benefits

- Static voltage and current response between PSE and PD.
- Provide Type3 Signature for both PSE and PD
- Backwards compatible with Type1 and Type2 PoE
- Capable of providing more options for Mutual-Identification
- Able to be extended to Type4 PD by adding one more event

Alternative w/ Better Power Granularity



Type3/Class5 Sub-Class Table (TBD)

Sub-Class5	Iclass1(mA)	Iclass2(mA)	Iclass3(mA)	Power (W)
0	20	40	40	60
1	20	30	30	55
2	20	20	20	50
3	20	10	10	RESERVED
4	20	0	0	AUTO
5	10	40	40	45
6	10	30	30	40
7	10	20	20	35
8	10	10	10	RESERVED
9	10	0	0	AUTO
NA	0	3af/3at	40 if Iclass2=40	<30

Type4/Class6 Sub-Class Table (TBD)

Sub-Class6	Iclass1(mA)	Iclass2(mA)	Iclass3(mA)	Iclass4(mA)	Power (W)
0	30	30	40	40	100
1	30	30	30	30	90
2	30	30	20	20	80
3	30	30	10	10	70
4	30	30	0	0	AUTO
NA	0	0	3af/3at	40 if Iclass3=40	<30