Vport ad hoc discussion
September 2006

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Agenda

- **Existing constraints.**
- **Data collected.**
- **Example future PDs**
- **An option for dealing with voltage transients.**
- **Next step.**

PD di/dt is unconstrained in IEEE 802.3-2005

- **PD 33.3.5.4 Peak Operating Current**

  At any operating condition the peak current shall not exceed $P_{Port\ max}/V_{Port}$ for more than 50ms max and 5% duty cycle max. Peak current shall not exceed $I_{Port\ max}$.

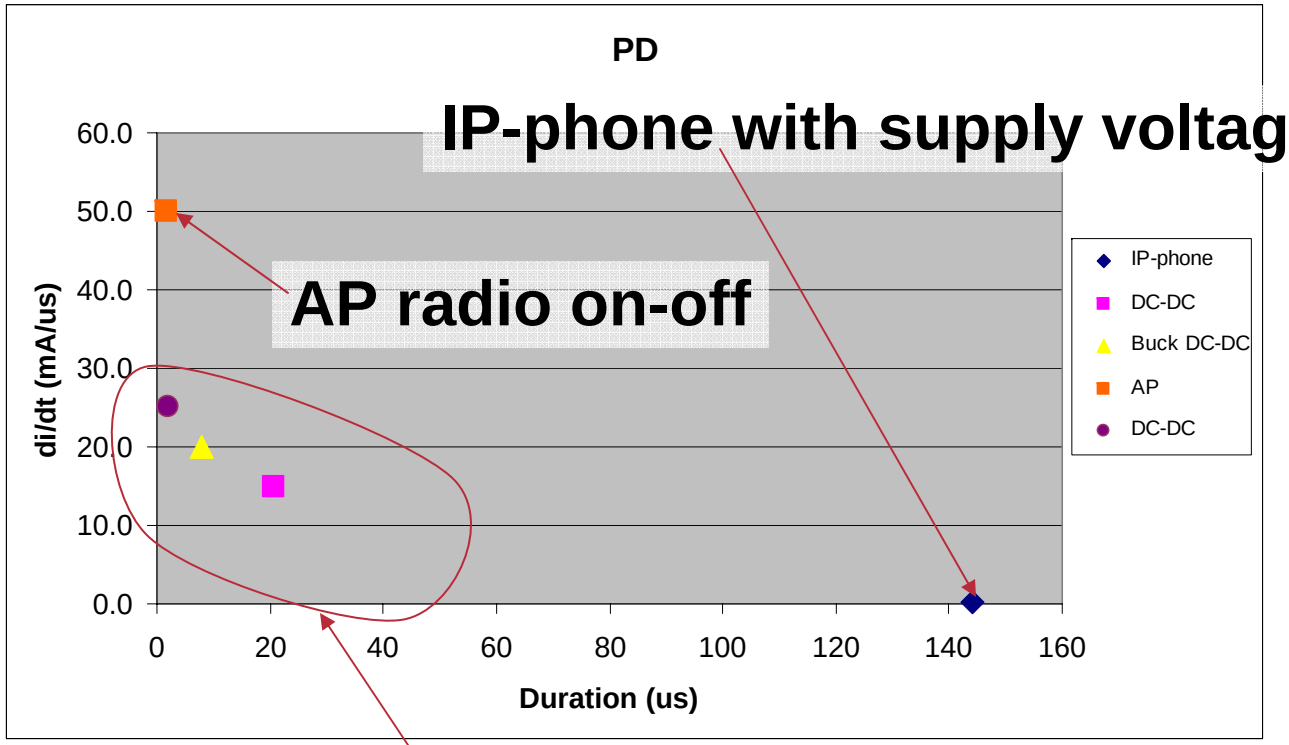
  R.M.S calculation.

- **PD 33.3.5.5 PI Capacitance during normal powering mode**

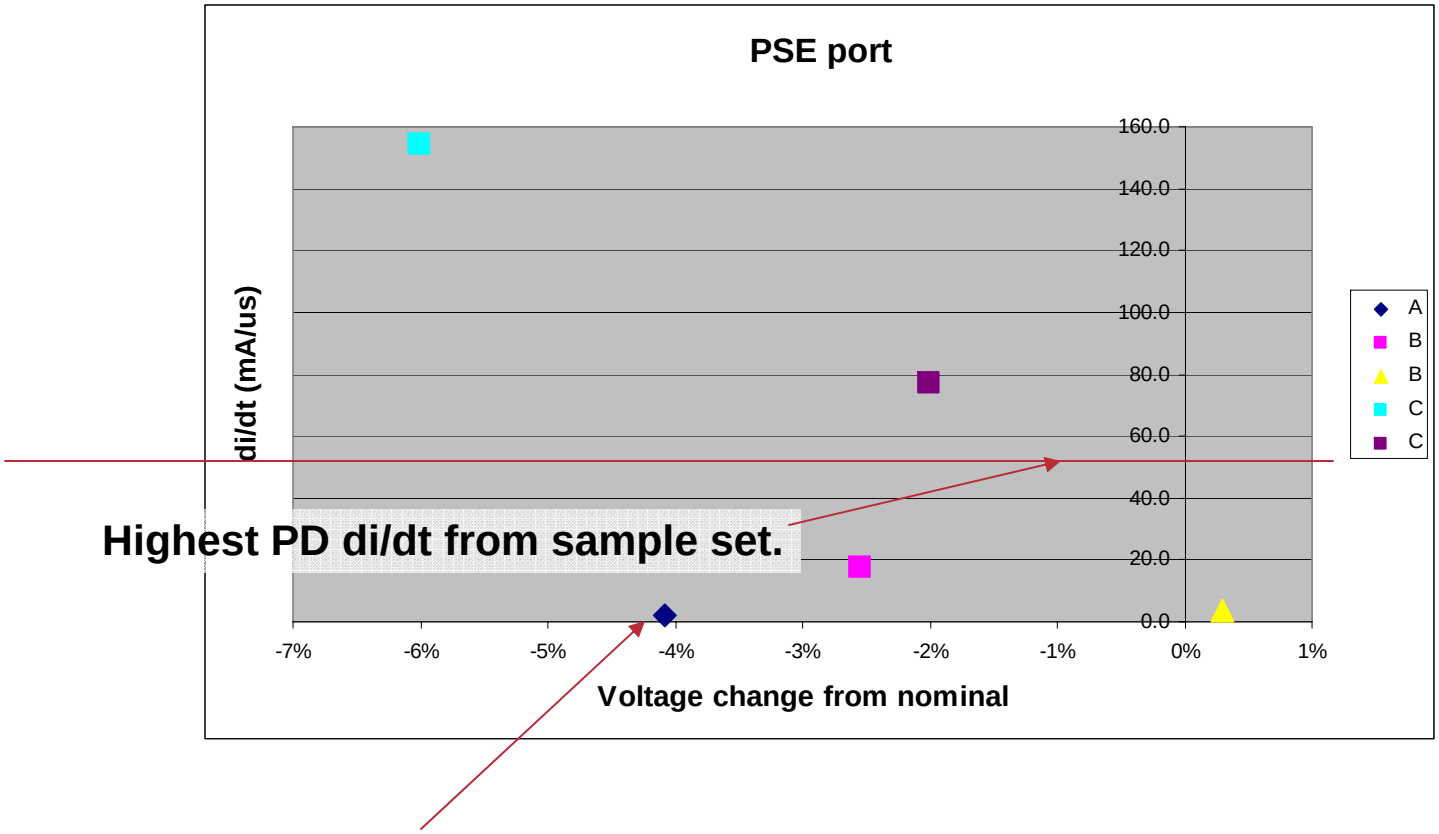
  When C_{in} > 180uF, a voltage change of 44 to 57 V with a 20 ohm series resistance I_{port} is limited by Table 33-12 item 4.

  When C_{in} <= 180 uF, no limitations.

Sample PD di/dt values



Sample PSE load change effects



Slow 0 to 100% load change. 160us transient.

Example Future PDs

- PTZ Cameras
- Display systems
- High power access points
- Computer charging and backup
- Door locks
- Printers
- Current USB devices

Increasing Power

PD power is increasing and di/dt rates are unknown.

Transient Scenario

- **A PSE port drops below the static minimum voltage of 50 V.**

  A PSE power supply failure leads to a backup supply taking over.

  Multiple PSE ports transition to a new load state.

- **The PD voltage drops and this increases the PD current demand.**
- **The current demand is limited by the PSE or the PD.**

IEEE 802.3-2005 Analogy: option 1

- **Use the existing I_{CUT}, I_{LIM} specification to deal with a transient.**
- **Static PSE min. 44 V, PD min. 37 V.**
- **Dynamic PSE min. 42 V, 350 mA < I_{CUT} < 400 mA PD min. 36 V, T_{ovld}, TLIM > 50 mS.**
- **The PD is design to operate in this condition but is drawing more power than its classified level.**
- **This is a starting point. The details need to be discussed by the task force and ad hoc.**

Next Step

- **Review details for the proposed direction.**
- **Collect more PD and PSE system input.**
- **Define PSE, PD and dynamic Vport, needs.**

V10 Spreadsheet available.