

## **2005 Sep 12 IEEE PoEPlus Minutes**

### Schedule:

- Recording secretary
- Discussion order of meeting
- Introductions
- Background stuff
- Review Objectives, 5 Criteria and PAR
- Presentations
- Approve Minutes of March meeting
- Motions

### Order:

- Monday 9:00-17:00 Presentations
- Tuesday 9:00-17:00 Discussion
- Wednesday 9:00-17:00 Discussion, Motions, Housekeeping
- Thursday 9:00-17:00 Ad-hoc

Motion to approve meeting schedule above by Thompson, seconded by Carlson. No discussion. Favor – unanimous; no objections.

### Ground Rules

- Mutual Respect
- All may speak & vote
- No product or corporate pitches
- No prices / cost in any currency, complexity is OK
- No restrictions on presentations or materials
- 802.3 rules apply

Patent policy read by Yair Darshan

### Inappropriate Topics for IEEE WG Meetings

- Don't discuss licensing terms or conditions; product pricing, territorial restrictions, or market share; on going litigation or threatened litigation.
- Don't be silent if inappropriate topics are discussed... do formally object
- Consult IEEE patent information

### IEEE Structure

Rules – Behave

Electronic information sources listed

Order: Darshan, Nordin, Stanford, Walling,

## **Presentations**

### **Recommended Guidelines for Enhanced Classification Concepts by Yair Darshan**

- Discussion went into max current of cabling due to temperature. This was stopped to be discussed later.
- Discussion went into accuracy of references. This applies to the Vclass operating range and detection of step voltage within the Vclass range.
- Discussion on handling the .af condition of a PSE skipping classification period.

### **Current Balance in Cabling Systems by Ron Nordin**

- Results show that ballasting resistors are needed. Draw backs is that there is extra power dissipated so it would be required to keep the value low.
- Recommend a cabling ad-hoc group to be formed to validate assumptions and provide guidance to the task force. – Discuss this at closing of this meeting. – Alan has a standing offer to work with us (comment by Mike McC).

### **PSE Output Voltage by Clay Stanford**

- Basically, “how tight do we want to make PSE output voltage?” Current accuracy of 12.8% yields voltage range from 44 to 57 Volts (published in .af specification). If we tighten up the accuracy, the minimum power delivery will be increased. Propose 5% (51.5 to 57 V).
- Tighter accuracy could affect balancing.

### **PoE Requirements and Limitations due to the Cabling System by Jo Walling**

- Concern already that there is too much current for cabling systems under .af. Need to discuss with UL code definers.
- Second concern is the connector. There is no problem plugging in since currents are low. However, unplugging while powered causes arcing and damage to connector contacts.
- Questions about the equivalent Load Circuit for Connector Un-Plugging is in question. Should talk to John Seymond. Copy SC25 on correspondence with IEC SC48B. (Responsible for RJ45 connector specifications.)

### **Maximum Power – System Considerations by Yair Darshan**

- Presentation summarizes the previous presentation material, and adds some new data, on current capabilities of various parts of the system.
- Stability shows that above the 30 V UVLO should keep us in the stability range of the system.
- Balancing suggested to be put in the PD since a low power PD does not need balancing as a high power PD would.
- Requested that Yair add in the current .af specification values.

### **CAT-5 Cable Bundle Heating Experiment by Clay Stanford**

- Results show 35 W for a 2-pair system, and 52 W for a 4-pair system.

## ***Action items:***

- Discuss formation of ad-hoc group to validate cabling assumptions and work with cabling spec group. (ref. Darshan\_1\_0905.pdf presentation)
- Need to work with the SC48B group on connectors. (ref. Walling\_1\_0905.pdf presentation).
- ISO IC ad hoc request needs to be drafted Tue night.

Motion to adjourn at 16:30.

## **2005 Sept 13 PoEPlus Minutes**

Open at 09:00

Review of Objectives

- 24 AWG wire

Proposed Voltage Range

- 51-57 @ PSE PI
  - Equivalent to a  $\pm 5.5\%$  range ( $54 V_{nom} \pm 3 V$ )
- 37-57 @ PD PI
  - 37-57 V in 802.3af modes
  - PoEPlus range ( $51 V - loss_{TBD}$ ) to 57 V

Battery Back-up

- Battery float voltage 55-54 V
- Battery will drop to 48-46 V after removal of float
- 802.3af allows 44 V operation
- Can we accommodate?
  - Reduced functionality?
  - Reclassification?
  - PoEPlus to 802.3af fallback?
  - Separate classes for “survivable” PDs?

This was brought up for information purpose to help discuss voltage range. There are cases where the output power is run off the battery directly. The float voltage is present when there is ac power and thus shows up on the output.

4P vs. 2P: Proposal for Getting Consensus by Yair Darshan

- Discussion on this went long

2-pair vs. 4-pair PSE

- Option 1: 4-pair only PoE+
  - 802.3af PDs
  - Power >12.95 W only available on 4-pairs
  - Highest power possible on all PSE ports
  - Does not work on 2-pair installations
- Option 2: 2-pair only PoE+
  - 802.3af PDs
  - 50 % of power 2-pair PoE vs. 4-pair PSE
  - No ports support highest possible power
  - Works on 2-pair or 4-pair installations
- Option 3: 2/4 pair single config.
  - 802.3af PDs
  - 50 % power on 2-pair
  - Highest power possible on all PSE ports
  - Works on 2-pair or 4-pair installations

802.3af vs. PoE-Plus (2/4-pair single config.)  
By Geoff Thompson

	PoE Plus Power Supply Range 4-pair only
	PoE Plus 2-pair ext range 2 pair (but either pair) only
12.95 Watts	→ 802.3af Power Supply Range 2-pair (but either pair) only
Min Power	→

Vote count:

- Option 1 only – 5 for; 10 against
- Option 2 only – 3 for; 17 against
- Option 3 only – 23 for; 0 against — general consensus to work with
- Option 1 & 2 only – 5 for; 8 against
- Option 1 & 3 only – 0 for; 12 against
- Option 2 & 3 only – 7 for; 8 against
- Option 1 & 2 & 3 - 0 for; 22 against

Action items:

- Focus on detection / classification methods for Option 3  
Pending from yesterday...
- Discuss formation of ad-hoc group to validate cabling assumptions and work with cabling spec group. (ref. Darshan\_1\_0905.pdf presentation)
- Need to work with the SC48B group on connectors. (ref. Walling\_1\_0905.pdf presentation). – This is directed to the same group as the previous action item.

Suggest to send questions to the PoEPlus reflector to start the letter.

Meeting adjourned @ 17:00

## **2005 Sep 14 PoEPlus Meeting**

Start 09:00

### **Presentation**

Attenuation Increase Due to Aging and to Hygroscopicity of the Jacket Materials by Jo Walling

- Focus of this presentation is to show how heating of passing current through the cable affects the signal integrity – particularly for 10G.
- Aging slides: Cable heated to 100 °C for 1 week then tested.
- Data presented earlier to another group.

Alternate PD Detection Proposal by Paul Kish

- Has been implemented before with success

Class Schemes by Gordon Capes

- Outlines a few general concepts. No details provided.
- Looks at what could be IP protected and what is not.

Cabling inquiry – charter an ad-hoc to meet this afternoon to formulate a letter to Alan Flatman to ISO IEC cabling group.

- Effects of current carrying capacity – which model to look at?
- Questions about cable temperature rise in existing installations.
- Connector reliability with current.
- Cabling cycling under load for insertion and removal.
- Can also send to TIA. This would have to go through the 802.3 group.

Motion to form adhoc for informal letter writing to Alan Flatman and Paul Kish and Walter Von Pattay and Chris Diminico to discuss cabling and connector issues. – by Yair Darshan; second by Carlson

Favor – unanimous, appose – none

Approval of 2005 July minutes

Motion by Chad Jones to approve; second by Derek Kroes

No discussion

Approval – unanimous, appose – none

Motion to adjourn – approved at 11:10 hours

802.3 plenary at Fairmont in Vancouver