IEEE 802.3 Ethernet Working Group Liaison Communication

Source: IEEE 802.3 Working Group[1]

To: Mr Bernard Dumortier, IEC SC65C Secretary (bd@bdumortier.com)
Members of IEC SC65C/JWG10

CC: Mr Paul Nikolich, Chair, IEEE 802 LMSC (p.nikolich@ieee.org)
Mr Adam Healey, Secretary, IEEE 802.3 Ethernet Working Group (adam.healey@lsi.com)
Mr Wael William Diab, Vice-Chair, IEEE 802.3 Working Group (wdiab@broadcom.com)
Mr Michael McCormack, Chair, IEEE P802.3at Task Force (mike_mccormack@ti.com)
Mr Antony Capel, Chair, IEC SC65C (capel@comgate.com)
Mr Matei Cocimarov, IEC Officer for SC65C (mco@iec.ch)
Mr Francesco Russo, Convenor, IEC SC65C/JWG10 (russof76@libero.it)

Date: 16th July 2009
Subject: Expected performance of Power over Ethernet when used in industrial applications
Action: Liaison response
From: David Law, Chair, IEEE 802.3 Ethernet Working Group (david_law@3com.com)
Approval: At IEEE P802.3 Plenary meeting, San Francisco, CA, USA on 16th July, 2009

Dear Mr Dumortier and Members of the IEC TC65/SC65C/JWG10,

The IEEE 802.3 Working Group thanks the IEC TC65/SC65C/JWG10 for their kind liaison requesting performance information regarding IEEE Std 802.3-2005 Clause 33 (PoE) and industrial environmental requirements.

In response to your specific inquiries:

Has IEEE had any similar reports?

The IEEE 802.3 Working Group has received no such reports. However, we do not typically receive end equipment reports.

Have IEEE members reported any testing or evaluation of expected performance of the PoE "probing & classification" procedure when used in noisy environments?

During the creation of IEEE Std 802.3af there were numerous contributions by individuals on the performance of detection and classification which are archived at http://www.ieee802.org/3/poep_study/public/index.html and http://www.ieee802.org/3/af/public/index.html. You may wish review these to see if they are applicable to your noise environment.

[1] This document solely represents the views of the IEEE 802.3 Working Group, and does not necessarily represent a position of the IEEE, the IEEE Standards Association, or IEEE 802.

What are the IEEE recommendations or guidance to avoid damage to vulnerable PD's when used in noisy environments such as MICE E2 and E3?

The IEEE 802.3 family of standards specify electrical requirements for interoperability as well as a basic set of environmental requirements. These do not preclude or alleviate additional requirements imposed by the environment or jurisdiction of the actual installation site for the end equipment.

What are the expected bit error rates for normal Ethernet signals during such transients in PoE demand on the same or adjacent pairs?
What recommendations are proposed to mitigate any anticipated problems?

PDs transients are bounded by IEEE P802.3at Draft 4.2 subclause 33.3.7.5 Peak transient current and subclause 33.3.7.7 Ripple and noise. PDs which do not meet these requirements are non-compliant. PDs are required to include circuitry to mitigate their internal load requirement while conforming to the interface specification.

Bit error ratios and channel requirements are specified identically with PoE as without it.

Sincerely,
David J. Law
Chair, IEEE 802.3 Ethernet Working Group
David_Law@3Com.com