

802.3bq Receiver Common-Mode Noise Rejection (Rx CMNR) ad hoc

IEEE P802.3bq 40GBASE-T Task Force

Pete Cibula (Intel)
Rx CMNR ad hoc chair

October 22nd, 2014

Proposed Agenda

8:00 am meeting start

1. Roll call

Record attendance, attendees' names and affiliations

- (Following previous meeting practice, ad hoc attendees are asked to please email Dave Chalupsky <david.chalupsky@intel.com> or Pete Cibula <peter.r.cibula@intel.com> a note confirming their attendance)

2. Reminder of IEEE patent policy

- www.ieee802.org/3/patent.html

3. Housekeeping

Approve meeting agenda

Review the ad hoc charter/scope and deliverables

4. Brainstorming session

Review relevant content from prior study group/task force work and/or new contributions

Discuss actions/next steps needed to begin moving forward with developing the ad hoc's deliverables

Contribution – “40GBASET EMC”, German Feyh (Broadcom), Neven Pischl (Broadcom)

5. Discussion and next steps

10:00 am meeting end

Ad Hoc Communications

- The P802.3bq Rx CMNR ad hoc will use the P802.3bq task force reflector for ad hoc communications
- To subscribe to the P802.3bq reflector, send an email to: ListServ@ieee.org with the following in the body of the message (do not include “<>”):
***subscribe stds-802-3-NGBASET <yourfirstname>
<yourlastname>***
- Send P802.3bq reflector messages to:
[STDS-802-3-NGBASET @listserv.ieee.org](mailto:STDS-802-3-NGBASET@listserv.ieee.org)
- Task Force web page URL:
<http://www.ieee802.org/3/bq/index.html>

Ad Hoc Meetings

- Meeting frequency
 - Contribution driven
 - Regularly scheduled meeting may help maintain momentum
- Meeting venue
 - Teleconference (Lync meeting), others

Why Are We Here?

- Chartered by the P802.3bq Task Force Chair to investigate the common mode noise rejection test (also known as the cable clamp test).
- Clause 98 Text (from D1.0)
 - “This test, known as the “cable clamp test” is currently in the draft, but is being reviewed to see whether frequency extension, augmentation of the existing test, replacement of the test or deletion is desired.”

Rx CMNR ad hoc charter and scope/deliverables (proposed)

- Investigate the receiver common mode noise rejection (Rx CMNR) test, also known as the cable clamp test, and define an appropriate requirement for 40GBASE-T PHYs.
- Develop corresponding text for IEEE P802.3bq™/D1.0, subclause 98.5.4.3 Common-mode noise rejection and any associated Annexes.

Areas for Discussion & Investigation

Investigations along the lines of improving and augmenting the existing test

- Determining appropriate frequency extensions
- Identifying augmentations to the test specific to the supported cabling systems (e.g., tests relevant to shielded cabling)
- Identifying improvements/augmentations to the existing test and associated configuration/calibration procedures

Investigations along the lines of replacing the existing test

- Identifying alternative test methods

Investigations along the line of deleting the existing requirement

- Evaluating common-mode noise coupling over supported cabling systems
- Assessing PHY transceiver sensitivity to common-noise signals coupled over supported cabling systems
- Confirming that PHYs operating over supported cabling systems can meet the BER objective in the presence of common-mode impairments

Previous contributions (not comprehensive)

- Noise Immunity Performance Analysis of Screened Cab Screened Cabling Systems ([rossbach_0513_40GBT.pdf](#))
 - Reviews coupling attenuation and implications for alien crosstalk. Can this be extended to comprehend common-mode noise rejection?
- 40GBASE-T Suggestions (40GBASE-T_Discussion.pdf), presented by German Feyh during the July 7th, 2014 PHY proposal ad hoc meeting
 - Identifies some limitations with the present Rx CMNR requirement defined in Subclause 55.5.4.3
- Common-Mode Noise Rejection Specifications and Initial Considerations for 40GBASE-T ([cibula_3bq_02a_0714.pdf](#))
 - Reviews twisted-pair Rx CMNR specifications and presents some considerations for a 40GBASE-T specification
- Installation Practices for Screened Cabling ([flatman_3bq_01_0914.pdf](#))
 - A brief tutorial on requirements & best practices defined by ISO/IEC 11801, ISO/IEC 14763, and CENELEC EN 50174-2

Things Needed (Not Comprehensive)

- “Requirements 101”
 - Relationship/correlation between the Rx CMNR test and system immunity requirements (standards-based and ad-hoc/those not comprehended by standards)
 - Operational requirements
- Channel/cabling/MDI/magnetics/PHY
 - Shielding effectiveness of the end-to-end channel over supported media and interconnect/coupling components
 - Representative (worst-case?) common-mode noise presented to the PHY
 - PHY sensitivities to common-mode noise
- Test implementation
 - Descriptions/characterizations of existing and alternative test methods, including fixture calibration techniques
 - Capabilities/limitations of clamp noise coupling techniques over an extended frequency range (80MHz – 2GHz)

New Contributions

- “40GBASET EMC”, German Feyh (Broadcom), Neven Pischl (Broadcom)

Ad hoc Next Steps

- To be discussed and determined

Thank You!