Receiver Common-Mode Noise Rejection ad hoc report

IEEE P802.3bq 40GBASE-T Task Force

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Rx CMNR ad hoc chair

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Rx CMNR ad hoc charter and scope/deliverables

- 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, subclause 113.5.4.3 Common mode noise rejection and any associated Annexes.

Rx CMNR ad hoc activity since Atlanta meeting

- Three Rx CMNR ad hoc calls – January 21st, February 18th and March 4th, 2015.

- Meeting minutes and contributions are available at the 40GBASE-T website Receiver Common-Mode Rejection ad hoc area (http://www.ieee802.org/3/bq/public/rxcmr/index.html)

- Meeting highlights
  - Deconstructed the text in P802.3bq, Draft 1.1 as a follow-up to discussion of the specification during P802.3bq D1.1 comment resolution
  - Reviewed basic electrical performance of an updated cable clamp fixture that features a larger center conductor to accommodate larger-diameter cables
  - Considered several proposals for Clause 113.5.4.3 and developed recommended text to be reviewed during P802.3bq D1.2 comment resolution

Recommended Text for 113.5.4.3

113.5.4.3 Rejection of External EM Fields

- When the cabling system is subjected to electromagnetic fields, currents are generated in the shield which may be converted to interference. This specification is provided to limit the sensitivity of the PMA receiver to external EM fields picked up by the cabling and interconnect system. It provides an assessment method of the electromagnetic performance of the link segment and the PHY, including the MDI.

- An 80 MHz to 2000 MHz test can be made based on the cable clamp test defined in 40.6.1.3.3, a 30 meter plug-terminated Category 8 channel that meets the requirements of 113.7, and suitable broadband ferrites. All components in the test remain over the ground reference plane. A sine wave with the amplitude held constant over the whole frequency range from 80MHz to 2000MHz, with the amplitude calibrated so that the signal power measured at the output of the clamp does not exceed 6dBm, is used to generate the external electromagnetic field and corresponding shield current.

- A system integrating a 40GBASE-T PHY may perform this test to evaluate anticipated performance in regulatory test environments. Operational requirements of the transceiver during the test are determined by the manufacturer.

- *Editor's note (to be removed prior to publication): Commenters are encouraged to confirm the source-adjustment criteria, measurement points, and levels used with the clamp methodology in this subclause.*

Rx CMNR ad hoc next steps

- Further work
  - Continue technical work in the ad hoc to refine details of implementation as suggested in the Editor's note
  - Submit updates as comments in upcoming Working Group ballot(s)

- Next meetings
  - Meetings will be scheduled on alternate Wednesdays at 9:30AM PST between now and the May interim meeting

- Thanks to all ad hoc participants and contributors – and remember… you, too, can be a contributor!

Thank You!