Enterprise noise and use case analysis ad hoc report

German Feyh, ENUCA Chair

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Charter

Mr. Chalupsky announced the formation of the “Enterprise noise and use case analysis” ad hoc and has appointed German Feyh as the ad hoc chair.

Charter of this ad hoc is to recommend electrical specifications for the project based upon:

1) analysis of enterprise noise sources (noise generated external to cable or noise generated internal to the cable by the cable construction).
2) evaluation of the results of the Use Case ad hoc.

Activity

- IEEE 802.3 NGEBASET ENUCA Ad Hoc has:
  - Held two conference calls since the Pittsburgh Interim meeting:
    - June 17th, 2015: 18 attendants
    - July 1st, 2015: 20 attendants
- Reviewed 3 presentations:
  - Physical test setup for impulse noise testing, Larry Cohen, Aquantia.
  - Enterprise Cabling Impulse Noise Test Station, Bryan Moffitt, Commscope.
  - Measurement of EM Clamp Coupling Characteristics, Larry Cohen, Aquantia.
- Meeting minutes and presentations can be found at:
  - http://www.ieee802.org/3/NGEBASET/public/entnoise/index.html

Achievements, stretch goal and a chimera

- Achieved:
  - Measurement and consensus on the impulse responses of the external noise:
    - Short impulses,
    - Impulse trains,
    - Football shaped amplitudes,
    - Narrow band interferers.
  - Use: External noise evaluation of line coding using simulation.
- Stretch goal:
  - Reproducible setup for external noise injection using a cable clamp.
  - Use: External noise evaluation of existing cable, connector, magnetics and PHY.
- Chimera:
  - Def.: a thing that is hoped or wished for, but in fact is illusory or impossible to achieve.
  - Characterization of occurrence and severity of external noise:
    - What is representative (use, environmental characteristics, etc.)?
    - Public places (libraries) do not allow measurements during use.

Advantages of the existing cable clamp test for narrow band interferers over external noise cable clamp test.

- Narrow band interferer (vs. wide band interferer in external noise test)
  - Less challenging test setup.
    - No wide band reflections.
  - Amplitudes at the different frequencies can be controlled individually.
- Reason for existence:
  - Qualification of cable, connector, magnetics and PHY for CISPR test.
  - Customer needs to pass CISPR tests.
- Tests do exist for external noise like interferers.
  - Amplitudes are so severe, that only recovery after the application of the noise is tested.
  - External noise cable clamp test is not suggested as a pre-test for these tests.
- What is the goal of a new external noise cable clamp test:
  - Qualify cables, connectors, magnetics and PHYs?
  - Show limitation of the use of BASE-T technology?
  - Forward looking development of line coding for the next generation?

Thank you