Limit Lines for

IEEE 802.3dm

Interim January 2026

Conrad Zerna (Aviva Links Inc.)

Overview

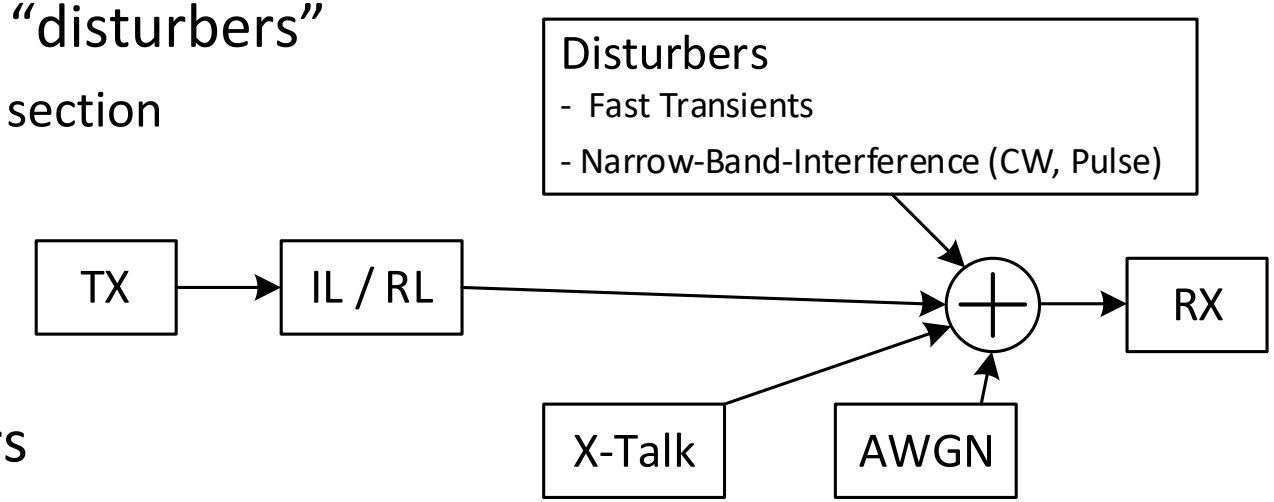
- Limit line for Clause 202.5.3.2 “Alien crosstalk noise rejection”
- Defining a noise model, which the receiver should be able to tolerate
- Focusing on “alien” components outside a (multi-port) PHY

Alien Noise Model

- Referring to https://ieee802.org/3/dm/public/1124/Zerna_802.3dm_02_241110_TDD_proposal.pdf

- Complete system model is shown on the right
- Focus in Clause 202.5.3.2 is on outside “disturbers”
  - IL / RL, X-Talk, AWGN are covered by other section

- Automotive noise environment, especially in GHz bandwidth range, is few(er), but high(er) power disturbers
  - Not a large enough mass to trend towards anything like a Gaussian distribution



Alien Noise Model

- "Signal" is referring to single-ended signal for coax, and to differential signal for STP directly at the receiver
- Power-Over-Cable disturbance signal
  - constantly present sine wave signal at 10MHz with 100mVpp amplitude
- NBI disturbance signal
  - Continuous wave from 10MHz to 6GHz, NBI levels as per table
  - LF: flat amplitude 1-200 MHz
  - Linear amplitude slope from 200MHz to 400MHz
  - HF: flat amplitude 400MHz to 6GHz
- Fast Transient signal
  - A single period of a sine wave, repeated every 10us
  - Coax: sine frequency 14MHz, amplitude 50mVpp
  - STP: sine frequency 25MHz, amplitude 8mVpp

	NBI
Coax	LF 80mVpp HF 16mVpp
STP	LF 50mVpp HF 32mVpp

Thank You!