Effects of New NEXT Limit on Performance

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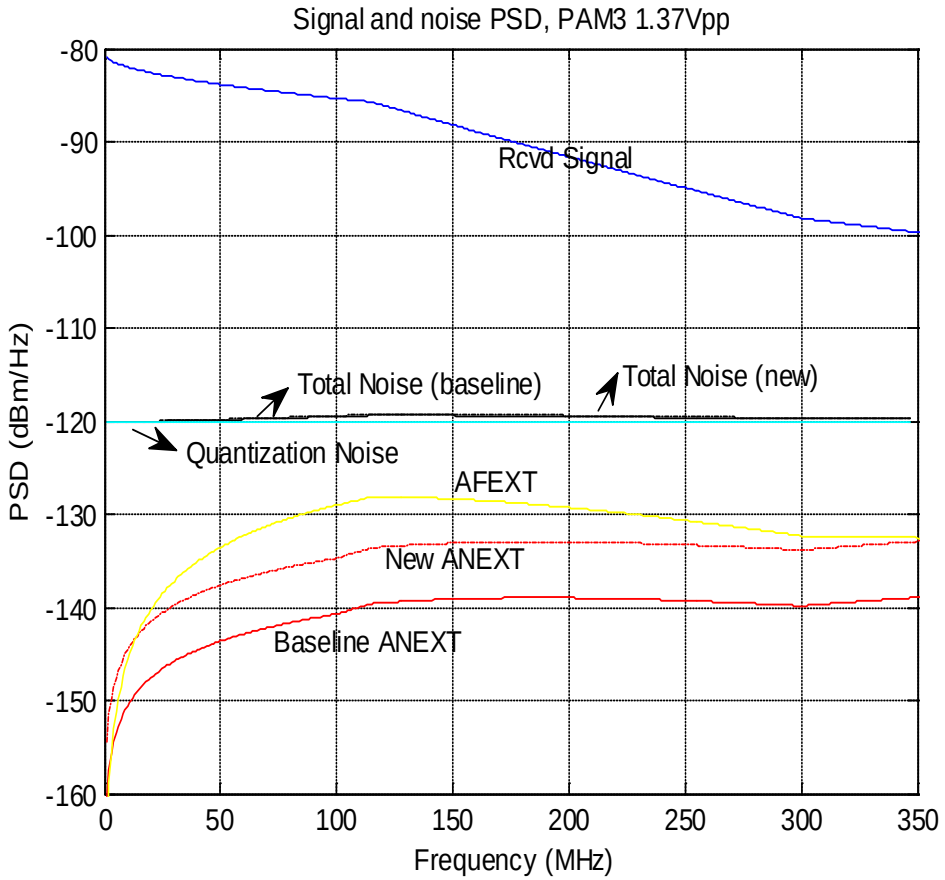
Motivation

- To evaluate the effects on performance of newly proposed relaxation of 6 dB on PSANEXT baseline [mueller_01a_0114.pdf].

Simulation Setups

- 15m channel at room temperature.
  - Largest effect of PSANEXT relaxation.
- -140dbm/Hz background noise.
- Modified PSD masks
  - PAM2 - 1 Vpp,
  - PAM3 -1.37 Vpp
  - PAM4 -1.55 Vpp
- 5.8 mVrms Quantization noise.
  - 5.5, 6.2, and 6.5 ENOB for PAM2, 3 and 4, respectively with 7.8 db backoff for ISI, echo, and RFI.

PSD of Noise Components



- The new ANEXT is still smaller than AFEXT at 15m channel.
- Quantization noise dominates other noise components.
- Increase of 6 dB in ANEXT leads to negligible increase in total noise.

Infinite-Length DFE Results for 15m channel @20C

Table – SNR comparison of baseline vs. Rosenb. ANEXT.

Modul.	SNR (dB)	Raw Eye Height (mv)
PAM-2	26.0/25.7	244/244
PAM-3	29.1/29.0	214/214
PAM-4	31/30.9	192/192

Conclusion

- Relaxation of 6dB on PSANEXT limit degrades SNR by less than 0.3db.