

Noise Model

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Alvin Wang

alvin.wangchao@huawei.com

Requirement for Noise Model

One of the objectives of this task force is to achieve:

6. “Support a BER better than or equal to 10^{-12} at the MAC/PLS service interface (or the frame loss ratio equivalent)”

To achieve this target the noise, especially the impulse noise, should be analyzed carefully. Most contributions on the cable measurement are based on the shielded cables. One of the main reasons is the shielding can reduce the radiation noise.

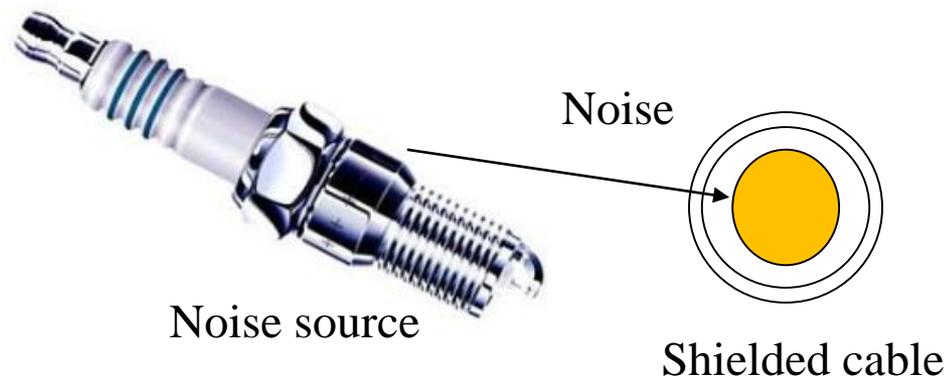
1. “802.3ch channel options”, Jul. 2017, Thomas Müller, Rosenberger. [mueller_channel_options_01a_0717.pdf](#)
2. “Measurement results of Single Balanced Twisted-Pair Shielded cables up to 7.3 GHz”, Jul. 2017 IEEE 802.3ch NGAUTO, Wayne Hopkinson, Masood Shariff, CommScope. [hopkinson_shariff_3ch_01_0717.pdf](#)
3. “RF Ingress Measurements for Shielded Twisted Pair (STP) Cables from Automotive BCI Test”, Jul. 2017, Larry Cohen, Ramin Shirani, Aquantia. [cohen_shirani_3ch_01_0717.pdf](#)

To apply the Ethernet to automotive, the noise model should be specified. It can facilitate the in-vehicle network design and applications.

Mike Tu pointed the DFE may introduce error propagations in July 2018 802.3ch “RS FEC Proposal for Multi-Gigabit Automotive PHY”. And interleaved RS is used to reduce the error rate. The interleaving depth should be based on the duration and amplitude of the impulse noise. [tu_3ch_01b_0718.pdf](#).

To achieve the BER target, the noise model should be specified based on the cable measurements, noise source measurements, and the coupling between the noise source to the communication cable.

Proposal: It is proposed that 802.3ch shall study the noise model of in-vehicle environment.



Thank you!