Baseline Wander causes higher Implementation Loss

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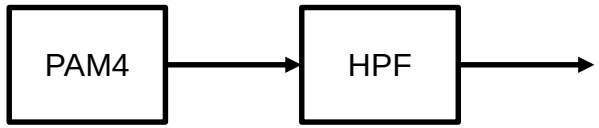
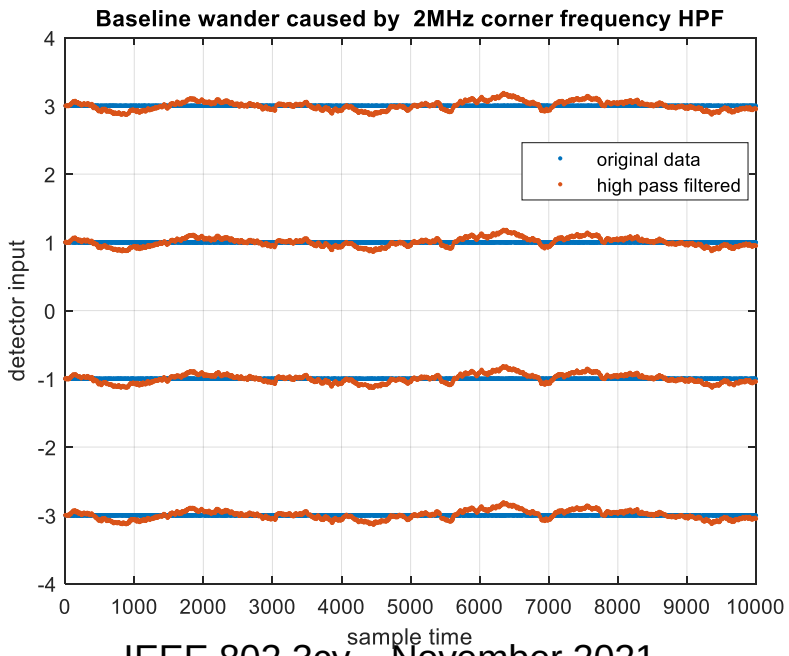
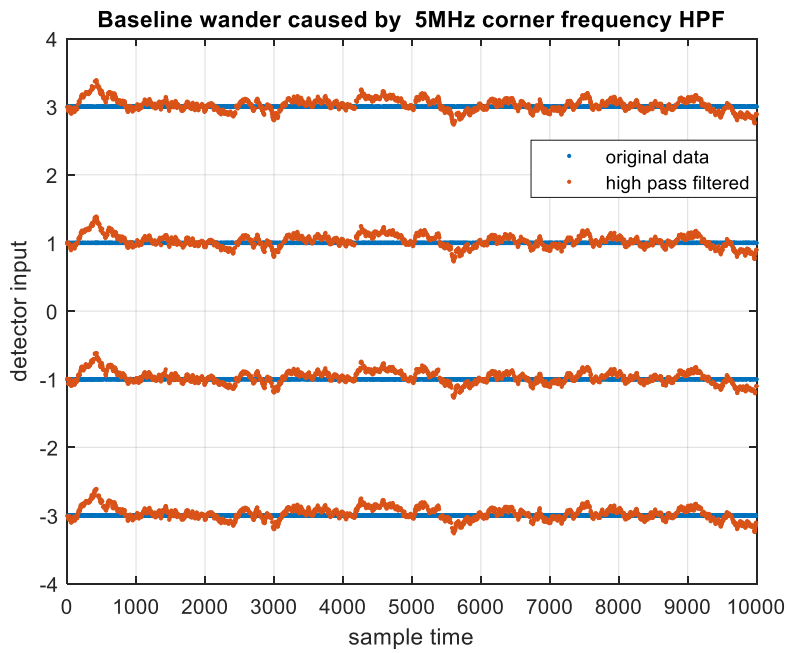
Visual comparison of the baseline wander effect.

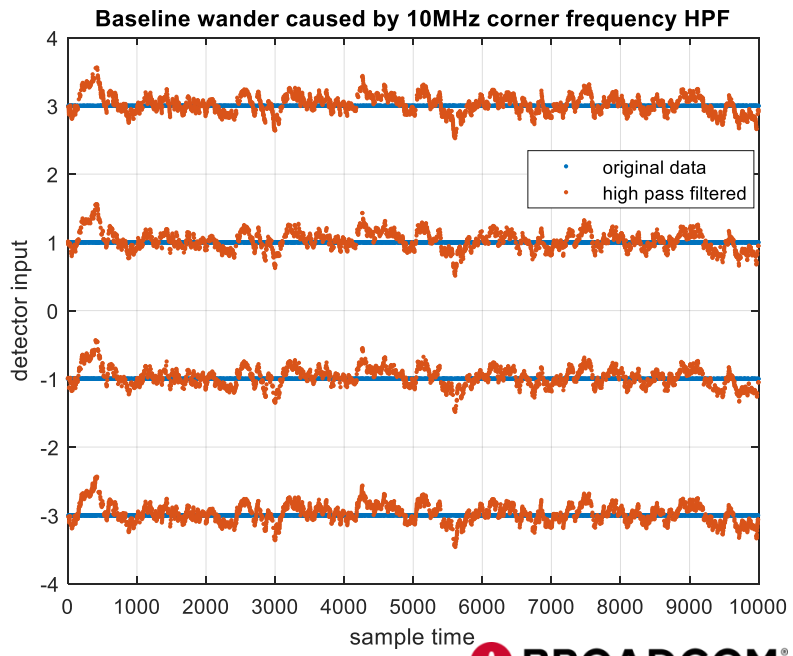
- A double pole high pass filter of given corner frequency.
- Filter PAM4 data using this high pass.
- Baseline wander becomes more pronounced as corner frequency of HPF increases.

Lower PSD mask frequency limit	SNR contribution
1MHz	32.5dB
2MHz	29.6dB
5MHz	25.6dB
10MHz	22.6dB









Lower frequency limit of insertion loss mask

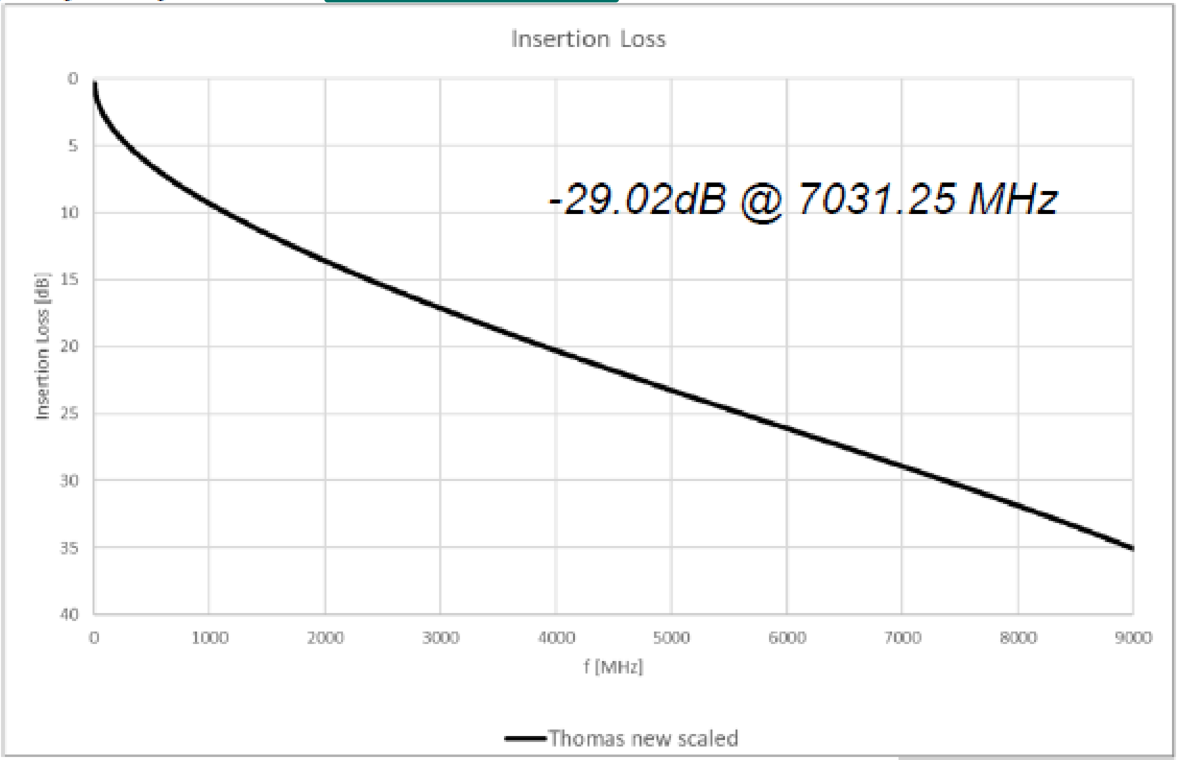
- 1000BASE-T1: Clause 96.7.1.2: 1MHz
- 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1: Clause 149.7.1.1: 1MHz
- 100 Gb/s, 200 Gb/s, and 400 Gb/s: 802.3ck: 10MHz (4X faster).
- Current adopted fmin for 802.3cy: 10MHz
  - diminico_kadry_3cy_01_06_22_21.pdf
- PODL designs can be implemented using a 2MHz lower IL limit.
- Detectors using DC typically have lower relative costs of implementation than other potential solutions.
- Propose
  - To change fmin from 10MHz to 2MHz for the link segment IL.
  - To adopt fmin of 2MHz for the PCB IL.

Link Segment IL - Baseline Proposal

An adjustment to the Link Segment IL proposal was put fourth by Thomas Muller in mueller_3cy_01_05_18_21.pdf

$$IL_{LinkSegment}(dB) \leq 0.00135(f_{MHz}) + 0.3564(f_{MHz})^{0.45} + 0.495\left(\frac{f_{MHz}}{7500}\right)^{6}$$

where f is the frequency in MHz; $10 \leq f \leq 9000$ Change to $2 \leq f \leq 9000$



Source: diminico_et_all_3cy_01a_05_18_21.pdf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