PBO break points

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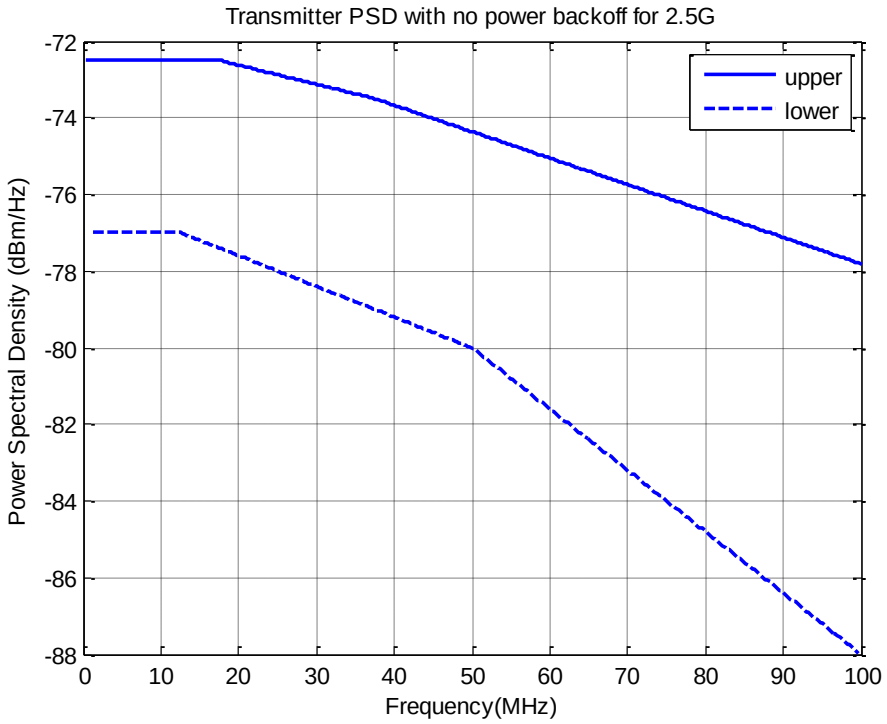
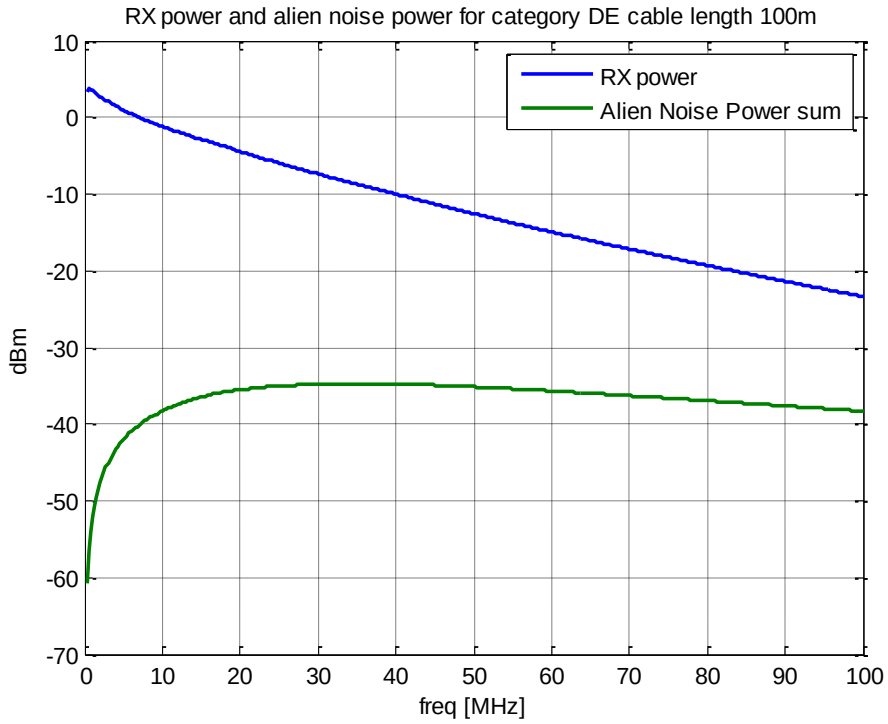
PBO breaks from limit lines

- Three different figures of merit (FOM).
- For e.g. 40G PBO break points are computed keeping the “alien noise power sum” the same for different length interferers.
- RX far end power is the local measurement to switch PBOs.
- Salz SNR is of concern to the PHY.

2.5G PSD, RX PS, AXT PS

- Transmitter PSD
- For transmit power assume the maximum envelope normalized to the maximum allowed power.
- Alien Next: Assumption for CAT5E: CAT6A - 20dB
- Alien FEXT: Assumption for CAT5E: CAT6A - 20dB

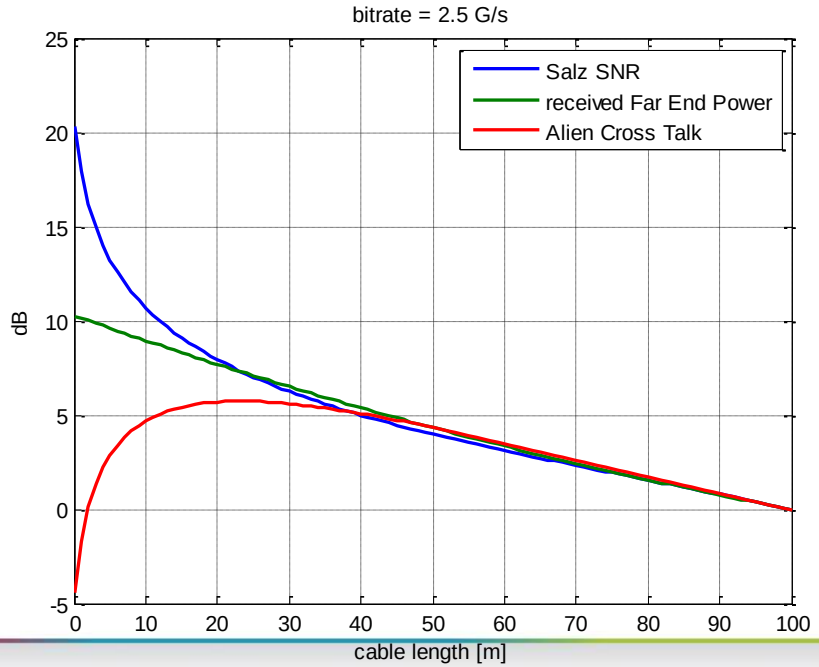




2.5G: Alien noise power, far end received power and Salz SNR

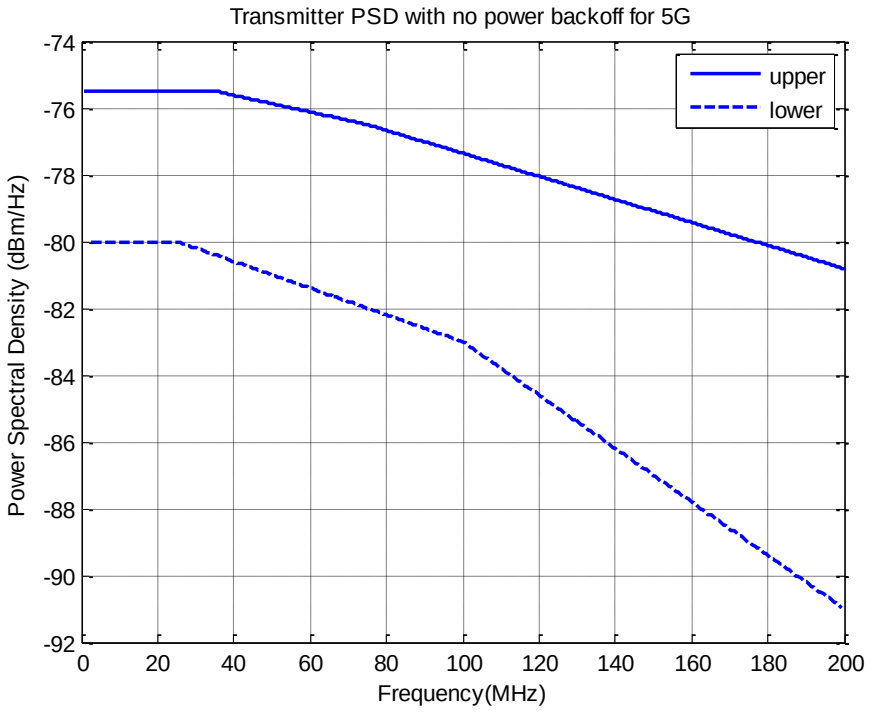
- Tracks well for 2.5G for the length 35m to 100m
- Break of PBO for one of the measures will result in a similar break of the other.

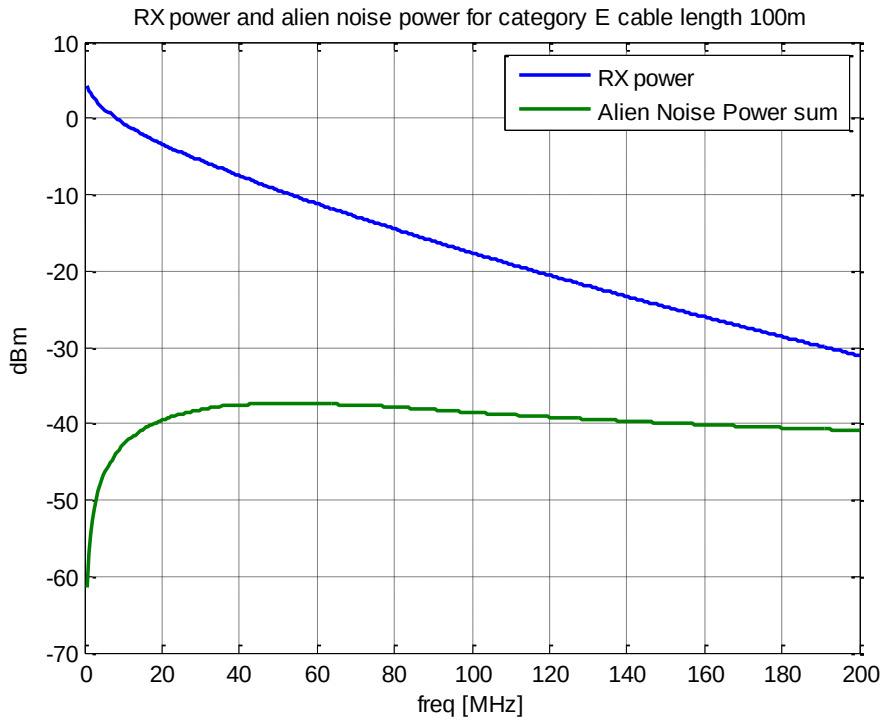
AXT ps [dBm]	RX ps [dBm]	Salz SNR [dB]	Length [m]
-51.2	-0.8	29.8	41
-53.2	-3.2	27.6	65
-55.2	-5.2	25.9	88



5G: PSD, RX PS, AXT PS

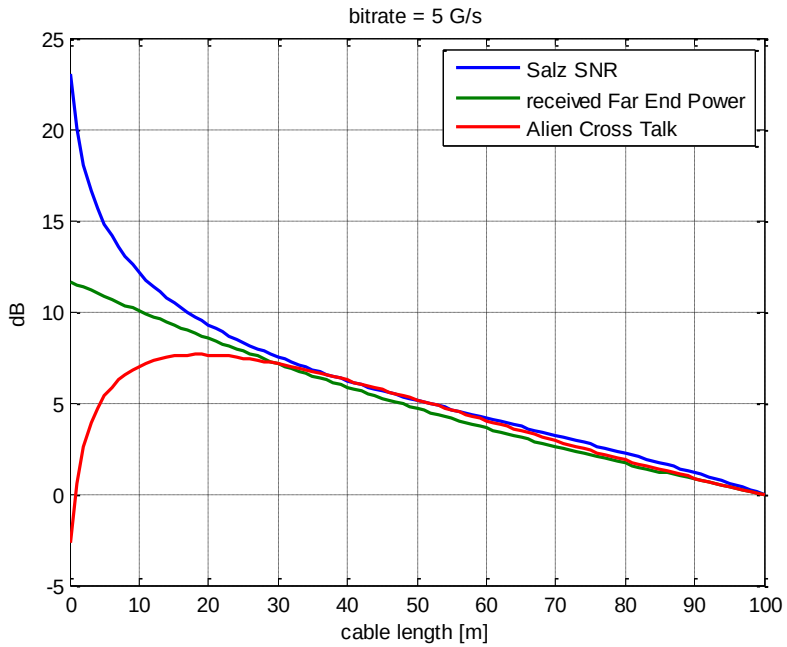
- Alien Next: Assumption for CAT6: CAT6A - 15
- Alien FEXT: Assumption for CAT6: CAT6A - 15;





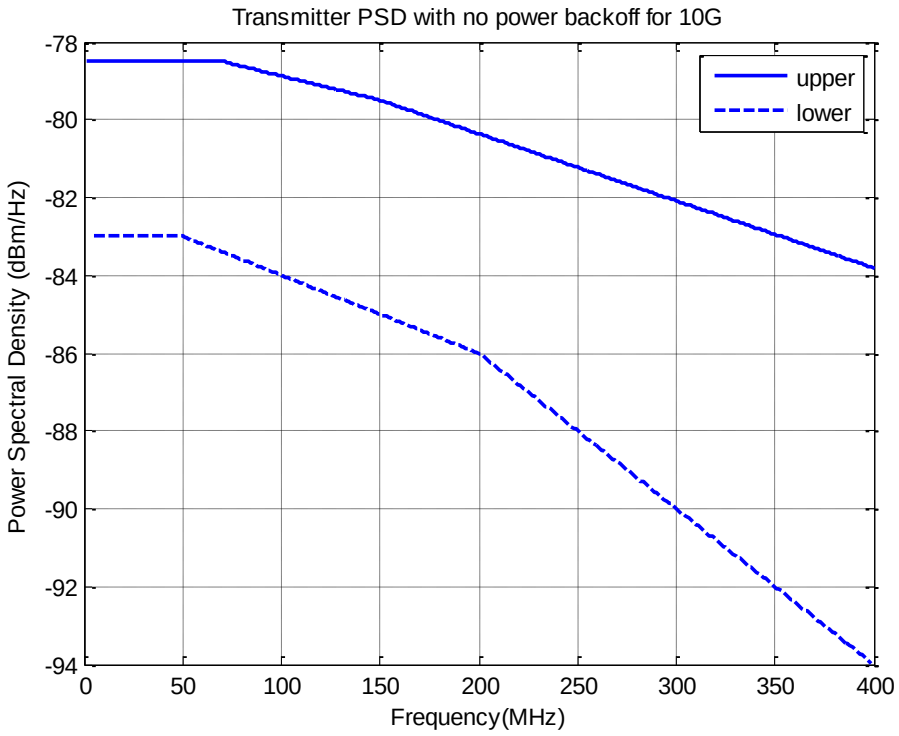
5G: Alien noise power, far end received power and Salz SNR

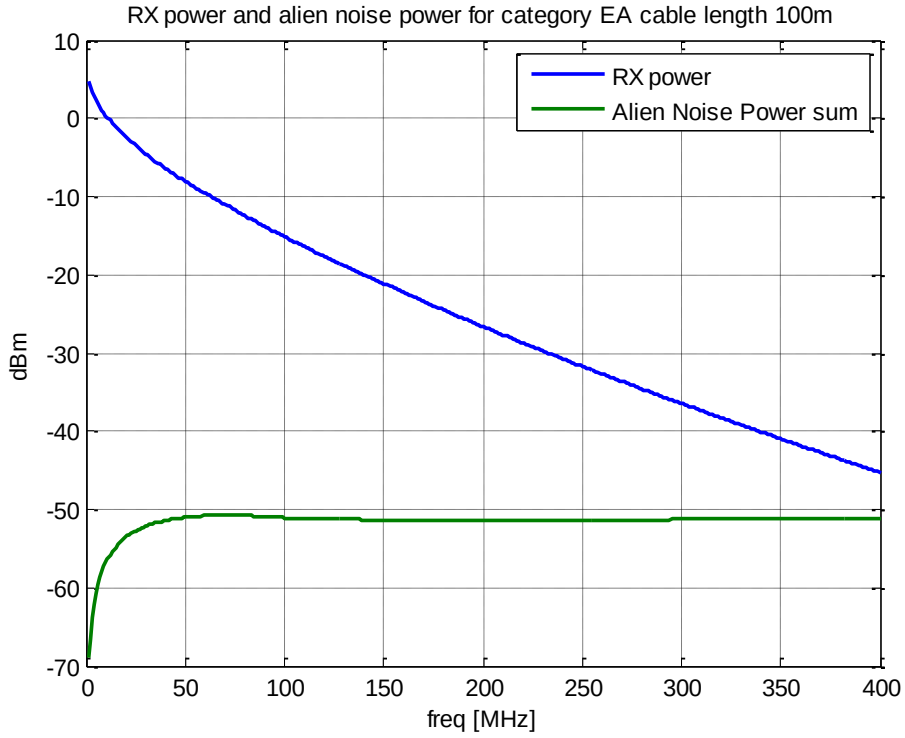
AXT ps [dBm]	RX ps [dBm]	Salz SNR [dB]	Length [m]
-55.0	-1.1	30.1	31
-57.0	-3.5	27.8	51
-59.0	-5.4	26.1	69
-61.0	-7.1	24.2	88



10G: PSD, RX PS, AXT PS

- Weighted with the maximum PSD envelope

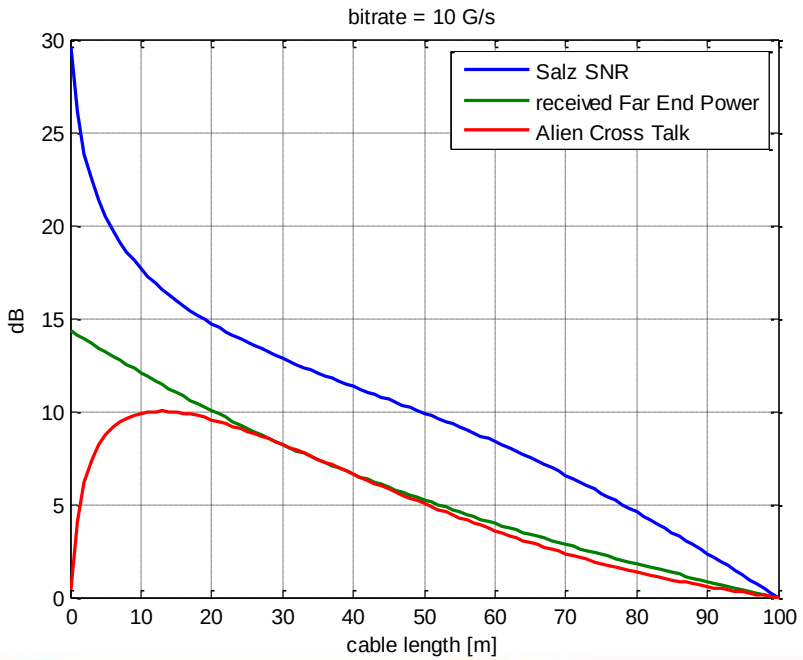




10G: Alien noise power, far end received power and Salz SNR

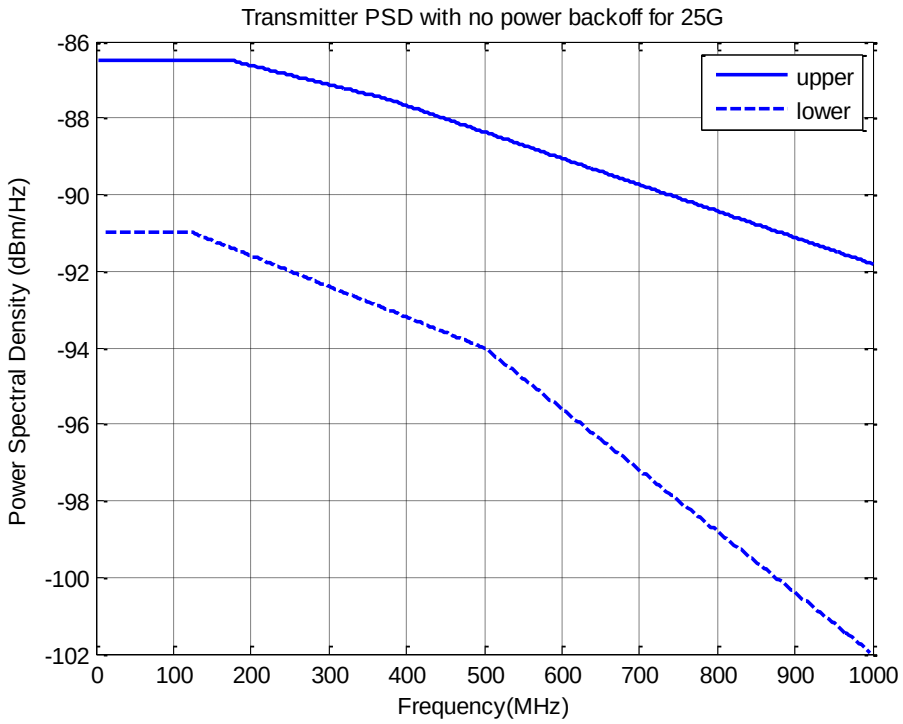
AXT ps [dBm]	RX ps [dBm]	Salz SNR [dB]	Length [m]
-68.4	-0.8 (-1.1)	40.2	24 (35)
-70.3	-3.0 (-2.3)	38.1	37 (45)
-72.4	-4.9 (-3.3)	36.2	50 (55)
-74.4	-6.6 (-4.2)	34.0	64 (65)
-76.6	-8.7 (-5.0)	30.0	84 (85)

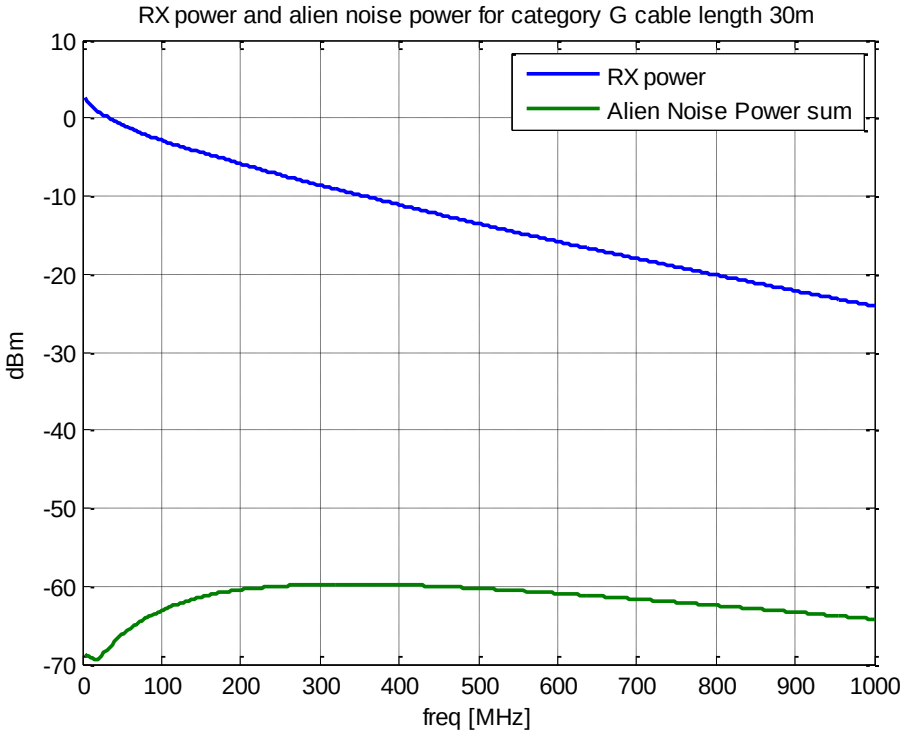
- 10G Standard in brackets



25G: PSD, RX PS, AXT PS

- Reduction of maximum cable length to 30m

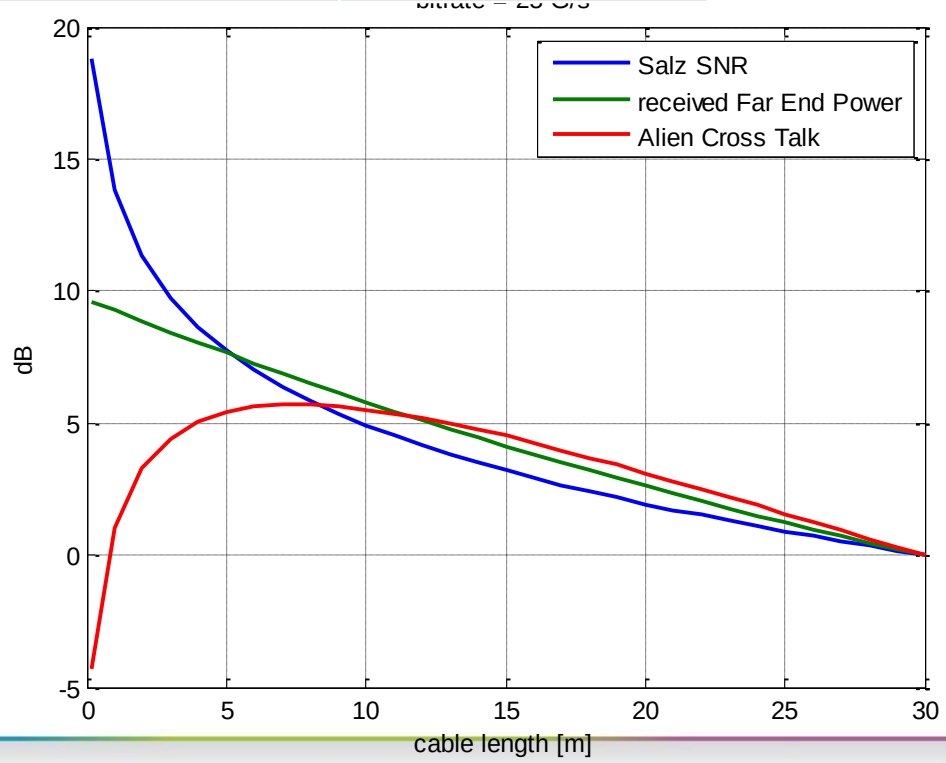




25G: Alien noise power, far end received power and Salz SNR

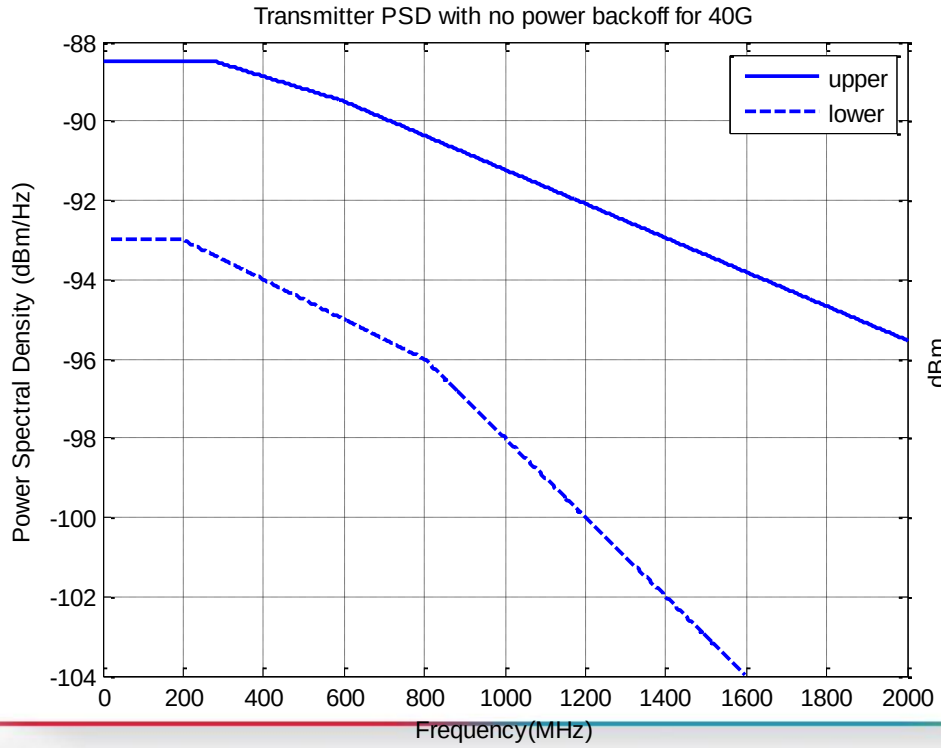
AXT ps [dBm]	RX ps [dBm]	Salz SNR [dB]	Length [m]
-86.2	-2.6	53.0	12
-88.3	-5.1	50.8	20
-90.2	-6.7	49.6	26

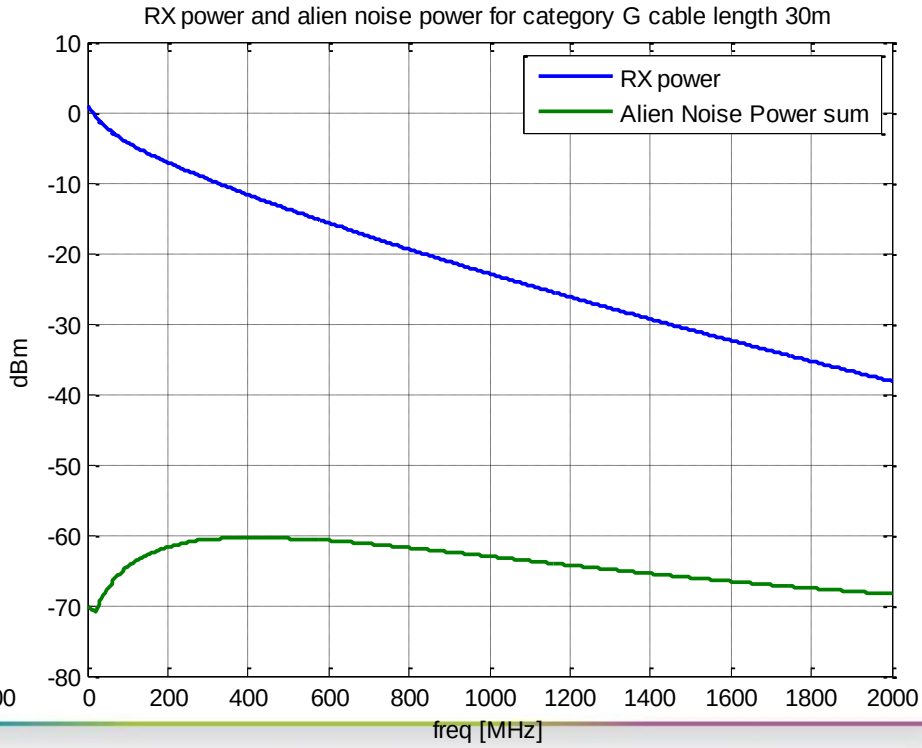
- Salz SNR increases slower than AXT ps and RX ps
- Don’t care, since absolute SNR is high



40G: PSD, RX PS, AXT PS

- D1.1.1 Definition of insertion loss for CAT8

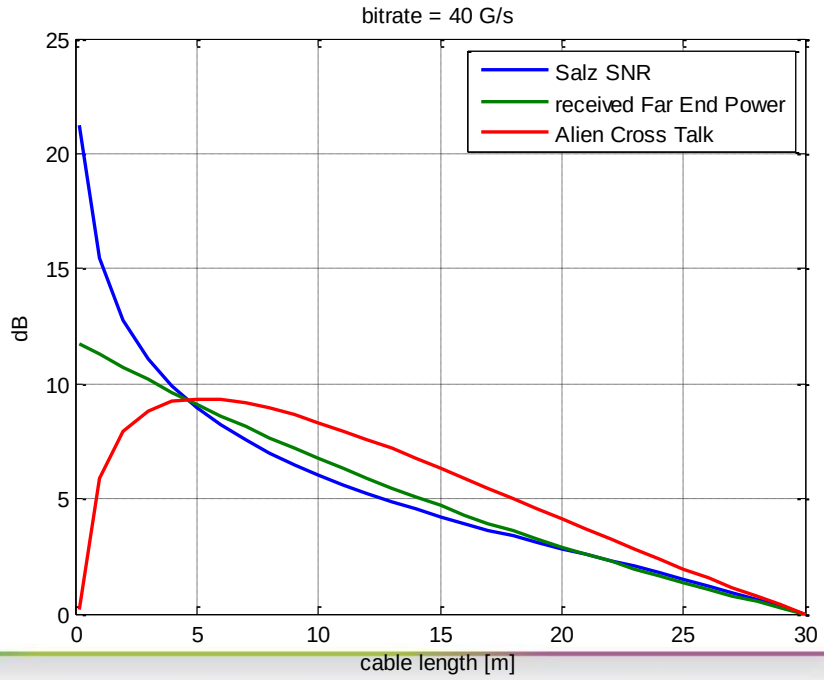




40G: Alien noise power, far end received power and Salz SNR

AXT ps [dBm]	RX ps [dBm]	Salz SNR [dB]	Length [m]
-87.1	-3.7	49.5	7
-89.1	-6.4	46.9	13
-91.2	-8.3	45.4	18
-93.0	-9.6	44.3	22
-95.1	-11.1	42.9	27

- D1.1.1 Insertion loss for CAT8



Questions

- 10G Standard: does it consider limit line FEXT for RX power, since it is estimated high?
- Step size is 2dB for AXT PS break points.
- 0.5dB steps are ok with PBO format and would result in less quantization of PBO. Switch to 0.5dB steps for 2.5G and 5G?