# Transmit PSD mask

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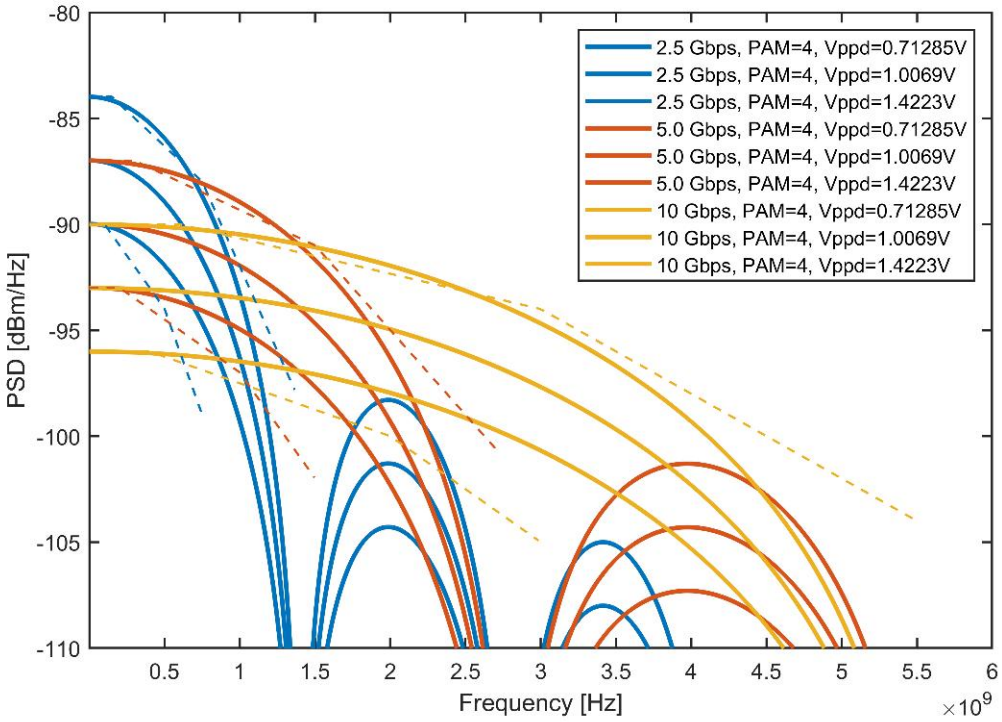
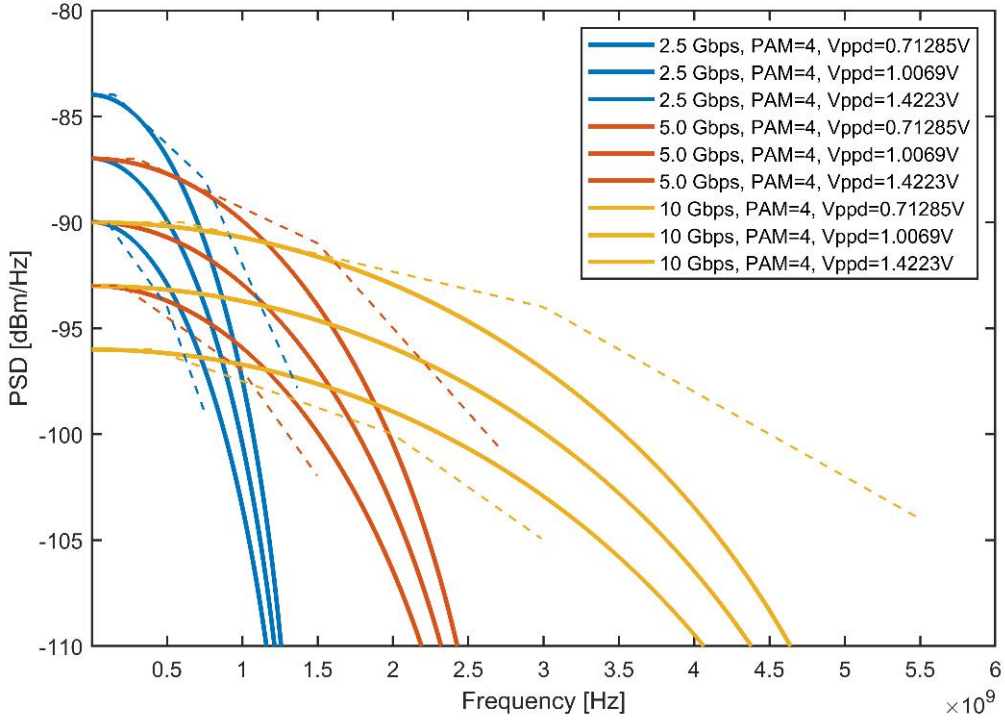
# Summary of proposed modifications

- Make upper mask limit meaningful
  - Current upper limit is meaningless: it does not contain a constraint and it allows unreasonably high out-of-band power
- Bound transmit power by a 3 dBm range around 1Vppd
  - Last meeting proposed -0.5 to +2.5dBm, which due to misinterpretation in the discussion unintentionally changed to -2 to +2 dBm in the current draft D1.2 → Propose to fix
- Make lower frequency bound consistent
  - Set low-freq corner for lower PSD mask at 10S MHz for PoDL
  - Add a first order roll-up for 1-10S MHz

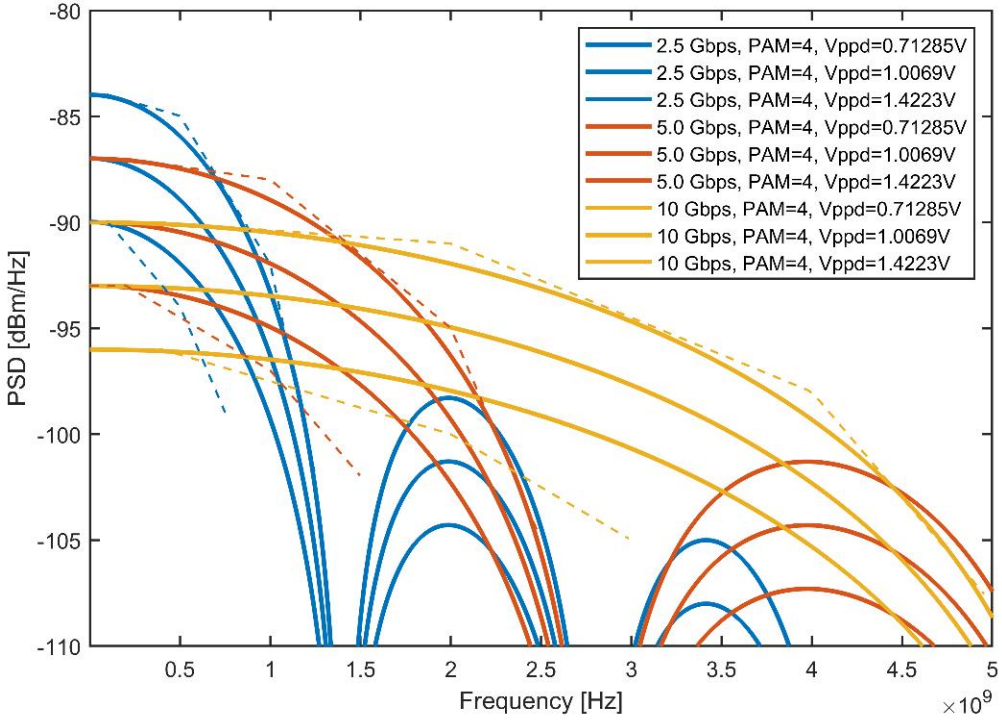
# PSD shapes with current PSD mask

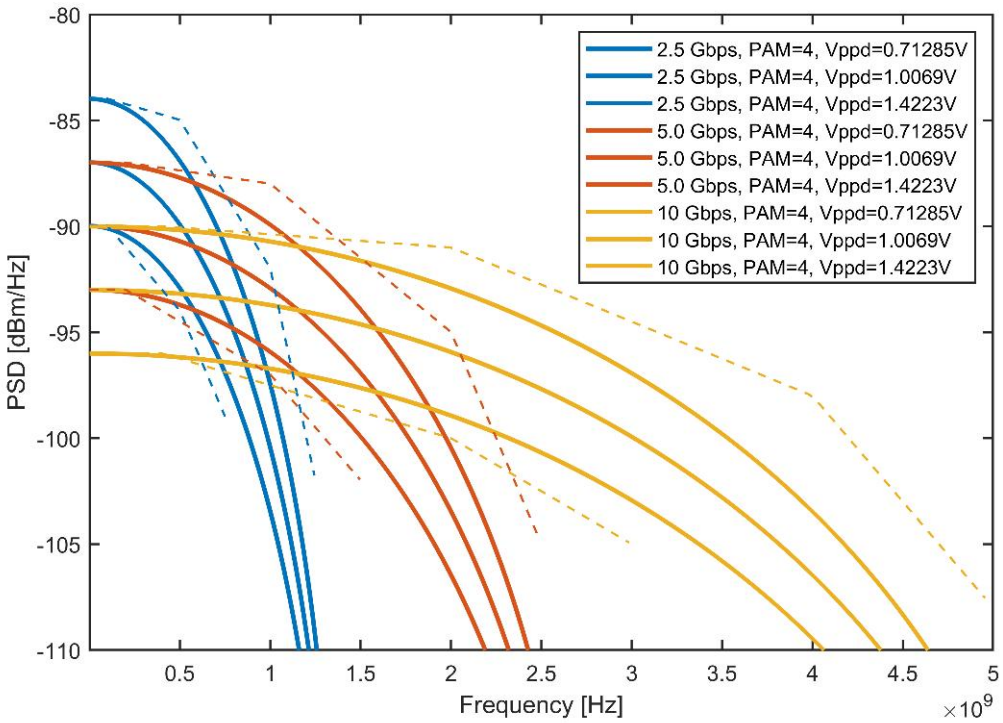



- Actual PSD shape shown for steep and smooth edges
- Current upper limit does not follow ‘native’ PSD shape
- PSD over the limit <2GHz for +3dB (implicit constraint)
- Limit above 2GHz is practically meaningless here

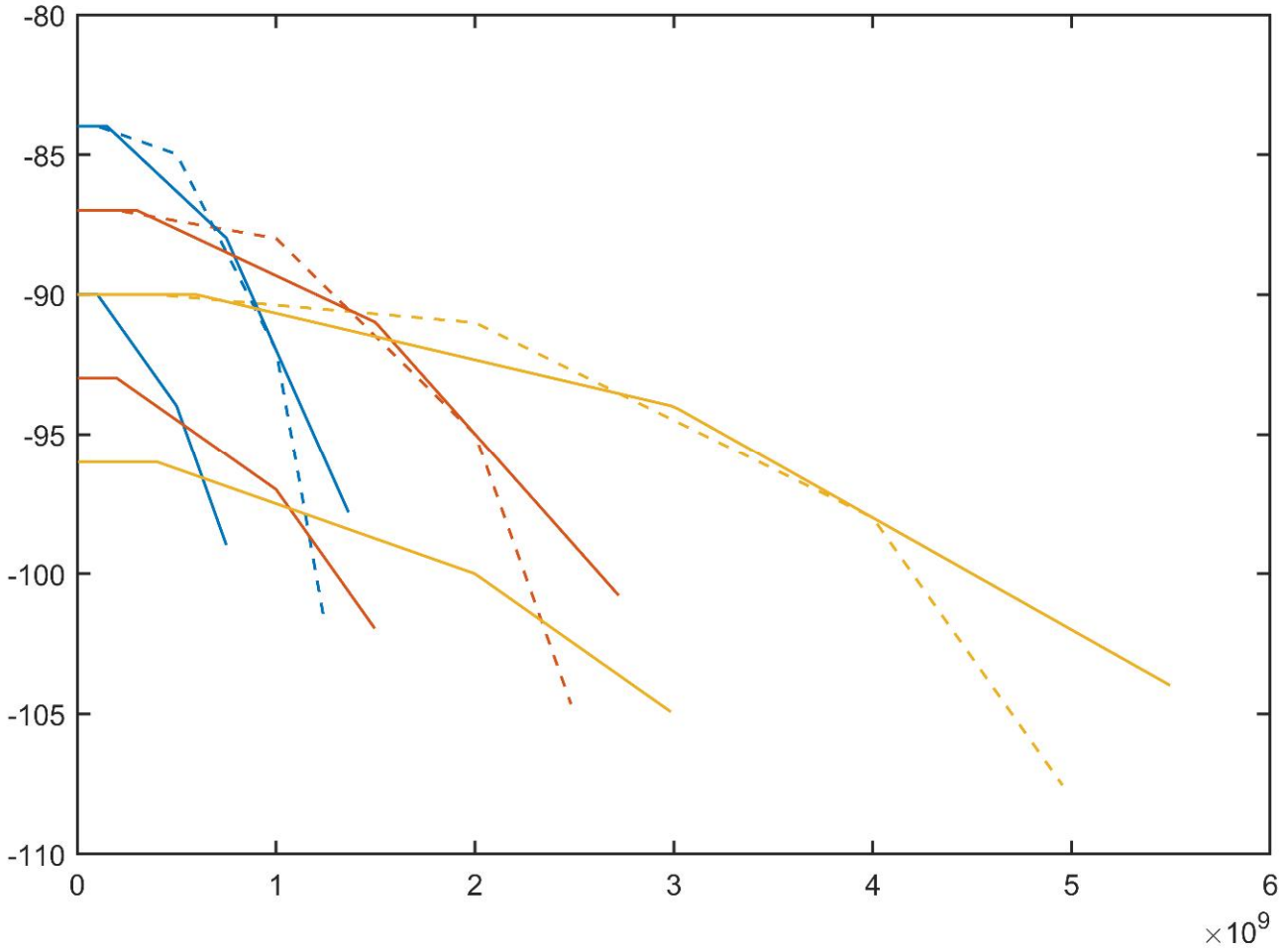
# PSD shapes with proposed PSD mask




- Actual PSD shape shown for steep and smooth edges
- Proposed upper limit <u>follows</u> ‘native’ PSD shape

# Comparing masks




- Looser < 3S GHz, tighter >4S GHz

# Formulas

- Upper mask limit

$$\begin{cases} -90 - K & dBm/Hz \quad 0 < f \le 400 \cdot S \\ -90 - K - \dfrac{f - 400 \cdot S}{1600 \cdot S} & dBm/Hz \quad 400 \cdot S < f \le 2000 \cdot S \\ -91 - K - \dfrac{f - 2000 \cdot S}{2000 \cdot S / 7} & dBm/Hz \quad 2000 \cdot S < f \le 4000 \cdot S \\ -98 - K - \dfrac{f - 4000 \cdot S}{100 \cdot S} & dBm/Hz \quad 4000 \cdot S < f \le 5000 \cdot S \end{cases}$$

- Lower mask limit
  - Shape untouched compared to D1.2 except for low-freq limit

$$\begin{cases} -96 - K & dBm/Hz \quad 10 \cdot S < f \le 400 \cdot S \\ -96 - K - \dfrac{f - 400 \cdot S}{400 \cdot S} & dBm/Hz \quad 400 \cdot S < f \le 2000 \cdot S \\ -100 - K - \dfrac{f - 2000 \cdot S}{200 \cdot S} & dBm/Hz \quad 2000 \cdot S < f \le 3000 \cdot S \end{cases}$$

# Transmit power limits

- A 1Vpp PAM4 signal is 0.25-1.5dBm depending on shaping
- A transmit power range of -0.5 to +2.5dB provides a symmetrical window around the nominal value

End