

# Comment #69 TX Lower PSD Mask



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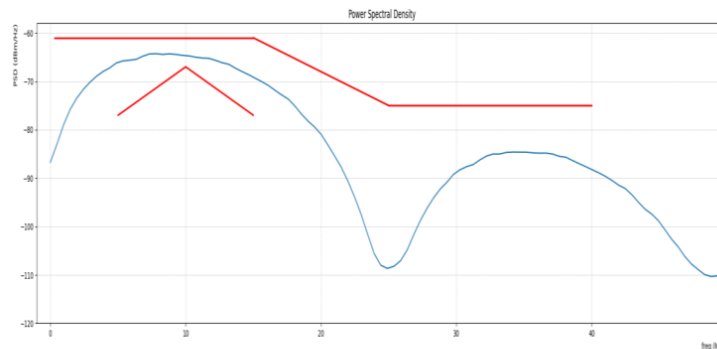
**Tim Baggett**  
IEEE 802.3da Task Force, July 2024

# Comment #69 – Constrain Lower TX PSD Mask

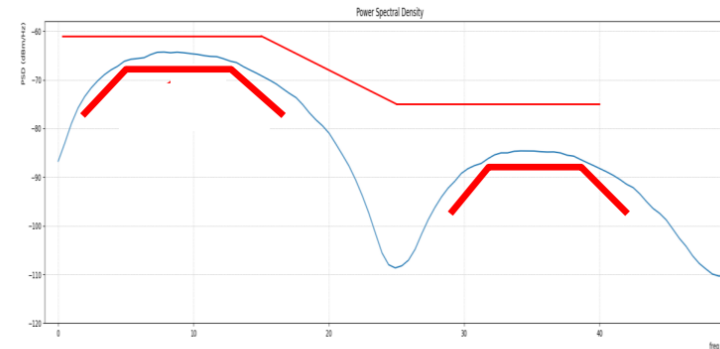
- The lower PSD mask has been shown to be too loose
  - See: IEEE 802.3da – EMC Noise Margin, Piergiorgio Beruto, July 2022
    - [https://www.ieee802.org/3/da/public/1122/beruto\\_3da\\_20221114\\_emc\\_noise\\_margin.pdf](https://www.ieee802.org/3/da/public/1122/beruto_3da_20221114_emc_noise_margin.pdf)
- Proposed changing first lobe PSD:

$$\text{Lower PSD}(f) = \begin{cases} -77 + 4*(f-2.5) & 2.5 \leq f < 5 \\ -67 & 5 \leq f < 12.5 \\ -67 - 2.5*(f-12.5) & 12.5 \leq f \leq 16.5 \end{cases}$$

} dBm/Hz,  $f$  in MHz



OLD



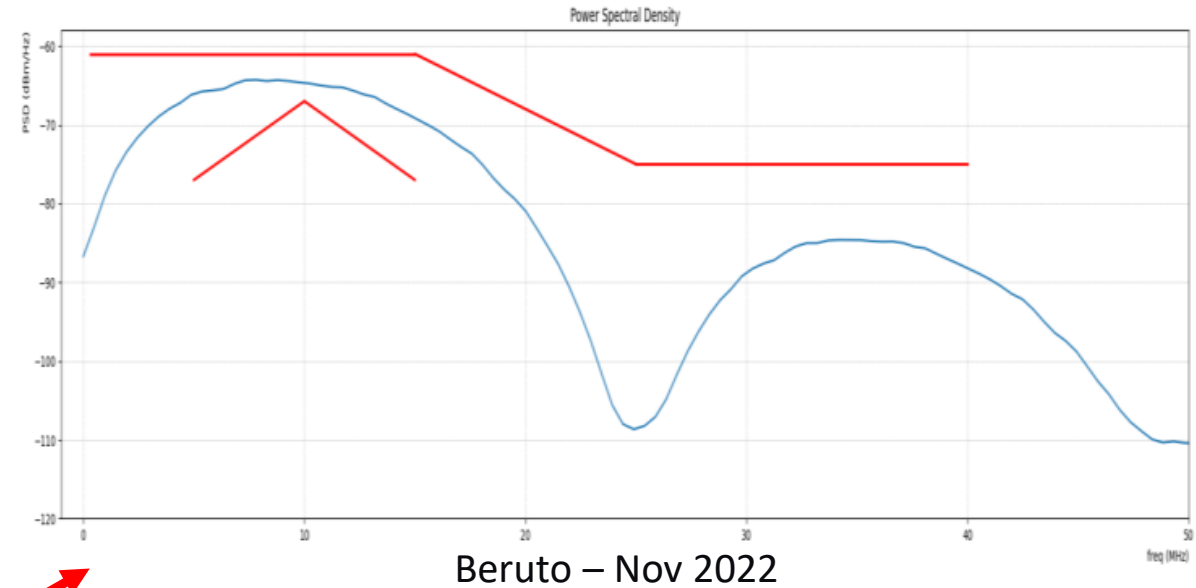
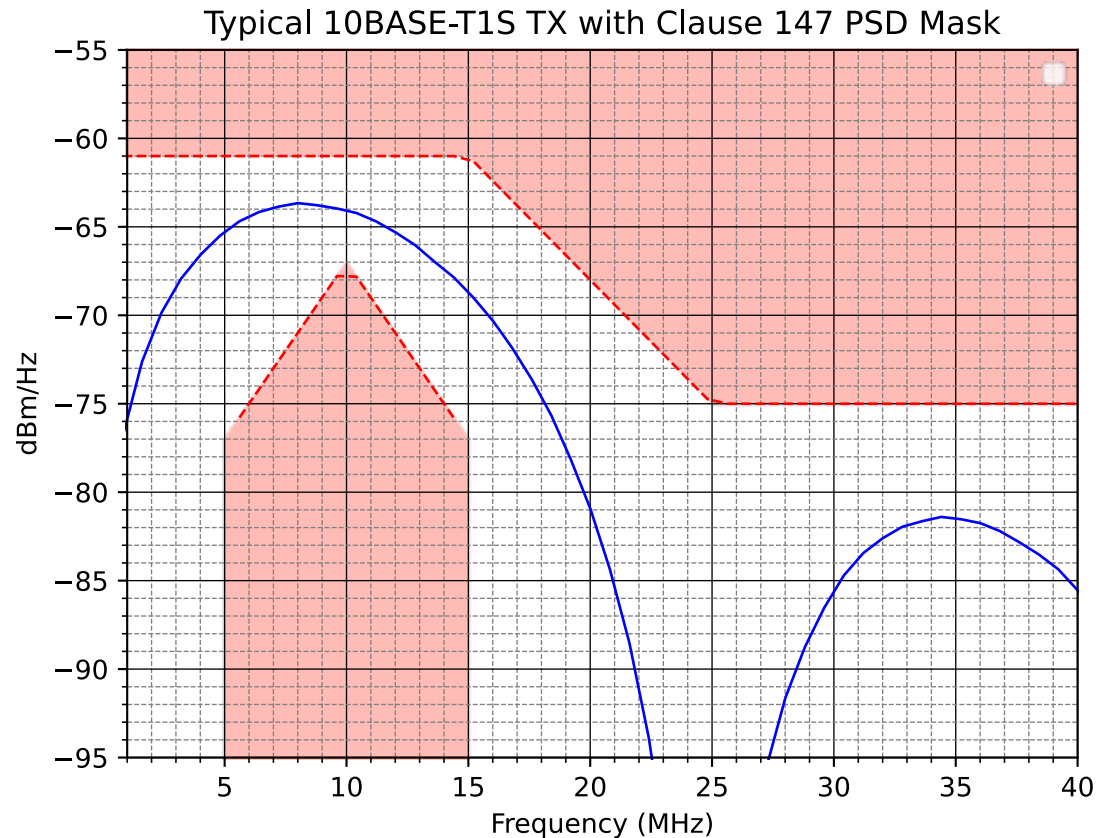
NEW (?)

IEEE 802.3da SPMD Task Force – July 2024

# Typical Clause 147 Transmitter

## Clause 147 TX Mask

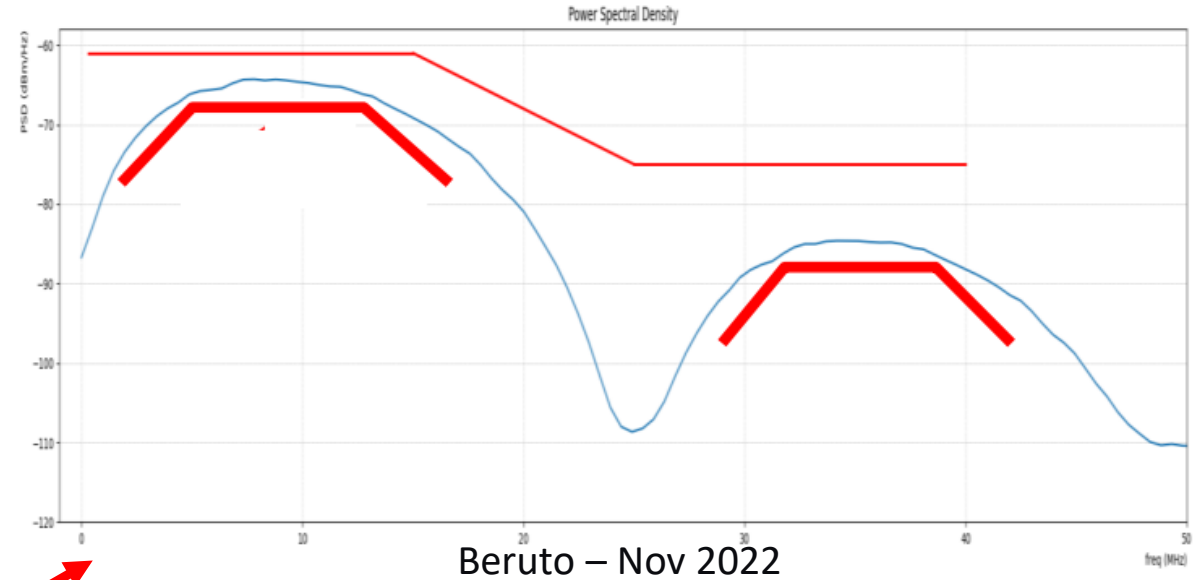
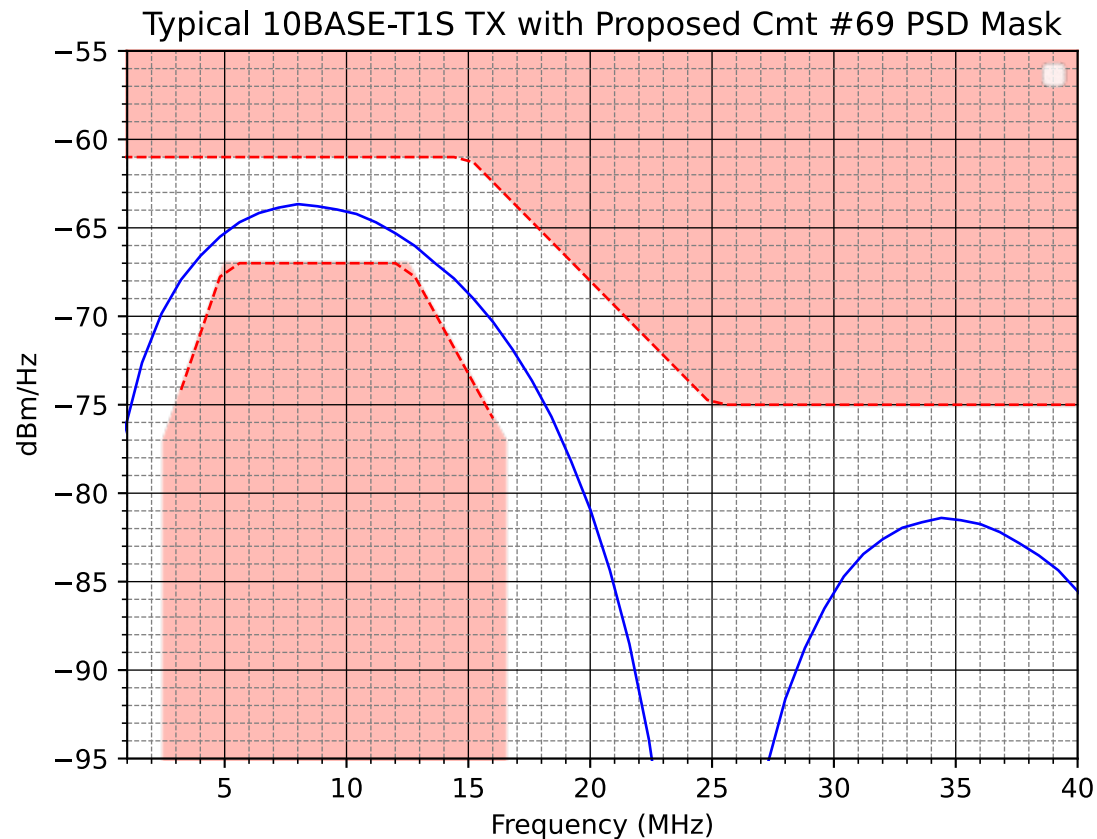
- Compares to Beruto (Nov 2022)
- Good Margin



# Typical Clause 147 Transmitter

## Comment #69 Proposed TX Mask

- Close at 5MHz, 12.5Mhz with *typical* TX

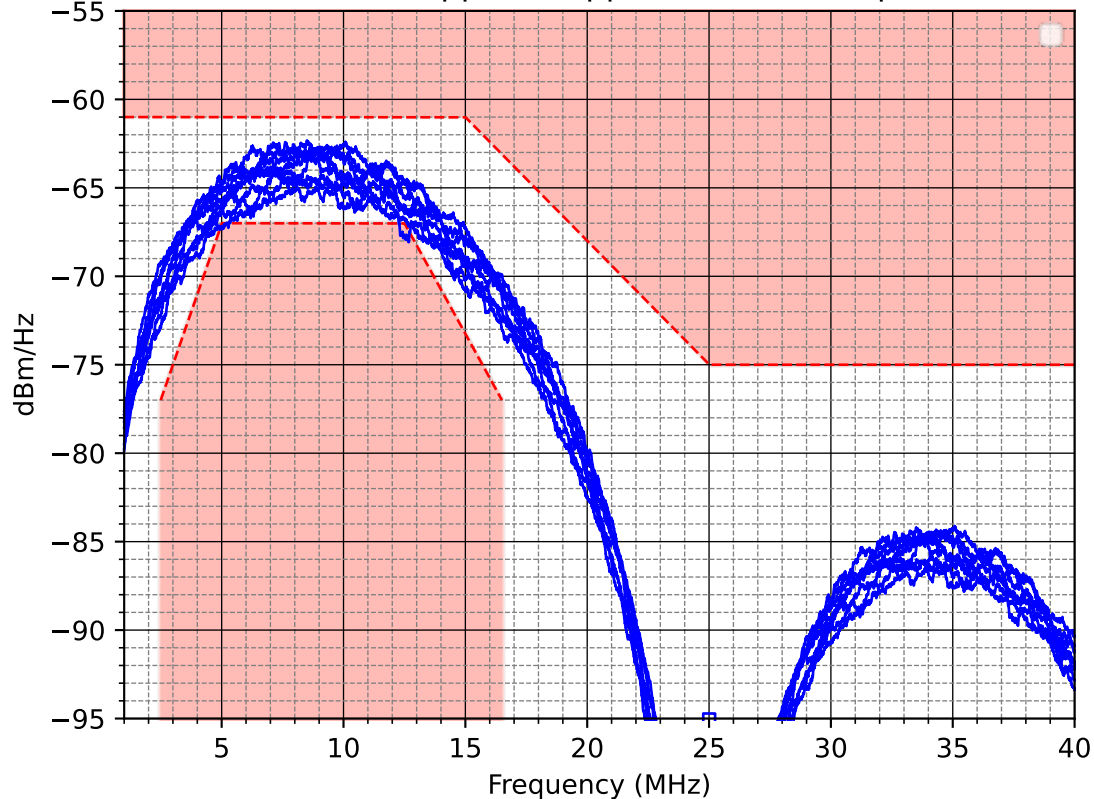


# Transmit Amplitude Variability

## Clause 147 and 168 Transmitter Output Voltage: 1 Vpp ± 20%

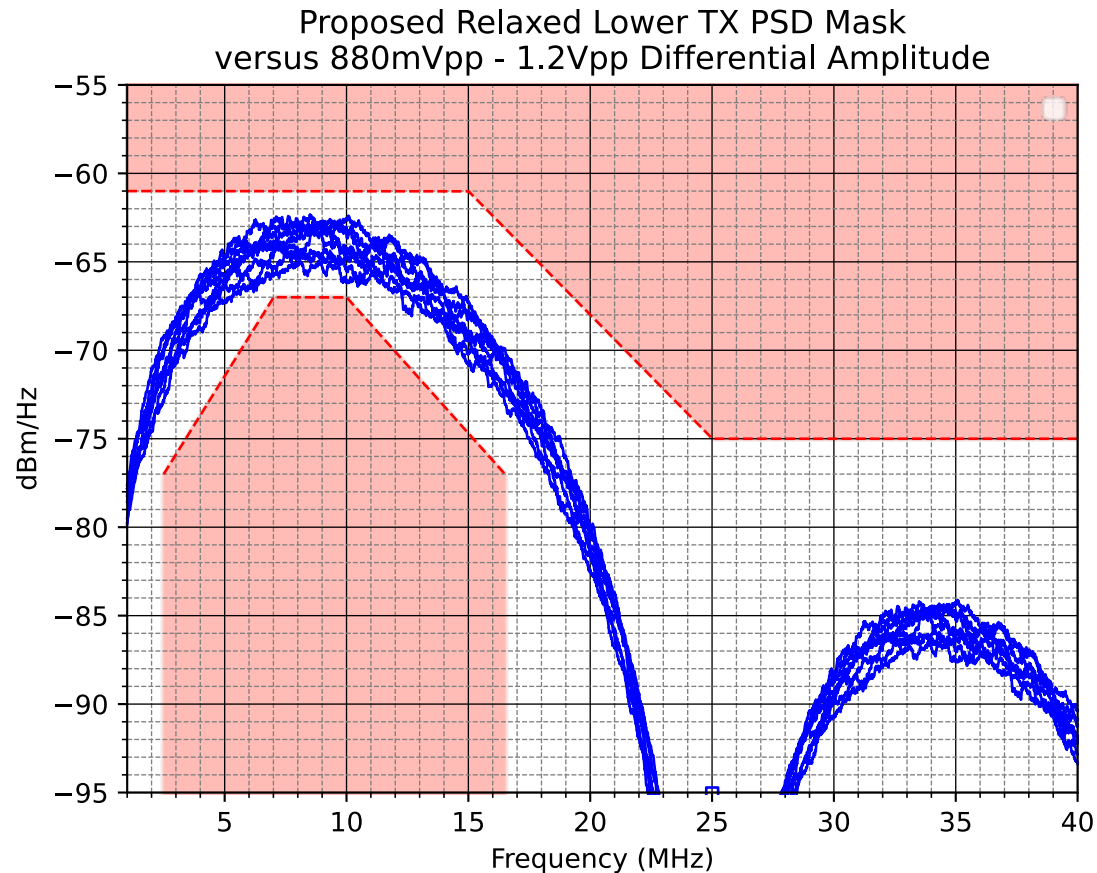
- Now we do have a problem at 5MHz, 12.5MHz
  - This is still *above* the minimum 800mVpp amplitude

Comment #69 Proposed Lower TX PSD Mask  
versus 880mVpp - 1.2Vpp Differential Amplitude



# Relax the Lower TX PSD as proposed in Cmt #69

- Increase lower cutoff from 5MHz to 7MHz
- Decrease upper cutoff from 12.5MHz to 10MHz



$$\text{Lower PSD}(f) = \begin{cases} -77 + (10/4.5)*(f-2.5) & 2.5 \leq f < 7 \\ -67 & 7 \leq f < 10 \\ -67 - (10/6.5)*(f-10) & 10 \leq f \leq 16.5 \end{cases} \text{ dBm/Hz,}$$

where  $f$  is in MHz;  $2.5 \leq f \leq 16.5$

**Thank You!**

**Questions?**