



WILDER
TECHNOLOGIES

It's all about integrity

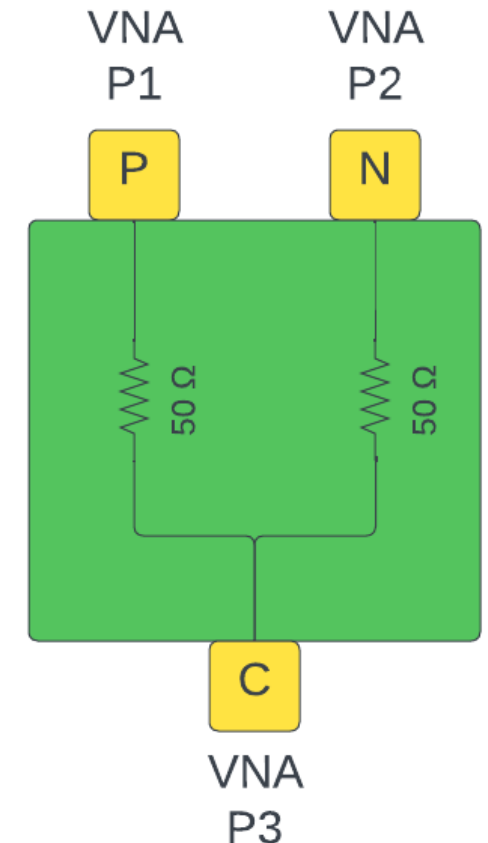
Common Mode Fixture 100Base-T1

20 March, 2023

50-ohm resistors must be within $\pm 0.1\%$ tolerance

PCB trace impedance must be 100 ohms $\pm 10\%$

CM fixture output reference calculated from measured fixture s-parameters



CM Fixture Output Reference

Open Alliance 100Base-T1 Specification recommends DUT output common mode should be below 24dBuV including fixture and that a reference measurement of the measuring system should be 6dB below the recommended limit.

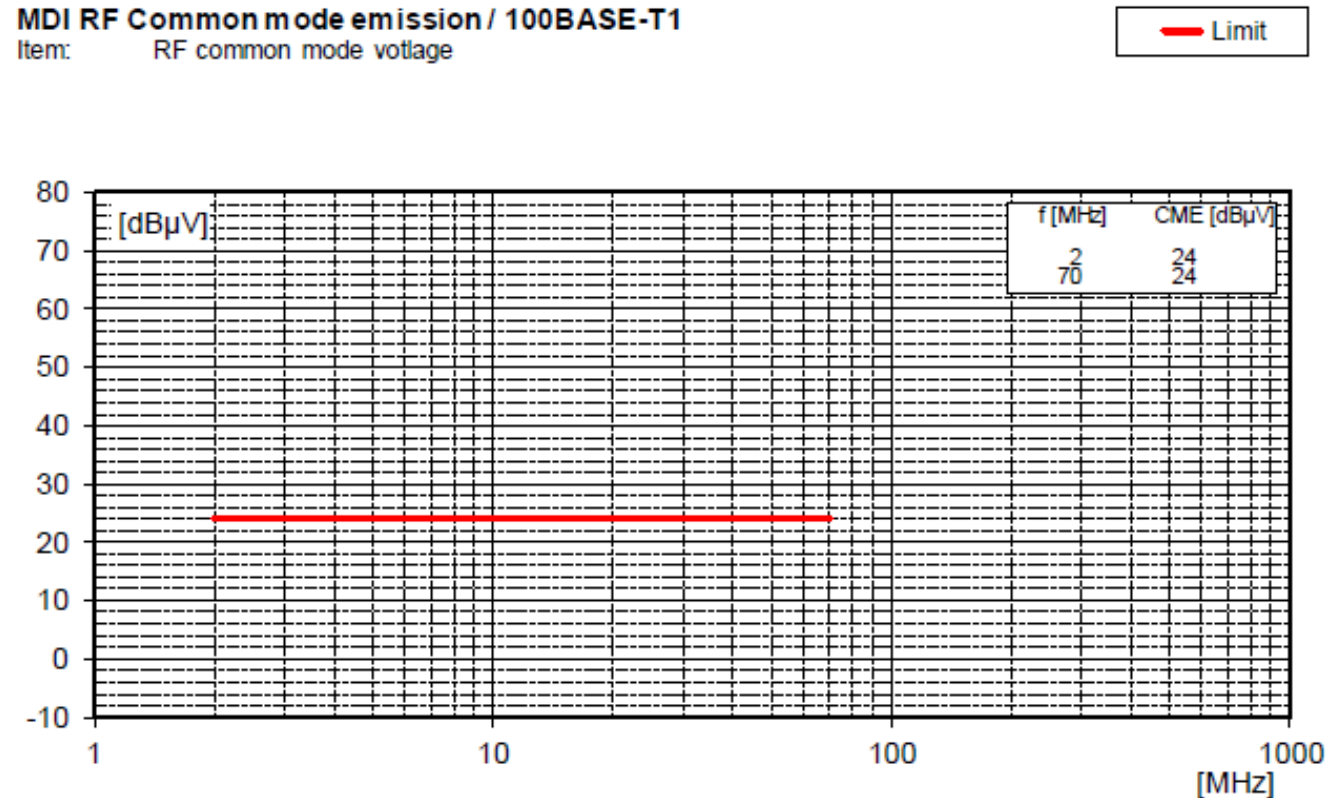
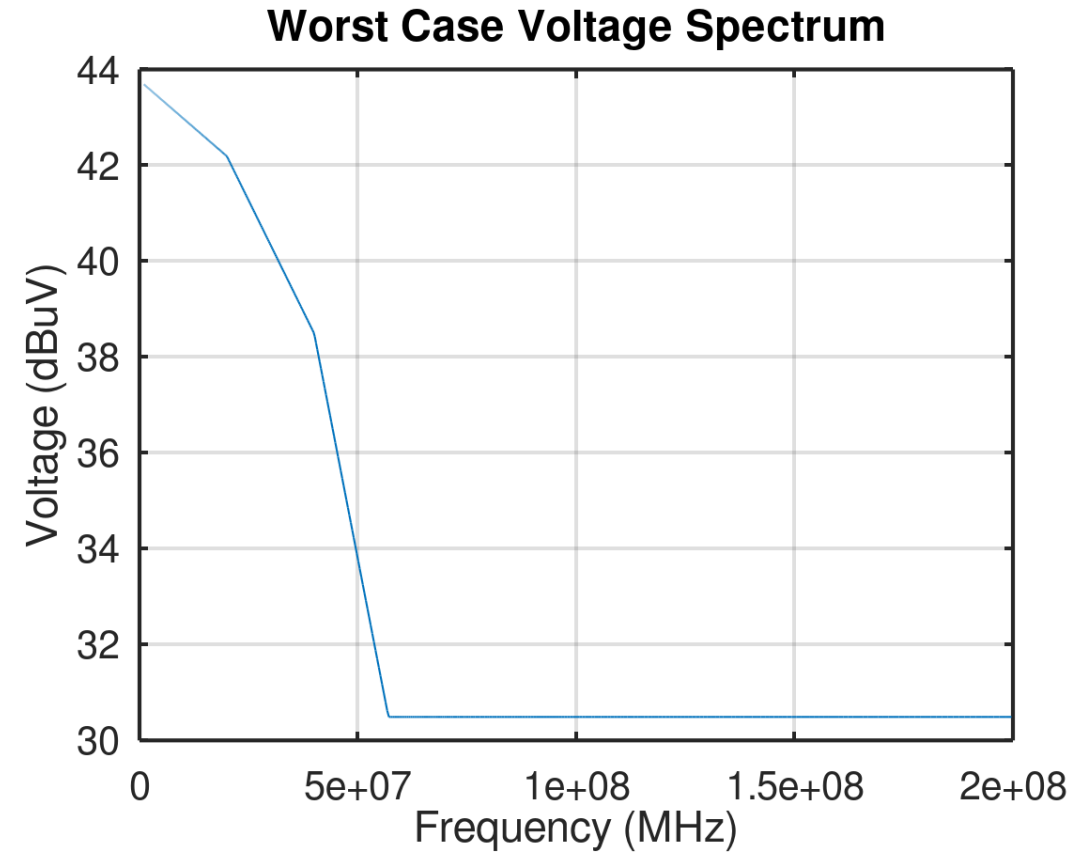
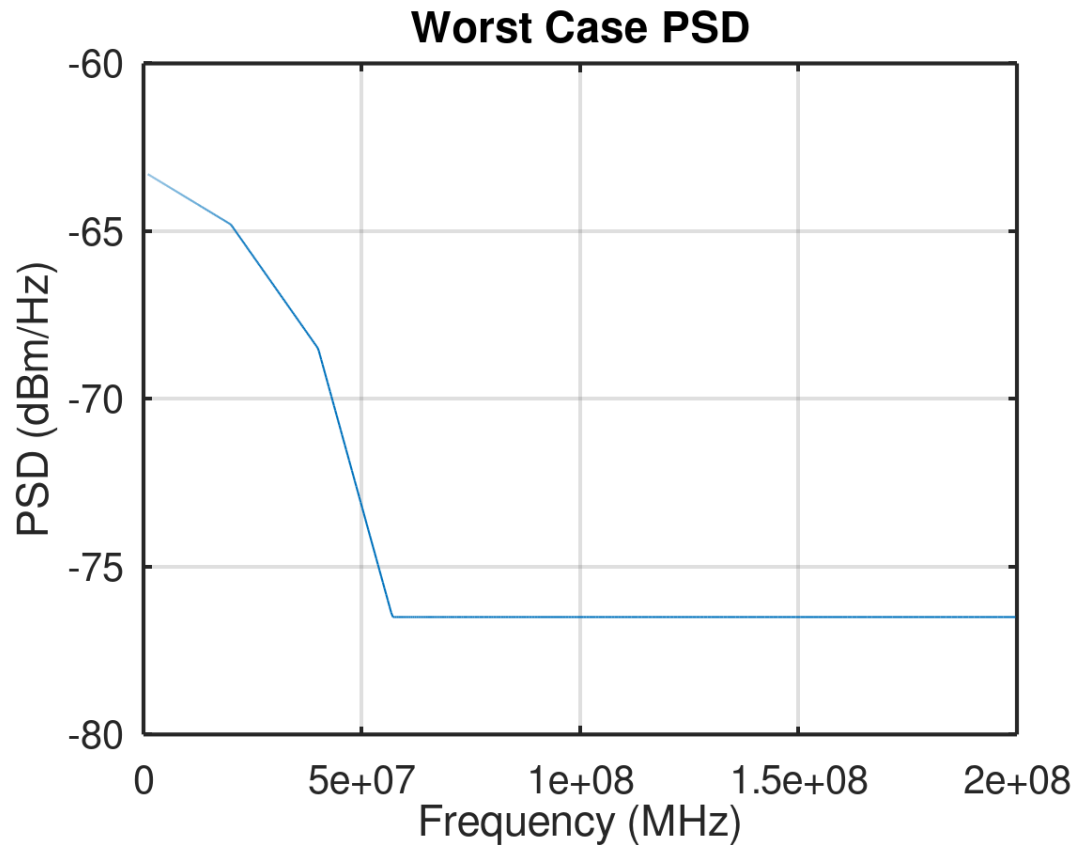


Figure D-2: Recommended limit for MDI RF common mode emission

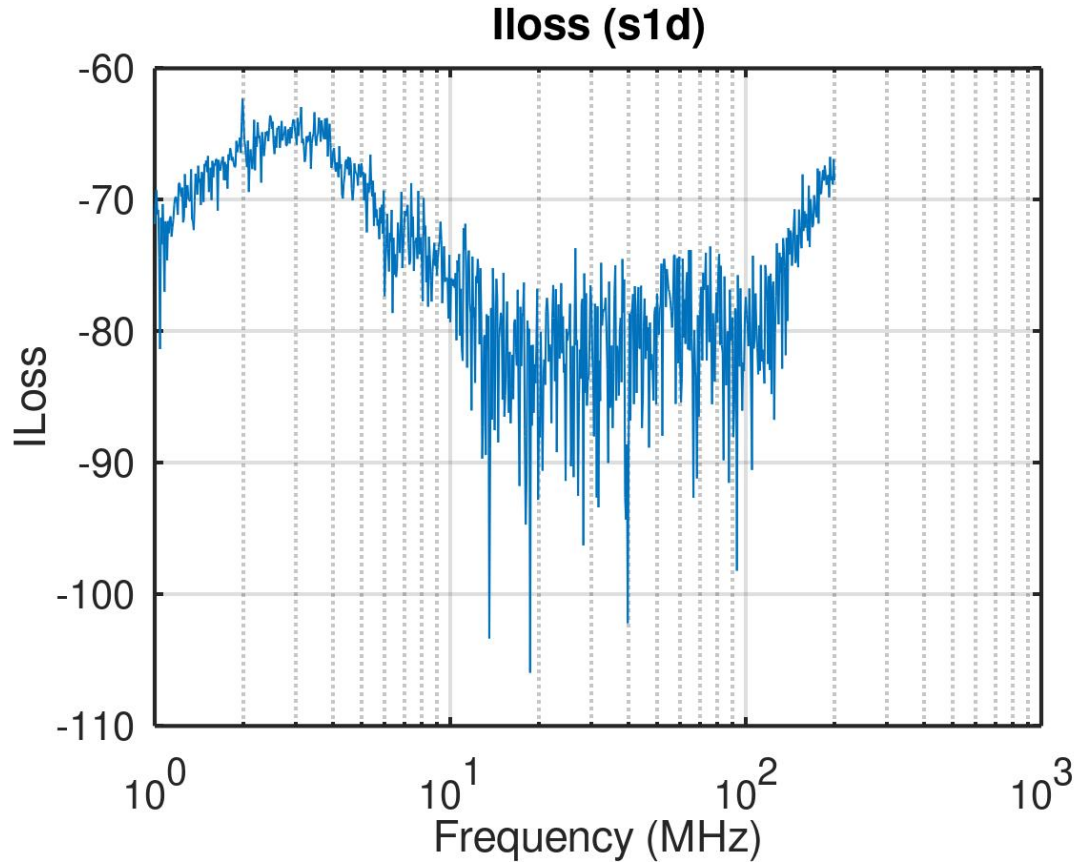
CM Fixture Output Reference

Assuming the following:

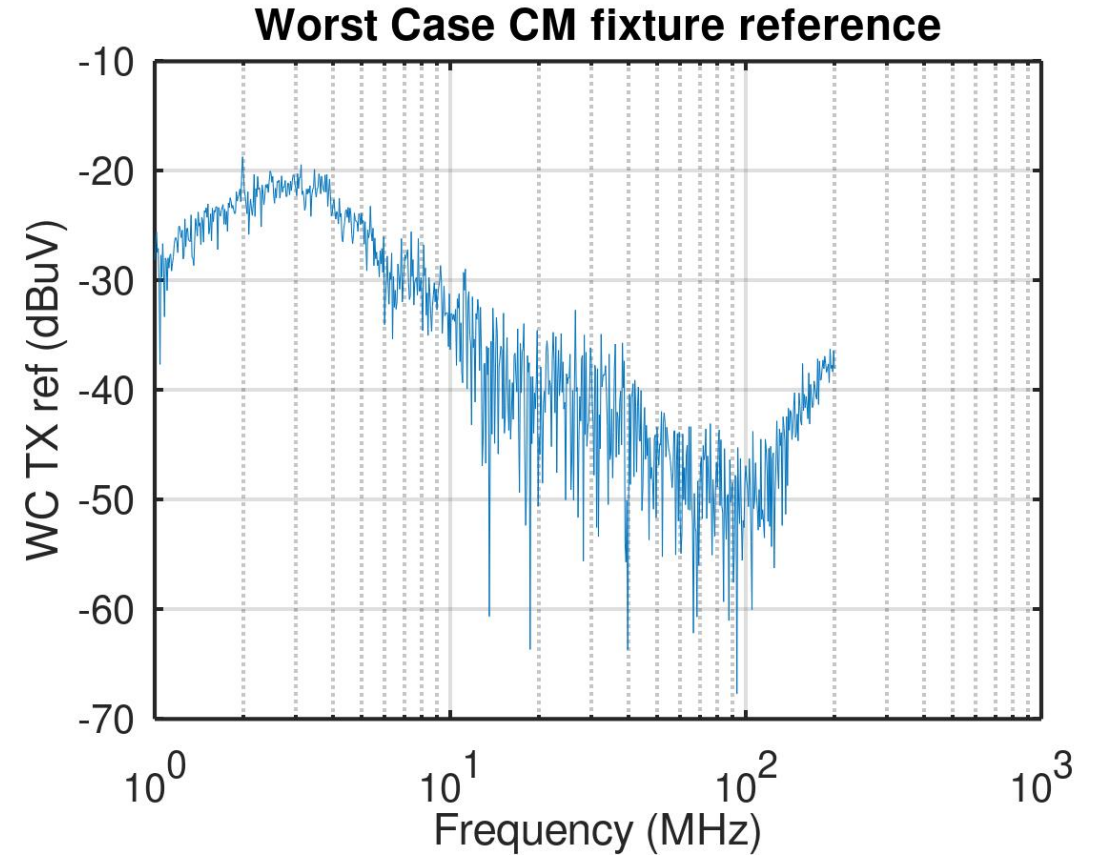
- Accurate 3port measurement is made of the common mode fixture.
- From 802.3BW worst-case (high) differential PSD is assumed.
- Worst-case PSD is converted to dBuV and convolved with differential to common mode response of fixture.
- Assuming CM dBuV output of fixture alone should be below 0dBuV to ensure margin.



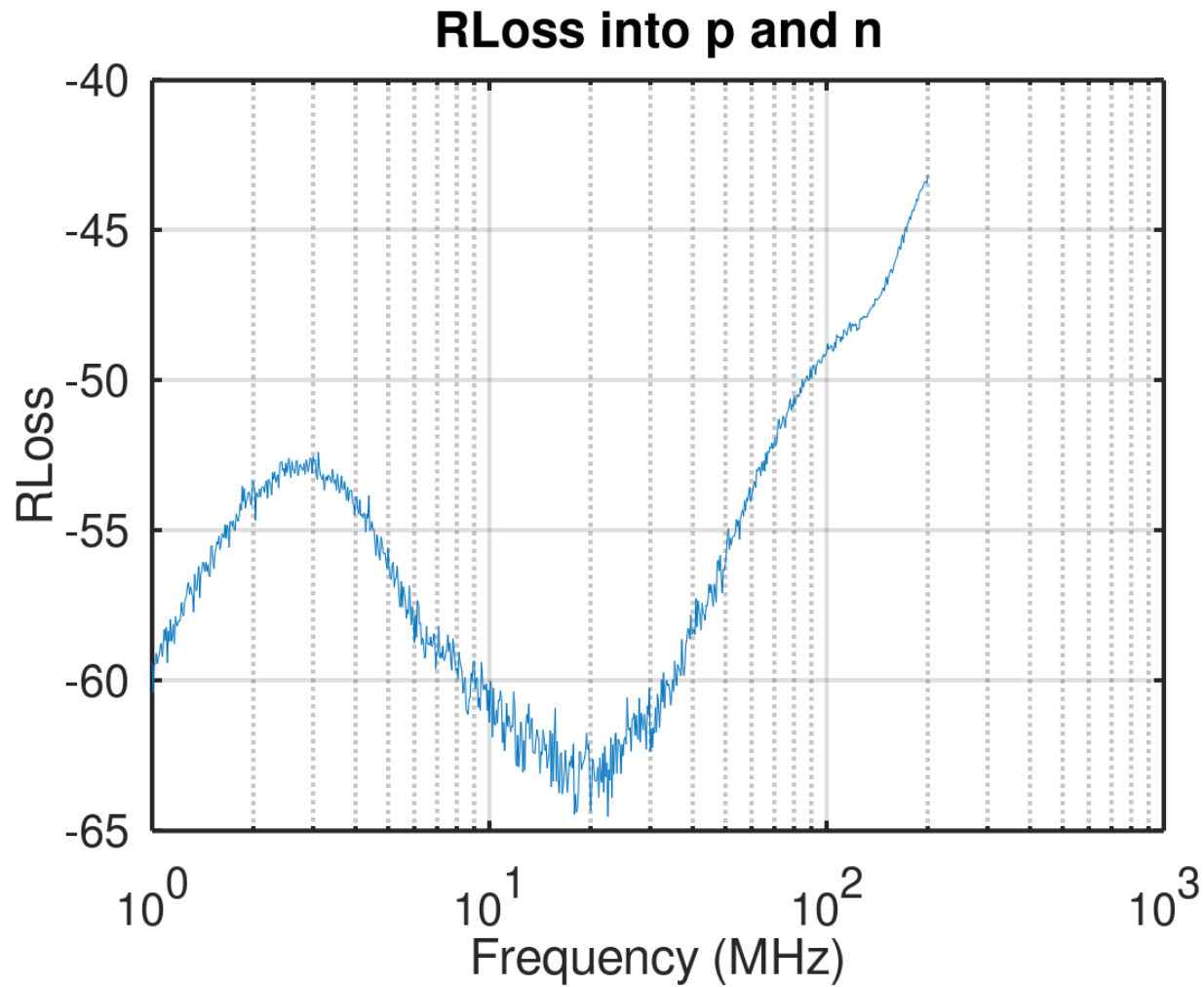
CM Fixture Output Reference



Differential in on P and N to single-ended out on C.



Differential voltage spectrum (dBuV) convolved with s1d giving worst-case common mode output for fixture response.



Return Loss below -40dB is well within +/-10% impedance tolerance stated in the specification.