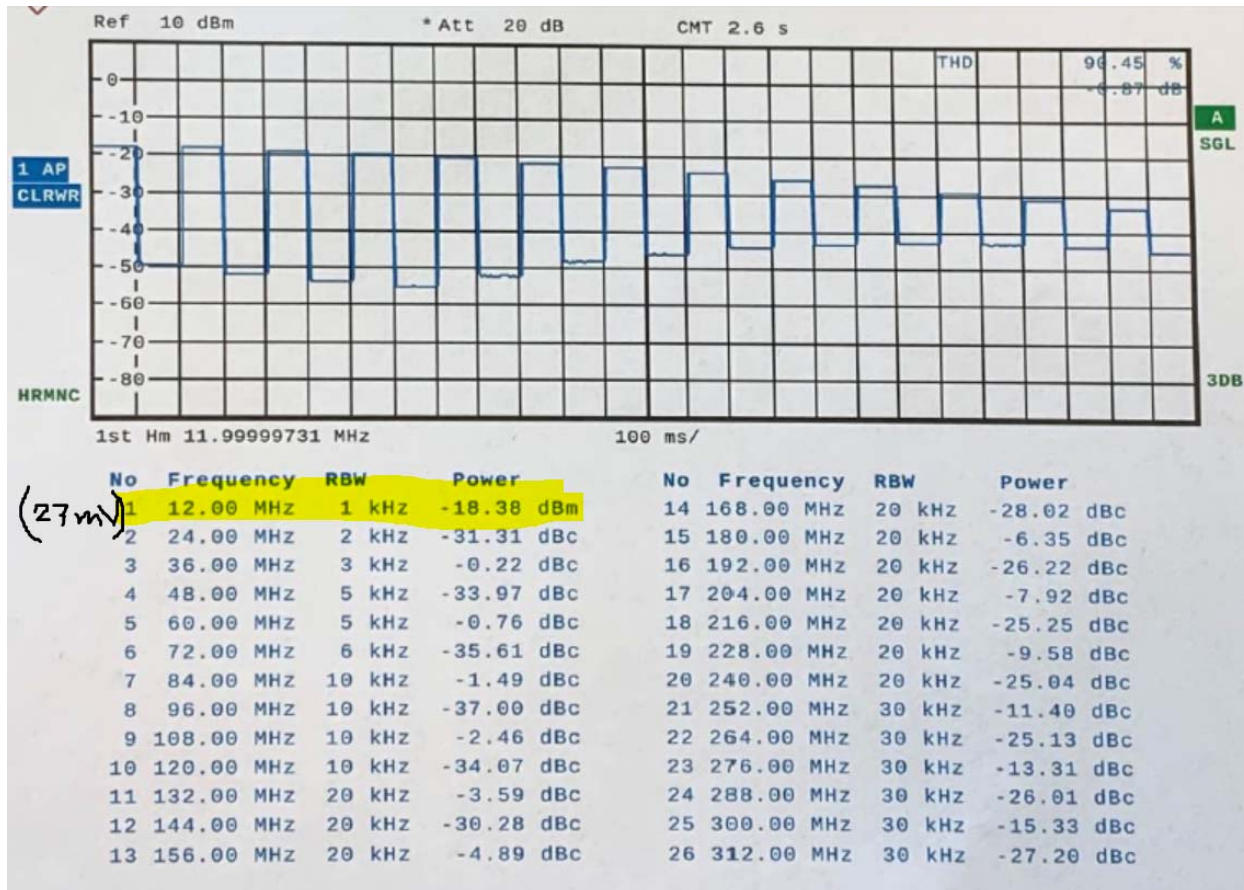


Hardware Simulation

Noise source



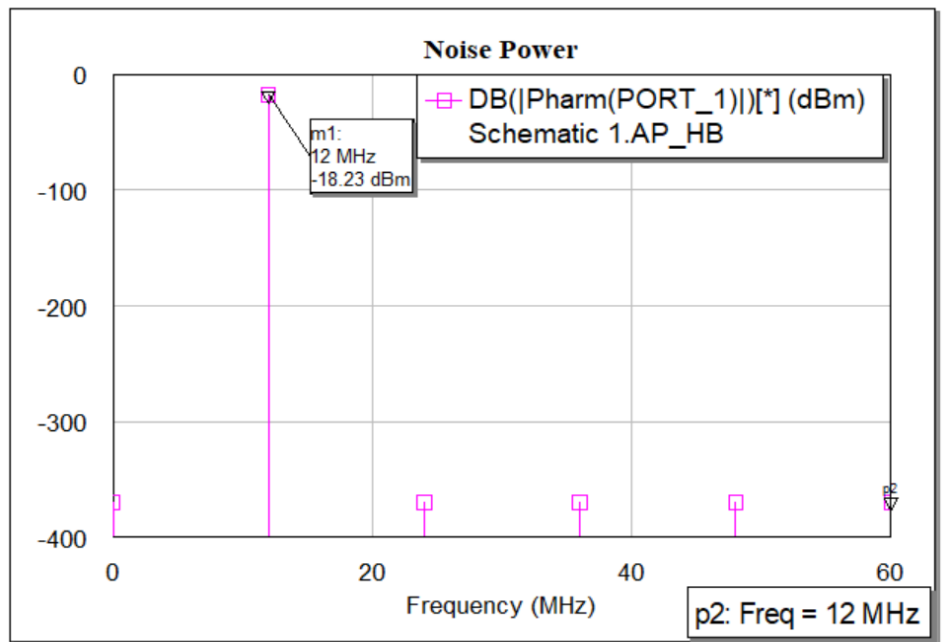
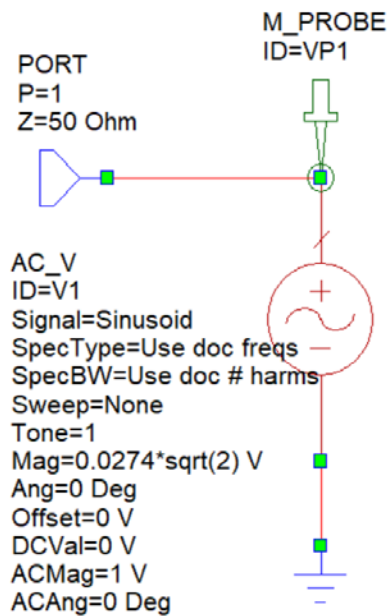
Noise Source with filter (except capacitors)

At 12 MHz, the output power is -48 dBm

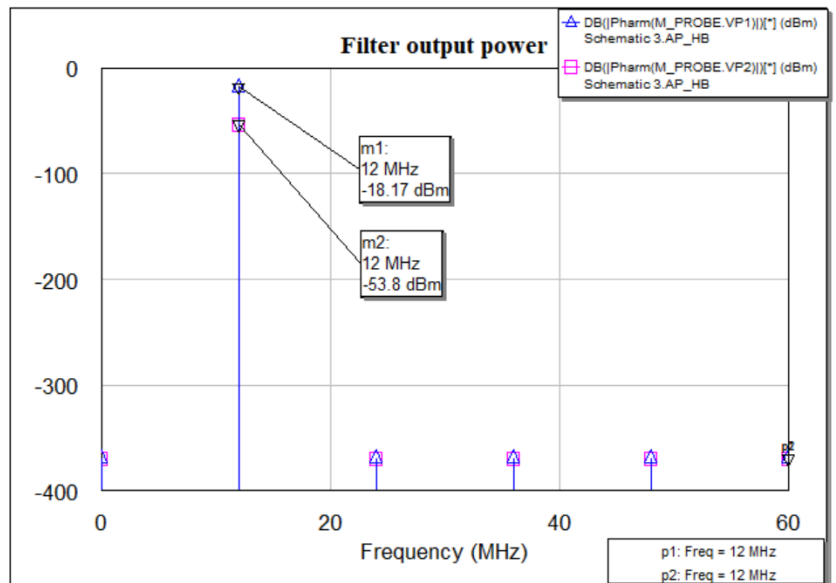
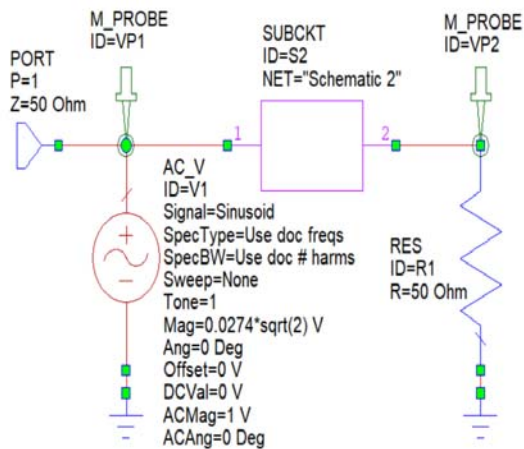
$$\begin{aligned}
 \text{Noise} \Rightarrow 12 \text{ MHz} &\Rightarrow 27.2 \text{ mV} = -18.3 \text{ dBm} \\
 &\quad -48 \text{ dBm} \\
 36.36 &\Rightarrow 300.36 \\
 &\quad = -18.3 \text{ dBm} \\
 &\quad -49.4 \text{ dBm} \\
 60.36 &\Rightarrow \\
 &\quad = -19.2 \text{ dBm} \\
 &\quad -42 \text{ dBm} \\
 84.36 &\Rightarrow \\
 &\quad = -19.9 \text{ dBm} \\
 &\quad -47.3 \text{ dBm} \\
 108.36 &= \\
 &\quad = -20.7 \text{ dBm} \\
 &\quad -41.3 \text{ dBm}
 \end{aligned}$$

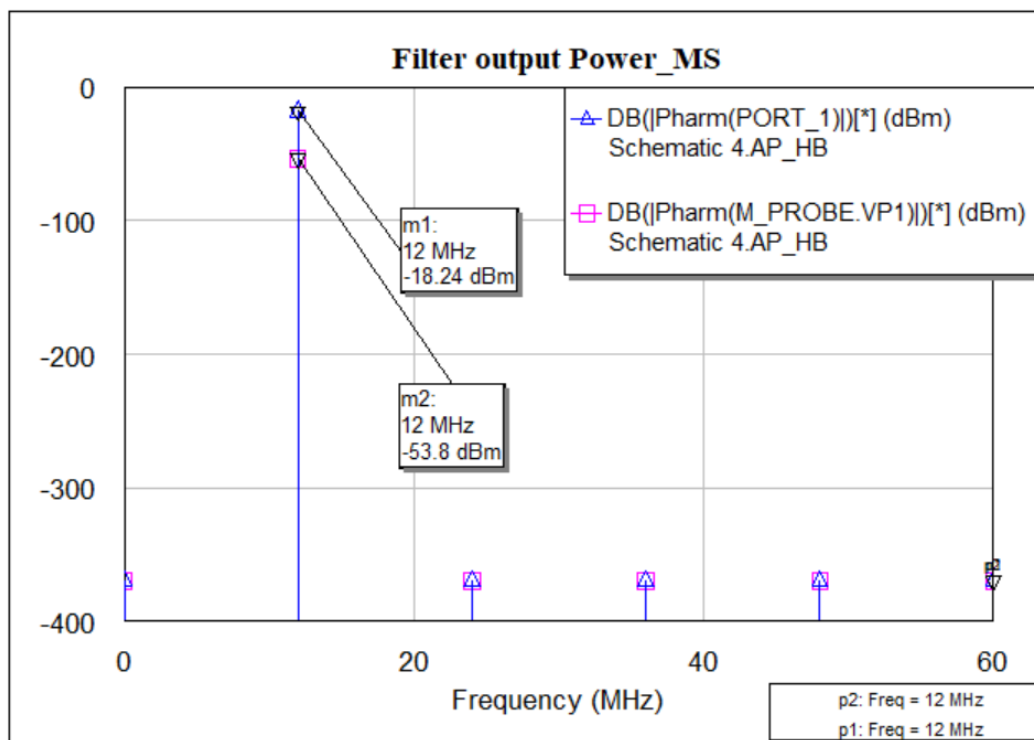
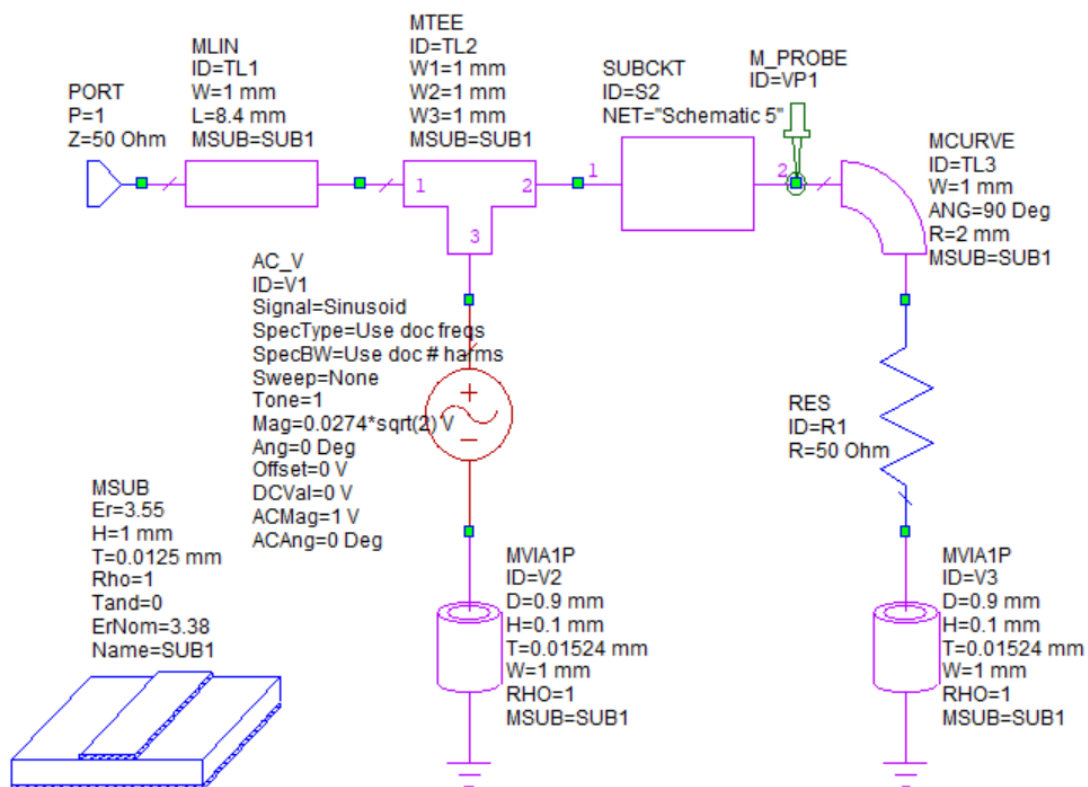
Software Simulation

Noise source



Noise Source with filter (except capacitors)





Facts:

- Noise source is producing -18.3 dBm harmonic power at 12 MHz. both is Hardware and software
- Filter attaching alone with noise source producing
 - -48dBm harmonic power at 12 MHz in Hardware
 - -53.8dBm harmonic power at 12 MHz in Software (both MS and OL)
- Including capacitors lowering the value of Harmonic power
- Explain why the harmonic power is such lower as 30dBm down.