

Intermodulation Distortion

Second Order (IMD2) Frequencies (2 tones)

$$F_{\text{IMD2}} = F_1 + F_2 \text{ \& } F_2 - F_1$$

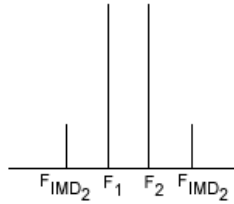
Example:

$$F_1 = 5 \text{ MHz}$$

$$F_2 = 8 \text{ MHz}$$

$$F_{\text{IMD2}} = F_1 + F_2 = 8 + 5 = 13 \text{ MHz and}$$

$$F_2 - F_1 = 8 - 5 = 3 \text{ MHz}$$



Second order IMD is out of band for HPA's with a bandwidth less than one octave.

Third Order (IMD3) Frequencies (2 tones)

$$F_{\text{IMD3}} = 2F_1 - F_2 \text{ \& } 2F_2 - F_1$$

Example:

$$F_1 = 7 \text{ MHz}$$

$$F_2 = 8 \text{ MHz}$$

$$F_{\text{IMD3}} = 2F_1 - F_2 = 2(7) - 8 = 14 - 8 = 6 \text{ MHz and}$$

$$2F_2 - F_1 = 2(8) - 7 = 16 - 7 = 9 \text{ MHz}$$

