- Señal seno

$BW = 200[KHZ]$ ; $RBW = 100\ [Hz]$

- Noise floor (NF)

$$NF = \frac{-80\ dBm}{100\ Hz} = -100\ \frac{dBm}{Hz} = 10^{-13}\ \frac{W}{Hz}$$

$$P_N = (200 \times 10^3\ Hz)(10^{-13}\ W/Hz) = \boxed{2 \times 10^{-8}\ W}$$

- Potencia señal

$$P_S = (-78.7\ dBm)(4) \Rightarrow (10^{-5.89}) \times 4 = 4 \times 10^{-5.87}$$

$$- SNR = \frac{P_S}{P_N} = \frac{4 \times 10^{-5.87}}{2 \times 10^{-8}} = 269.79\ \frac{W}{W}$$

- Señal cuadrada : $RBW = 100\ [Hz]$ ; $BW = 400\ [KHZ]$

$$PSD = \frac{-68\ dBm}{100\ Hz} = -78\ \frac{dBm}{Hz} = 10^{-10.8}\ \frac{W}{Hz}$$

$$P_N = (400 \times 10^3\ Hz)(10^{-10.8}\ W/Hz) = \boxed{4 \times 10^{-5.8}\ W}$$

$$- P_S = (-11.2\ dBm \times 2)(-15.16\ dBm \times 4)(-25\ dBm \times 4)$$

$$\Rightarrow (10^{-6.12} \times 2) + (10^{-4.516} \times 4) + (10^{-5.5} \times 4)$$

$$= 7.8593 \times 10^{-4}$$

- Triangular : $BW = 793\ KHZ$ $\quad P_{N\,ref} = -104\ dBm$

$$N_F = P_{N\,ref} - 10\log(RBW) = -124\ dBm \rightarrow 10^{\frac{-124-30}{10}} = 10^{-15.4}$$

$$P_N = (10^{-15.4})(793 \times 10^3) = 3.16 \times 10^{-10}\ W$$

$$- P_S = (-63.11\ dBm \times 2)(-71\ dBm \times 4)(-90\ dBm \times 4)$$

$$= 10^{-9.3} \times 2 + 10^{-10.1} \times 4 + 10^{-12} \times 4 = 1.32 \times 10^{-9}$$

- Coseno : $BW = 2.19\ MHZ$ $\quad P_{N\,ref} = -94.6\ dBm$

$$N_F = -94.6\ dBm - 10\log(100) = -114.6\ dBm = 10^{-14.4}\ W$$

$$P_N = (10^{-14.4})(2.19 \times 10^6) = 8.92 \times 10^{-9}\ W =$$

$$- P_S = (-54.9 \times 4) \rightarrow 4 \times 10^{-8.49} = 1.29 \times 10^{-8}$$

$$SNR = 1.418$$