

KSN - Test B

$$P_s = 10 \text{ dBm} \quad F = 14 \text{ dB}$$

$$G_t = 5 \text{ dB}$$

$$G_r = 3 \text{ dB}$$

$$\text{SNR} = 10 \text{ dB}$$

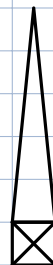
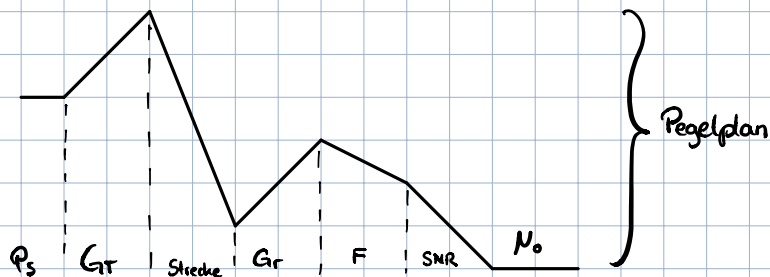
$$B' = 100 \text{ kHz} \rightarrow B = 10 \log(B') = 50 \text{ dB}$$

$$\eta_o = -204 \text{ dBW/Hz} = -174 \text{ dBm/Hz}$$

$$N_o' = \eta_o' \cdot B'$$

$$N_o = \eta_o + B = -174 \text{ dBm/Hz} + 50 \text{ dB} = 124 \text{ dBm}$$

$$A : 2F$$



$$P_s + G_t - P_{LFS} + G_r - F - \text{SNR} = N_o$$

$$P_s + G_t + G_r - F - \text{SNR} - N_o = P_{LFS}$$

$$10 \text{ dBm} + 5 \text{ dB} + 3 \text{ dB} - 14 \text{ dB} - 10 \text{ dB} + 124 \text{ dBm} = 118 \text{ dB} = P_{LFS} \quad \dots \text{ Maximale Freifeldämpfung}$$

$$P_{LSE} = P_{LFS} - G_t - G_r = 118 \text{ dB} - 5 \text{ dB} - 3 \text{ dB} = 110 \text{ dB}$$

$$B : 1$$

$$10 \log \left(\frac{\lambda^2}{(4\pi r)^2} \right) = 20 \log \left(\frac{\lambda}{4\pi r} \right) = P_{LFS}$$

$$\frac{\lambda}{4\pi r} = 10^{\frac{P_{LFS}}{20}}$$

$$r = \frac{\lambda}{4\pi} \cdot 10^{\frac{P_{LFS}}{20}} = 21,8 \text{ km}$$