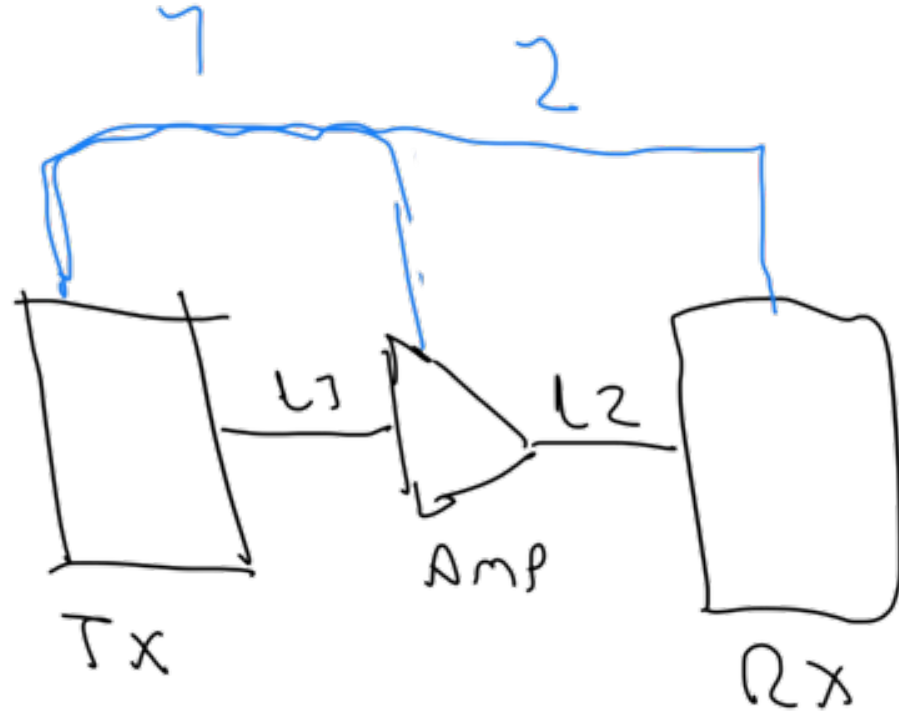


$$P_{TX} - P_{TOT} + 6 = S_{RX}$$

\downarrow POTENCIA \downarrow PERDIDA \downarrow 6.1000m \swarrow SENSIBILIDAD RECEPTION

4) $P_{TX} = -3 \text{ dBm}$
 $S_{RX} = 1 \text{ mW}$
 $L_1 = 500 \text{ m}$
 $L_2 = 1.000 \text{ m}$



$$\text{CONNECTION} = 0.25 \text{ dB c/u}$$

$$\text{ATTENUATION} = \frac{1 \text{ dB}}{1.000 \text{ m}}$$

1) $P_{ERDIOS} = 2 \text{ CONNECTIONS} \rightarrow 0.25 * 2$
 $- \text{ATTENUATION} \rightarrow 500 \text{ m} * \frac{1 \text{ dB}}{1.000 \text{ m}}$

$$P_{TOTAL} = 0.5 \text{ dB} + 0.5 \text{ dB} = 1 \text{ dB}$$

$$P_{TX} - P_{ERDIOS} + 6 \text{ ANTENAS} = S_{RX}$$

$$-3 \text{ dB} - 1 \text{ dB} + 0 = -4 \text{ dBm}$$

$$-4 = 10 \log \frac{P_2}{1 \text{ mW}}$$

$$P_2 = 0.3981 \text{ mW}$$

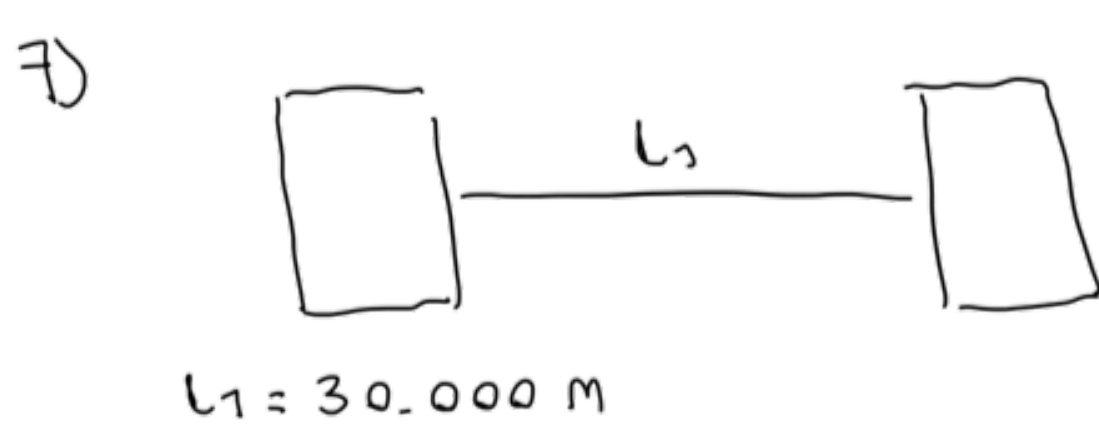
2) $P_{ERDIOS} = 4 * 0.5 \text{ dB} + 1500 \text{ m} * \frac{1 \text{ dB}}{1.000 \text{ m}}$
 $P_{TOTAL} = 2.5 \text{ dB}$

$$P_{TX} - 2.5 \text{ dB} + 6 = S_{RX}$$

$$6 = S_{RX} - P_{TX} + P_{ERDIOS}$$

$$6 = 0 - (-3 \text{ dBm}) + 2.5 \text{ dB}$$

$$6 = 5.5 \text{ dB} \quad | \quad \text{R10: } 6 \text{ dB}$$



$$P_{OT} = 2 \text{ mW}$$

$$S_{RX} = -60 \text{ dBm}$$

$$P_{OT} - P_{ER} + 6 = S_{RX}$$

$$\text{DBm} = 10 * \log \frac{P_i}{1 \text{ mW}}$$

$$P_{TX} = 10 \log \frac{2 \text{ mW}}{1 \text{ mW}}$$

$$P_{TX} = 3 \text{ dBm}$$

$$P_{TX} - P_{TOT} + 6 = S_{RX}$$

$$3 \text{ dBm} - ? + 0 = -60 \text{ dBm}$$

$$3 \text{ dBm} + 60 \text{ dBm} - P_{TOT} = 0$$

$$P_{TOT} = 63 \text{ dBm}$$

$$30.000 \text{ m} * \frac{k \cdot \text{dB}}{1.000 \text{ m}} = 63 \text{ dB}$$

$$k = \frac{2.1 \text{ dB}}{1 \text{ km}}$$

9) $P_{OT} \text{ sat} = 1 \text{ mW}$

$$P_{TX} = ?$$

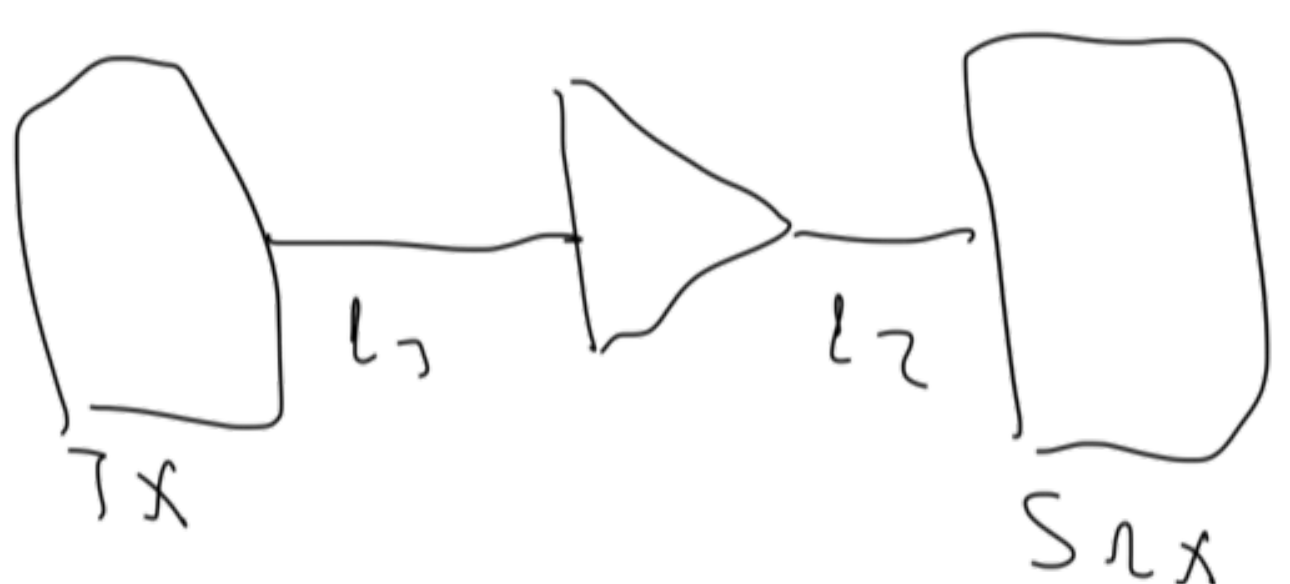
$$S_{RX} = 0.5 \text{ mW} = -3 \text{ dBm}$$

$$L_1 = 1000 \text{ m}$$

$$L_2 = 500 \text{ m}$$

$$AT = ?$$

$$6 \text{ (amp)} = 5 \text{ dB}$$



$$P = 10 \log \frac{1 \text{ mW}}{0.5 \text{ mW}}$$

$$P = 3 \text{ dB} = \text{ATTENUATION} + \text{CONNECTIONS}$$

\uparrow \downarrow
 $?$ $2 * 0.25 \text{ dB}$
 1.5 dB 1.5 dB

$$500 * \frac{k}{1000 \text{ m}} = 1.5$$

$$k = 3$$

$$AT = \frac{3 \text{ dB}}{1.000 \text{ m}}$$

Circuito completo

$$P_{TX} - 1500 * \frac{3 \text{ dB}}{1000} - 3 \text{ dB} + 5 \text{ dB} = -3 \text{ dB}$$

\uparrow CONNECTIONS

$$P_{TX} = -0.5 \text{ dBm}$$