Given:

P(O) = +3dbm

P(I) = -6dbm

α= 0.5/km

Find:

Distance L in km

Formula:

1. dBm = 10log10 P/1mW
2. α = 10/L log10 P(0)/P(L)

Solution:

Using 1),

3 = 10log10 P/1mW

Therefore, P(O) in W = 10-3 x 100.3 = 0.00199 and

Similarly, P(I) = 10-3 x 100.6 = 0.00025

Now using 2),

0.5 = 10/L log10 (0.00025/0.00199)

L = 20 (0.9)

**Thus, ANSWER: L = 18km**