

- Total noise power

$$= \textcircled{A} + \textcircled{B} + \textcircled{C} + \textcircled{D} = \underline{4.13 \times 10^{-21} \text{ W/Hz}}$$

- ~~available~~ available source noise power

$$= kT \Delta f = 1.38 \times 10^{-23} \times 300$$
$$= \underline{4.14 \times 10^{-21} \text{ W/Hz}}$$

These results are same.

\Rightarrow Noise power keeps constant.

$$F = \frac{4.13 \times 10^{-21}}{2.07 \times 10^{-21}} \approx 2 \rightarrow 3 \text{ dB}$$

~~$$L = \left(\frac{R_o - R_x}{R_o + R_x} \right)^2 = \left(\frac{50 - 8.55}{50 + 8.55} \right)^2 = \dots$$~~

~~$$\therefore \dots$$~~

$$L = \left(\frac{50 + 8.55}{50 - 8.55} \right)^2 \approx 2 \rightarrow 3 \text{ dB}$$

$$\Rightarrow F = L$$