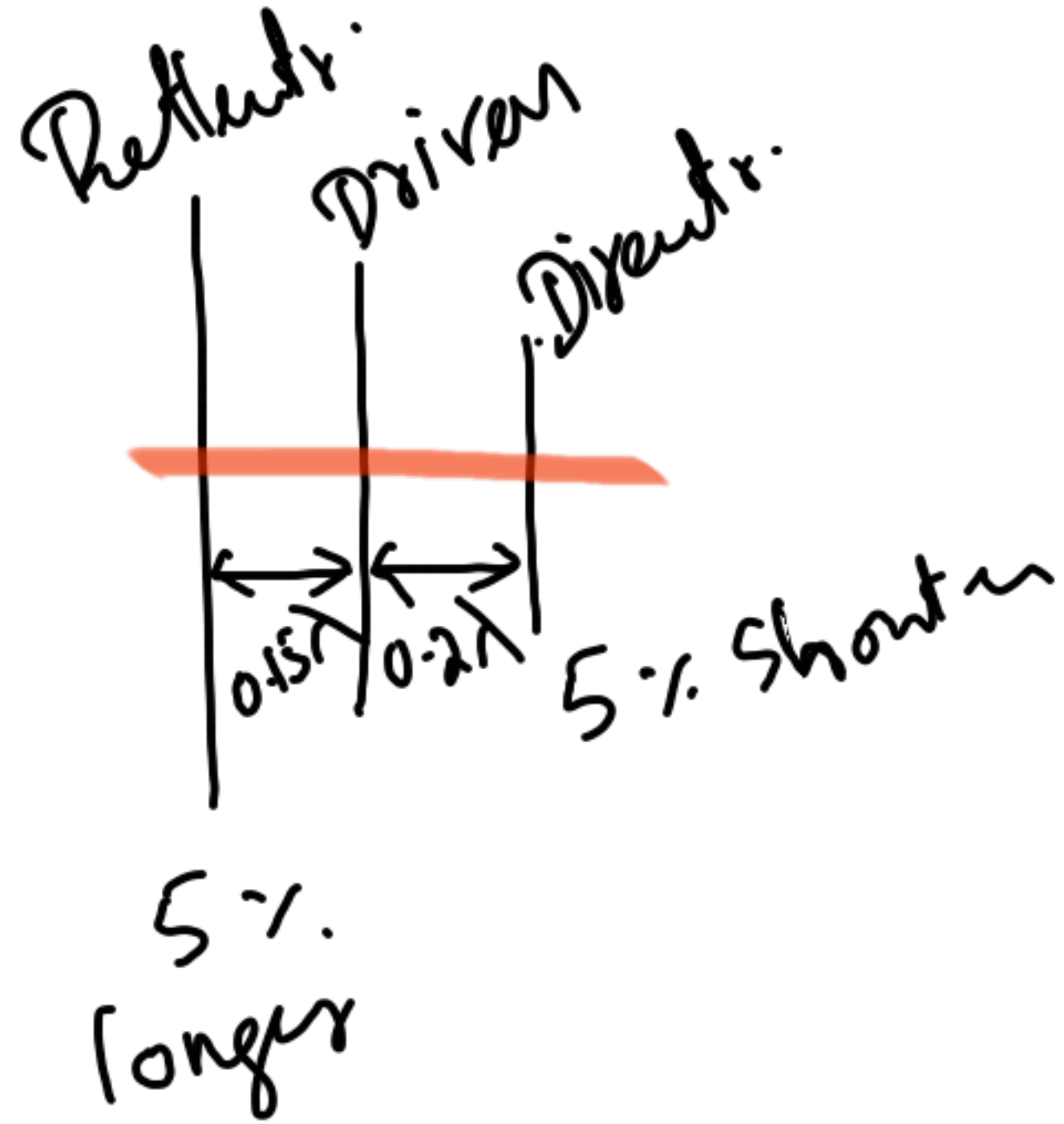


1) Calculate the length of the driven element, director and reflector for a 3 element Yagi-Uda antenna designed to operate at a frequency of 200 MHz. also Calculate the distance between antenna elements, if the distance from driven element to the reflector is 0.15λ , and the distance from the driven element to the director is

0.2λ . Note that the difference between the length of each adjacent antenna element is 5%.

Soln



$$f = 200 \text{ MHz.}$$

$$f = \frac{c}{\lambda}$$

$$\lambda = \frac{c}{f} = \frac{3 \times 10^8}{200 \times 10^6} = 1.5 \text{ m}$$

$$L = \frac{\lambda}{2} = \frac{1.5}{2} = 0.75 \text{ m}$$

length of Reflector (5% longer)

$$L_R = 1.05 \times 0.75$$

$$L_R = 0.7875 \text{ m}$$

length of Director (5% shorter)

$$L_D = 0.95 \times 0.75$$

$$L_D = 0.7125 \text{ m}$$

Distance between Reflector and
Driven element 0.15λ

$$D_{RD} = 0.15 \lambda = 0.15 \times 1.5 \\ = 0.225 \text{ m.}$$

Distance between Driven element and
Director.

$$D_{DD} = 0.2 \lambda = 0.2 \times 1.5 \\ = 0.3 \text{ m}$$

