

PAG. 933 N 27

$$P_s = 5,0 \times 10^4 \text{ W}$$

$$r = 30 \text{ m}$$



$$\begin{aligned} \log \frac{I}{I_0} &= \log I - \log I_0 = \\ &= \log I + 12 \end{aligned}$$

$$1) \quad I = \frac{P_s}{\frac{4\pi r^2}{2}} = \frac{5,0 \times 10^4 \text{ W}}{2\pi (30 \text{ m})^2} = 8,841 \dots \frac{\text{W}}{\text{m}^2} \approx 8,8 \frac{\text{W}}{\text{m}^2}$$

$$L = 10 \log_{10} \frac{I}{I_0} = 130 \text{ dB} = 1,3 \times 10^2 \text{ dB}$$

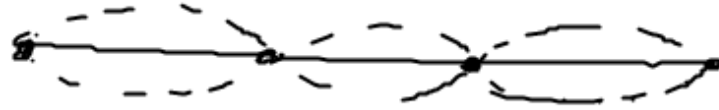
$$2) \quad I_1 r_1^2 = I_2 r_2^2$$

$$I_2 = \frac{I_1 r_1^2}{r_2^2} = 0,00198 \dots \frac{\text{W}}{\text{m}^2} = 2,0 \times 10^{-3} \frac{\text{W}}{\text{m}^2}$$

$$L = 93 \text{ dB}$$

N 43

$n = 3$



$$f_3 = \frac{3v}{2L} \Rightarrow v = \frac{2f_3L}{3} = \frac{2(1,8\text{ Hz})(2,0\text{ m})}{3} = 2,4 \frac{\text{m}}{\text{s}}$$

N 58

$$T^* = \frac{1}{f^*} = 0,050 \text{ s} \quad \lambda_1 = 0,46 \text{ m} \quad v_0 = 340 \frac{\text{m}}{\text{s}}$$

$$f^* = |f_2 - f_1|$$

$$f_1 = \frac{v_0}{\lambda_1}$$

$$f_2 = \frac{v_0}{\lambda_2}$$

$$\frac{1}{0,050 \text{ s}} = \left| \frac{340 \frac{\text{m}}{\text{s}}}{\lambda_2} - \frac{340 \frac{\text{m}}{\text{s}}}{0,46 \text{ m}} \right| \Rightarrow 20 = \left| \frac{340}{\lambda_2} - \frac{340}{0,46} \right|$$

$$\frac{1}{0,050} = \pm 340 \left(\frac{1}{\lambda_2} - \frac{1}{0,46} \right)$$

$$\frac{340}{\lambda_2} = \frac{340}{0,46} \pm 20$$

$$\frac{1}{0,050} = \pm 340 \left(\frac{1}{\lambda_2} - \frac{1}{0,46} \right)$$

$$\frac{1}{340 \cdot 0,050} = \pm \frac{0,46 - \lambda_2}{0,46 \lambda_2}$$

$$\frac{0,46 \lambda_2}{340 \cdot 0,050} = \pm (0,46 - \lambda_2)$$

$$\begin{aligned} +) \quad \frac{0,46}{340 \cdot 0,050} \lambda_2 + \lambda_2 &= 0,46 \Rightarrow \lambda_2 = 0,447 \dots \text{ m} \\ &= 0,45 \text{ m} \end{aligned}$$

$$\begin{aligned} -) \quad \frac{0,46}{340 \cdot 0,050} \lambda_2 - \lambda_2 &= -0,46 \Rightarrow \lambda_2 = 0,47 \text{ m} \end{aligned}$$