

28.05.18

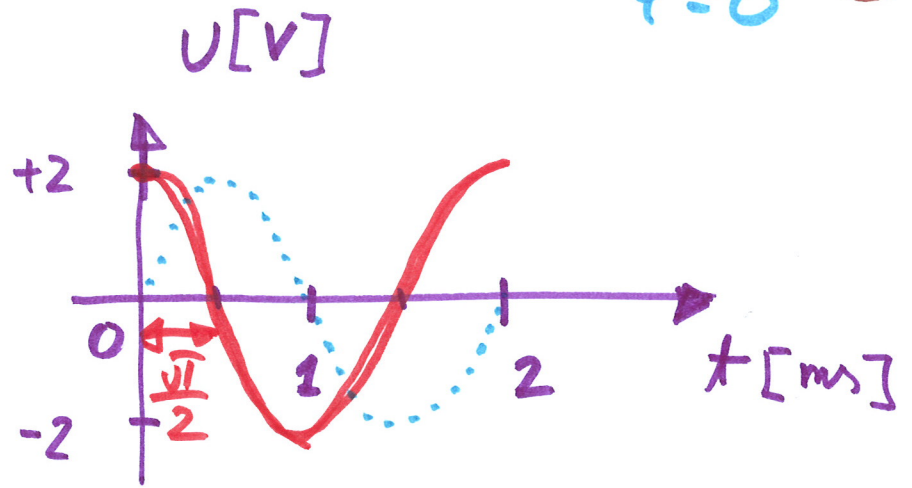
$\varphi = 0$ (20)

1) ANTUD:

$$U_m = 2 \text{ V}$$

$$f = 500 \text{ Hz}$$

$$\varphi = \frac{\pi}{2} \text{ rad}$$



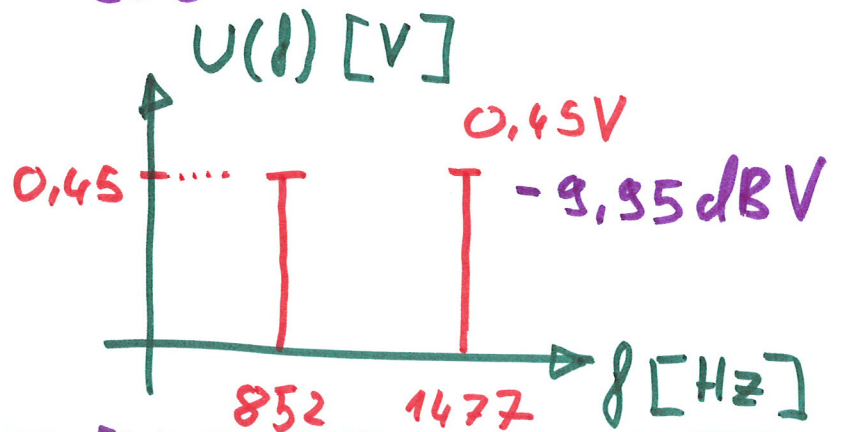
$$u(t) = U_m \cdot \sin(2\pi \cdot f \cdot t + \varphi)$$

$$T = \frac{1}{f} = \frac{1}{500} = 2$$

2.) $f_1 = 852 \text{ Hz}$

$f_2 = 1477 \text{ Hz}$

$U_m = 0,45 \text{ V}$



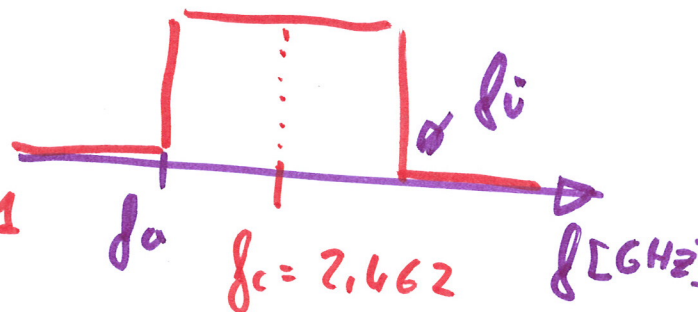
$$U[\text{dBV}] = 20 \cdot \log\left[\frac{U}{1\text{V}}\right]$$

$$U_m = 0,45 \text{ V} \quad U = \frac{U_m}{\sqrt{2}} = \frac{0,45}{\sqrt{2}} \approx 0,32 \text{ V}$$

3.) $f_c = 2,462 \text{ GHz}$

$B = 20 \text{ MHz}$

$20 \text{ MHz} = 0,02 \text{ GHz}$



$$f_a = f_c - \frac{B}{2} = 2,462 - 0,01$$

$$f_u = f_c + \frac{B}{2} = 2,462 + 0,01$$

$f_a = 2,452 \text{ GHz}, f_u = 2,472 \text{ GHz}$

4.) 8-PSK

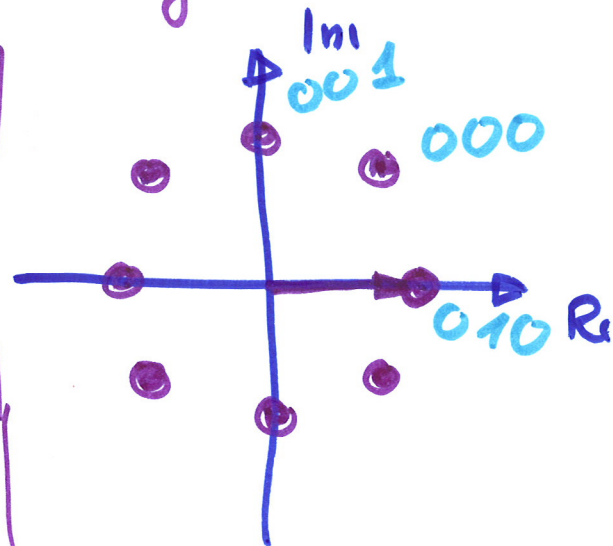
(21)

$$I = \log_2(M) = \log_2(8) = 3$$

5.)

$\oplus x_2$

10010_2



100100111010 0000

10010

000000111010 0000

10010

011110 0000

10010

01100 0000

10010

101 0000

10010

11000

10010

1010

x_1	x_2	y
0	0	0
0	1	1
1	0	1
1	1	0

1010_2

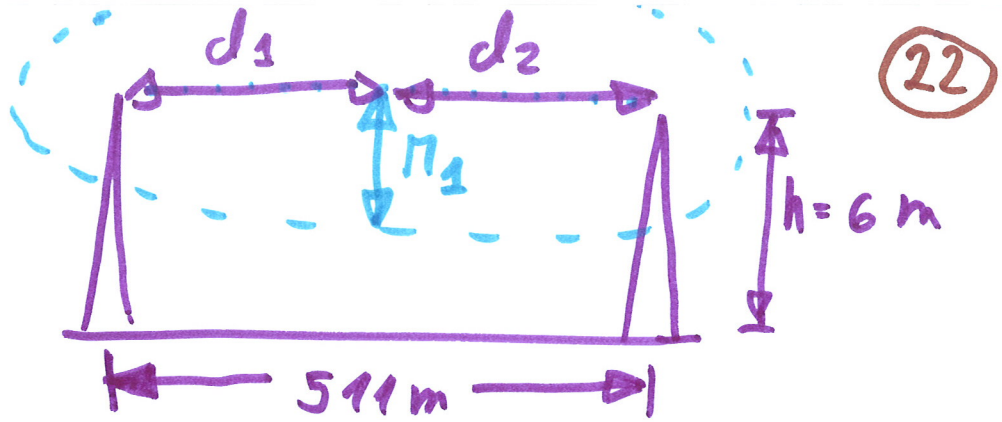
1010

$\oplus x_A$

6.)

$$D = 511 \text{ m}$$

$$h = 6 \text{ m}$$



$$d_1 = d_2 = \frac{D}{2}$$

$$n_1 = \sqrt{2 \frac{d_1 \cdot d_2}{d_1 + d_2}}$$

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

$$n_1 = \sqrt{\frac{c}{f} \cdot \frac{D^2}{4D}} = \sqrt{\frac{cD}{4 \cdot f}}$$

$$n_1^2 = \frac{cD}{4f} \Rightarrow f = \frac{cD}{4 \cdot n_1^2} = \frac{3 \cdot 10^8 \cdot 511}{4 \cdot 6^2} = 1,065 \cdot 10^9 \text{ Hz}$$