

Exercise Lesson 2

Problems from the compendium:

2.11, 2.12, 2.13, 2.14a, 2.28, 2.15

Other problems:

2.1 M -ary PAM signals:

You want to transmit the binary sequence

$$\mathbf{b} = b[0] b[1] b[2] b[3] b[4] b[5] = 101101 ,$$

using a rectangular pulse $g(t) = g_{rec}(t)$ with amplitude A and duration T .

(a) Draw the transmitted signal $s(t)$, assuming binary PAM ($M=2$) with $T_b = T$.

(b) Assume now 4-PAM ($M=4$) with $T_s = T$ and draw the transmitted signal $s(t)$.

2.2 Bandpass M -ary PAM signals:

Repeat Problem 2.1 for bandpass PAM signaling with carrier frequency $f_c = 2/T_s$ and phase offset $\varphi = 0$.

2.3 M -ary PSK signals:

Repeat Problem 2.1 for PSK signaling with carrier frequency $f_c = 2/T_s$ and phase offset $\nu_{const} = 0$. Compare the binary PSK signal with the binary PAM signal in Problem 2.2.