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A list of some notation used in the course Digital Communications (ETT051)

(the list below should cover Chapters 1-4, the remaining chapters will be added as soon as possible)

$D_{i,j}^2$ means the squared Euclidean distance between two signal alternatives, $s_i(t)$ and $s_j(t)$, [V^2s, V is Volt], page 28.

$d_{0,1}^2$ means the normalized squared Euclidean distance between two received signal alternatives, $z_0(t)$ and $z_1(t)$, page 255.

D_{min}^2 means the minimum squared Euclidean distance in a received signal constellation, [V^2s, V is Volt], page 274.

d_{min}^2 means the normalized version of D_{min}^2, page 279.

$E\{\ \}$ means the expectation operator, page 15.

E_l means the energy in the signal alternative $s_l(t)$, [V^2s, V is Volt], page 26.

E_g means the energy in a pulse $g(t)$, [V^2s, V is Volt], page 32.

$\overline{E_s}$ means the average transmitted signal (or symbol) energy, [V^2s, V is Volt], page 26.

$\overline{E_b}$ means the average transmitted energy per information bit, [V^2s, V is Volt], page 26.

$\overline{\mathcal{E}_b}$ means the average received energy per information bit, [V^2s, V is Volt], page 17.

f_c means the carrier frequency, [Hz], page 35.

k means the number of information bits carried by a sent signal alternative, page 21.

M means the number of signal alternatives in the transmitter, page 21.

N_0 means a noise parameter characterizing the power spectral density of white Gaussian noise, [$\frac{V^2}{Hz}$], page 178.

$\bar{P}$ means the average transmitted signal power, [V^2, V is Volt], page 26.

P_b means the bit error probability, page 15.

P_F means the probability of “false alarm”, page 238.

P_M means the probability of a “miss”, page 238.

P_s means the symbol error probability, page 231.

P_l means the probability that signal alternative $s_l(t)$ is sent, page 26.

$Q(x)$ means the probability that a zero-mean unit-variance Gaussian random variable is larger than x, page 180.

$R(f)$ means the power spectral density function, [$\frac{V^2}{Hz}$], page 71.

R_b means the bit rate, [bit/s, bps], page 6.

R_s means the signaling (or symbol) rate, [symbol/s or Baud], page 23.

$r(t)$ means the input signal to a receiver, page 11.

ρ means the bandwidth efficiency, [bps/Hz], page 19.

ξ_l means the decision variable for message l, [V^2s, V is Volt], page 240.

t means real time, [s], page 10.

T means the time duration of a pulse (signal), [s], page 10.

T_b means the bit time, [s], page 6.

T_s means the signaling (or symbol) time, [s], page 22.

W means the bandwidth, [Hz], page 17.