EE 567

Homework 9 Solution

Instructor: Christopher Wayne Walker, TA: James Huang

Problem 1. Suppose we detect a signal as shown in class and now we wish to noncoherently integrate the detected samples. Using Albersheim's equation plot the probability of detection vs. SNR (dB) for a probability of false alarm of 10^{-6} and number of independent samples noncoherently integrated is $N = 32$. Repeat this for probability of false alarm of 10^{-4} and show both curves on the same graph. In each case your probability of detection should range from at least 0.1 to 0.99.

Solution:

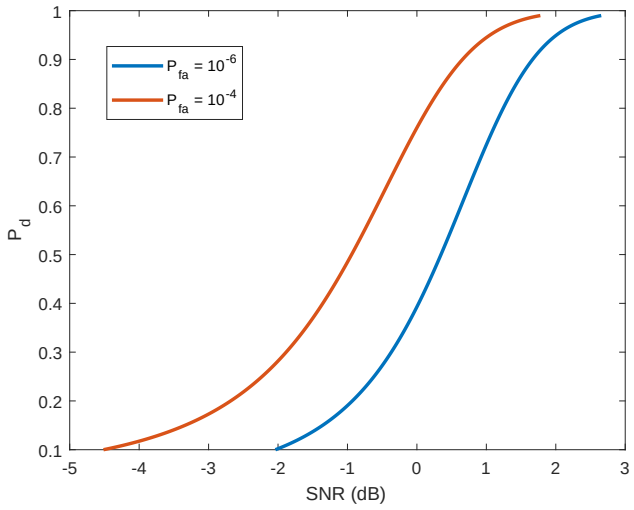

Figure 1: Probability of detection P_d versus SNR (dB) for probability of false alarm $P_{fa} = 10^{-6}$ and 10^{-4}.