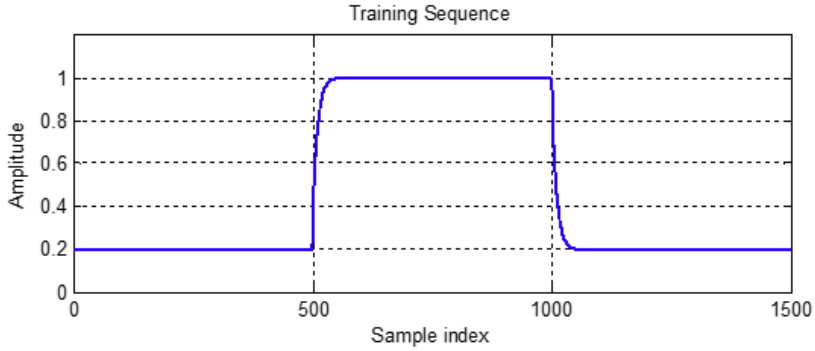
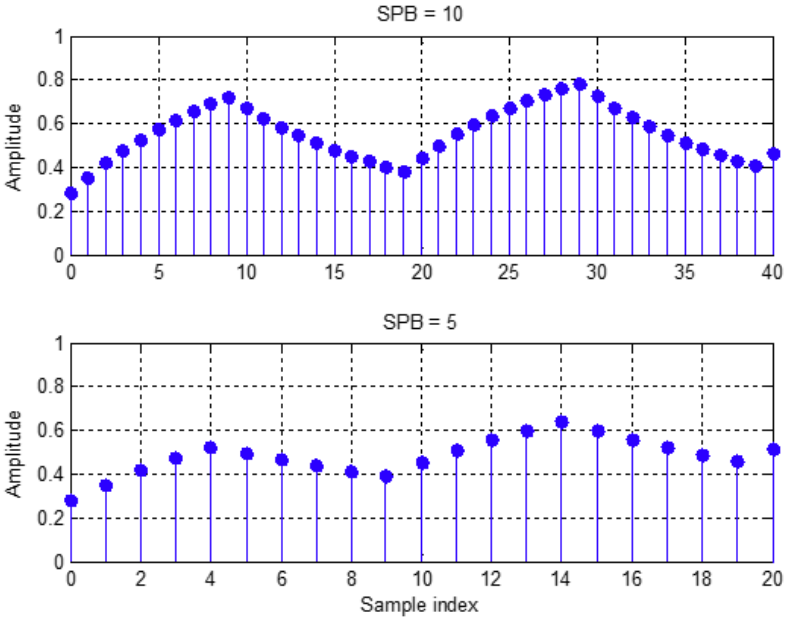
INTRODUCTION

The response of a communication channel to the training sequence is shown below.



The following figures plot received waveforms for different bit times (SPB=10 and SPB=5).



Assume that

1. The response to the first bit starts at index 0.

2. Bit decisions are made by comparing the last sample corresponding to each bit to a decision threshold.

3. The decision threshold is chosen based on the response to the training sequence as described previously in Topic 4.2.

Help

7.1 QUIZ QUESTION 1 (1/1 point)

What is the input bit sequence estimated from the received waveform with **SPB=10**?

Please key in the numerical value of your answer in the box provided below. Input the bit sequence in series of 1's and 0's with no spaces between. (e.g. 0101...)

1010

1010

Answer: 1010

EXPLANATION

From the response of the channel to the training sequence, we can get the threshold as $T = \frac{1+0.2}{2} = 0.6$ (the average of the maximum and minimum values of the response).

Given SPB=10, there are four bits in 40 samples. The sampling points for 4 bits are at indices 9, 19, 29 and 39, respectively. Comparing the values of the received waveform at those points to the threshold, we obtain the bit sequence 1010.

Check Save Hide Answer *You have used 1 of 3 submissions*

7.1 QUIZ QUESTION 2 (1/1 point)

What is the bit sequence estimated from the received waveform with **SPB=5**?

Please key in the numerical value of your answer in the box provided below. Input the bit sequence in series of 1's and 0's with no spaces between. (e.g. 0101...)

0010

0010

Answer: 0010

EXPLANATION

Threshold: $T = \frac{1+0.2}{2} = 0.6$

Given SPB=5, the sampling points for 4 bits are at the indices 4, 9, 14 and 19, respectively. Comparing the sampled values with threshold $T = 0.6$, we obtain the bit sequence 0010.

Notice that a smaller SPB value may cause errors due to ISI.

Check Save Hide Answer *You have used 1 of 3 submissions*

Help