

1 H-3.1

The dispersive channel can introduce inter-symbol interference. This can lead to more bit errors. Thus the bit error curves for the dispersive channel are shifted to the right of the bit error curves for the AWGN channel, as the error increases for the same SNR.

2 H-3.2

One can calculate the delay spread of the channel by measuring the time between the first and last peaks of the impulse response. Alternatively, one can measure the coherence bandwidth and take the reciprocal.

Figure 1: 4-QAM constellation with natural mapping

$$N_{bits} = \frac{-\ln(1 - CL)}{BER} = 3 \times 10^6 \quad (1)$$