Project 1

Abhinav Narain

1 Question 1: Benchmarks: Shannon limit and QPSK limit
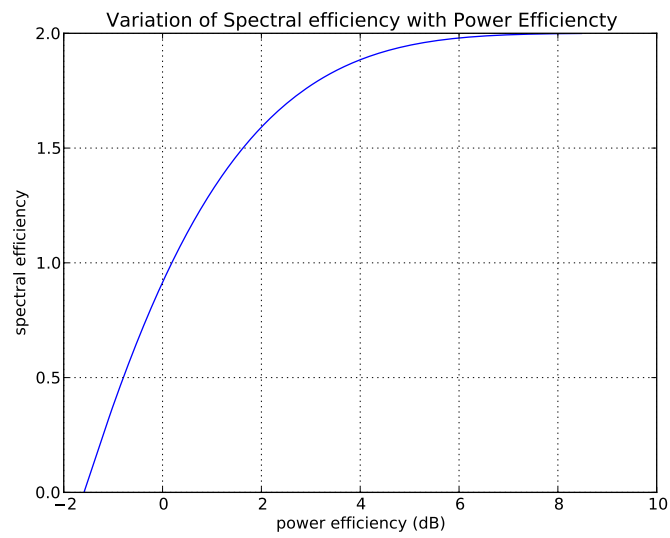

Figure 1: plot using the fundamental equation
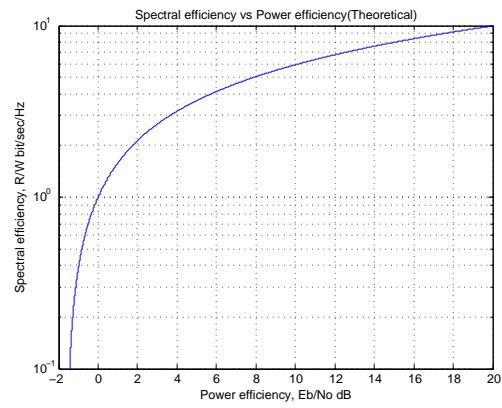
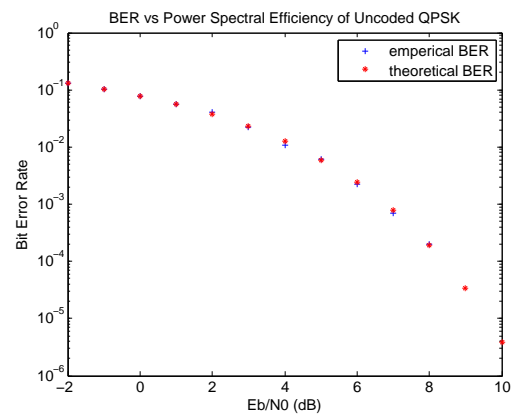Figure 2: plot of Theoretical function

2 Question 2: Uncoded QPSK

Figure 3: plot of Uncoded QPSK for
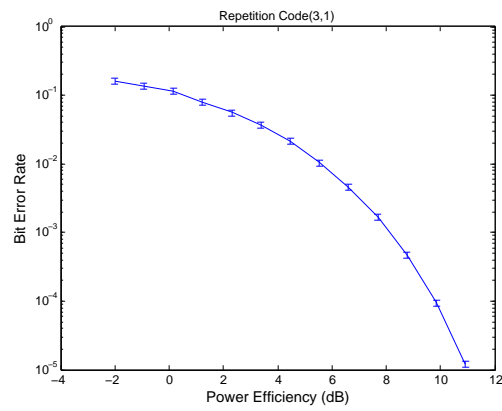
3   Question 3: Repetition Codes

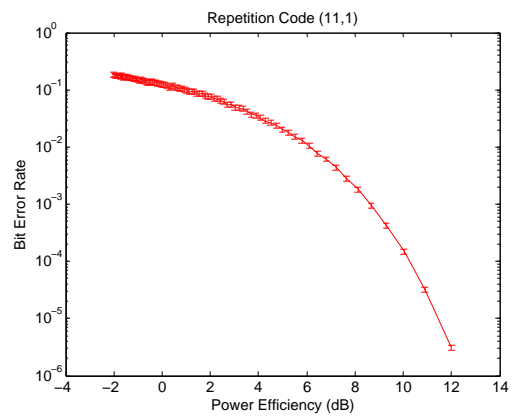Figure 4: Variation of Bit error rate of Repetition Codes (3,1)

Figure 5: Variation of Bit error rate of Repetition Codes (11,1)

4 Question 4: Hamming Codes
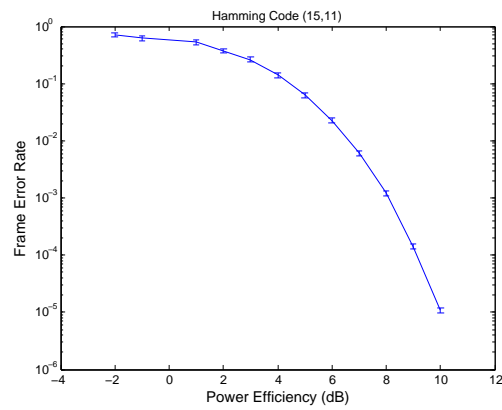
4.1 15,11 Hamming Codes

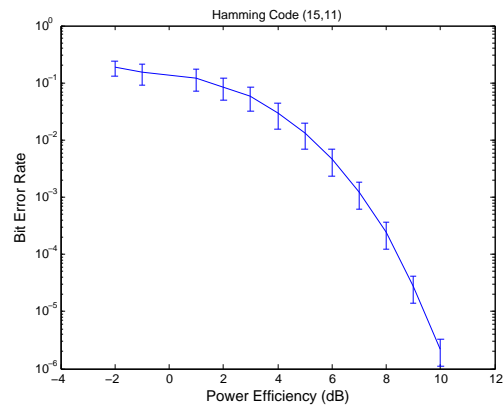Figure 6: Variation of Frame error rate of Hamming Codes (15,11)

Figure 7: Variation of Bit error rate of Hamming Codes (15,11)
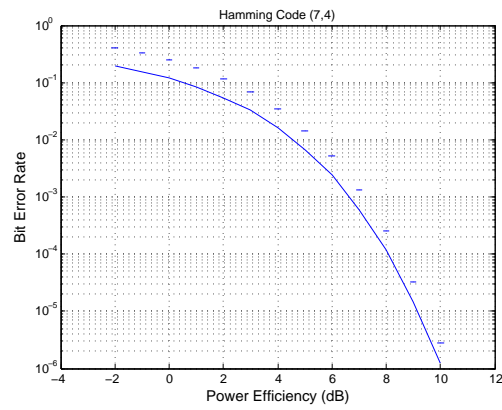
4.2 3,4 Hamming Codes

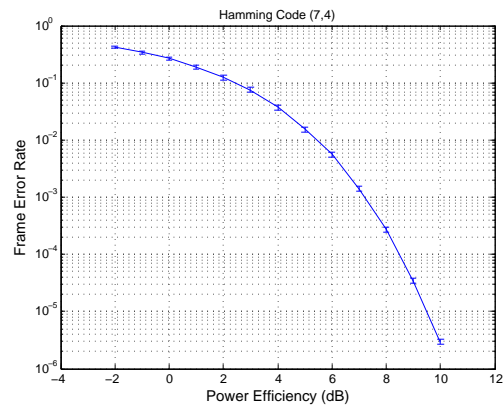Figure 8: Variation of Bit error rate of Hamming (3,4)

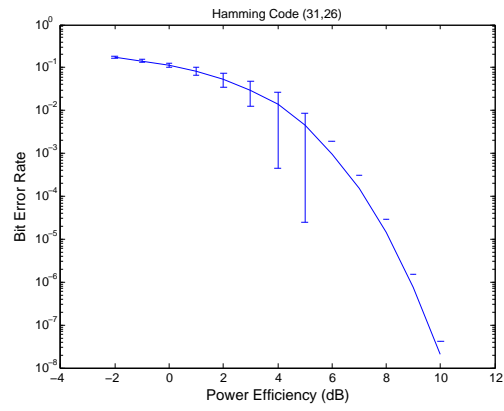Figure 9: Variation of Frame error rate of Hamming (3,4)

Figure 10: Variation of Bit error rate of Hamming (31,26)
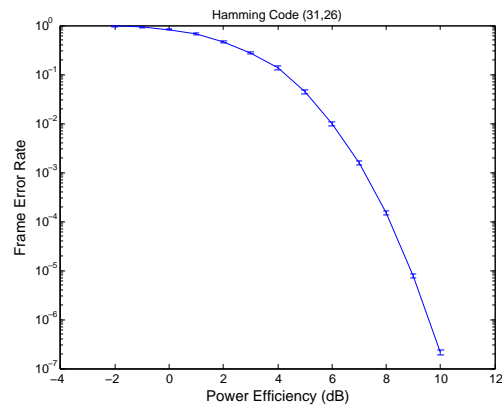
4.3 31, 26 Hamming Codes

Figure 11: Variation of Frame error rate of Hamming (31,26)

5 Question 4: Simplex Code

5.1 Syndrome Decoding

This remains to be filled.
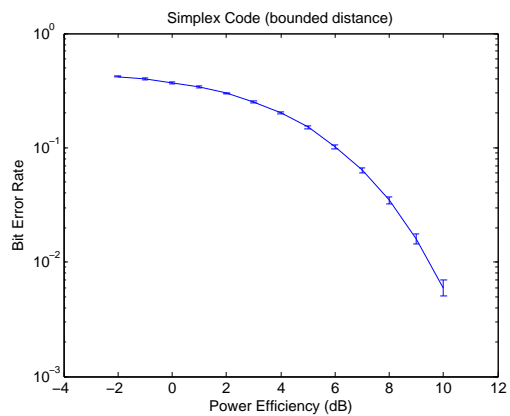
5.2 Bounded Distance Decoding

Figure 12: Variation of Bit error rate of of Simplex, bounded distance decoder