

ECE6604 Personal & Mobile Communications
Assignment #7

Date Assigned: April 6, 2010

Date Due: April 14, 2010

- 1) **computer exercise** Consider an OFDM waveform with block size N . For an FFT implementation, the PAPR for any given data block is given by

$$\text{PAPR} = \frac{\max_k |X_k|^2}{N^{-1} \sum_{k=0}^{N-1} |X_k|^2}$$

where $X_k, k = 0, \dots, N - 1$ are the IFFT coefficients.

Note that the PAPR of each data block depends on the random data vector $\mathbf{x} = (x_0, x_1, \dots, x_{N-1})$.

By averaging over many data vectors (using computer), determine the mean PAPR and the variance of the PAPR. Do this for 16-QAM modulation with block sizes $N = 256, 512, \text{ and } 1024$. Assume in this case that the guard interval $G = 0$.

- 2) Text problem 5.7
- 3) Text problem 5.10
- 4) Text problem 6.1
- 5) Text problem 6.3