Brandon Wright

ECE 6590

December 14, 2023

**Software Radio Final Project – QPSK Receiver**

**Abstract—For this project, we were tasked with creating a QPSK receiver to demodulate a series of progressively more degraded input signals. Part I implements demodulation, timing acquisition and data extraction. Part II adds a symbol-spaced equalizer to Part I. Part III adds a fractionally-spaced equalizer to Part I. Part IV implements carrier acquisition and tracking to correct for phase and carrier offset. Part V adds symbol rate tracking. By following the textbook and applying topics taught in class, the end result was a receiver that is able to successfully demodulate and extract the data from all samples, despite how degraded or noisy the input signal was.**

**PART I.**