ECE 662 Final Exam – Fall 2019

Your "Final Exam" will consist of demonstrating and explaining (during the question/answer session of the final) your FM broadcast-band / Purpletooth receiver built from projects 1 through 4.

Due Date: Complete on or before the end of exam week (Friday, Dec 20, 5pm).

There will be a signup sheet in the lab with 60 minute timeslots (20 minute demo, 30 minute quiz, 10 minute gaps).

Demonstration

Demonstrating your receiver will include actual "off-the-air" tests showing that you can receive strong and weak FM stations alike. You should be able to receive at least 20 unique stations with the deck antenna. You must also show that you meet the following specifications using suitable laboratory-generated signals (***with you doing the tests and your instructor observing***). Hence, you must also show proficiency and efficiency in operating the test equipment.

• Tuning range	88 MHz to 108 MHz
• Threshold sensitivity	Better than -110 dBm (12 dB SINAD at 98 MHz)
• 30 dB quieting sensitivity	Better than -100 dBm (at 98 MHz)
• Audio frequency response	100 Hz to 10 kHz or better (+/- 3 dB) after accounting for 75us equalization rolloff
• Audio output power	> 1 Watt at less than 10% THD with 75 kHz peak deviation
• Distortion (at 0.1 Watt)	< 2% THD for 1 kHz sinewave with 50 kHz peak deviation
• Purple-tooth support	FSK and RSSI outputs functional
• Power consumption	< 50 mA at 5V (zero volume)

Quiz

The quiz is designed to check your knowledge of all aspects of radio theory and circuits we have discussed in class. You should bring your project schematics and circuits with you, although I may also have schematics you may need to read and understand. I will start by asking some basic questions and then increase the difficulty to try to see the depth of your knowledge. The questions may cover material from any of the projects/block diagrams as well as other material presented in class, including the last week's slides.

Grading

As stated in the syllabus, the weighting of the final is 20% of the total grade, with 10% on the demo/performance and 10% on the quiz.

ANOTHER NOTE:
You should **signup at least 24 hours in advance to be sure I will be there at the chosen time**. Please be sure to be on-time and ready, since we will only have 20 minutes allocated per demo, plus 30 minutes for the quiz in a 60 minute block. **Do to the class size and number of hours available, demos that fail may NOT be repeated, so please have your circuit setup, tested, and working prior to your scheduled time. If it fails, we will test as much as we can of the subcircuits.**

PHOTOS:
At the demonstration, I will be taking photographs of your receivers (either with you in the picture or not – your choice). These may be used to create a class photobook website after the semester is over.