

Pass-off Criteria for Milestone 2

A. Preliminary pass-off (due one week before final pass-off)

1. Transmitter data file test.

The TA will read in a file of one second of ADC sample data from your simulation of pulse data from player 4. File format is to be consistent with the test data file available on the class wiki page. It shall contain only human readable ASCII text characters, beginning with two lines of explanatory header information, then one line per 4 digit positive integer ADC sample. A total of 100,000 samples are to be stored. The “fileIOexample.m” file available on the wiki page contains some code examples for writing and reading this format. The TA will use your file as input to a receiver / detector code. Pass-off will be given if the a pulse in the proper player channel is detected.

2. Anti-alias data file test.

The TA will read in a file of one second of sample data from your simulation of the decimated output of the FIR anti-alias filter. File format shall be the same as test 1) above except that there will be 10,000 samples of floating point data. The “fileIOdecimatingFIRexample.m” file available on the wiki page contains some code examples for writing and reading this format. The TA will use your file as input to a filter bank / detector code. Pass-off will be given if the a pulse in the proper player channel is detected.

B. Final pass-off

3. Show the TA your filter design source code to confirm that:

- a) You used appropriate windowed filter design methods for your FIR anti-aliasing filter.
- b) You used appropriate Butterworth IIR bandpass filter design methodology for your bank of 10 channel / player selection filters.
- c) Your “real-time” filtering code sections for signal transmit generation, FIR and IIR filters, and power / channel detection use C-like code structure.

4. Show the TA the plotted results in your lab book for:

- a) Data generated by your transmitter simulation. Zoom in so the square wave signal and noise levels can be clearly seen.
- b) FIR and IIR filter frequency responses. The TA will confirm that you have acceptable corner and center frequencies, bandwidths, and stopband ripple levels.

- c) Plots of the power versus player channel over time for some test data you generated.
5. Demonstrate end-to-end operation of your simulation. Have your results for the following tasks prepared in advance and ready to show the TA for check off.
- a) Run your transmitter simulation to generate an ADC sampled data file with pulses from at least two different players and an instantaneous (i.e. just during the transmit pulses) signal to noise power ratio of 10 dB. Save these data to disk using the same format as the data file “receiverTest1.txt” provided on the class wiki.
 - b) Read in your data file from step a) above as input to your receiver / detector simulation. Show that it detects the proper players and has not false alarms.
 - c) Download and run the file “receiverTest1.txt” through your receiver / detector simulation. The TA will confirm proper player and pulse detection. There will be at least four different players present at non-overlapping time intervals in a file consisting of 1.0 second of ADC samples.
6. The TA will confirm that your lab book entries are complete and document your simulation design, development, and performance testing efforts.