

ECE 440L  
 Fall 2013  
 Last updated: 10/16/13

## Lab X rubric

### Overview

- 100 points possible
- Grade basis: Completeness, clarity, and correctness
- Assign partial credit when appropriate.

Problem	Item	Points
1a	Plot is given proving that the sample rate is 1kHz.	4
1b	Anti-aliasing and reconstruction filters have correct bandwidth.	4
2	Time AND frequency plots are given for:	
	- 25-kHz carrier	4
	- 50-kHz carrier	4
3	Time AND frequency plots are given for:	
	- PCM encoder (TTL) data	4
	- PCM NRZ data	4
	- BPSK channel	4
	- Output of demodulator multiplier	4
	- Output of demodulator filter	4
	- Output of PCM decoder	4
	- Output of reconstruction filter	4
	Explanations are given as to why the following plots make sense:	
	- Frequency spectrum of PCM encoder (TTL) data	5
	- Frequency spectrum of BPSK channel (explaining both the shape AND location of the spectrum)	5
	- Time plot of the demodulator before <i>versus</i> after filter (compare and explain)	5
	- Time plot of PCM decoder output <i>versus</i> reconstruction filter output (compare and explain)	5

Problem	Item	Points
4b	Time AND frequency plots are given for: BPSK channel.	4
	TA signs off that CD was demonstrated successfully.	8
5a	Report compares audio quality for 25-kHz versus 50-kHz carriers.	4
5b	Report compares audio quality for 7-bit linear versus 4-bit compander encoding.	4
7	Plots are given comparing (on the same time/freq scales):	
	- BPSK input to the spreader (in time AND frequency domain)	4
	- Spread-Spectrum channel (in time AND frequency domain)	4
	Report compares spectra of BPSK and Spread-Spectrum signals.	8