Lab 2, Approximate Marking Scheme, Oct. 2005

Demo: 1. Show signs of life, get parts, start building, 2. DC biasing, 3. Carrier Null, 4. Mixing (DSBSC), 5. Check of Linearity, 6. SSB output with tuned load.	15 marks
Lab Writeup: 1) Verify carrier at 1.2 MHz, 120 mV RMS; convert to peak, or peak-to-peak - Observation of effect of carrier null, output frequency (at null). Comment on how the pot nulls the carrier.	4 marks
2) Verify mod signal at 60 kHz, 200 mV RMS; convert to peak, or peak-to-peak - Observe (sketch, or capture) DSBSC Output, determine output amplitudes of each sideband from time-domain waveform, compare to expected amplitude. Discuss selection of equation and/or use and comment on data sheet info.	16 marks
3) Show spectrum analyzer plots, compare to time domain, verify carrier and modulating frequencies, check carrier rejection (relative to sidebands).	6 marks
4) Plot of output voltage versus modulating signal input amplitude calculate theoretical linear range, compare	6 marks
5) Design of tuned circuit. Inductors are about 3.3, 10, 33 μH with inductor Q predicted at 1.2 MHz from 15 to 30 - Pick L, calculate C. - Verify center frequency of tuned circuit is close to 1.2 MHz, adjust carrier frequency to pick out upper sideband, show time domain output, determine amplitude of each sideband signal	8 marks
6) Show fft results, compare to time domain results for each sideband. Verify and explain with frequencies of carrier, modulating signal and filter frequency, and by doing fft that it is the upper sideband.	5 marks
7) Compute theoretical amplitude, (of desired single-sideband signal, and of residual signal of other sideband) compare to measurement	8 marks
8) Adjust carrier frequency to pick out lower sideband, sketch output waveform, and verify with frequencies and fft, that it is the lower sideband	5 marks
9) Compute amplitude, compare (probably same as 6)	2 marks
Discretionary	10 marks
Lab 2 Total	**85 marks**