**Test Procedure for Lab 6 PCB**

*Description: This procedure tests the functionality of the TM4C, DAC, and audio generation circuitry.*

1. Connect two 8-channel Logic Analyzer ports to the Pin Header labeled *Logic Analyzer* on the PCB.
2. Connect two oscilloscope probes to the Pin Header labeled *O-Scope: Power*.
3. Connect the board to a +5V power supply and check if the red power LED turns on.
4. Measure all test points with a multimeter. Check the +5V and +3.3V power rails. Check the 1.5V shunt reference voltage for the TLV5618A.
5. If the appropriate voltage was found in step 4, evaluate the power rails on the oscilloscope and check that the noise in the power rails is being successfully filtered by the smoothing capacitors on either side of the LP290CZ-3.3 regulator.
6. Connect an oscilloscope probe to the Pin Header labeled *O-Scope: DAC output*
7. Disconnect the PCB from the +5V power supply and connect to a computer with test software.
8. Perform a full erase of the TM4C’s flash memory.
9. Given that step 8 is successful, flash software to generate a 440 Hz sine wave on the DAC.
10. Examine the DAC output on the oscilloscope, and examine the DAC’s SCLK, ICS, DIN signals on the Logic Analyzer.
11. Connect two oscilloscope probes to the Pin Header labeled *O-Scope: Speaker Output* and check that the signals Vo- and Vo+ are exactly 180 degrees out-of-phase with each other.