**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 through the micro-USB header (J5) and check if the red power LED turns on.
4. Check the +5V and +3.3V power rails (e.g. TP10 and TP3). Check the 1.5V shunt reference voltage for the TLV5618A (TP11).
5. If the appropriate voltages was found in step 4, evaluate TP10, TP3, and TP11 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 TP17 (the DAC output).
7. Disconnect the PCB from the +5V power supply and connect through the micro-USB port (J5) to a computer with test software.
8. Perform a full erase of the TM4C’s flash memory via the micro-USB port (J5).
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 TP12 and TP13 to check that the signals Vo- and Vo+ (speaker output) are exactly 180 degrees out-of-phase with each other.