ECE-411 Homework 6

Practicum Team 11

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System Tests

1.   CPU Board Functional Checks
    1.1.   Power on indicator
    1.2.   Power supply voltages and current levels
    1.3.   Mode button and indicators

2.   Sensor Board Functional Checks
    2.1.   Power supply voltages
    2.2.   Local oscillator accuracy
    2.3.   Pitch oscillator
        2.3.1.   Stable behavior
        2.3.2.   Detection range
    2.4.   Filter behavior
    2.5.   MISO voltage

3.   Calibration Functionality Check
    3.1.   Run calibration function
    3.2.   Remeasure MISO

4.   Functional Mode Checks
    4.1.   Mode 1
    4.2.   Mode 2
    4.3.   Mode 3

5.   MIDI Control Checks
    5.1.   Mode 1
    5.2.   Mode 2
    5.3.   Mode 3

Test Writer: James Solonika / Charles Staffeld						
Test Case Name:	CPU Board Functional Checks		Test ID#:		CPU-FC	
Description:	Checks to determine if the CPU board has power and basic functionality. Does not test any user modes.		Type:		Black Box	
Tester Information						
Name of Tester:			Date:			
Hardware Ver:			Time:			
Setup:	CPU board should begin unplugged, 12V DC adapter with barrel jack and DMM should be available.					
Step	Action	Expected Result	Pass	Fail	N/A	Comments
1	Plug in board.	Mode 1 LED (LED 2) should light up.				
2	Measure +12V test point with DMM.	Meter should read +12V ± 0.5. Current should be < 200mA.				
3	Measure +5V test point with DMM.	Meter should read +5V ± 0.5. Current should be < 40 mA.				
4	Press mode button (SW 1) repeatedly.	LEDs will light up one at a time in this order: LED 2, 3, 4, 5, then repeat.				
Overall Test Result:						

Test Writer: James Solonika / Charles Staffeld						

Test Case Name:	Sensor Board Functional Checks	Test ID#:	SB-FC
Description:	Checks to determine if the Sensor board can receive power and oscillate	Type:	White Box

Tester Information						

Name of Tester:		Date:	
Hardware Ver:		Time:	

Setup:	CPU board plugged in and passed CPU-FC, oscilloscope, DMM and MIDI cable available

Step	Action	Expected Result	Pass	Fail	N/A	Comments
1	Plug MIDI cable into CPU MIDI Jack 1 and MIDI jack on sensor board .	Test point "TP_LV+"" should measure +6V± 0.5V (with respect to GND as defined on the board)				
2	Plug MIDI cable into CPU MIDI Jack 1 and MIDI jack on sensor board .	Test point "TP_PV+" should measure +6V± 0.5V (with respect to GND as defined on the board)				
3	Measure test point "TP_LV-" voltage.	Voltage should be -6V ± 0.5V. (with respect to GND as defined on the board)				
4	Measure test point "TP_PV-" voltage.	Voltage should be -6V ± 0.5V. (with respect to GND as defined on the board)				
5	Scope "TP_LOSC"	Sine wave should be 460 kHz kHz ± 10kHz				

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6	Scope "TP_POSC" with hand far away from antenna	Sine wave should be 460 kHz ± 10kHz				
7	Scope "TPFOUT". With hand far away from antenna	Sine wave should be between 1Hz and 3 kHz, but stable at that frequency				
8	Scope "TPFOUT". While moving hand near antenna	Sine wave should vary in frequency by around 1 kHz.				
9	Scope proximity voltage output "PROXIMITY"	A steady DC voltage.				
10	Scope MISO test point .	Should be a flat DC signal, no AC ripple.				
Overall Test Result:						