Listen Technologies Corporation
MicroField Test and Alignment Procedure

M. Simon 6-25-03, Revised 11-05-03

Scope

This document defines the RF alignment and test procedures for the MicroField product. This procedure is valid for revision C printed circuit board assemblies.

Equipment Required

Test Fixture
RF Signal Generator
RF Spectrum Analyzer
Audio Signal Generator
Oscilloscope
Digital Voltmeter
Power Supply (AC Charger)
Test Cables (Aux/Mic input, IR input)

Procedure

1. Initial Calibration and Set-up
   a. Connect the IR cable and place the sensor in a black box so no light hits the IR detector.
   b. Apply 6.00 VDC to the battery terminals. Caution: Reverse polarity may damage the unit.
   c. Short the calibration terminals J1-1 and J1-2.
   d. Turn the unit on. Release the short on J1 after 5 seconds. The unit is now calibrated.
   e. Disconnect the power supply and install 4 NiMH batteries. Caution: Reverse polarity may damage the unit
   f. Place UUT into test fixture.
   j. Place UUT (Unit Under Test) into test fixture. Connect Charger to DC input. Battery symbol on LCD should be indicating that charging is in process. Connect speaker.

2. Turn UUT on and verify that the +3.3 volt power supply voltage (U1 pin 1) is between 3.20 and VDC. Typical ➔ 3.3VDC

3. Verify that the charger voltage (U22 pin 2) is between 6.45 and 6.85 VDC. Typical ➔6.5VDC

4. Connect signal generator to IR input using IR test cable and set to 2.06 MHz, 25 kHz deviation, -50 dBm. Set UUT to receive IR channel 93. Verify that the transmit channel is 00 (216 MHz transmitter disabled).

5. Adjust L7 for 0.5 +/- 0.1 VDC at TP3. (Centers VCO tuning range)

6. Adjust C107 and C127 for maximum RSSI level at TP7 using an oscilloscope. Repeat adjustment several times as C107 and C127 interact slightly. (Aligns band-pass filter). Typical ➔0.7~1.0VDC

7. Adjust C97 for maximum amplitude of 1 kHz sine wave at TP8 using an oscilloscope. Amplitude should be between 400-550 mV p-p. (Sets tuning of 10.7 MHz FM demodulator).

8. Set RF signal generator to –80 dBm and verify that the signal heard through the speaker is free of noise.

9. Set the receiver channel to E (72.9 MHz) and the RF signal generator to 72.9 MHz, -30 dBm. Connect the RF signal generator output to the receive test loop input on the test fixture.

10. Adjust C1 on the loop antenna board and C126 for maximum RSSI at TP7. (Tunes loop antenna and band-pass filter to 72 MHz frequency range) Typical: ➔0.7~0.87VDC

11. Set the receive channel to 29 and the RF signal generator to 216.525 MHz, -50 dBm.

12. Adjust L8 for 1.5 VDC at TP3. (Centers VCO tuning range)

13. Adjust C2 on loop antenna board and C133 for maximum RSSI at TP7. (Tunes loop antenna and band-pass filter to 216 MHz band). Typical: ➔0.87~1.1VDC

14. Set MicroField transmitter channel to 41 (216.025 MHz). Connect RF spectrum analyzer to transmit pick-up loop on test fixture**.** Adjust L1 for 1.5 +/- 0.1 VDC at TP6. (Centers VCO frequency) A carrier should be observed at 216.025 MHz.

15. Turn RF signal generator off. The MicroField receiver squelch should have activated and no audio should be present at the speaker output.

16. Connect Mic/Aux test cable to MicroField Mic/Aux input jack. Connect other end of cable to audio signal generator. Keep audio signal off during the following steps.

17. Adjust C155 for maximum carrier amplitude. Carrier level should be between -17 and -25 dBm. (Tunes 216 MHz transmit loop antenna)

18. Adjust C43 to set carrier center frequency to 216.025 MHz, +/- 500 Hz. (Centers 4.0 MHz reference crystal oscillator)

19. Turn audio signal generator on and set the input switch to AUX. Set audio signal generator to 1 kHz and 1V p-p. Set MicroField volume control to step 25 (maximum) Adjust VR1 for +/- 7 kHz deviation. Verify that the MicroField is producing a clean sounding audio signal by listening to a receiver tuned to Listen channel 2A.

20. Set input switch to Mic and verify that the deviation is +/- 7 kHz. Verify that the audio quality is clean.

END OF TEST