

# **LABORATORY TESTING PROCEDURES**

## **LXT320/420**

### **UNIT TEST - (UNIT ASSEMBLED)**

#### **TEST PREPARATION**

- 1) Install Alkaline battery (observe polarity markings).
- 2) Turn on unit by pressing the power button.

#### **SYSTEM TEST**

- 1) Radiated Transmit and Receive performance may be observed.
- 2) Audio out & Audio in are available at the Headset jack.

### **LABORATORY TEST - (UNIT UN-ASSEMBLED)**

#### **TEST PREPARATION**

- 1) Disassemble unit (4 screws – 2 behind batteries). Remove the PCB from the cabinet.
- 2) Remove the antenna with soldering iron and install a 50 ohm coax cable in its place.
- 3) Either clip alligator leads or solder test leads to the power supply connections. The negative terminal is the lower right PCB area. The positive terminal is the lower left PCB area.
- 4) Connect 5VDC power source to the terminals, observing correct polarity.
- 5) Connect an 12-ohm load through the Headset jack
- 6) Connect a audio generator with 10uF coupling capacitor through the Headset jack
- 7) Select desired channel 1-22 using CH up/down keypad switch. The rubber keypad may be removed from the front cabinet and used directly on the PCB.

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### SPECIFIC TEST METHODS AND GUIDANCE

#### Modulation Characteristics – (*paragraph 2.1047(a) of the Rules*)

##### FOR TX AUDIO FILTER RESPONSE

1. Connect audio generator with 10uF coupling capacitor to microphone input jack. Press PTT button.
2. Connect RF output with modulation meter. (Filters of modulation meter should be set to a 25Hz to 15KHz.)
3. Adjust audio generator 6-7mVrms of 1KHz audio (approx. 0.75KHz modulation).
4. While transmitting, sweep generator and note measurement.
5. **Results should be multiplied by a two times because of compressor.**
6. Please compensate the back-ground noise level.

#### Modulation Characteristics – (*paragraph 2.1047(b) of the Rules*)

##### FOR TX AUDIO LOW PASS FILTER RESPONSE.

1. Connect audio generator with 10uF coupling capacitor to microphone input jack. Press PTT button.
2. Connect AC voltmeter or other test equipment via jumper wire with junction (TP9) of C53, R82.
3. Adjust audio generator for 200mV.
4. While transmitting, sweep generator and note measurement.

#### Occupied Bandwidth – (*paragraph 2.1049(c) of the Rules*)

1. Connect an audio frequency sweep generator with 10uF coupling capacitor to microphone input jack.
2. Adjust audio generator to a frequency of 2500Hz and a level of 51mV rms (+16dB above 8mV per FCC).
3. With a spectrum analyzer, transmit the radio and monitor the transmitter though an antenna.
4. Note required measuements per FCC.

# TRANSMITTER ALIGNMENT METHOD

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### 1. Frequency Setting

- A. Connect a frequency counter or communications service monitor capable of at least five watt RF.
- B. Press the PTT switch.
- C. Adjust CT201 trimmer capacitor such that the output frequency is equal to the channel frequency with a maximum error of +/- 200 Hz. CT201 is located the right side of VCO Shield can.

### 2. Output Power Alignment

- A. Connect a communications service monitor or a wattmeter and dummy load to the antenna connector.
- B. Press the PTT switch.
- C. Adjust air coil (L6) by spreading or de-spreading, to achieve maximum power, not to exceed 1.5W at 5V Vcc.

**Note: Normally, it is not necessary.**

### 3. Deviation Adjustment

- A. Connect an audio generator with 10uF coupling capacitor to the microphone jack. The audio frequency should be set at 1KHz with a level of 200mV.
- B. Connect an FM deviation meter or communications service monitor to the antenna connector. Set the monitor to read peak deviation.
- C. Press the PTT switch.
- D. Adjust RV2 for +/- 2.0KHz deviation. RV2 is located the bottom right side of PCB.