

**Exhibit 10: Information Required for Certification****VENTURE - EXPRESS**

- (1) DC voltage of the RF amplifier is DC 3V(same as Battery supply voltage) and current consumption of the power transistor is 25mA.
- (2) Function of the active circuit device – (RF board section)
- (3)
- 2-a) IC1 – PLL IC, the operating frequency is controlled from CPU by serial data(STB, data CLK pins), the X1 is reference frequency's oscillator, the CPU's reference frequency is 12.5KHz.
- 2-b)Q6, D2, D1 --- There are RF OSC/modulator circuits.
- 2-c)Q3 --- this is power ripple filter for PLL IC.
- 2-d)Q4 --- this is buffer amplifier for transmitter.
- 2-e)Q7 --- this is driver amplifier for transmitter.
- 2-f)Q9--- this is power amplifier for transmitter.
- 2-g)IC2A--- this is audio input amplifier.
- 2-h)IC2B,D4,D3,Q1 --- there are ALC(auto level controlled) circuits. The IC2B is amplifier for ALC audio input, the D4,D3 are double voltage rectifier that detect the DC voltage to controlled the Q1 for ALC purpose.
- 2-i)Q10,Q11 --- Audio/TX Driver VCC switch.
- 2-j)IC3,D5,D6,Q8--- there are DC to DC voltage converter, there are up the battery voltage from 3V to 4.5 VDC.
- 2-k) IC4 ---- this is binary switch for low battery charger's purpose. CPU board section.
- 2-l)UC1- this is CPU IC that built-in LCD driver's circuit, the time base is 4.19MHz.

2-n)QC3, QC1 --- 4.5 VDC converter voltage switch for stand-by purpose.

2-o)DC2, QC5, UC3 --- there are low battery detect circuit for low battery indicator(LCD)

2-p)QC2 --- CPU power down detect.

2-q) UC2--- LCD module

(3) Description of all circuitry and device provided for determining and stabilizing frequency----

3-a)The VCO circuit is designed to generate the operating freq directly, the CPU will send the divider's data to PLL IC, according to the PLL working principle, the VCO will lock at certain frequency.

3-b)The operating frequency's stability is depended in the PLL referency frequency, the Y1 is a crystal which stability is  $\pm 10\text{ppm}$  in  $-10^{\circ}\text{C} \sim +60^{\circ}\text{C}$ , so it should operate within  $\pm 50\text{ppm}$  after tuned the trimmer capacity to the proper frequency.

(4) Description of suppression of spurious radiation, limiting modulation and limiting power --- there are spurious radiation as follow:

4-a) RF harmonics --- the lowpass filter of the RF amplifier are designed by 5<sup>th</sup> butterworth, the harmonic rejection are better than 50 db from the carrier.

4-b) PLL 12.8MHz OSC frequency --- There are eliminated by power ripple filter.

4-c) CPU time base --- There eliminated by LFC1, CC3 power filter.

4-d) DC- DC converter --- there are low frequency and eliminated by C53, C40, C39, C4...etc by pass capacitor.

4-e) Regarding limiting modulation --- there are built-in ALC circuit into audio amplifier with more than 30 db dyramic range, so the max. deviation must be limited in 10KHz ~ 15KHz.

4-f)Limiting power --- the TX power is controlled by R34, there are lots db with the FCC rating power (100mW), so it should not be over the FCC specification.

(5) Detailed description of the modulation --- the modulation of the VCO is linearly FM modulator. The input signal is sine wave in audio band (10Hz ~ 10KHz) by ALC circuit & audio filter R29, R30, C62.

## Tune up Procedures

**1 SCOPE**

- 1.1 This procedure details the process for testing the Venture Express Transmitter.

**2 APPLICABLE DOCUMENTS/SPECIFICATIONS**

- 2.1 N/A

**3 FORMS**

- 3.1 Testing Log  
3.2 Failed Product Disposition Log

**4 SPECIAL TOOLS**

- 4.1 1 - HP3561A Dynamic Signal Analyzer  
4.2 1 - IFR Modulated Signal Generator  
4.3 1 - 1710 Distortion Measurement System  
4.4 2 - Fully Charged AA-Sized Batteries

**5 PROCEDURE****5.1 Test Setup**

- 5.1.1 Verify packaging and labeling
- Properly packaged with all components (plastic screwdriver, microphone, VENTURE EXPRESS and manual)
  - Properly labeled (product and packaging) with corresponding serial numbers
- 5.1.2 Install batteries and turn unit ON

**5.2 Preset Testing**

- 5.2.1 Verify presets
- Button 1, Channel 01
  - Button 2, Channel 04
  - Button 3, Channel 07
  - Button 4, Channel 10
  - Button 5, Channel 13
  - Button 6, Channel 17

**5.3 Verify broadcast frequency of Channel 01.**

- 5.3.1 Select 216.025 MHz on the thumbwheel of IFR Modulation System and select Channel 1 on the VENTURE EXPRESS by pressing button 1 and the DOWN arrow until Channel 1 is displayed.
- 5.3.2 Verify that the IFR Modulation System equipment reads 0 on frequency error (+/- .5 frequency error).

**5.4 Verify broadcast frequency of channel 06.**

- 5.4.1 Select 216.875 MHz on the thumbwheel of IFR Modulation System and select Channel 17 on VENTURE EXPRESS by pressing button 6 until channel 17 is displayed.
- 5.4.2 Verify that the IFR Modulation System equipment reads 0 on frequency error.

## 5.5 RF Modulation Test

- 5.5.1 Connect the IFR Demodulated output to the input of the HP3561A Dynamic Signal Analyzer.
- 5.5.2 Set the VENTURE EXPRESS for auxiliary line-level input and select button 3 (Channel 07).  
Input a 1kHz 0dBm signal to the unbalanced input (bottom) jack.
- 5.5.3 Push the recall button and the STATE ONE button.
- 5.5.4 Select 216.325 MHz on the thumbwheel of the IFR modulation system.
- 5.5.5 Verify a minimum of 50 SNR on the Audio Spectrum Analyzer. (The difference between 1kHz fundamental and highest level artifact in 0-15kHz band, excluding 1kHz harmonics.)
- 5.5.6 Move the input select switch to MIX and verify 20kHz +/-4kHz of deviation using the IFR Modulation Signal Generator, tuned to 216.325 MHz.
- 5.5.7 Disconnect the auxiliary audio source and input 1kHz, -10dBm signal to the microphone input jack.
- 5.5.8 Move the input select switch to MIC.
- 5.5.9 Move the MIC switch to MIC ON.
- 5.5.10 Verify 20kHz +/- of deviation using the IFR Modulated Signal Generator tuned to 216.325 MHz.
- 5.5.11 Move the MIC switch to MIC OFF.
- 5.5.12 Verify presence of no modulation.
- 5.5.13 Move the MIC switch to MIC ON.
- 5.5.14 Push the recall button and the STATE ONE button.
- 5.5.15 Verify a minimum of 50dB SNR on the Audio Spectrum Analyzer. (The difference between 1kHz fundamental and highest level artifact in 0-15kHz band, excluding 1kHz harmonics.)
- 5.5.16 Increase the input signal to +20dBm.
- 5.5.17 Verify that modulation remains increased to no greater than 34kHz.

## 5.6 Output Level Test

- 5.6.1 On HP 8901A Modulation Analyzer, push RF level measurement button.
- 5.6.2 The power measurement on the analyzer will be less than 100 mW. If the power output is greater than 100 mW, reject the unit and set aside for rework

by the manufacturer.

**5.7 Audio Tests**

5.7.1 Connect test microphone to VENTURE EXPRESS.

5.7.2 Speak into the microphone and listen to the IFR Modulated Signal Generator for objectionable artifacts.

**5.8 Pass/Fail Specification**

5.8.1 If the product passes test specifications, complete assembly of product, stamp box with test stamp and enter on test log form.

5.8.2 If product fails to meet test specifications, tag with red tag and move to troubleshoot area.

**6 RECORDS/MAINTENANCE RESPONSIBILITY**

This procedure is part of the Manufacturing Engineering Test Procedures, Sub Manual 03 and is to be maintained by the Manufacturing Engineering department.