


| GIANT ELECTRONICS LTD.                   |   |   |  |
|--|---|---|--|
| Title: Alignment Procedure               |   |   |  |
| Model: FV200                             |   |   | Rev.   |
| A. PCB LEVEL (Test Condition: under CH1) |   |   |  |
| NO                                       | ITEM                                    | ALIGNMENT METHOD  | REMARK   |
| 1.                                       | LCD display<br>(Should enter test mode) | <div>1. Turn on the radio power until a good key chirp is heard, finally, the LCD should be display ‘1’.</div> <div>2. Press ‘DOWN’ key, then all LCD segments should be Anti clockwise displayed.</div> <div>3. Finally, all the LCD segments should be shown for about 500ms as follows:</div> <div></div>   |  |
| 2.                                       | Standby current                         | <div>1. Set A-METER, and RX mode.</div> <div>2. Check the standby current &lt;45mA DC.</div>  |  |
| 3.                                       | Talk on current                         | <div>1. Set A-METER, and TX mode @50ohm load.</div> <div>2. Check the talk on current &lt;500mA DC.</div>   |  |
| 4.                                       | VCO                                     | <div>1. Set test mode</div> <div>2. Check TP3 to provide0.8 ~ 2.3VDC.</div> <div>3. Adjust L11 to provide 2.0 ± 0.1VDC at TP103 if VCO level are more than 2.4VDC on TX modeCH20.</div>   |  |
| 5.                                       | TX Power                                | <div>1. Set TX mode</div> <div>2. Check transmit power to provide Ch 4: 0.14W ERP, Ch11: 0.13WERP.</div>  | Test Voltage:<br>DC 4.5 V  |
| 6.                                       | TX Frequency                            | Adjust C53 to provide 462.5625MHz ± 50Hz.   |  |
| 7.                                       | TX Modulation & distortion              | <div>1.Set AF level 25mv, 1KHz,Adjust VR1 to provide Max TX deviation 2.25KHz to 2.35KHz.</div> <div>2.Check input Mic level in 0.5~10 mV to provide normal Deviation 1.5KHz.</div> <div>3.Check the demodulation distortion &lt;= 5%.</div> <div>1. Audio Frequency Response.<div>a) Input a 2.0mV 1KHz audio frequency to TP33 and press ‘PTT’ switch.</div><div>b) Check the response compare to 1KHz tone.<div>i) 500Hz: -5.0 dB to –11.0 dB.</div><div>ii) 2.5KHz: +3.0 dB to +9.0 dB.</div></div></div> | Filter set:<br>1.HPF 50Hz<br>2.LPF 15KHz<br>3. PK +<br>All input at TP33 |

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| NO                                       | ITEM                       | ALIGNMENT METHOD   | REMARK        |
| 8.                                       | Rx Audio test              | 1. Set RX mode CH10.<br>2. Set SG RF level to -50dBm with 1.5KHz deviation 1KHz modulation Signal.<br>3. Adjust L13 to provide minimum distortion & max output level at TP37.<br>4. Press the volume “+” key until display show 15, which give a Max audio output at TP37.<br>5. Check Max audio output level >1350mV.<br>6. Check Rx current <150mA.<br>7. Press the volume “-“ key until display show 13.<br>8. Check the 1KHz distortion <= 5%.<br>9. Set SG RF level to -119dBm with 1.5kHz deviation at 1KHz audio frequency.<br>a). Check SINAD sensitivity <= -119dBm.<br>@12dB SINAD at TP37.<br>10. Audio frequency response.<br>a) Set SG RF level to -50dBm with 1.5kHz deviation at 1KHz audio frequency.<br>b) Press the volume “-“key until display show 9.<br>c) Vary the audio frequency from 300Hz to 3KHz.<br>d) Check the RX response compare to 1KHz tone.<br>i) 500Hz: +3.0 dB to +7.0 dB.<br>ii) 2.5KHz: -6.0 dB to -11.0 dB.<br>11. Maximum and Minimum Audio Output Power.<br>a) Set SG RF level to -50dBm with 1.5kHz deviation at 1KHz audio frequency.<br>b) Press the volume “+”. Key until display show 15, which give a maximum output.<br>c) Check the voltage at TP37 >=1350mV.<br>d) Set maximum audio output to 0dB, Press the volume “-“ key until display show 1, which give a minimum output.<br>e) Check the minimum voltage -13dB to -30dB at T37 | 32 OHM        |
| 9.                                       | Noise- Detector            | 1. Set SG to -120dBm with 1.5KHz deviation. 1KHz AF on CH10.<br>2. Adjust VR102 for transient state @ 10dB SINAD.<br>3. Check high state @7 to 15dB SINAD.   |               |
| 10.                                      | Normal Batter level detect | 1. Battery level: 3.85+/-0.15V level 1, 2.88+/-0.15V level 2,  |               |
| 11.                                      | Battery charging current   | 1. Switch to charger unit, check charger battery / walk talk charging current @3.6V battery:( coordinate 68 Ohm load.)<br>2. Adaptor input voltage 120V: 60±10mA.  | (For charger) |
| 12.                                      | SCAN                       | 1. Set SG RF level to -50dBm with 500hz deviation, 100 Hz modulation signal.<br>2. Press “Mon” key<br>1. Unit will shows channels number.  |               |

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| B. CASING LEVEL            |                     |  |  |
| NO                         | ITEM                | ALIGNMENT METHOD   | REMARK   |
| 1.                         | Current Consumption | 1. Set A-METER. With volume switch OFF, check the OFF current <10 μ A.<br>2. With volume switch ON, check the standby current <50mA.<br>Press 'PTT' switches and check the TX current <500mA.  |  |
| 2.                         | TX Frequency        | 1. Check CH1=462.5625Mhz -/+500Hz.<br>2. Check CH22 =467.7125MHZ+ /-500Hz.   |  |
| 3.                         | Noise- Detector     | 1. Set the distance between antennas of SG and checked unit to 0.3M ~ 0.5M.<br>2. The antennas of SG and checked unit should be parallel to make the electromagnetic field of SG.<br>3. Radiate equably to the antenna of checked unit.<br>4. Set SG to -90dBm with 1.5KHz deviation, 1KHz tone on CH10.<br>5. Adjust VR102 for HIGH state: 7 ~ 15dB SINAD.  | When adjusting Noise-Det Should reduce any interference from other Instruments and body. |
| 4.                         | Audio RX Path CH10  | 1. Set SG RF level to -50dBm with 1.5kHz Dev.; 1kHz AF , Rotate the volume switch to the position, which give an Max output.<br>2. Check speaker O/P level >85dBspL(30cm distance).<br>3. Set SG RF level to -60dBm with 1.5kHz Dev.; 1kHz AF.<br>4. Plug the dummy speaker and dummy microphone into audio jet.<br>5. Rotate the volume switch to the position, which give an output 900+/-50mv.<br>6. Set SG RF level to -90dBm with 1.5kHz Dev.; 1kHz AF.<br>7. Check the radiated sensitivity correlate to the golden sample.<br>8. Audio frequency response.<br>a) Set SG RF level to –60dBm with 1.5kHz deviation at 1KHz audio frequency.<br>b) Rotate the volume switch to the position, which give an output 100mV ±5mV (voltage difference of dummy speaker).<br>c) Vary the audio frequency from 300Hz to 3KHz.<br>d) Check the RX response compare to 1KHz tone.<br>i) 500Hz: + 5.0 dB to +14.0 dB.<br>ii) 2.5KHz: -12.0 dB to –20.0dB.<br>9. Maximum and Minimum Audio Output Power.<br>a) Set SG RF level to –60dBm with 1.5kHz deviation at 1KHz audio frequency.<br>b) Rotate the volume switch to the position, which give a maximum output with distortion <5%.<br>c) Check the voltage difference of dummy speaker >/=900mV.<br>d) Set maximum audio output to 0dB rotate the volume switch to the position, which give a minimum output. |  |

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|  |  | e) Check the voltage difference between of dummy speaker -13dB to -30dB. |  |
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| NO                         | ITEM  | ALIGNMENT METHOD  | REMARK   |
| 5.                         | Audio TX Path CH15  | <div>1. Check the radiated power correlate to golden sample.</div> <div>2. Plug the dummy speaker and dummy microphone into audio jet.</div> <div>3. Standard TX Deviation.<div>a) Input Mic level to dummy microphone and press ‘PTT’ switch.</div><div>b) Check max. Dev. 1.9KHz &lt; max. Dev. &lt;2.2KHz.</div><div>c) Check input level in 5~15mV to provide normal deviation 1.5KHz.</div></div> <div>4. Audio Frequency Response.<div>a) Input a 2.0mv@1KHz audio frequency to dummy microphone and press ‘PTT’ switch.</div><div>b) Check the response.<div>i) 500Hz: -5.0 dB to -11.0 dB.</div><div>2.5KHz: +3.0 dB to +9.0 dB</div></div></div> <div>5.Repeat CH22.</div>   | <div>Filter set:</div> <div>1. HPF: 50Hz</div> <div>2. LPF: 15KHz</div> <div>3. PK +</div> |
| 6.                         | Function check and Intercom function (between sample and production unit) | <div>1. Turn on the radio power, a good key chirp should be heard.</div> <div>2. The LCD display should be clear, not miss the segment when pressing ‘+’ and ‘-’ or ‘-’ key, the key tone should also be heard clearly.</div> <div>3. Set channel of the sample and production unit CH=5.</div> <div>4. Press ‘PTT’ switch to intercom between sample and Production unit.</div> <div>5. The sound quality between both should be clear and no metal sound.</div> <div>6. Press ‘CALL’ key, the call tone should be heard clearly each other.</div> <div>7. Change channel of the production unit to CH=15, then Press ‘PTT’ switch of sample.</div> <div>8. Any noise should not be heard from the speaker of Production unit.</div> <div>9. Press any key, the dead problem should not occur.</div> <div>10.Set CH1/, SG to be CH1, check the speaker mute.</div> |  |

**\* Remark:**

TX mode:

1. Press and hold PTT button

RX mode:

1. Release PTT button

Power supply: Min DC 3.5v;Normal DC4.0v; Max DC4.5v

---End of Document---