GIANT ELECTRONICS LTD.	
Title: Alignment Procedure	Revision No.: A
Model: L1010	Date: JUNE 27, 2005

A. PCB LEVEL (Test Condition: under CH7, **Supply=4.5Vdc**)

NO	ITEM	ALIGNMENT METHOD	REMARK
1.	LCD display (Should enter test mode)	1. Press and hold the '+' key and 'Menu' key together. 2. Turn on the radio power until a good key chirp is heard, and the backlight is on for about 500ms, finally, the LCD should be display '**1**$^{\mathbf{CH}}$'. 3. Press '-' key , then all LCD segments should be anticlockwise displayed. 4. Finally, all the LCD segments should be shown for about 500ms as follows: 2**18**$^{\mathbf{88.}}$.	
2.	Standby current	1. Set A-METER, and RX mode. 2. Check the standby current <50mA DC.	
3.	VCO	1. Set RX or TX mode 2. Check **TP503** to provide 0.7~2.3V DC . 3. Adjust L509 to provide 2.2 ± 0.1VDC at **TP503** if VCO level are more than 2.3VDC on CH14.	
4.	TX Power & TX current (Power supply 4.5V DC)	1. Set TX mode CH7, Check the transmit to 0.25 W ERP, the talk on current <1000mA. 2. Set TX mode CH14, adjust VR503 to 0.25 W ERP **power,** Check the talk on current <500mA.	Test Voltage 4.5Vdc
5.	TX Frequency	1. Set TX mode CH8; 2. Adjust VC501 to provide 467.5625MHz ± 50Hz.	
6.	CTCSS Tone Frequency	1. Set CH8/CODE1 and Tx mode. 2. Check CTCSS tone frequency to be within 66.8Hz to 67.2Hz.	
7.	TX Modulation & distortion	1. Set AF level at 50mv;1KHz,Adjust VL101 to provide Max TX deviation 2.1KHz to 2.3KHz. 2.Check input Mic level in 5~15 mV to provide normal deviation 1.5KHz. 3.Check the demodulation distortion <= 5%. 4.Audio Frequency Response. a) Input a 3.0mV 1KHz audio frequency to **TP116** and press 'PTT' switch. b) Check the response compare to 1KHz tone. i) 500Hz : -12.5 dB to –6.5 dB. ii) 2.5KHz : +5.0 dB to +11 dB .	ITEM1, 4 FILTER SET: I. HPF 50Hz II. LPF 15KHz ITEM2, 3 FILTER SET: I. HPF 300Hz II. LPF 3KHz
8.	CTCSS Tone Dev.	1. Set CH8/CODE1、AF input level to off, check DEV to be 350Hz~ 650Hz. 2. Set CH8/CODE38、AF input level to off, check DEV to be 350Hz~ 650Hz. 3. Set CH8/CODE19、AF input level to off, check DEV to be 350Hz~ 650Hz.	FILTER SET: 1. <20HZ~300HZ 2. 750μs De-emp ON 1. PK+ 2. FM DEV. AVG ON

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NO	ITEM	ALIGNMENT METHOD	REMARK
9.	VOX Detector	1. Set VOX level at 1. 2. Set AF level at 12.5 +/- 1.5 mV,1KHz at **TP116**. 3. Unit start to transmit. 4. Set AF level at 10.5 +/- 1.5mV,1KHz at **TP116**. 5. Unit stop transmit. 6. Set VOX level at 2. 7. Set AF level at 8 +/-1.5mV,1KHz at **TP116**. 8. Unit start to transmit. 9. Set AF level at 7.0+/- 1.5mV,1KHz at **TP116**. 10. Unit stop transmit. 11. Set VOX level at 3 12. Set AF level at 4.5 +/- 1mV,1KHz at **TP116**. 13. Unit start to transmit. 14. Set AF level at 3.5+/- 1mV,1KHz at **TP116**. 15. Unit stop transmit.	
10.	IVOX Detector	As same as item 11	
11.	Rx Audio test	1. Set RX mode CH7. 2. Set SG RF level to –50dBm with 1.5KHz deviation 1KHz modulation Signal. 3. Adjust the volume key to give a Max audio output at **TP117**. 4. Check Max audio output level >1450mV. 5. Check Rx current <150mA. 6. Check the 1KHz distortion <= 5%. 7. Set SG RF level to –118dBm with 1.5kHz deviation at 1KHz audio frequency. a). Check SINAD sensitivity <= -119dBm. @12dB SINAD at **TP117**. 8. Audio frequency response. a) Set SG RF level to –50dBm with 1.5kHz deviation at 1KHz audio frequency. b) Adjust the volume key to give an output 700mV± 100mV at **TP117**. c) Vary the audio frequency from 300Hz to 3KHz. d) Check the RX response compare to 1KHz tone. i) 500Hz : -13 to –7.0 dB. ii) 2.5KHz : -15 to –9.0 dB 9. Maximum and Minimum Audio Output Power. a) Set SG RF level to –50dBm with 1.5kHz deviation at 1KHz audio frequency. b) Adjust the volume key to give a maximum out put. c) Check the voltage at **TP117** ≥1450mV. d) Set maximum audio output to 0dB, Adjust the volume key to give a minimum output. e) Check the minimum voltage -20 to -12dB at **TP117**	

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NO	ITEM	ALIGNMENT METHOD	REMARK
12.	Noise- Detector	1. Set SG to –120dBm with 1.5KHz deviation., 1KHz AF on CH7. 2. Press ”Mon” key and Adjust VR502 for transient state @ 10dB SINAD. 3. Check high state @8 to 12dB SINAD.	
13.	CTCSS Tone Detect	1. Set CH7/CODE1 and SG to –60dBm with 67Hz tone frequency, 400Hz deviation. 2. Check TP4, it have square-wave, and low for RF modulation off. 3. Repeat item 1 and 2 for code38 (250.3Hz). 4. Repeat item 1 ~ 3 for CH14.	
14.	Quiet Noise Detect	1. Set unit to quiet noise mode 2. Set CH7/CODE1and SG to –60dBm with 67Hz tone frequency, 400Hz deviation and 55 Hz audio frequency, 1K deviation. 3. 55 Hz tone Frequency appear on **TP117**.	
15.	Normal Batter level Detect	1. If the battery voltage level more than 5.35V, the battery icon display as  . 2. If the battery voltage level less than 5.05V, the battery icon display as  . 3.If the battery voltage level less than 4.65V, the battery icon display as  . 4.If the battery voltage level less than 3.95V, the battery icon display as  . 5.If the battery voltage level less than 3.15V,it will turn off the power.	
16.	SCAN	1. Set SG RF level to –50dBm with 500Hz deviation, 100Hz modulation. 2. Press "Mon" key. 3. Unit shows channels 9 and code 13.	

B. CASING LEVEL

NO	ITEM	ALIGNMENT METHOD	REMARK
1.	Current Consumption	1. Set A-METER, turn off the power, check the OFF current <200 μ A. 2. Press the "MEMU" key to turn on power, check the standby current <50mA. 3 Press 'PTT' switches and check the TX current <1000mA.	
2.	TX Frequency	1. Check CH7=462.5500MHz+/-500Hz; 2. Check CH14 =467.7125MHz+ /-500Hz.	
3.	Noise- Detector	1. Set the distance between antennas of SG and checked unit to 0.3M ~ 0.5M. 2. The antennas of SG and checked unit should be parallel to make the electromagnetic field of SG. 3. Radiate equably to the antenna of checked unit. 4. Set SG to -90dBm with 1.5KHz deviation, 1KHz tone on CH7. 5. Adjust VR502 for HIGH state : 8 ~ 15dB SINAD .	When adjusting Noise-Det. , Should reduce any interference from other Instruments and body.
4.	Audio RX Path CH7	1. Set SG RF level to -50dBm with 1.5kHz Dev.; 1kHz AF, adjust the volume key to give an Max output. 2. Check speaker O/P level >83dBspL(30cm distance). 3. Set SG RF level to -60dBm with 1.5kHz Dev.; 1kHz AF. 4. Plug the dummy speaker and dummy microphone into audio jet. 5. Adjust the volume key to give an output 700+/-100mv. 6. Set SG RF level to -90dBm with 1.5kHz Dev.; 1kHz AF. 7. Check the radiated sensitivity correlate to the golden sample. 8. Audio frequency response. a) Set SG RF level to –60dBm with 1.5kHz deviation at 1KHz audio frequency. b) Adjust the volume key to give an output 700mV ±100mV (voltage difference of dummy speaker). c) Vary the audio frequency from 300Hz to 3KHz. d) Check the RX response compare to 1KHz tone. 1) 500Hz : -13 to –7.0 dB. 2) 2.5KHz : -15 to –9.0 dB 9. Maximum and Minimum Audio Output Power. a) Set SG RF level to –60dBm with 1.5kHz deviation at 1KHz audio frequency. b) Adjust the volume key to give a maximum output . Set maximum audio output to 0dB, Adjust the volume key to give a minimum output. c) Check the voltage difference between of dummy speaker –20 to -12dB.	

5.	Audio TX Path CH7	1. Check the radiated power correlate to golden sample. 2. Plug the dummy speaker and dummy microphone into audio jet. 3. Standard TX Deviation. a) Input mic level to dummy microphone and press 'PTT' switch. b) Check max. Dev. 2.0KHz < max. Dev. < 2.4KHz. c) Check input level in 5~15mV to provide normal deviation 1.5KHz. 4. Audio Frequency Response. a) Input a 3.0mv@1KHz audio frequency to dummy microphone and press 'PTT' switch. b) Check the response. i) 500Hz: -12.5 to –6.5 dB. ii) 5KHz: +5.0 to +11.0 dB 5.Repeat CH14.	
6.	Function check and Intercom function (between sample and production unit)	1. Turn on the radio power, the back-light should be on For a while and a good key chirp should be heard at the same time. 2. The LCD display should be clear, not miss the segment when pressing '+' and '-' or '-' key, the key tone should also be heard clearly. 3. Set channel of the sample and production unit CH=11. 4. Press 'PTT' switch to intercom between sample and Production unit, the LED should be light. 5. The sound quality between both should be clear and no metal sound. 6. Press 'CALL' key, the call tone should be heard clearly each other. 7. Change channel of the production unit to CH=12, then Press 'PTT' switch of sample. 8. Any noise should not be heard from the speaker of Production unit. 9. Press any key, the dead problem should not occur. 10.Set CH1/code5, SG to be CH1/code4 and code6, check the speaker mute. 11.Set CH1/code37, SG to be CH1/code36 and code38, check the speaker mute. 12. Repeat item 10 and 11 for CH14.	

C. CHARGER CASING

NO	ITEM	ALIGNMENT METHOD	REMARK
1	Charge current	1. Charge current: 50 to 100mA. 2. The LED on the adaptor should glow continuously.	

* Remark:

1) TX mode: Press and hold PTT button

2) RX mode: Release PTT button

3) Power supply: Min.=3.4VDC Normal=4.2VDC Max=4.5VDC

4) Test Mode: Press and hold "+" key, and press "MEMU" key