

GIANT ELECTRONICS LTD.			
Title: Alignment Procedure			
Model: R1050		Test voltage: 5.2Vdc	
A. PCB LEVEL (Test Condition: under CH15)			
NO	ITEM	ALIGNMENT METHOD	REMARK
1.	LCD display (Should enter test mode)	<ol style="list-style-type: none"> 1. Press and hold the ‘-’&’+’ key 2. Turn on the radio power until a good key chirp is heard, and the backlight is on for about 500 ms . finally, the LCD should be display ‘1^{CH}’. 3. Press ‘DOWN’ key , then all LCD segments should be anticlockwise displayed. 4. Finally, all the LCD segments should be shown for about 500ms as follows: 18⁸⁸ . 	
2.	Standby current	<ol style="list-style-type: none"> 1. Set A-METER, and RX mode. 2. Check the standby current <45mA DC. 	
3.	Talk on current	<ol style="list-style-type: none"> 1. Set A-METER, and TX mode @50ohm load. 2. Check the TX current <1500mA@5.2Vdc. 3. Set channel to 14. 4. Check the TX current <700mA@5.2Vdc. 	
4.	VCO	<ol style="list-style-type: none"> 1. Set RX or TX mode 2. Check TP503 to provide 0.7 ~ 2.4VDC. 3. Adjust L509 to provide 2.0 ± 0.1VDC at TP503 if VCO level are more than 2.4VDC on CH14. 	
5.	TX Power	<ol style="list-style-type: none"> 1. Set TX mode CH15. 2. Check transmit power to provide<1.59W ERP 3. Set TX mode channel 14. 4. Adjust VR 503 to provide <0.37WERP. 5. Check CH15 low power is 0.37WERP. 	Test voltage is 6.0V DC.
6.	CTCSS Tone Frequency	<ol style="list-style-type: none"> 1.set CH1/CODE1. 2.Set Tx mode. 3.Check CTCSS frequency within 66.8Hz to 67.2Hz. 	
7.	TX Frequency	Adjust VC501 to provide 462.5625MHz ± 50Hz.	
8.	CTCSS Tone Dev.	<ol style="list-style-type: none"> 1. Set CH1/CODE1、 AF input level to off, check DEV to be 350Hz~ 600Hz. 2. Set CH14/CODE38、 AF input level to off, check DEV to be 350Hz~ 600Hz. 	FILTER SET: 1.20HZ~300HZ 2.750µs De-emp ON 3. PK+ 4. FM DEV. AVG ON
9.	TX Modulation & distortion	<ol style="list-style-type: none"> 1.Set AF level at 50mv;1KHz,Adjust VR101 to provide Max TX deviation to 2.15~2.25KHz. 2. Check the max deviation with code1(or code38), it should be ≤2.5KHz 3. Without code. check input Mic level (TP116) in 3~15 mV to provide normal deviation 1.5KHz. 4.Check the demodulation distortion <6% 5. Audio Frequency Response. <ol style="list-style-type: none"> a) Input a 2.0mV 1KHz audio frequency to TP116 and press ‘PTT’ switch. b) Check the response compare to 1KHz tone. <ol style="list-style-type: none"> i) 500Hz : -11.0 dB to -5.0 dB. ii) 2.5KHz : 3.0 dB to 10.0 dB . 	Fliter set : 1.HPF 50Hz 2.LPF 15KHz 3. PK + All input at TP116 ----- Distortion Test: HPF 300Hz LPF 3KHz 2.750µs De-emp ON

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10.	VOX Detector	Input and test 1KHz AF signal at TP116. 1. Set VOX level at 1. Unit start to transmit : 12.0 ~19.0 mV Unit stop transmit: 8.0 ~ 13.0 mV 2. Set VOX level at 2. Unit start to transmit : 7.0 ~ 10.0 mV Unit stop transmit : 5.0 ~ 9.0 mV 3. Set VOX level at 3. Unit start to transmit : 3.0 ~ 6.0 mV Unit stop transmit : 2.0 ~ 5.0 mV	
11.	Rx Audio test	<ol style="list-style-type: none"> 1. Set RX mode CH7. 2. Set SG RF level to -50dBm with 1.5KHz deviation 1KHz modulation Signal. 3. Tune the volume to obtain a Max audio output at TP117. 4. Check Max audio output level >1500mV. 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. <ol style="list-style-type: none"> a). Check SINAD sensitivity <= -118dBm. @12dB SINAD at TP117. 8. Audio frequency response. <ol style="list-style-type: none"> a) Set SG RF level to -50dBm with 1.5kHz deviation at 1KHz audio frequency. b) Tune the digital volume to obtain an output 100mV± 5mV at TP117. c) Vary the audio frequency from 300Hz to 3KHz. d) Check the RX response compare to 1KHz tone. <ol style="list-style-type: none"> i) 500Hz : -18.0 dB to -12.0 dB. ii) 2.5KHz : -22.0 dB to -16.0 dB. 9. Maximum and Minimum Audio Output Power. <ol style="list-style-type: none"> a) Set SG RF level to -50dBm with 1.5kHz deviation at 1KHz audio frequency. b) Tune the digital volume to obtain a maximum output . c) Check the voltage at TP117 >1500mV. d) Set maximum audio output to 0dB, Tune the volume to minimum output. e) Check the minimum voltage -10dB to -30dB at TP117 	
12.	Noise- Detector	<ol style="list-style-type: none"> 1. Set SG to -120dBm with 1.5KHz deviation., 1KHz AF on CH7. 2. Adjust VR502 for transient state @ 9dB SINAD. 3. Check high state at TP506 @9~ 15dB SINAD. 	

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NO	ITEM	ALIGNMENT METHOD	REMARK
13.	CTCSS tone Detect	<ol style="list-style-type: none"> 1. Set CH15/CODE1 and SG to -120dBm with 67Hz tone frequency, 400Hz deviation. 2. Check the audio output wave disappear when RF modulation off. 3. Repeat item 1 and 2 for code38(250.3Hz). 4. Repeat item 1 and 3 for CH14. 	
15.	Normal Batter level Detect	<ol style="list-style-type: none"> 1. Battery 2. level 1 : 4.9+/-0.15V 3. level 2, 4.5+/-0.15V 4. level 3: 4.2+/-0.15V. 5. off level: 4.0+/-0.15V. 	
16.	SCAN	<ol style="list-style-type: none"> 1. Set SG RF 467.5875MHz / -50dBm with 500Hz deviation, 100Hz modulation. 2. Press "Mon" key. 3. Unit shows channels 9 and code 13. 	
17.	Battery charging current	<ol style="list-style-type: none"> 1. Switch to charger unit ,check the battery and the unit charging current @ 5.2V battery:(coordinate 62 Ohm load) 2. Adaptor input voltage 120V: 80 ± 15mA. 3. Adaptor input voltage 108V: 75 ± 15mA. 4. Adaptor input voltage 132V: 90 ± 15mA. 	(for Plug in changing)

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B. CASING LEVEL			
NO	ITEM	ALIGNMENT METHOD	REMARK
1.	Current Consumption	<ol style="list-style-type: none"> 1. Set A-METER. With Power switch OFF, check the OFF current <math><100 \mu A</math>. 2. With volume switch ON, check the standby current <math><50mA</math>. Press 'PTT' switches and check the TX current <math><1500mA @ Ch15</math> and <math><700mA @Ch14</math>.	
2.	TX Frequency	<ol style="list-style-type: none"> 1. Check CH1=462.5625MHz+/-500Hz; 2. Check CH14 =467.7125MHz+ /-500Hz. 	
3.	Noise- Detector	<ol style="list-style-type: none"> 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 VR102 for HIGH state : 6~15dB SINAD . 	When adjusting Noise-Det. , Should reduce any interference from other Instruments and body.

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B. CASING LEVEL

NO	ITEM	ALIGNMENT METHOD	REMARK
4.	Audio RX Path CH7	<ol style="list-style-type: none"> 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. 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. Rotate the volume switch to the position, which give an output 900+/-50mv. 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. <ol style="list-style-type: none"> a) Set SG RF level to -60dBm with 1.5kHz deviation at 1KHz audio frequency. b) Rotate the volume switch to the position, which give an output 100mV ±5mV (voltage difference of dummy speaker). c) Vary the audio frequency from 300Hz to 3KHz. d) Check the RX response compare to 1KHz tone. <ol style="list-style-type: none"> i) 500Hz : -18.0 dB to -12.0 dB. ii) 2.5KHz : -22.0 dB to -16.0 dB 9. Maximum and Minimum Audio Output Power. <ol style="list-style-type: none"> a) Set SG RF level to -60dBm with 1.5kHz deviation at 1KHz audio frequency. b) Rotate the volume switch to the position, which give a maximum output with distortion <5%. c) Check the voltage difference of dummy speaker >/=900mV. d) Set maximum audio output to 0dB, rotate the volume switch to the position, which give a minimum output. e) Check the voltage difference between of dummy speaker -23dB to -40dB. 	
5.	Audio TX Path CH15	<ol style="list-style-type: none"> 1. Check the radiated power correlate to golden sample. 2. Plug the dummy speaker and dummy microphone into audio jet. 3. Standard TX Deviation. <ol style="list-style-type: none"> a) Input mic level to dummy microphone and press 'PTT' switch. b) Check max. Dev. 2.0KHz < max. Dev. < 2.5KHz. c) Check input level in 3~15mV to provide normal deviation 1.5KHz. 4. Audio Frequency Response. <ol style="list-style-type: none"> a) Input a 2.0mv@1KHz audio frequency to dummy microphone and press 'PTT' switch. b) Check the response. <ol style="list-style-type: none"> i) 500Hz : -11.0 dB to -5.0 dB. 2.5KHz : 3.0 dB to 10.0 dB 5.Repeat CH14. 	Fliter set : 1.HPF 50Hz 2.LPF 15HHz 3. PK +

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NO	ITEM	ALIGNMENT METHOD	REMARK
6.	Function check and Intercom function (between sample and production unit)	<ol style="list-style-type: none"> 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. 	

* Remark:

TX mode :

1. Press and hold PTT button

RX mode :

1. Release PTT button

Power supply: Min DC 4.2v; Normal DC5.2v; Max DC6.0v

_____ End _____

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