

FCC PART 15 TEST REPORT

For

Wireless alarm system main unit

Model Name: RL-0507A

Brand Name: RL/SWANN

FCC ID: YI6RL-0507A-R

Report No.: AGC11881008SZ10-2F2

Date of Issue: Aug.21, 2010

Prepared For

GUANGDONG ROULE ELECTRONICS CO., LTD

NO.12, Pingdong 3rd Road, Nanping Industry Community,

Zhuhai City, GuangDong, China

TEL: 866-0755-8919870

FAX: 866-0755-8818901

Prepared By

Attestation of Global Compliance Co., Ltd.

2F., No.2 Building, Huafeng No.1 Technical Industrial Park, Sanwei,

Xixiang, Baoan District, Shenzhen

TEL: 86-755-2908 1966

FAX: 86-755-2600 8484

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1. VERIFICATION OF COMPLIANCE

Equipment Under Test:	Wireless alarm system main unit
Model Name:	RL-0507A
Applicant:	GUANGDONG ROULE ELECTRONICS CO., LTD
	NO.12, Pingdong 3rd Road, Nanping Industry Community, Zhuhai City, GuangDong, China
Manufacturer:	GUANGDONG ROULE ELECTRONICS CO., LTD
	NO.12, Pingdong 3rd Road, Nanping Industry Community, Zhuhai City, GuangDong, China
Type of Test:	FCC Class B
Measurement Procedure:	ANSI C63.4: 2003
File Number:	AGC11881008SZ10-2F2
Date of test:	Aug.13~Aug.21, 2010
Deviation:	None
Condition of Test Sample:	Normal

The above equipment was tested by Attestation Of Global Compliance Co., Ltd. For compliance with the requirements set forth in the FCC Rules and Regulations Part 15, the measurement procedure according to ANSI C63.4:2003 This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Checked By :

Jekey Zhang

Jekey Zhang Aug.21, 2010

Authorized By :

King Zhang

King Zhang Aug.21, 2010

2. PRODUCT INFORMATION

Equipment Under Test:	Wireless alarm system main unit					
Housing Type:	Plastic					
Rating Voltage:	DC 9V by Adapter					
Receive frequency:	433.92MHz (only one channel)					
Description of EUT	It is only a Receiver, and can't transmit					
Size of EUT:	Length	15.2cm	width	9.7cm	height	3.0cm

I/O Port Information (Applicable Not Applicable)

I/O Port of EUT			
I/O Port Type	Q'TY	Cable	Tested with
DC INPUT PORT	1	1	1

3. TEST FACILITY

Location:	2F., No.2 Building, Huafeng No.1 Technical Industrial Park, Sanwei, Xixiang,Baoan,District, Shenzhen, China.
Description:	There is one 3m semi-anechoic chamber for final test, the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.
Site Filing:	The Certificate Registration Number is 259865
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4 requirements that meet industry regulatory agency and accreditation agency requirement.
Ground Plane:	Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For radiated emission test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

4. SUPPORT EQUIPMENT LIST

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
--	--	--	--	--	--
--	--	--	--	--	--

**Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

5. SYSTEM DESCRIPTION

EUT test procedure:

1. Connect EUT and peripheral devices (if need).
2. Power on the EUT, the EUT begins to work.
3. Make sure the EUT operates normally during the test.

6. FCC LINE CONDUCTED EMISSION TEST

6.1. TEST EQUIPMENT OF LINE CONDUCTED EMISSION TEST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	R&S	--	N/A	06/29/2010	06/28/2011
Spectrum Analyzer	Agilent	E4440A	N/A	06/29/2010	06/28/2011
LISN	EMCO	3825/2	N/A	06/29/2010	06/28/2011

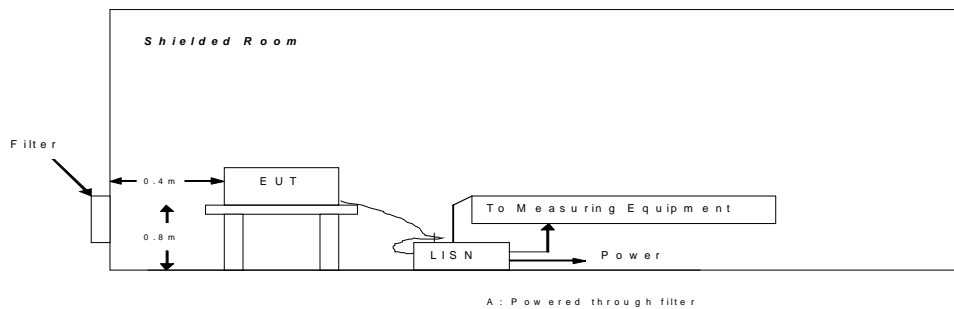
6.2 .LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

**Note: 1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

6.3. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



6.4. PROCEDURE OF LINE CONDUCTED EMISSION TEST

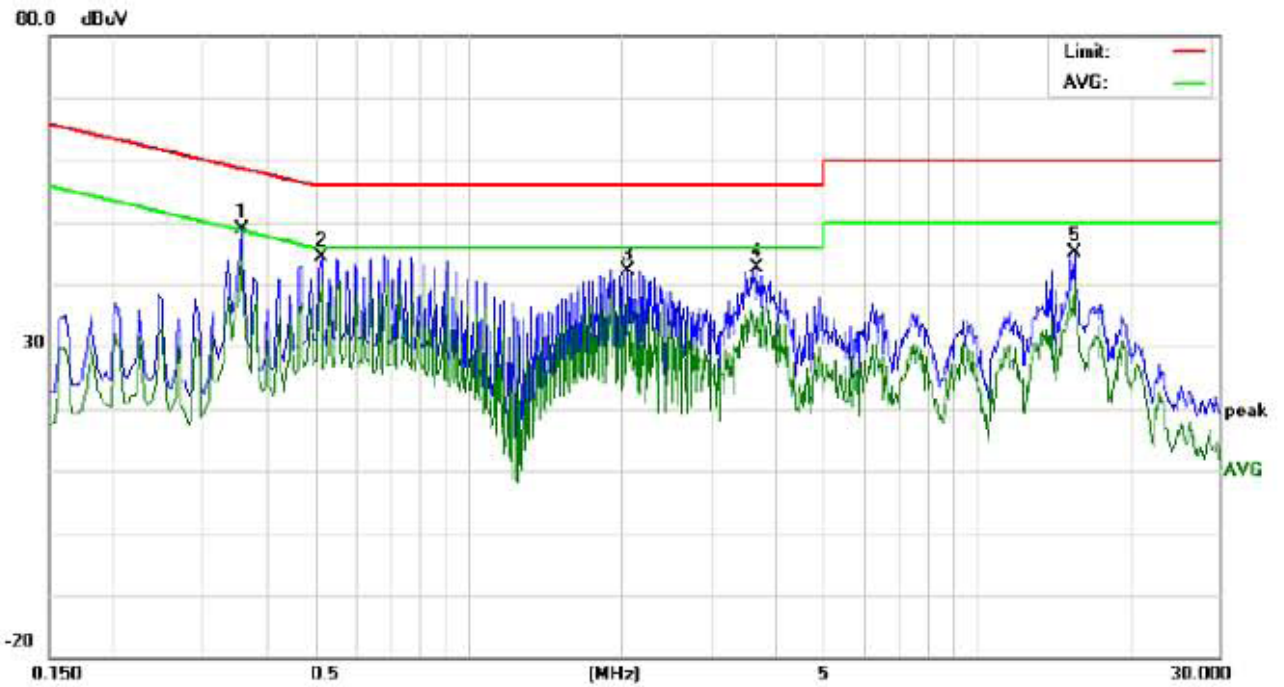
- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per ANSI C63.4.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4) The EUT received power through a Line Impedance Stabilization Network (LISN) that was grounded to the protect earth.
- 5) All support equipments received AC120V power from a second LISN, if any.
- 6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7) Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8) During the above scans, the emissions were maximized by cable manipulation.
- 9) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.
- 10) Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 11) The test data of the worst case condition(s) was reported on the Summary Data page.

MEASURING INSTRUMENT AND SETTING

The following table is the setting of receiver.

Receiver Parameter	Setting
Attenuation	10dB
Start Frequency	0.15MHz
Stop Frequency	30MHz
6dB bandwidth	9KHz for QP
IF bandwidth	9KHz for AV

TEST RESULT OF LINE CONDUCTED EMISSION-LINE 2



Site: Conduction Phase: **N** Temperature: 26
 Limit: FCC Class B Conduction(QP) Power: AC110V Humidity: 60 %
 EUT: Wireless alarm system
 M/N: RL-0507A
 Mode:
 Note:

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor (dB)	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.3580	38.58		34.48	10.28	48.86		44.76	58.77	48.77	-9.91	-4.01	P	
2	0.5140	33.91		29.54	10.34	44.25		39.88	56.00	46.00	-11.75	-6.12	P	
3	2.0579	30.91		26.37	11.32	42.23		37.69	56.00	46.00	-13.77	-8.31	P	
4	3.7140	30.86		22.66	11.73	42.59		34.39	56.00	46.00	-13.41	-11.61	P	
5	15.3700	29.88		23.52	14.15	44.03		37.67	60.00	50.00	-15.97	-12.33	P	

NOTE: The DC power cable of adapter is maximized during testing, and the receiver was supplied with a signal to simulate normal operation

7. FCC RADIATED EMISSION TEST

7.1. TEST EQUIPMENT OF RADIATED EMISSION

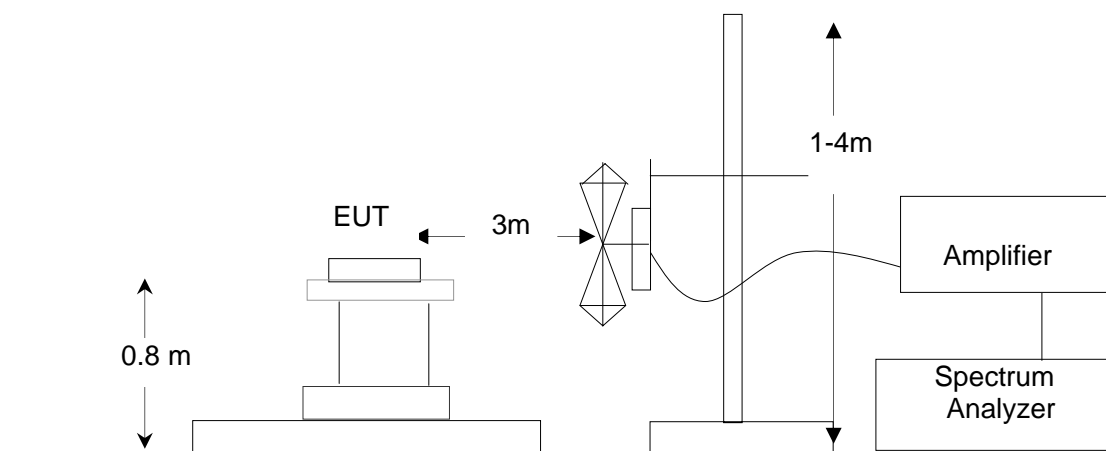
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4440	N/A	06/29/2010	06/28/2011
EMI Test Receiver	R&S	--	N/A	06/29/2010	06/28/2011
Amplifier	H.P.	8447D	N/A	06/29/2010	06/28/2011
Antenna	EMCO	85650A	N/A	06/29/2010	06/28/2011
CABLE	TIME MICROWAVE	LMR-400	N/A	06/29/2010	06/28/2011

7.2. LIMITS OF RADIATED EMISSION TEST

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m/ Q.P.)
30~88	3	40.0
88~216	3	43.5
216~960	3	46.0
Above 960	3	54.0

**Note: The lower limit shall apply at the transition frequency.

7.3 BLOCK DIAGRAM OF RADIATED EMISSION TEST



7.4 PROCEDURE OF RADIATED EMISSION TEST

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per ANSI C63.4.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4) The EUT received DC 9V by adapter. All support equipments received AC 120V/60Hz power from socket under the turntable, if any.
- 5) The antenna was placed at 3 meter away from the EUT as stated in FCC Part 15. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
- 6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- 7) The test mode(s) were scanned during the test:
- 8) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P./Peak reading is presented.

The following table is the setting of spectrum analyzer and receiver.

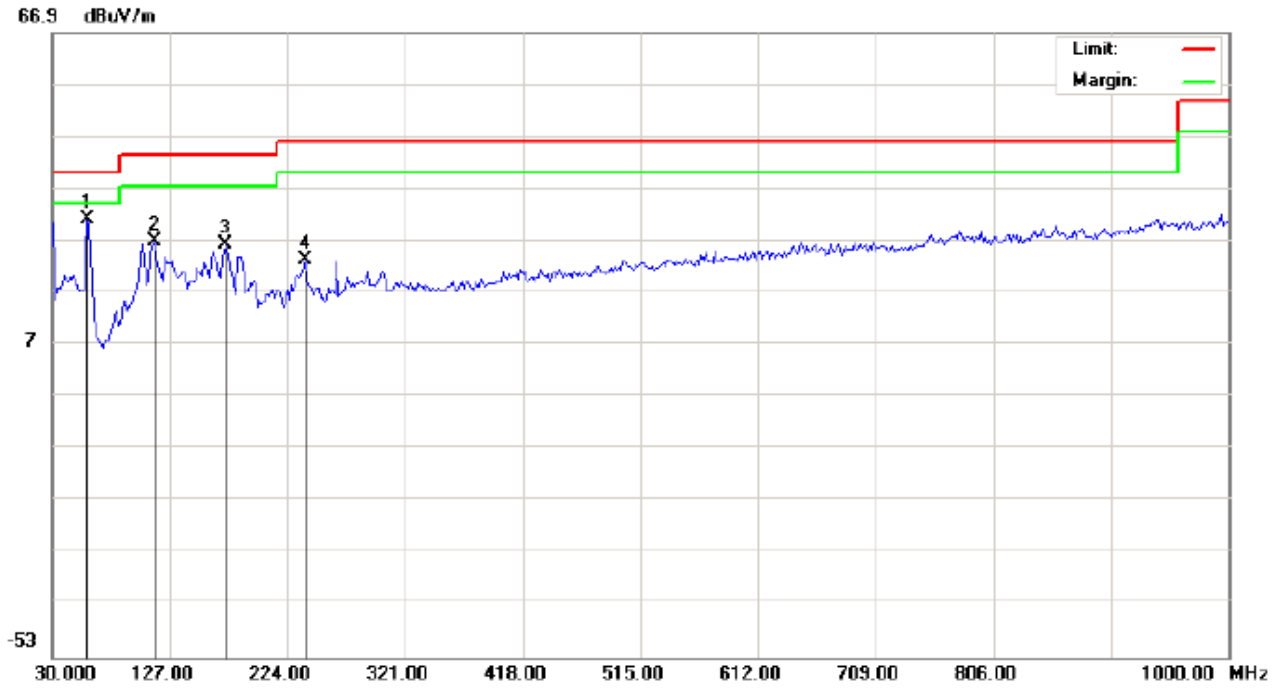
Spectrum Parameter	Setting
Start Frequency	1000MHz
Stop Frequency	3000MHz
RB/VB(Emission in restricted band)	1MHz/1MHz for Peak, 1MHz/10Hz for Average
RB/VB(Emission in non-restricted band)	1MHz/1MHz for peak

Receiver Parameter	Setting
Start Frequency	30MHz
Stop Frequency	1000MHz
RB/VB(Emission in restricted band)	120KHz/120kHz for QP

7.6 TEST RESULT OF RADIATED EMISSION TEST

Operation Mode: RX Test Date: Aug.18, 2010
Temperature: 25°C Tested by: Mary Liu
Humidity: 55 % RH Polarity: --

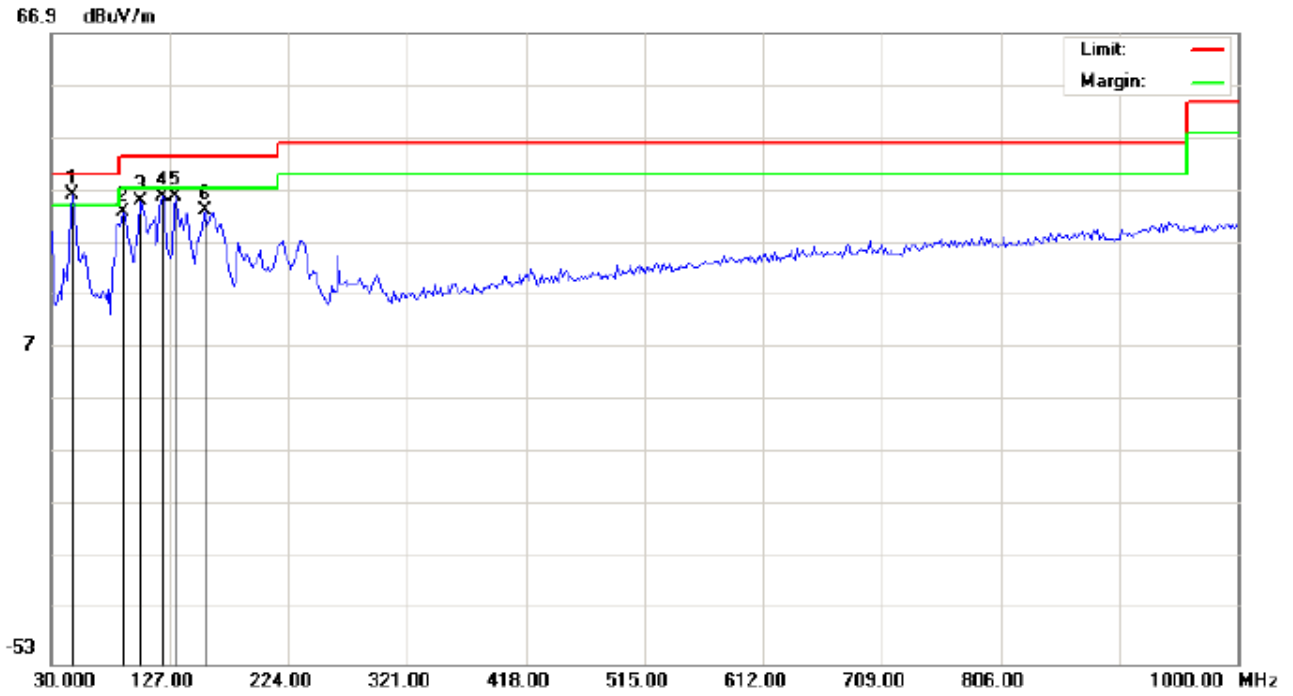
TEST RESULT OF RADIATED EMISSION – HORIZONTAL (30MHZ TO 1GHZ)



Site: site #1 Polarization: *Horizontal* Temperature: 26
Limit: FCC Class B 3M Radiation Power: Humidity: 60 %
EUT: Wireless alarm system main unit Distance: 3m
M/N: RL-0507A
Mode:
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna	Table	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		Height	Degree	
									cm	degree	
1	*	59.1000	23.11	7.94	31.05	40.00	-8.95	peak			
2		114.0667	9.41	17.52	26.93	43.50	-16.57	peak			
3		172.2667	6.48	19.80	26.28	43.50	-17.22	peak			
4		238.5500	7.26	15.97	23.23	46.00	-22.77	peak			

TEST RESULT OF RADIATED EMISSION –VERTICAL (30MHZ TO 1GHZ)



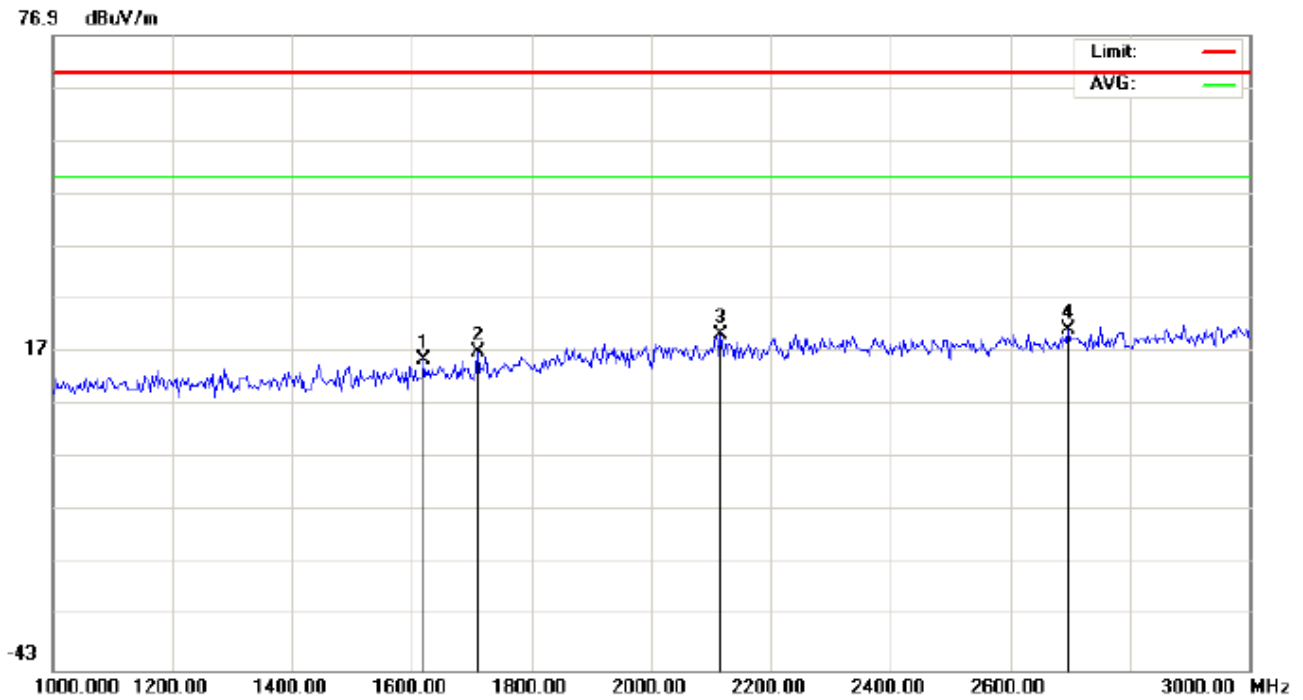
Site: site #1
 Limit: FCC Class B 3M Radiation
 EUT: Wireless alarm system main unit
 M/N: RL-0507A
 Mode:
 Note:

Polarization: *Vertical*
 Power:
 Distance: 3m

Temperature: 26
 Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	47.7833	22.59	11.62	34.21	40.00	-5.79	QP			
2		88.2000	21.03	11.95	32.98	43.50	-10.52	peak			
3		102.7500	18.76	16.08	34.84	43.50	-8.66	peak			
4		120.5333	17.36	18.35	35.71	43.50	-7.79	peak			
5		131.8500	16.42	19.31	35.73	43.50	-7.77	peak			
6		156.1000	12.84	20.19	33.03	43.50	-10.47	peak			

TEST RESULT OF RADIATED EMISSION ABOVE 1GHZ-HORIZONTAL



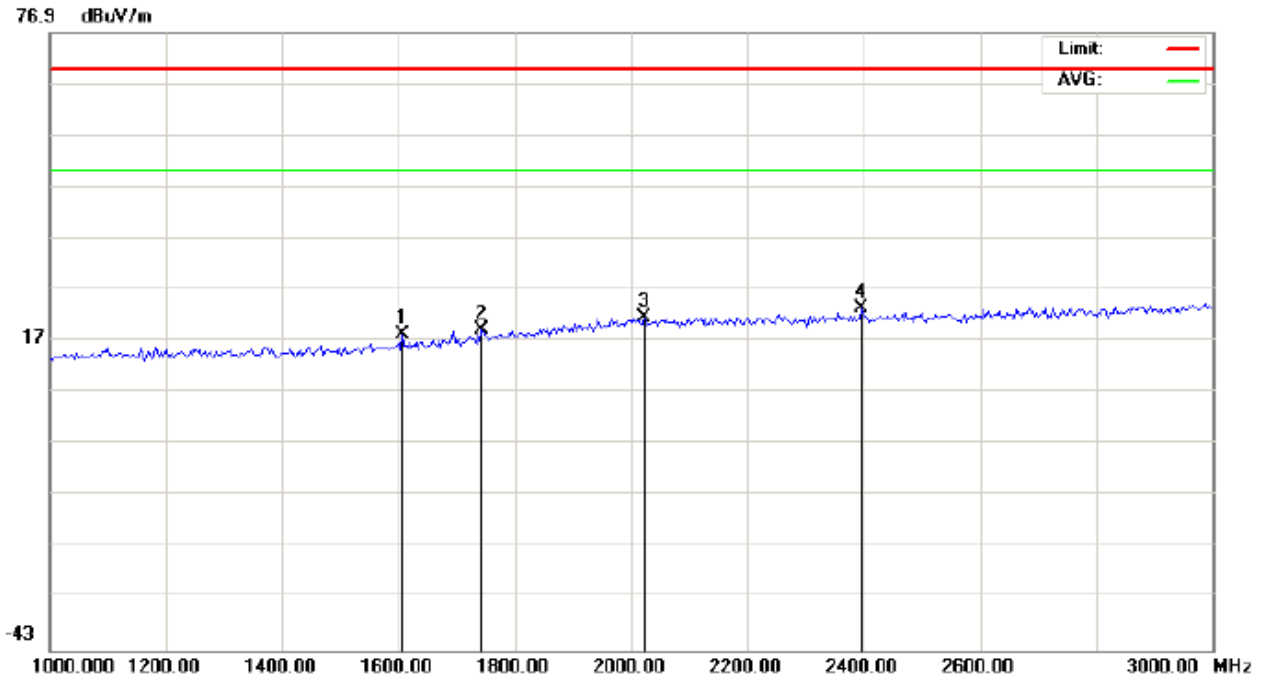
Site: site #1
Limit: FCC Class B Above 1G(Peak)
EUT: Wireless alarm system main unit
M/N: RL-0507A
Mode:
Note:

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		1620.000	19.68	-4.12	15.56	70.00	-54.44	peak			
2		1710.000	20.29	-3.17	17.12	70.00	-52.88	peak			
3		2116.667	20.32	0.01	20.33	70.00	-49.67	peak			
4	*	2696.667	20.43	0.91	21.34	70.00	-48.66	peak			

TEST RESULT OF RADIATED EMISSION ABOVE 1GHZ-VERTICAL



Site: site #1
 Limit: FCC Class B Above 1G(Peak)
 EUT: Wireless alarm system main unit
 M/N: RL-0507A
 Mode:
 Note:

Polarization: *Vertical*
 Power:
 Distance: 3m

Temperature: 26
 Humidity: 60 %

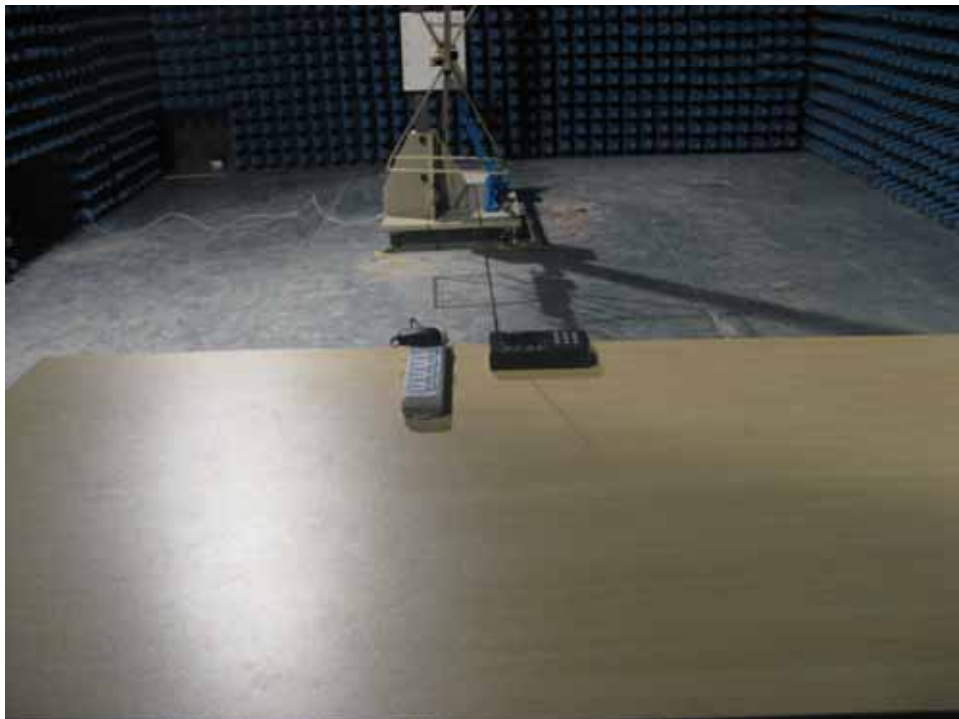
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		1606.667	22.50	-4.26	18.24	70.00	-51.76	peak			
2		1743.333	21.86	-2.82	19.04	70.00	-50.96	peak			
3		2023.333	21.72	-0.09	21.63	70.00	-48.37	peak			
4	*	2396.667	22.96	0.32	23.28	70.00	-46.72	peak			

NOTE: The DC power cable of adapter is maximized during testing, and the receiver was supplied with a signal to simulate normal operation

APPENDIX 1
PHOTOGRAPHS OF TEST SETUP
FCC LINE CONDUCTED EMISSION TEST SETUP



FCC RADIATED EMISSION TEST SETUP



APPENDIX 2 PHOTOGRAPHS OF EUT

TOP VIEW OF EUT



BATTOM VIEW OF EUT



LEFT VIEW OF EUT



RIGHT VIEW OF EUT



FRONT VIEW OF EUT



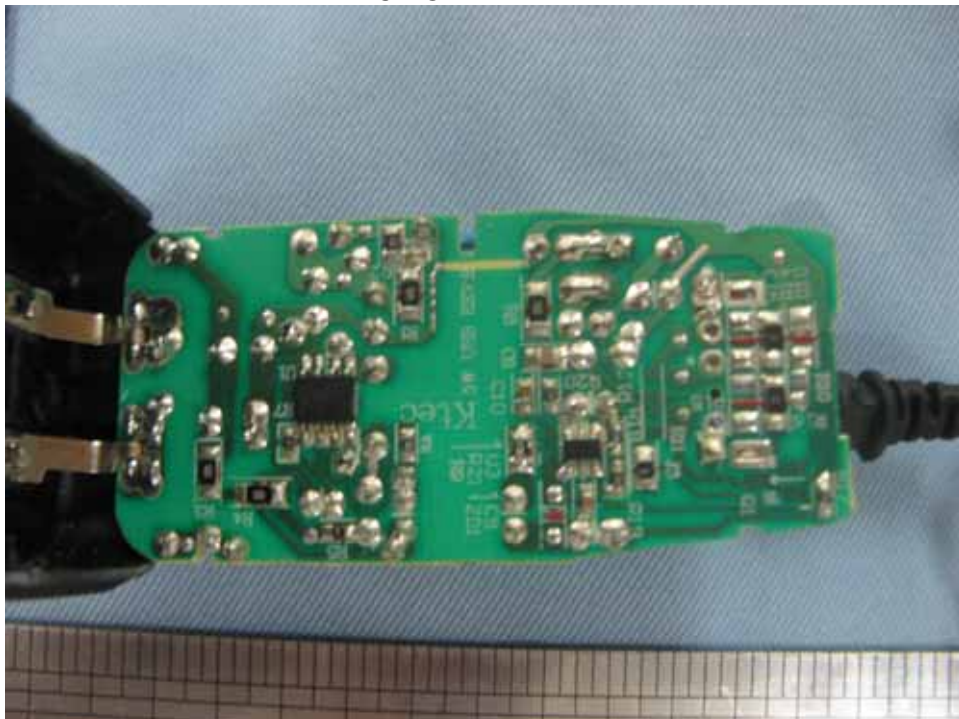
BACK VIEW OF EUT



ADAPTER



PCB OF ADAPTER-1



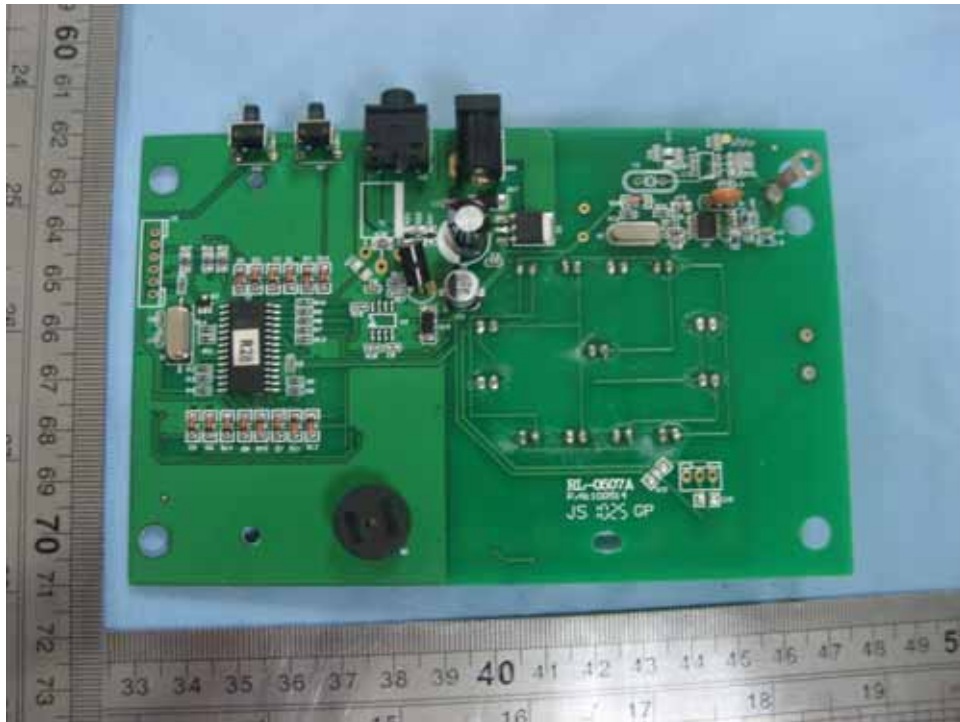
PCB OF ADAPTER-2



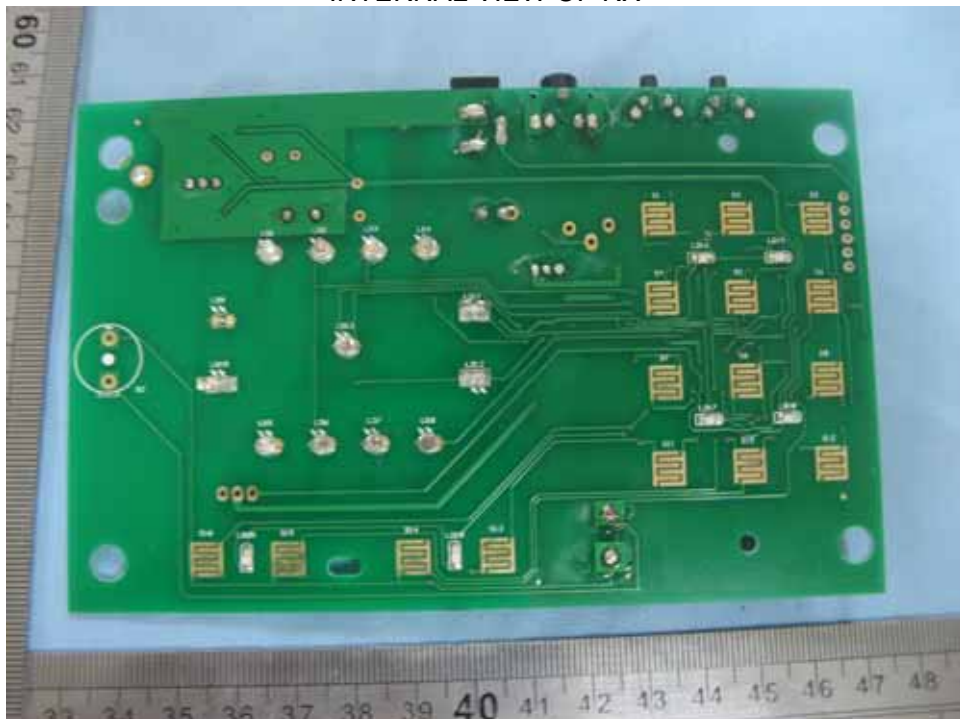
OPEN VIEW OF RX



INTERNAL VIEW OF RX



INTERNAL VIEW OF RX



---END OF REPORT---