Test Report

FCC Part15.249

Product Name	:	Remote control
Model No.	:	RC1309
FCC ID	:	2AAL3-RC1309

Applicant	:	ECOVACS Robotics (SuZhou) Co., Ltd
Address	:	No. 108 Shihu Road West, Wuzhong Zone, Suzhou, 215168 P.R.China

Date of Receipt	:	04/07/2013
Test Date	:	05/07/2013~ 16/08/2013
Issued Date	:	19/08/2013
Report No.	:	137S034R-RF-US-P06V01
Report Version	:	V2.0

Test Report Certification

Issued Date : 19/08/2013
Report No. : 137S034R-RF-US-P06V01

QuieTek

Product Name	:	Remote control
Applicant	:	ECOVACS Robotics (SuZhou) Co., Ltd
Address	:	No. 108 Shihu Road West, Wuzhong Zone, Suzhou, 215168 P.R.China
Manufacturer	:	ECOVACS Robotics (SuZhou) Co., Ltd
Address	:	No. 108 Shihu Road West, Wuzhong Zone, Suzhou, 215168 P.R.China
Model No.	:	RC1309
FCC ID	:	2AAL3-RC1309
EUT Voltage	:	DC 3.0V
Trade Name	:	ECOVACS
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C: 2012 ANSI C63.4: 2009, ANSI C63.10: 2009
Test Result	:	Complied
Performed Location	:	Suzhou EMC Laboratory No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392

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Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Germany	**:**	**TUV Rheinland**
Norway	**:**	**Nemko, DNV**
USA	**:**	**FCC**
Japan	**:**	**VCCI**
China	**:**	**CNAS**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site :http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	Remote control
Model No.	RC1309
Working Voltage	DC 3.0V
Frequency Range	2432.9999 -2478.3888 MHz
Channel Number	228
Type of Modulation	MSK
Date Rate	250kbps
Channel Control	Auto
Antenna Type	Printed Antenna
Antenna Gain	1.2dBi

Channel List

Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2432.9999MHz	33	2439.5983MHz	66	2446.1967MHz	99	2452.7951MHz
01	2433.1999MHz	34	2439.7983MHz	67	2446.3967MHz	100	2452.9950MHz
02	2433.3998MHz	35	2439.9982MHz	68	2446.5966MHz	101	2453.1950MHz
03	2433.5998MHz	36	2440.1982MHz	69	2446.7966MHz	102	2453.3950MHz
04	2433.7997MHz	37	2440.3981MHz	70	2446.9965MHz	103	2453.5949MHz
05	2433.9997MHz	38	2440.5981MHz	71	2447.1965MHz	104	2453.7949MHz
06	2434.1996MHz	39	2440.7980MHz	72	2447.3964MHz	105	2453.9948MHz
07	2434.3996MHz	40	2440.9980MHz	73	2447.5964MHz	106	2454.1948MHz
08	2434.5995MHz	41	2441.1979MHz	74	2447.7963MHz	107	2454.3947MHz
09	2434.7995MHz	42	2441.3979MHz	75	2447.9963MHz	108	2454.5947MHz
10	2434.9994MHz	43	2441.5978MHz	76	2448.1962MHz	109	2454.7946MHz
11	2435.1994MHz	44	2441.7978MHz	77	2448.3962MHz	110	2454.9946MHz
12	2435.3993MHz	45	2441.9977MHz	78	2448.5961MHz	111	2455.1945MHz
13	2435.5993MHz	46	2442.1977MHz	79	2448.7961MHz	112	2455.3945MHz
14	2435.7992MHz	47	2442.3976MHz	80	2448.9960MHz	113	2455.5944MHz
15	2435.9992MHz	48	2442.5976MHz	81	2449.1960MHz	114	2455.7944MHz
16	2436.1992MHz	49	2442.7975MHz	82	2449.3959MHz	115	2455.9943MHz
17	2436.3991MHz	50	2442.9975MHz	83	2449.5959MHz	116	2456.1943MHz
18	2436.5991MHz	51	2443.1974MHz	84	2449.7958MHz	117	2456.3942MHz
19	2436.7990MHz	52	2443.3974MHz	85	2449.9996MHz	118	2456.5942MHz
20	2436.9990MHz	53	2443.5973MHz	86	2450.1957MHz	119	2456.7941MHz
21	2437.1989MHz	54	2443.7973MHz	87	2450.3957MHz	120	2456.9941MHz
22	2437.3989MHz	55	2443.9972MHz	88	2450.5956MHz	121	2457.1940MHz
23	2437.5998MHz	56	2444.1972MHz	89	2450.7956MHz	122	2457.3940MHz
24	2437.7988MHz	57	2444.3971MHz	90	2450.9955MHz	123	2457.5939MHz
25	2437.9987MHz	58	2444.5971MHz	91	2451.1955MHz	124	2457.7939MHz
26	2438.1987MHz	59	2444.7971MHz	92	2451.3954MHz	125	2457.9938MHz
27	2438.3986MHz	60	2444.9970MHz	93	2451.5954MHz	126	2458.1938MHz
28	2438.5986MHz	61	2445.1970MHz	94	2451.7953MHz	127	2458.3937MHz
29	2438.7985MHz	62	2445.3969MHz	95	2451.9953MHz	128	2458.5937MHz
30	2438.9985MHz	63	2445.5969MHz	96	2452.1952MHz	129	2458.7936MHz
31	2439.1984MHz	64	2445.7968MHz	97	2452.3952MHz	130	2458.9936MHz
32	2439.3984MHz	65	2445.9968MHz	98	2452.5951MHz	131	2459.1935MHz

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
132	2459.3935MHz	156	2464.1923MHz	180	2468.9911MHz	204	2473.7900MHz
133	2459.5934MHz	157	2464.3923MHz	181	2469.1911MHz	205	2473.9899MHz
134	2459.7934MHz	158	2464.5922MHz	182	2469.3910MHz	206	2474.1899MHz
135	2459.9933MHz	159	2464.7922MHz	183	2469.5910MHz	207	2474.3898MHz
136	2460.1933MHz	160	2464.9921MHz	184	2469.7909MHz	208	2474.5898MHz
137	2460.3932MHz	161	2465.1921MHz	185	2469.9909MHz	209	2474.7897MHz
138	2460.5932MHz	162	2465.3920MHz	186	2470.1909MHz	210	2474.9897MHz
139	2460.7931MHz	163	2465.5920MHz	187	2470.3908MHz	211	2475.1896MHz
140	2460.9931MHz	164	2465.7919MHz	188	2470.5908MHz	212	2475.3896MHz
141	2461.1930MHz	165	2465.9919MHz	189	2470.7907MHz	213	2475.5895MHz
142	2461.3930MHz	166	2466.1918MHz	190	2470.9907MHz	214	2475.7895MHz
143	2461.5929MHz	167	2466.3918MHz	191	2471.1906MHz	215	2475.9894MHz
144	2461.7929MHz	168	2466.5918MHz	192	2471.3906MHz	216	2476.1894MHz
145	2461.9929MHz	169	2466.7917MHz	193	2471.5905MHz	217	2476.3893MHz
146	2462.1928MHz	170	2466.9916MHz	194	2471.7905MHz	218	2476.5893MHz
147	2462.3928MHz	171	2467.1916MHz	195	2471.9904MHz	219	2476.7892MHz
148	2462.5927MHz	172	2467.3915MHz	196	2472.1904MHz	220	2476.9892MHz
149	2462.7927MHz	173	2467.5915MHz	197	2472.3903MHz	221	2477.1891MHz
150	2462.9926MHz	174	2467.7914MHz	198	2472.5903MHz	222	2477.3891MHz
151	2463.1926MHz	175	2467.9914MHz	199	2472.7902MHz	223	2477.5890MHz
152	2463.3925MHz	176	2468.1913MHz	200	2472.9902MHz	224	2477.7890MHz
153	2463.5925MHz	177	2468.3913MHz	201	2473.1901MHz	225	2477.9889MHz
154	2463.7924MHz	178	2468.5912MHz	202	2473.3901MHz	226	2478.1889MHz
155	2463.9924MHz	179	2468.7912MHz	203	2473.5900MHz	227	2478.3888MHz

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit

Note:

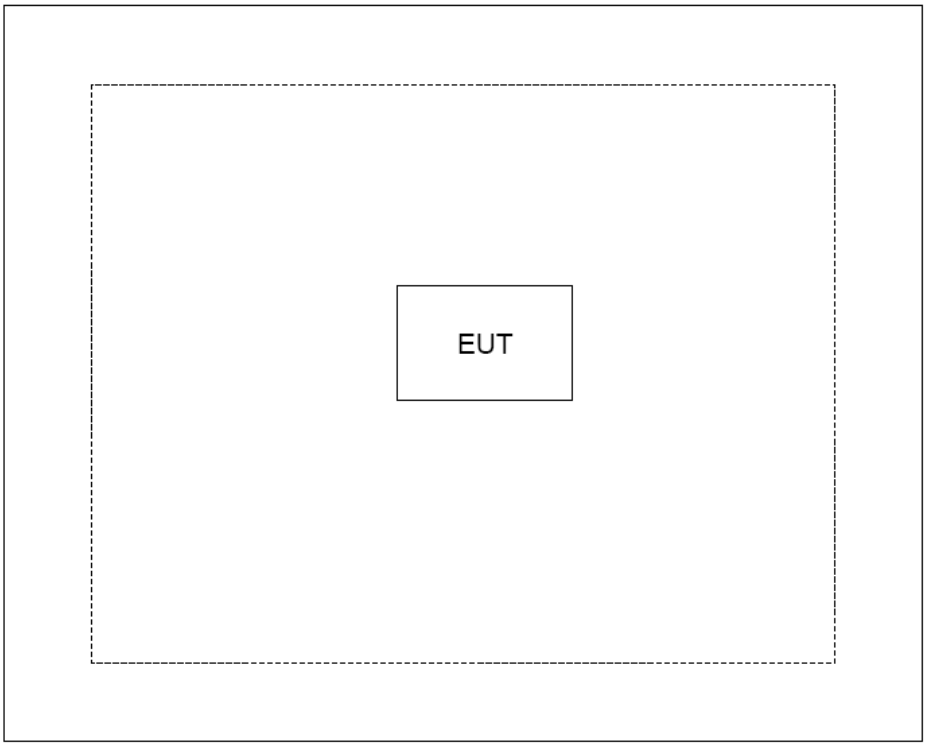
1. Regards to the frequency band operation: the lowest、middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. For portable device, radiated spurious emission was verified over X, Y, Z Axis, and shown the worst case on this report.

1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	N/A	N/A	N/A	N/A	N/A

1.4. Configuration of Tested System

Connection Diagram	
	
Signal Cable Type	Signal cable Description

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Open the software provided by applicant, Select the channel and test.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.207	N/A	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.209 and 15.249	Yes	No
Band-edge Compliance of RF Conducted Emissions	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.215(c)	Yes	No

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission

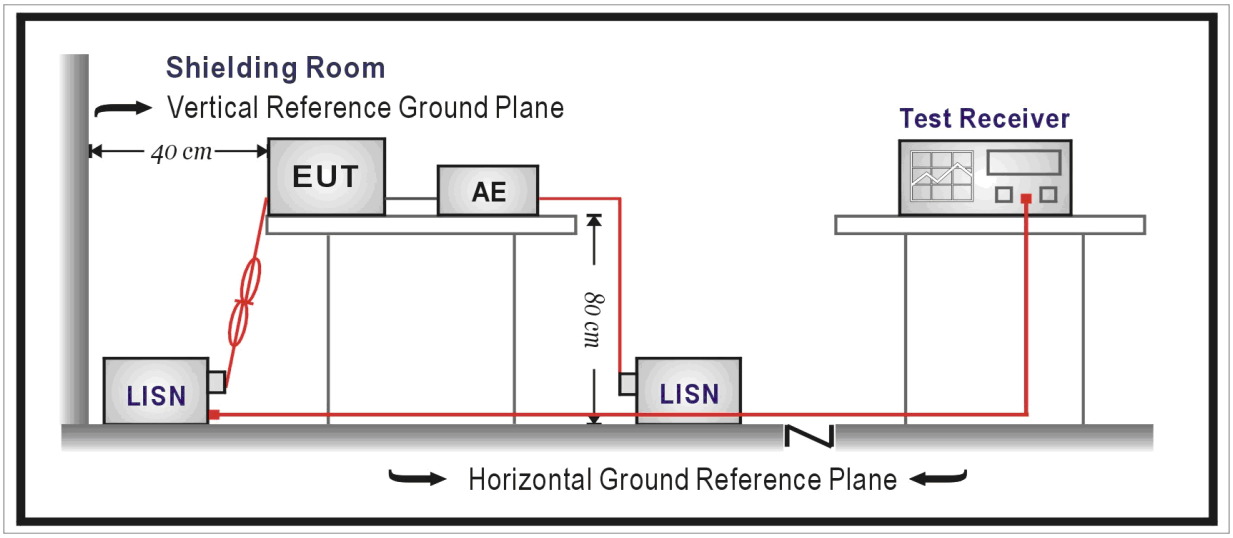
3.1. Test Equipment

Conducted Emission / TR-1

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100726	2014.03.30
Two-Line V-Network	R&S	ENV216	101043	2014.03.30
Two-Line V-Network	R&S	ENV216	101044	2013.09.17
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2014.03.01
50ohm Termination	SHX	TF2	07081401	2013.09.17
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2014.01.10

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup



3.3. Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

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

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

3.4. Test Procedure

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

3.6. Test Result

The EUT rely on battery-powered, so this test item needn’t perform.

4. Radiated Emission

4.1. Test Equipment

Radiated Emission / AC-2

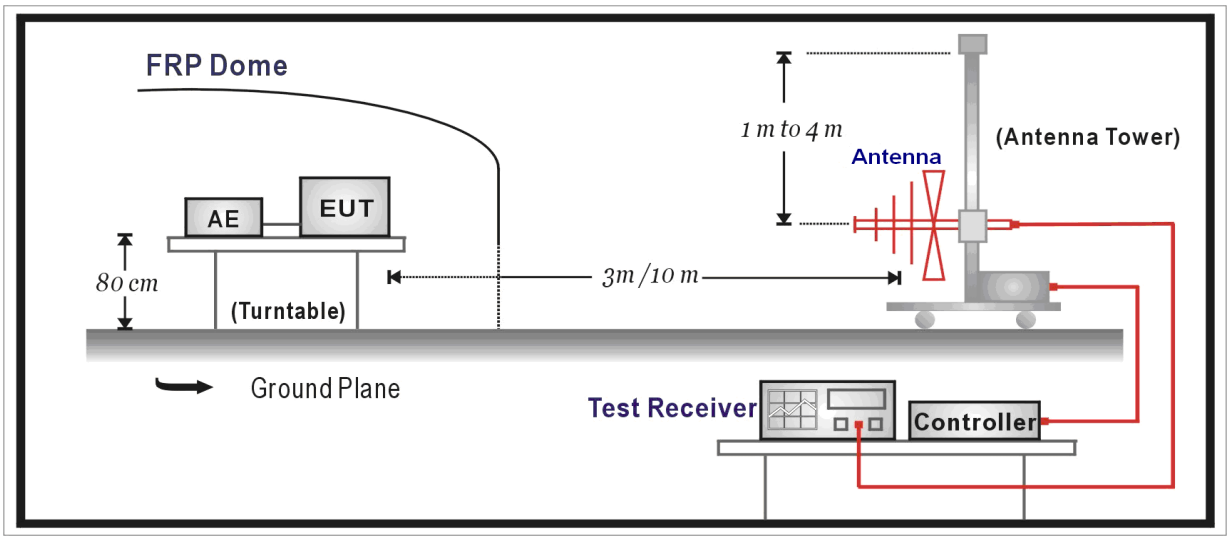
Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100573	2014.03.30
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2013.10.15
Loop Antenna	R&S	HFH2-Z2	833799/003	2013.11.17
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2014.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2014.01.09

Radiated Emission / AC-5

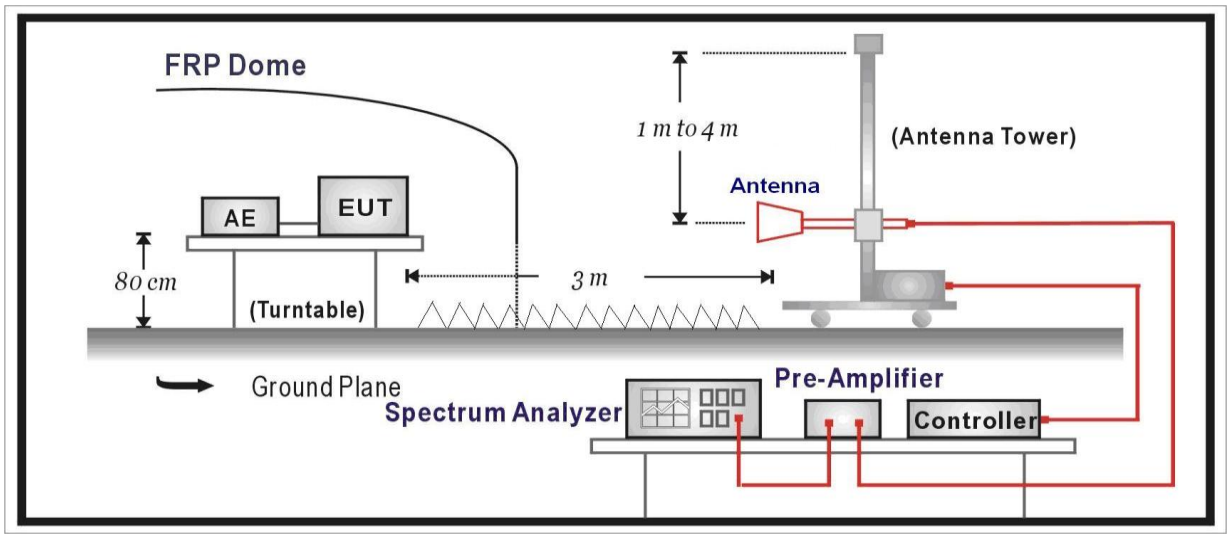
Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2014.05.03
Preamplifier	QuieTek	AP-040G	CHM-0906001	2014.05.03
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2013.10.15
DRG Horn	ETS-Lindgren	3117	00123988	2014.01.21
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2014.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2014.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2014.01.11

4.2. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (uV/m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-80	100**	3
80-216	150**	3
216-960	200**	3
Above 960	500	3

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

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m).

FCC Part 15 Subpart C Paragraph 15.249		
Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902-928(MHz)	50	500
2400-2483.5(MHz)	50	500
5725-5875(MHz)	50	500
24.0-24.25(GHz)	250	2500

- FCC Part 15.249 (d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

4.4. Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2009 / ANSI C63.10: 2009 on radiated measurement.
The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.
The frequency range from 30MHz to 10th harmonic is checked.
Note: When doing emission measurement above 1GHz, the horn antenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 60~10 degrees for H-plane and 90~10 degrees for E-plane.

4.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB
below 1G is defined as ± 3.8 dB

4.6. Test Result

All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:
Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = Auto;

Fundamental Radiated Emission

Product	:	Remote control
Test Item	:	Fundamental Radiated Emission
Test Site	:	AC-5
Test Mode	:	Mode 1: Transmit

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2432.9999	H	56.92	37.54	94.46	114	-19.54	PK
	V	49.81	36.71	86.52	114	-27.48	PK
2455.7944	H	51.43	37.73	89.16	114	-24.84	PK
	V	48.80	36.81	85.61	114	-28.39	PK
2478.3888	H	53.90	37.92	91.82	114	-22.18	PK
	V	48.80	36.91	85.71	114	-28.29	PK

Note: Measure Level = Reading Level + Factor.

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2432.9999	H	56.56	37.54	93.20	94	-0.80	AV
	V	49.62	36.71	86.33	94	-7.67	AV
2455.7944	H	51.31	37.73	89.04	94	-4.96	AV
	V	48.30	36.81	85.11	94	-8.89	AV
2478.3888	H	53.67	37.93	91.60	94	-2.40	AV
	V	48.45	36.91	85.36	94	-8.64	AV

Note: Measure Level = Reading Level + Factor.

Harmonic Radiated Emission

Product	:	Remote control
Test Item	:	Harmonic Radiated Emission
Test Site	:	AC-5
Test Mode	:	Mode 1: Transmit at low channel

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4867.50	H	50.59	-7.01	43.58	74	-30.42	PK
4867.50	V	49.70	-7.02	42.68	74	-31.32	PK
7299.00	H	43.83	-1.59	42.24	74	-31.76	PK
7299.00	V	42.70	-1.59	41.11	74	-32.89	PK
9732.00	H	37.16	4.46	41.62	74	-32.38	PK
9732.00	V	36.44	4.56	41.00	74	-33.00	PK

Note: Measure Level = Reading Level + Factor.

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4867.50	H	46.01	-7.01	39.00	54	-15.00	AV
4867.50	V	46.10	-7.02	39.08	54	-14.92	AV
7299.00	H	40.12	-1.59	38.53	54	-15.17	AV
7299.00	V	39.04	-1.59	37.45	54	-16.55	AV
9732.00	H	35.16	4.46	39.62	54	-14.38	AV
9732.00	V	35.16	4.56	39.72	54	-14.28	AV

Note: Measure Level = Reading Level + Factor.

Product	:	Remote control
Test Item	:	Harmonic Radiated Emission
Test Site	:	AC-5
Test Mode	:	Mode 1: Transmit at mid channel

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4910.00	H	50.60	-7.07	43.53	74	-30.47	PK
4910.00	V	49.60	-7.01	42.61	74	-31.39	PK
7365.00	H	43.59	-1.39	42.19	74	-31.81	PK
7365.00	V	43.00	-1.39	41.65	74	-32.35	PK
9823.00	H	36.91	4.82	41.73	74	-32.27	PK
9823.00	V	36.30	4.89	41.16	74	-32.84	PK

Note: Measure Level = Reading Level + Factor.

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4910.00	H	47.02	-7.07	39.95	54	-14.05	AV
4910.00	V	45.0	-7.01	38.03	54	-15.97	AV
7365.00	H	40.01	-1.39	38.62	54	-15.38	AV
7365.00	V	40.0	-1.39	38.60	54	-15.40	AV
9823.00	H	34.01	4.82	38.83	54	-15.17	AV
9823.00	V	33.4	4.89	38.29	54	-15.71	AV

Note: Measure Level = Reading Level + Factor.

Product	:	Remote control
Test Item	:	Harmonic Radiated Emission
Test Site	:	AC-5
Test Mode	:	Mode 1: Transmit at high channel

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4961.00	H	51.39	-7.06	44.33	74	-29.67	PK
4961.00	V	49.71	-6.92	42.79	74	-31.21	PK
7229.00	H	41.26	-1.76	39.49	74	-34.51	PK
7229.00	V	41.37	-1.78	39.59	74	-34.41	PK
9916.00	H	37.11	5.18	42.29	74	-31.71	PK
9916.00	V	35.64	5.21	40.85	74	-33.15	PK

Note: Measure Level = Reading Level + Factor.

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4961.00	H	49.47	-7.06	42.41	54	-11.59	AV
4961.00	V	47.01	-6.92	40.09	54	-13.91	AV
7229.00	H	39.12	-1.76	37.36	54	-16.64	AV
7229.00	V	39.61	-1.78	37.83	54	-16.17	AV
9916.00	H	35.89	5.18	41.07	54	-12.93	AV
9916.00	V	35.89	5.18	41.07	54	-12.93	AV

Note: Measure Level = Reading Level + Factor.

General Radiated Emission

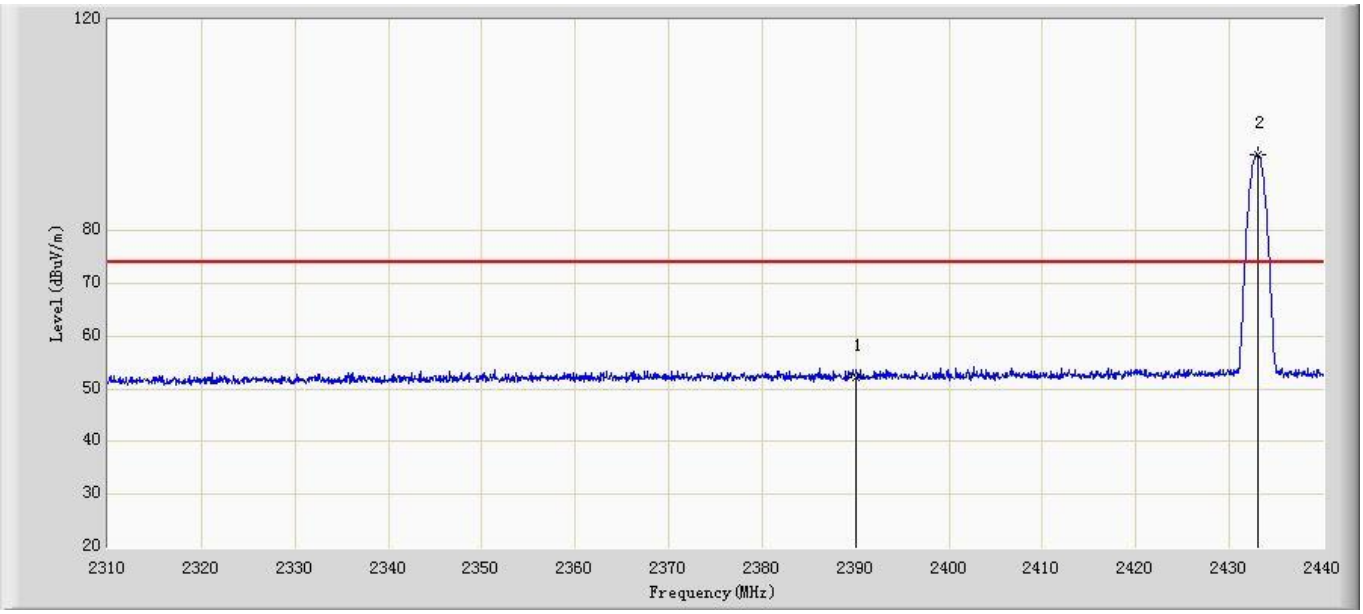
Product	:	Remote control
Test Item	:	General Radiated Emission
Test Mode	:	Mode 1: Transmit

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
32.63	H	8.51	22.72	30.21	40	-9.79	QP
32.63	V	10.01	22.72	32.73	40	-7.27	QP
116.52	H	16.16	18.66	34.82	43.5	-8.68	QP
116.52	V	12.18	18.66	30.84	43.5	-12.66	QP
403.21	H	11.28	23.95	35.23	46	-10.77	QP
403.21	V	6.30	24.11	30.41	46	-15.59	QP
618.79	H	9.65	27.35	37.00	46	-9.00	QP
618.79	V	8.78	27.35	36.13	46	-9.87	QP

Note:

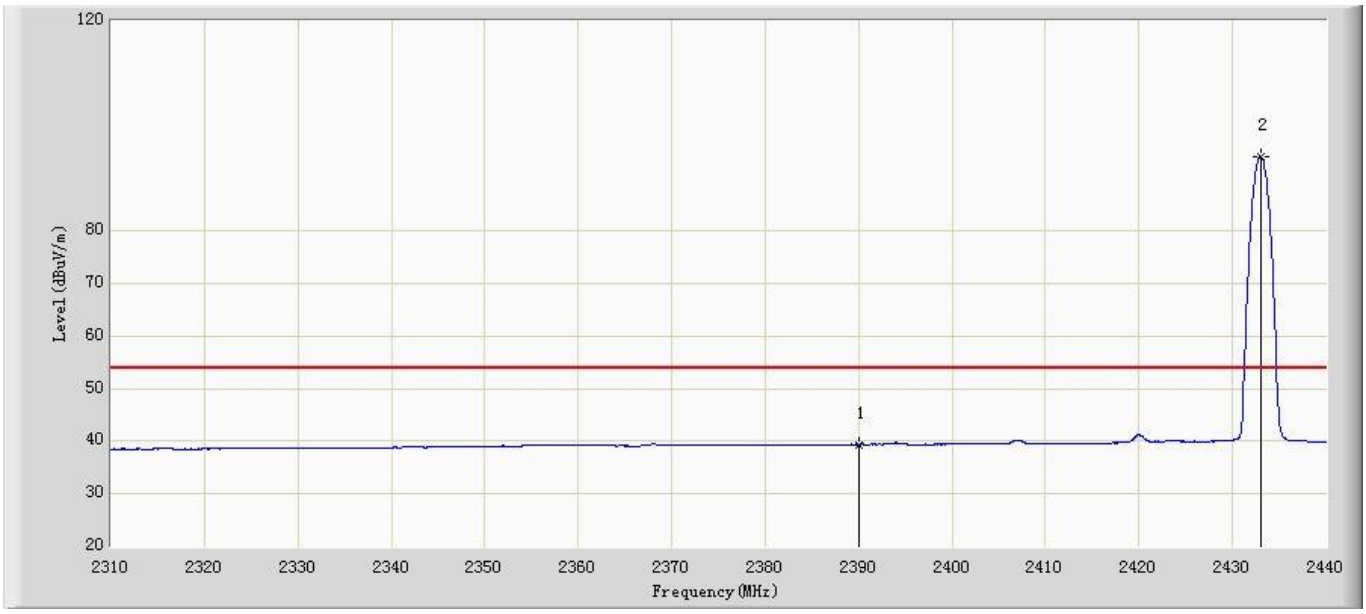
1. Measure Level = Reading Level + Factor.
2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

Engineer: Cloud	
Site: AC5	Time: 2013/08/08 - 20:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Remote control	Power: 3.0V
Note: Mode1: Transmit at low channel	



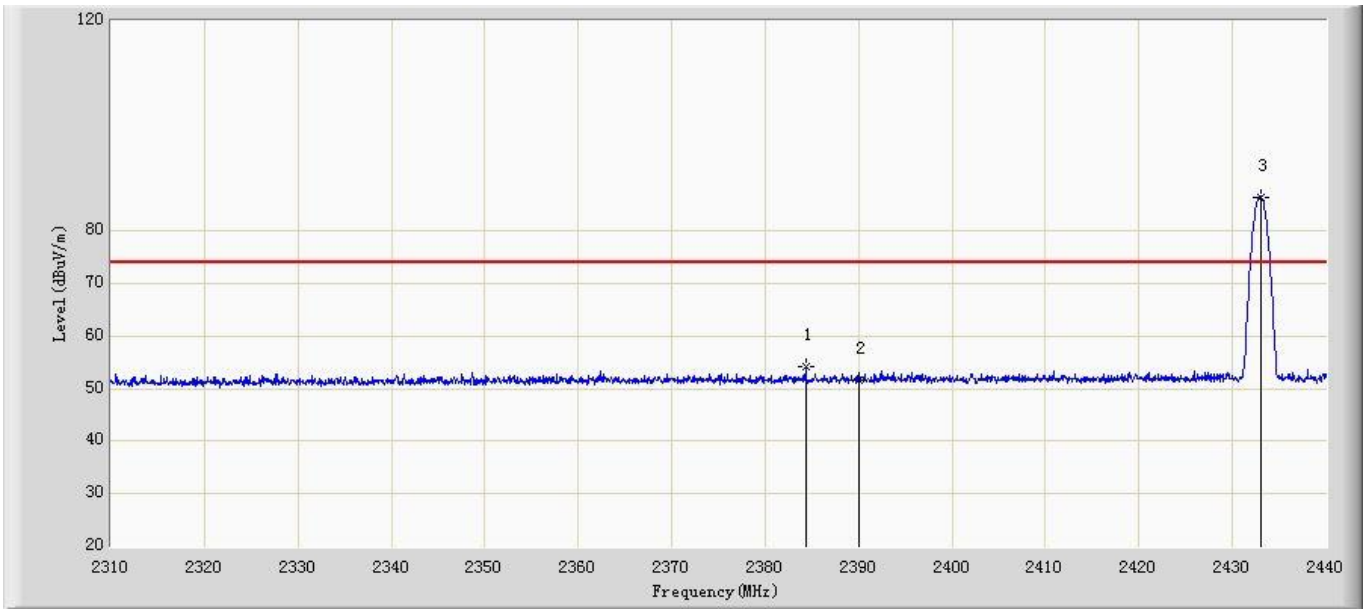
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	52.312	15.153	-21.688	74.000	37.159	PK
2	*	2433.045	94.460	56.923	20.460	74.000	37.537	PK

Engineer: Cloud	
Site: AC5	Time: 2013/08/08 - 20:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Remote control	Power: 3.0V
Note: Mode1:Transmit at low channel	



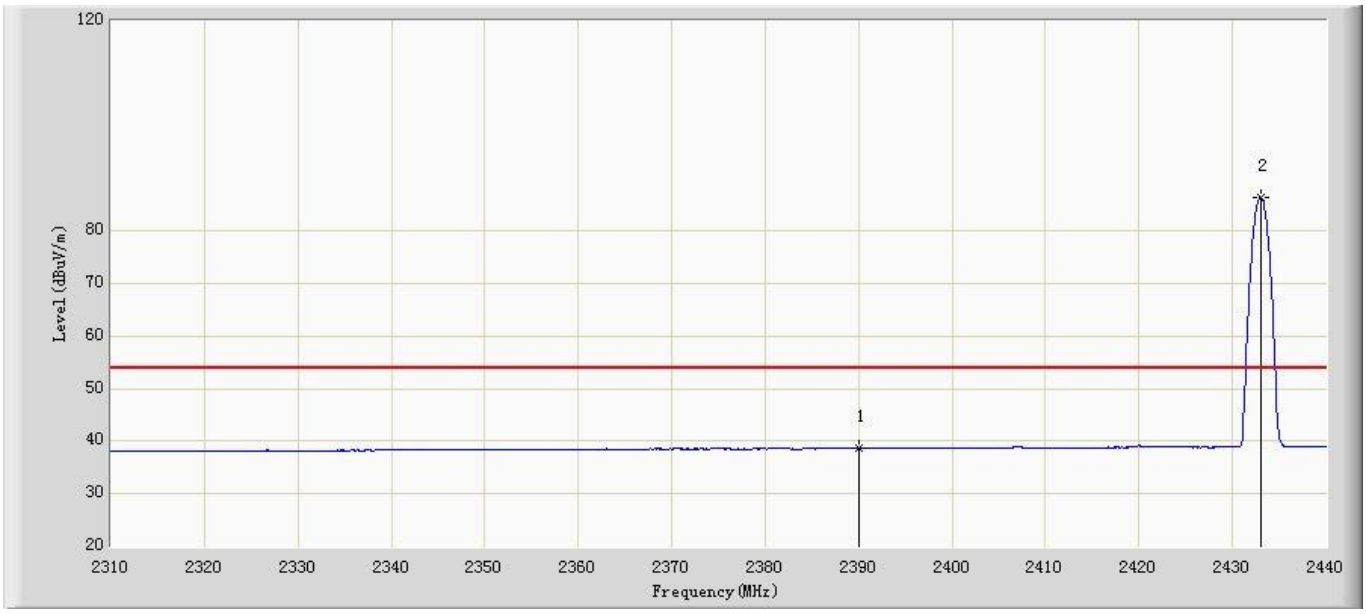
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.377	2.218	-14.623	54.000	37.159	AV
2	*	2433.045	94.201	56.664	40.201	54.000	37.537	AV

Engineer: Cloud	
Site: AC5	Time: 2013/08/08 - 20:20
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Remote control	Power: 3.5V
Note: Mode1:Transmit at low channel	



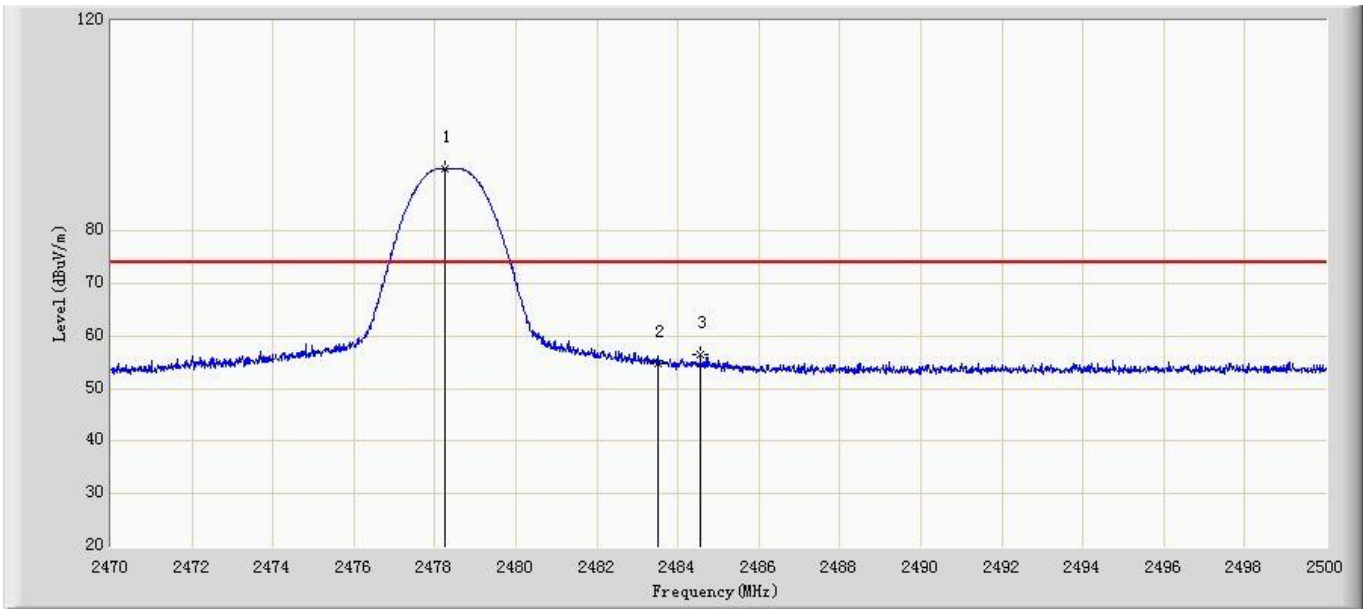
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2384.360	54.058	17.586	-19.942	74.000	36.472	PK
2		2390.000	51.535	15.036	-22.465	74.000	36.499	PK
3	*	2433.045	86.512	49.807	12.512	74.000	36.705	PK

Engineer: Cloud	
Site: AC5	Time: 2013/08/08 - 20:24
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Remote control	Power: 3.5V
Note: Mode1:Transmit at low channel	



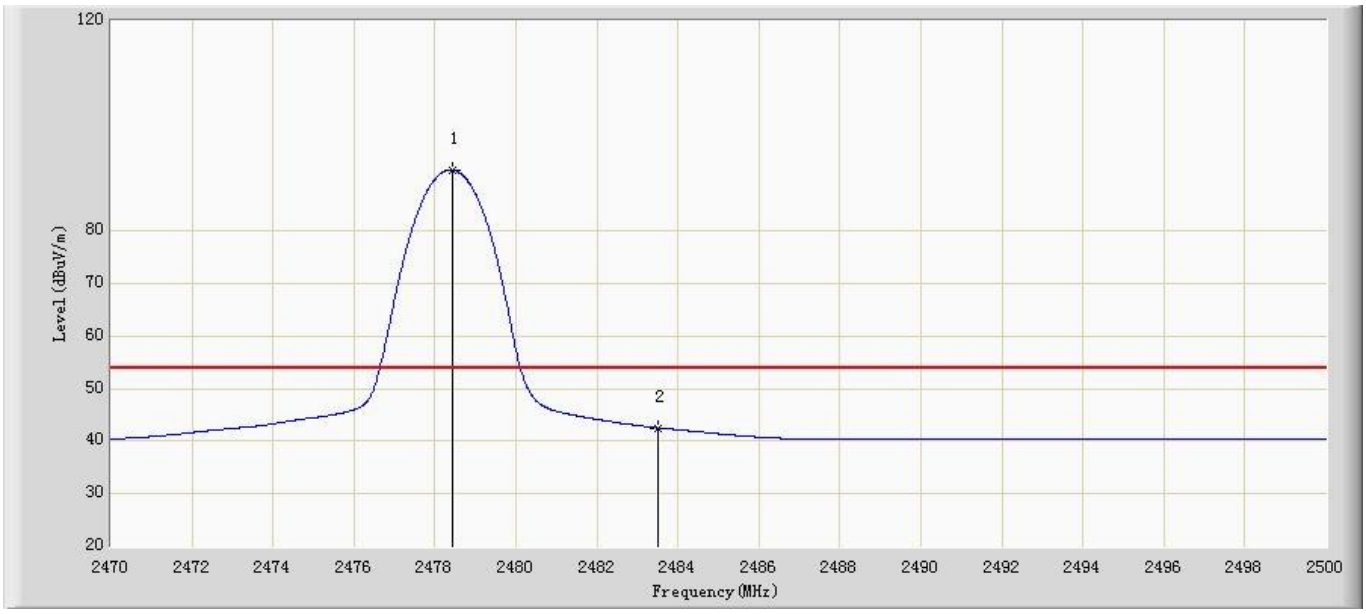
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	38.660	2.161	-15.340	54.000	36.499	AV
2	*	2433.045	86.320	49.615	32.320	54.000	36.705	AV

Engineer: Cloud	
Site: AC5	Time: 2013/08/08 - 20:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Remote control	Power: 3.5V
Note: Mode1:Transmit at high channel	



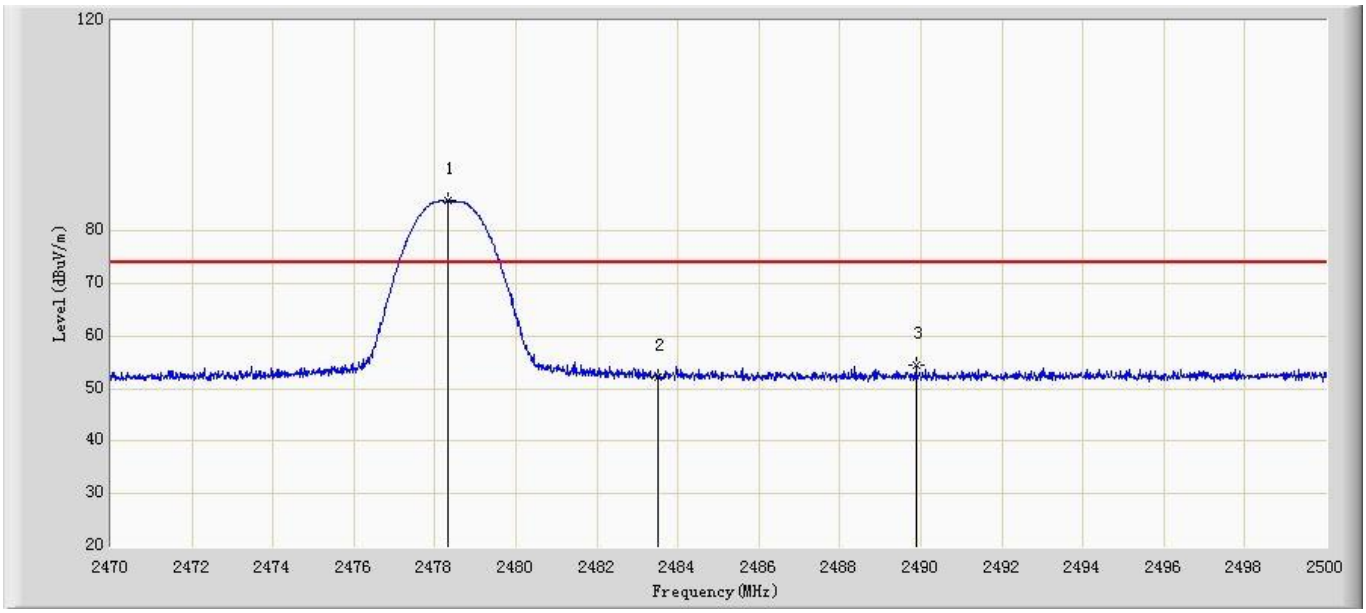
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2478.235	91.822	53.899	17.822	74.000	37.923	PK
2		2483.500	54.746	16.776	-19.254	74.000	37.969	PK
3		2484.550	56.516	18.537	-17.484	74.000	37.979	PK

Engineer: Cloud	
Site: AC5	Time: 2013/08/08 - 20:34
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Remote control	Power: 3.5V
Note: Mode1:Transmit at high channel	



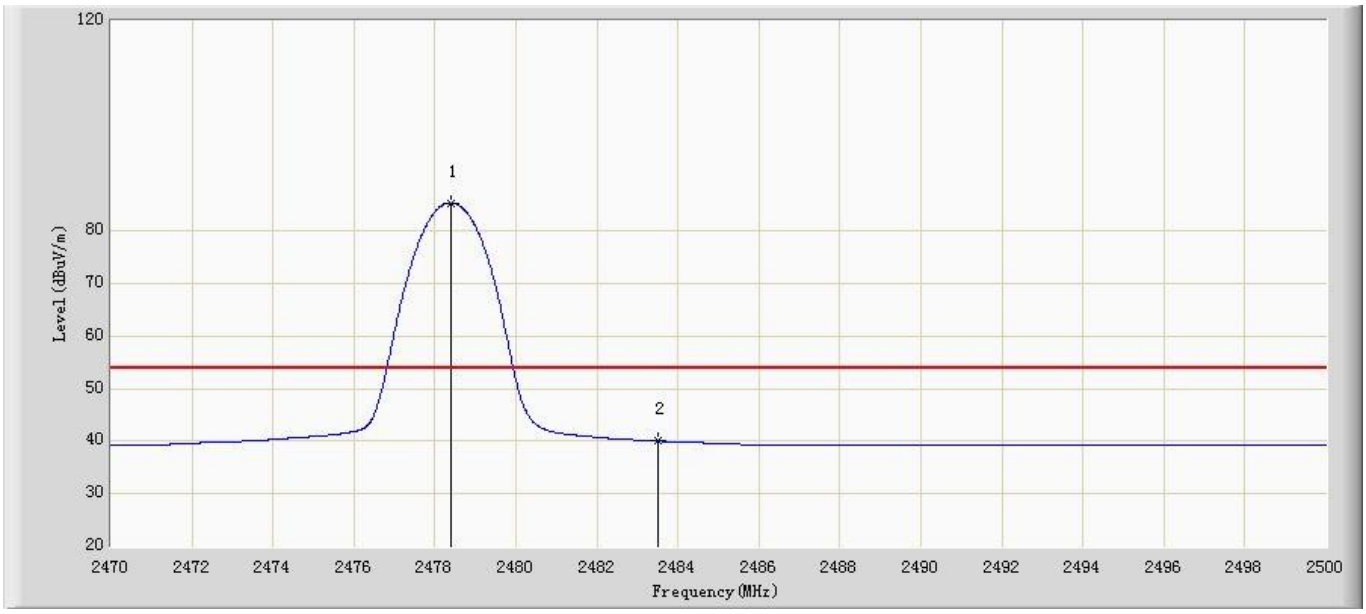
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2478.430	91.591	53.666	37.591	54.000	37.925	AV
2		2483.500	42.536	4.566	-11.464	54.000	37.969	AV

Engineer: Cloud	
Site: AC5	Time: 2013/08/08 - 20:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Remote control	Power: 3.5V
Note: Mode1:Transmit at high channel	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2478.310	85.708	48.797	11.708	74.000	36.911	PK
2		2483.500	52.299	15.363	-21.701	74.000	36.935	PK
3		2489.875	54.380	17.414	-19.620	74.000	36.967	PK

Engineer: Cloud	
Site: AC5	Time: 2013/08/08 - 20:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Remote control	Power: 3.5V
Note: Mode1:Transmit at high channel	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2478.385	85.359	48.448	31.359	54.000	36.911	AV
2		2483.500	40.037	3.101	-13.963	54.000	36.935	AV

5. Band-edge Compliance of RF Conducted Emissions

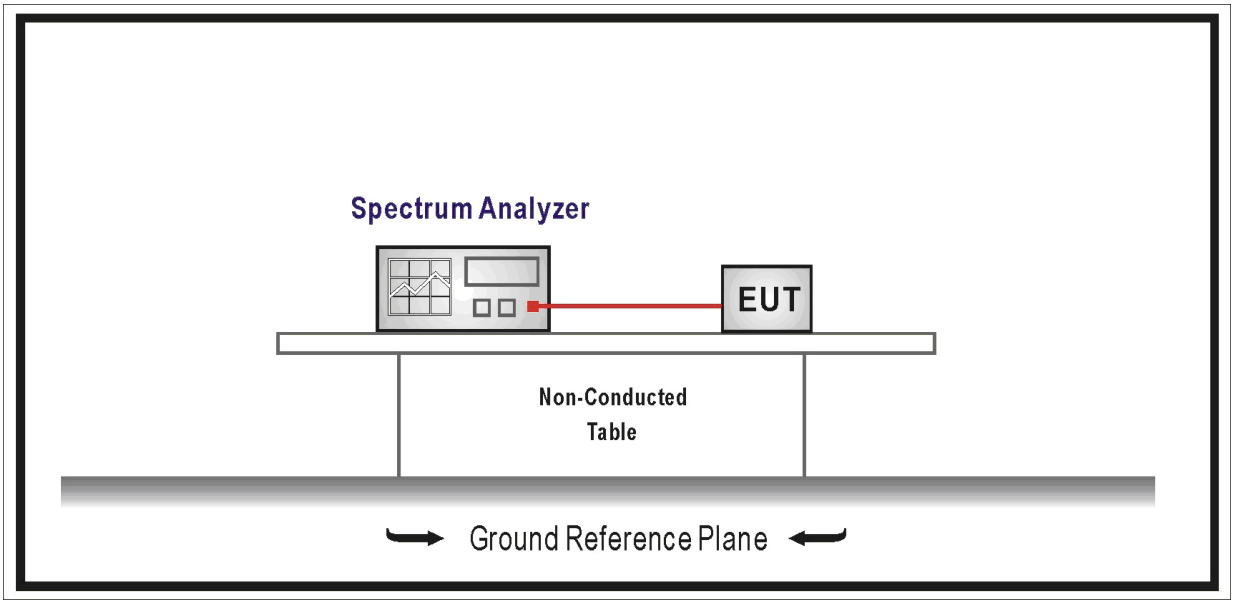
5.1. Test Equipment

Band-edge Compliance of RF Conducted Emissions / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014.01.21
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2014.05.08

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

5.2. Test Setup



5.3. Limit

- FCC Part 15.215 (c), Intentional radiators operating under the alternative provisions to the general emission limits as contained in 15.217 through 15.257 and in Subpart E of FCC part 15, must be designed to ensure that 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

5.4. Test Procedure

Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation.
RBW ≧ 1% of the span
VBW ≧ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation prouduct outside of the band, if this level is greater than that at the bandedge.
Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section.
Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.

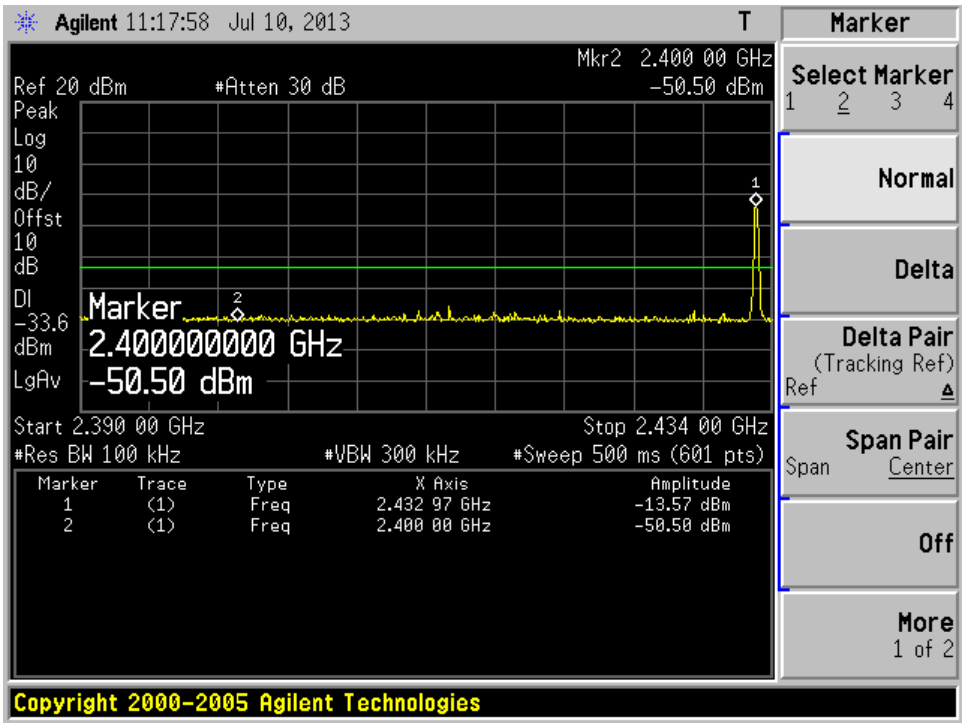
5.5. Uncertainty

The measurement uncertainty is defined as ± 1.0 dB

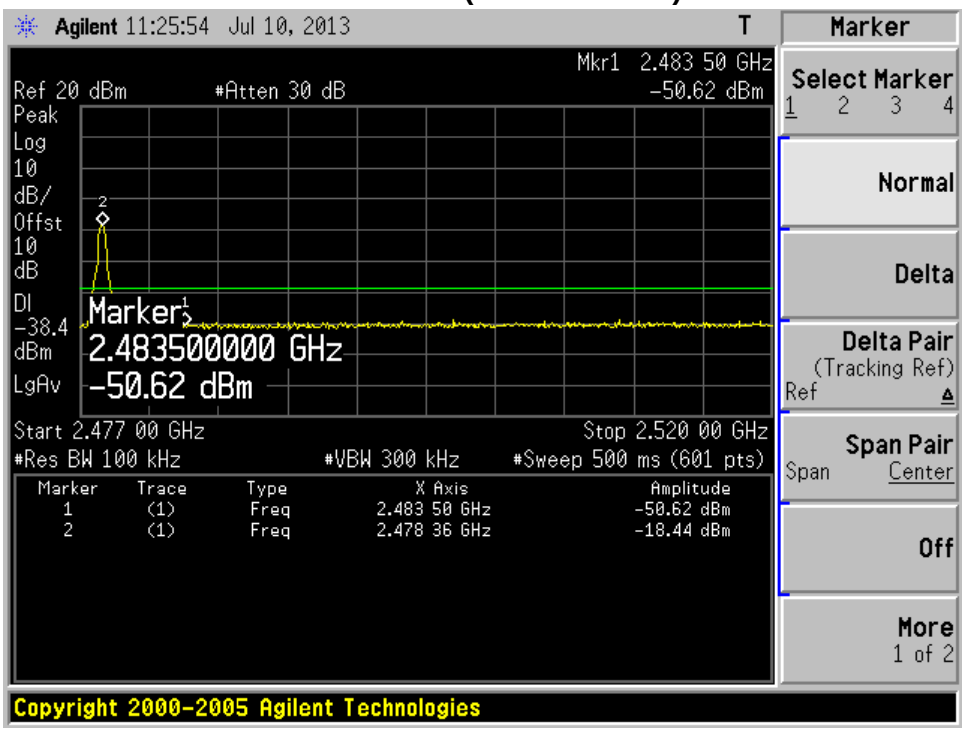
5.6. Test Result

Product	:	Remote control
Test Item	:	Band-edge Compliance of RF Conducted Emissions for FCC Part15.215
Test Mode	:	Mode 1: Transmit

Channel 00 (2432.9999MHz)

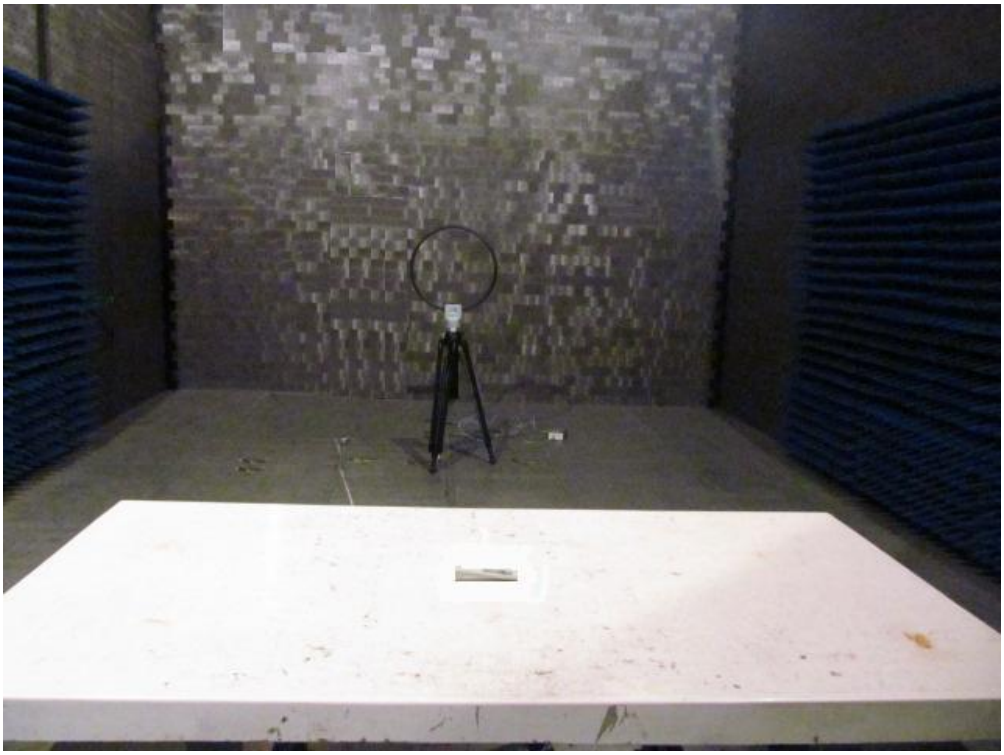


Channel 227 (2478.3888MHz)

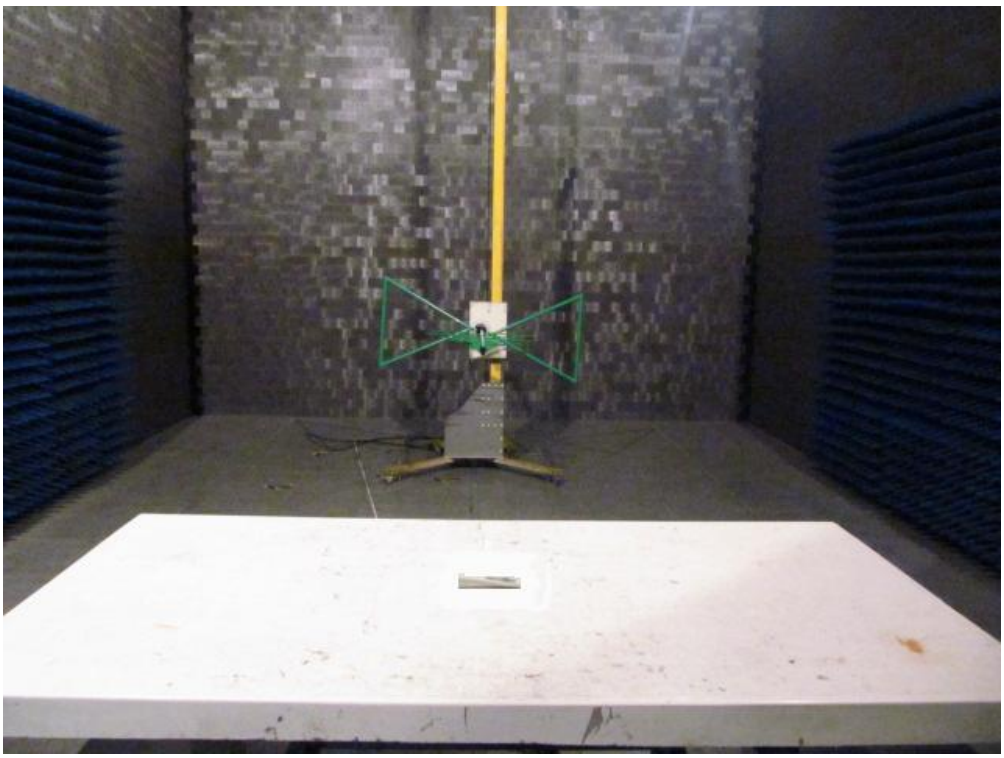


6. Appendix 1 – Test Setup Photograph

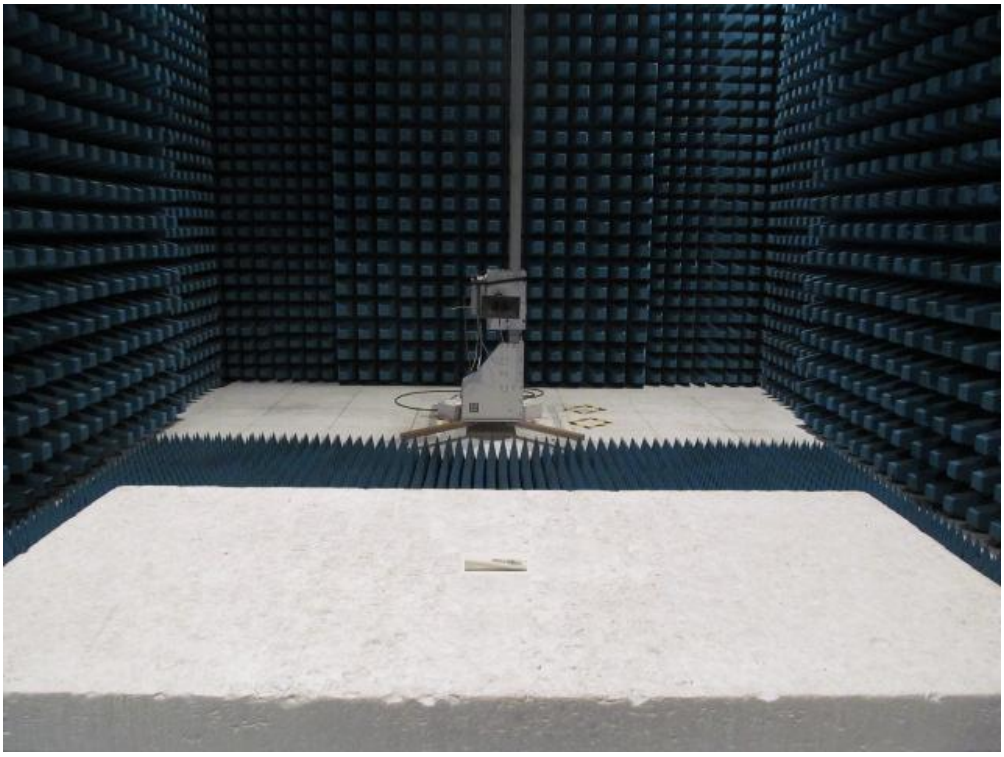
Description: Radiated Emission Test Setup for Below 1GHz



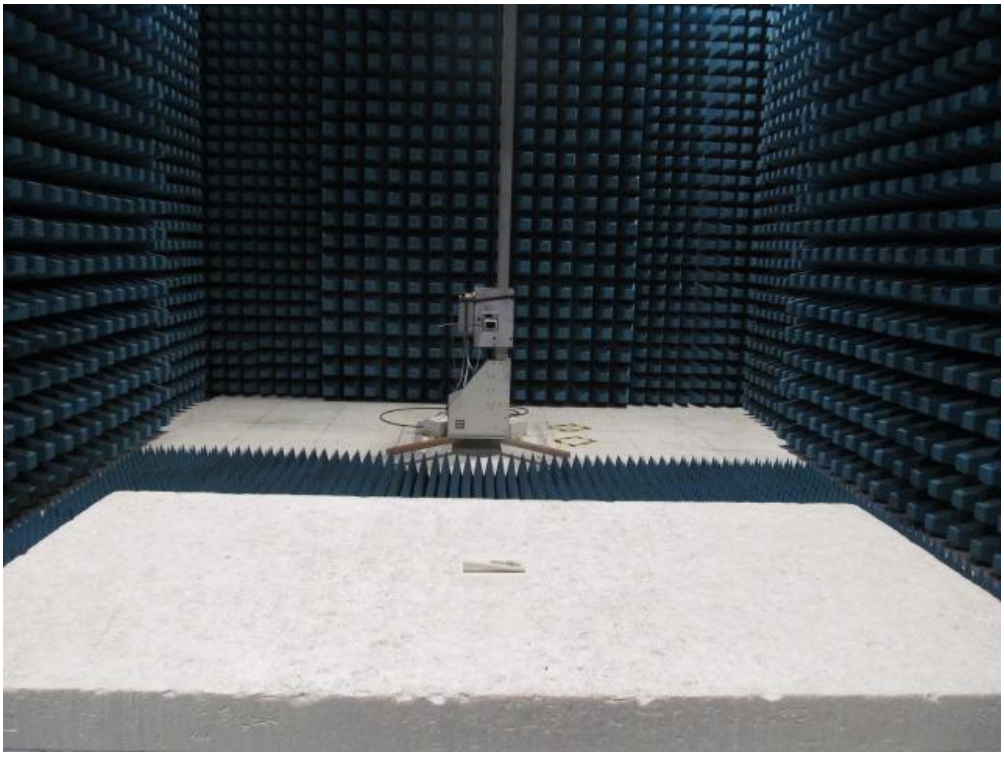
Description: Radiated Emission Test Setup for Below 1GHz



Description: Radiated Emission Test Setup for Above 1GHz



Description: Radiated Emission Test Setup for Above 18GHz

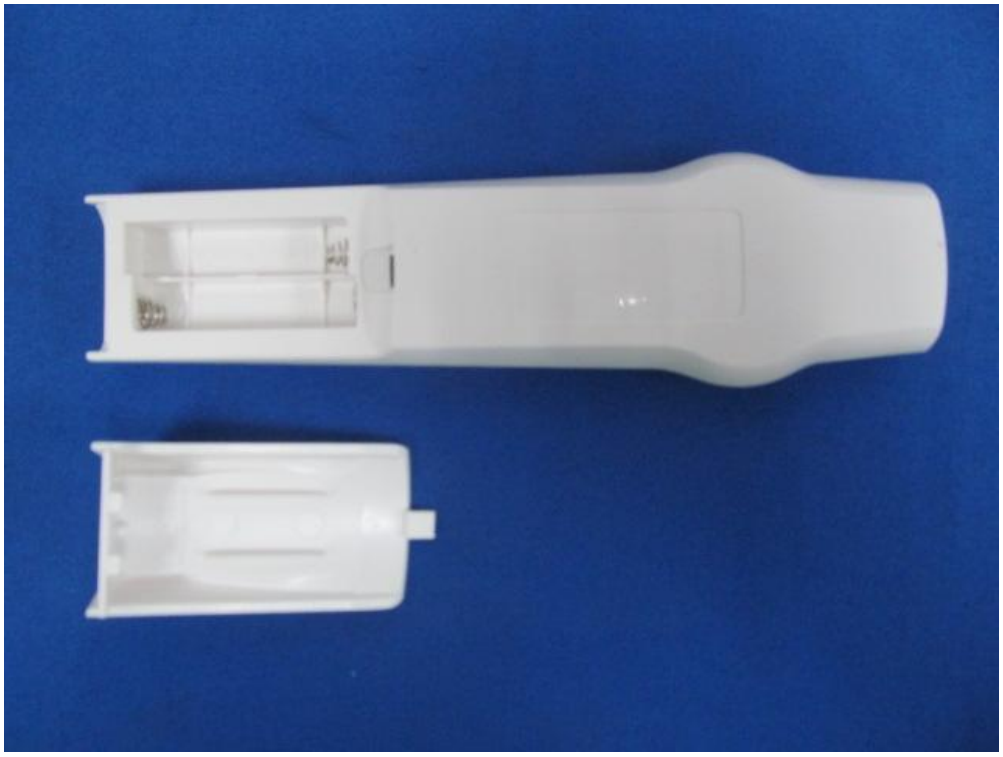


7 . Appendix 2 – EUT Photograph

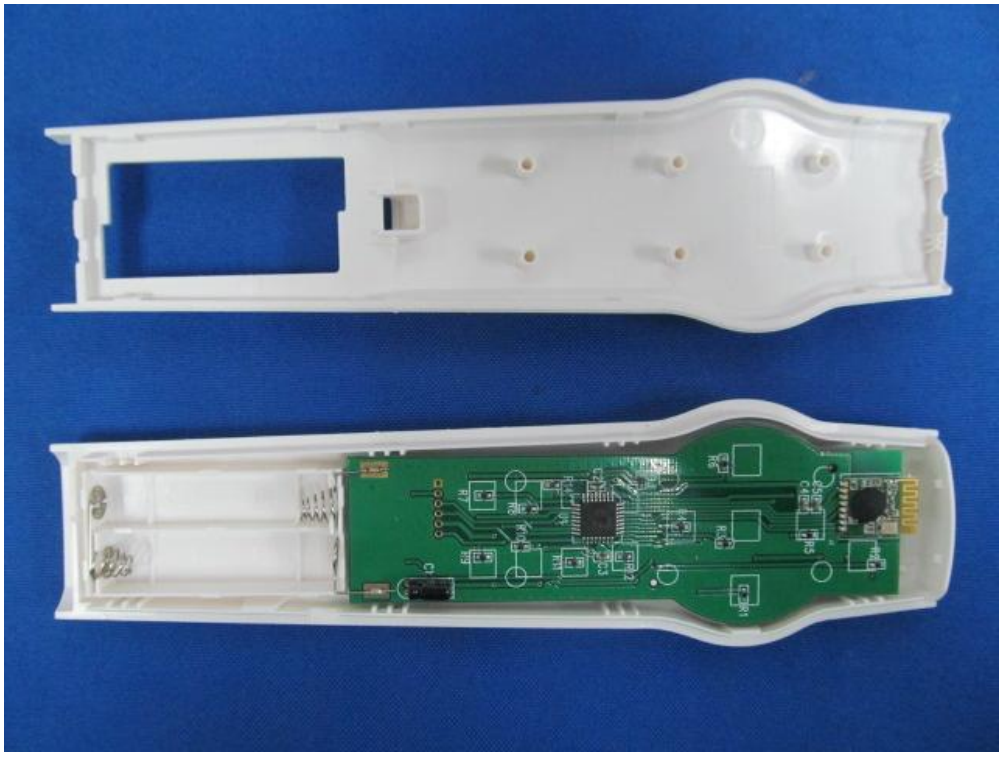
(1) EUT Photo

(2) EUT Photo

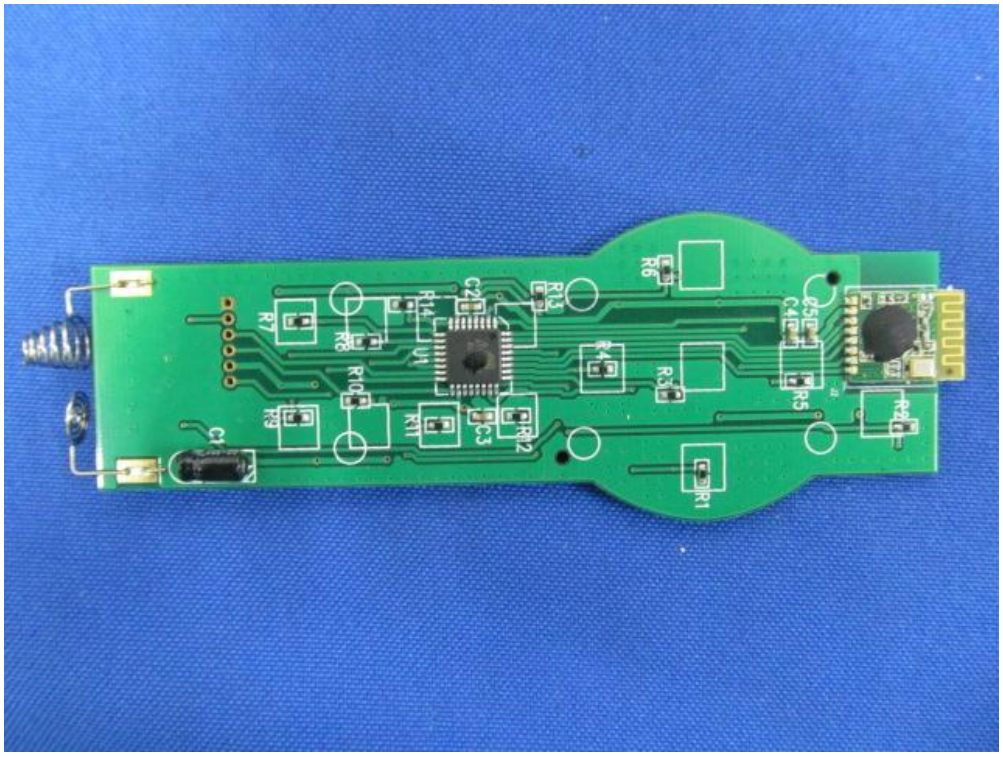
(3) EUT Photo



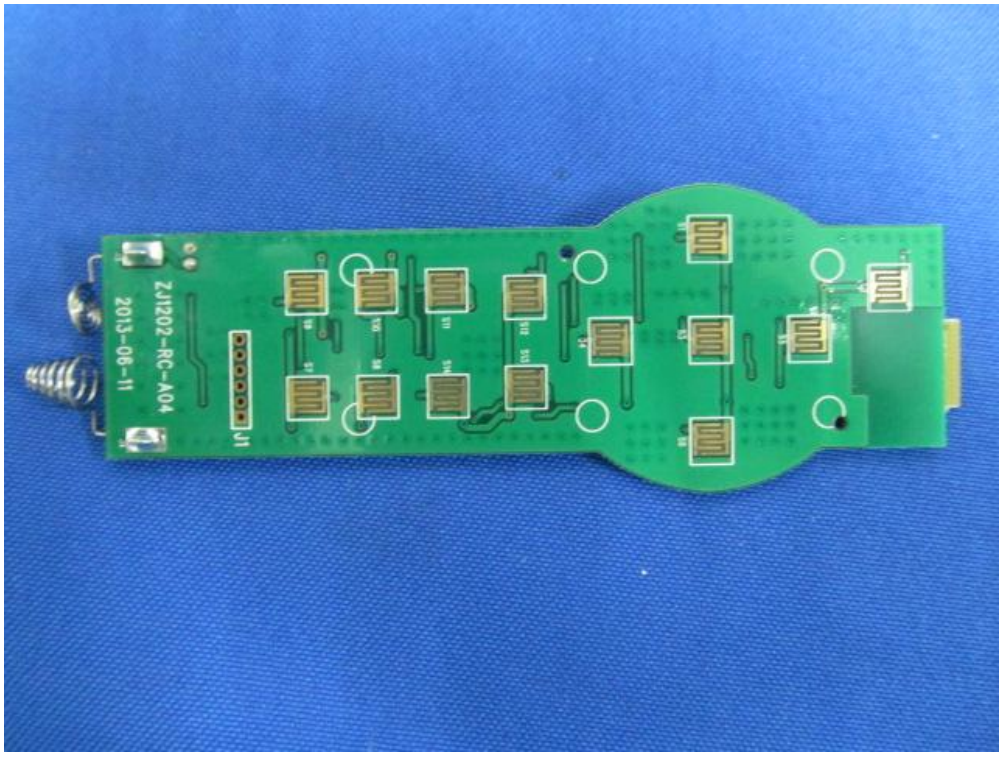
(4) EUT Photo



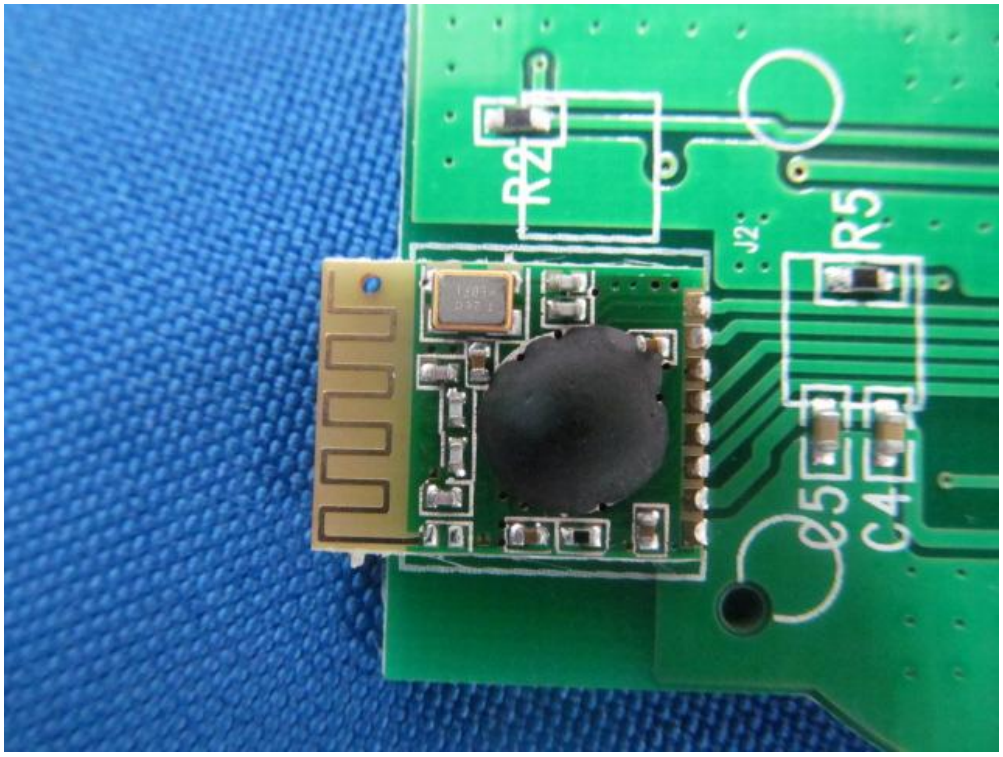
(5) EUT Photo



(6) EUT Photo



(7) EUT Photo



(8) EUT Photo