Test Report

FCC Part15.249

Product Name	:	Remote control
Model No.	:	HT21014
FCC ID	:	XM4HT21014

Applicant	:	Shanghai Height electronics Co LTD
Address	:	1500 Huiren Road Jiading Shanghai China

Date of Receipt	:	14/12/2011
Test Date	:	14/12/2011 ~ 13/01/2012
Issued Date	:	07/02/2012
Report No.	:	11CS043R-RF-US-P06V01
Report Version	:	V2.2

Test Report Certification

Issued Date : 07/02/2012
Report No. : 11CS043R-RF-US-P06V01

QuieTek

Product Name	:	Remote control
Applicant	:	Shanghai Height electronics Co LTD
Address	:	1500 Huiren Road Jiading Shanghai China
Manufacturer	:	Shanghai Height electronics Co LTD
Address	:	1500 Huiren Road Jiading Shanghai China
Model No.	:	HT21014
FCC ID	:	XM4HT21014
EUT Voltage	:	DC 6.0V(4*AA batteries)
Trade Name	:	Height
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C: 2008
		ANSI C63.4: 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

Documented By : Alice Ni
(Engineering ADM: Alice Ni)

Reviewed By : Jame Yuan
(Senior Engineer: Jame Yuan)

Approved By : Marlin Chen
(Engineering Manager: Marlin Chen)

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, NVLAP**
Japan	**:**	**VCCI**

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/emc/accreditations/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:

HsinChu Testing Laboratory :
No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

NVLAP Lab Code : 200347-0

LinKou Testing Laboratory :
No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen, Lin-Kou Shiang, Taipei, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

NVLAP Lab Code: 200533-0

Suzhou (China) Testing 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 E-Mail : service@quietek.com

NVLAP Lab Code : 200743-0

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1. General Information

1.1. EUT Description

Product Name	Remote control
Model No.	HT21014
Working Voltage	DC 6.0V(4*AA batteries)
Frequency Range	2404 - 2474 MHz
Channel Number	16
Type of Modulation	FSK
Date Rate	250kbps
Channel Control	Auto
Antenna Type	Dipole Antenna
Antenna Gain	2.0dBi

Channel List

Working Frequency of Each Channel:			
Channel	Frequency	Channel	Frequency
01	2404 MHz, 2444MHz	02	2406 MHz, 2446MHz
03	2408 MHz, 2448MHz	04	2410 MHz, 2450MHz
05	2412 MHz, 2452MHz	06	2414 MHz, 2454MHz
07	2416 MHz, 2456MHz	08	2418 MHz, 2458MHz
09	2420 MHz, 2460MHz	10	2422 MHz, 2462MHz
11	2424 MHz, 2464MHz	12	2426 MHz, 2466MHz
13	2428 MHz, 2468MHz	14	2430 MHz, 2470MHz
15	2432 MHz, 2472MHz	16	2434 MHz, 2474MHz

Note:

1.The EUT work while two-carrier frequency hopping automatic, the frequency interval is 40MHz.

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:

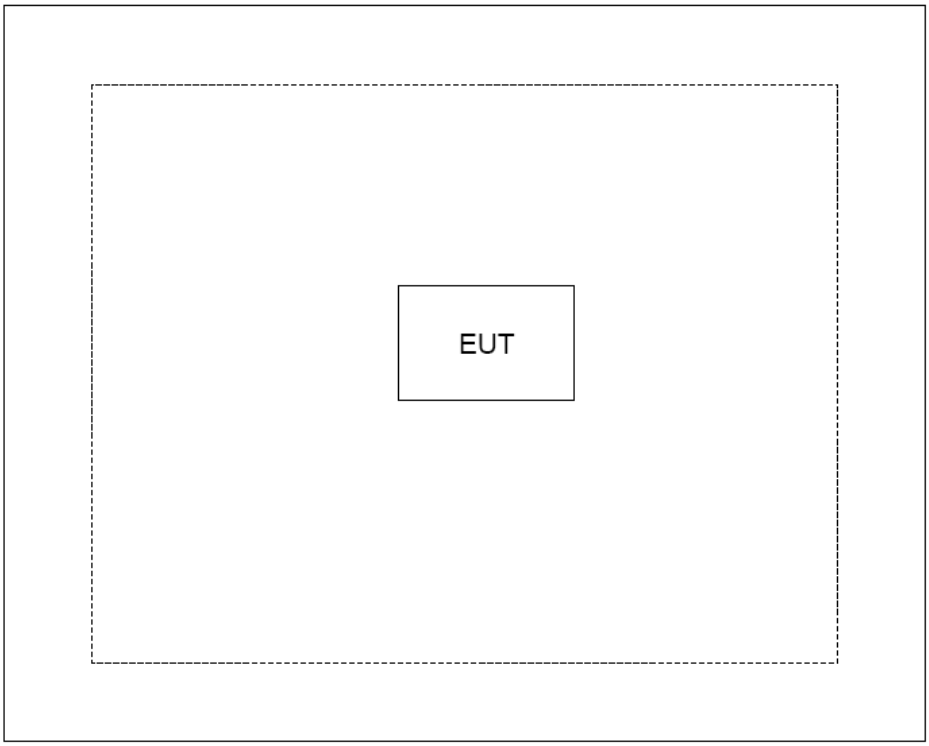
1. Regards to the frequency band operation: the lowest、middle and highest frequency of channel were selected to perform the test, then shown on this report.

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: 2008 Section 15.207	N/A	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.209 and 15.249	Yes	No
Band-edge Compliance of RF Conducted Emissions	FCC CFR Title 47 Part 15 Subpart C: 2008 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

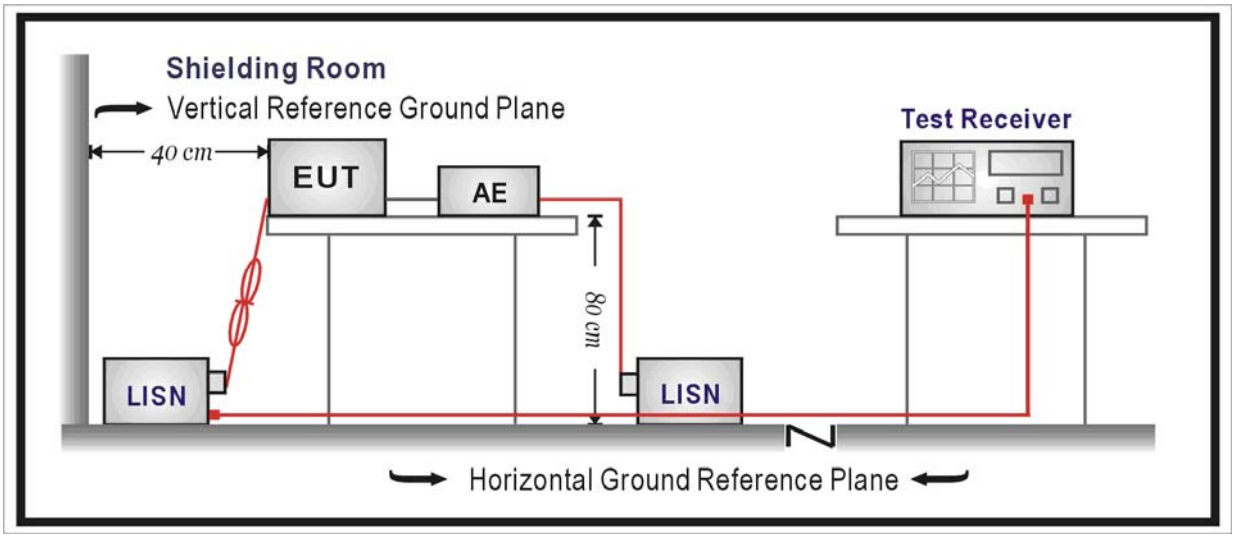
3.1. Test Equipment

Conducted Emission / TR-1

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
EMI Test Receiver	R&S	ESCI	100726	2012.04.23
Two-Line V-Network	R&S	ENV216	101043	2012.04.29
Two-Line V-Network	R&S	ENV216	101044	2012.09.07
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2012.03.07
50ohm Termination	SHX	TF2	07081401	2012.09.22
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2012.01.14

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

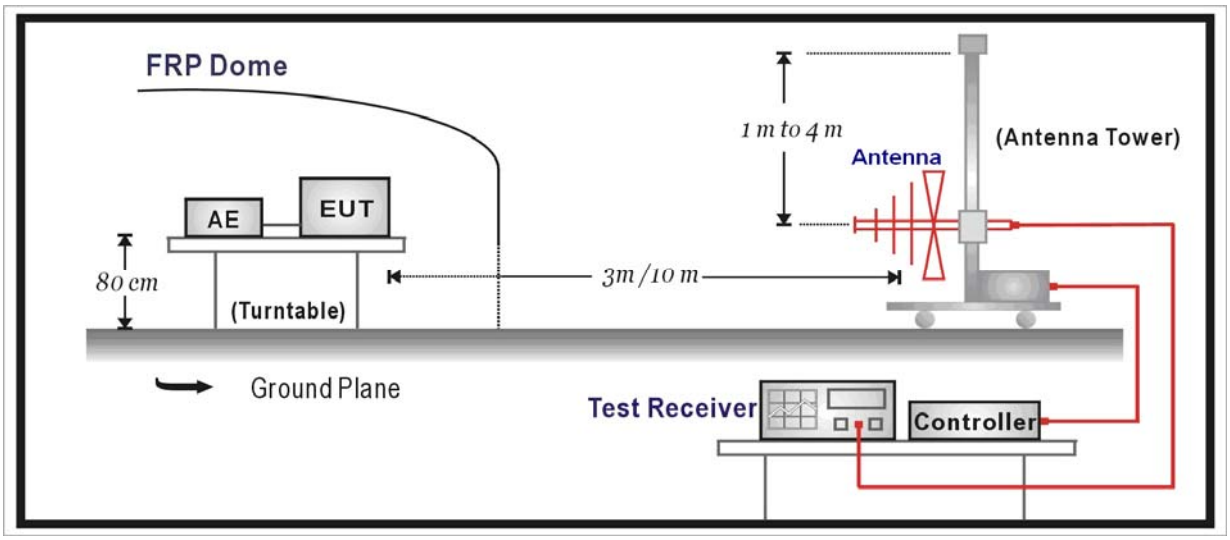
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
EMI Test Receiver	R&S	ESCI	100573	2012.04.23
Loop Antenna	R&S	HFH2-Z2	833799/003	2012.11.22
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2012.10.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2012.03.08
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2012.01.14

Radiated Emission / AC-5

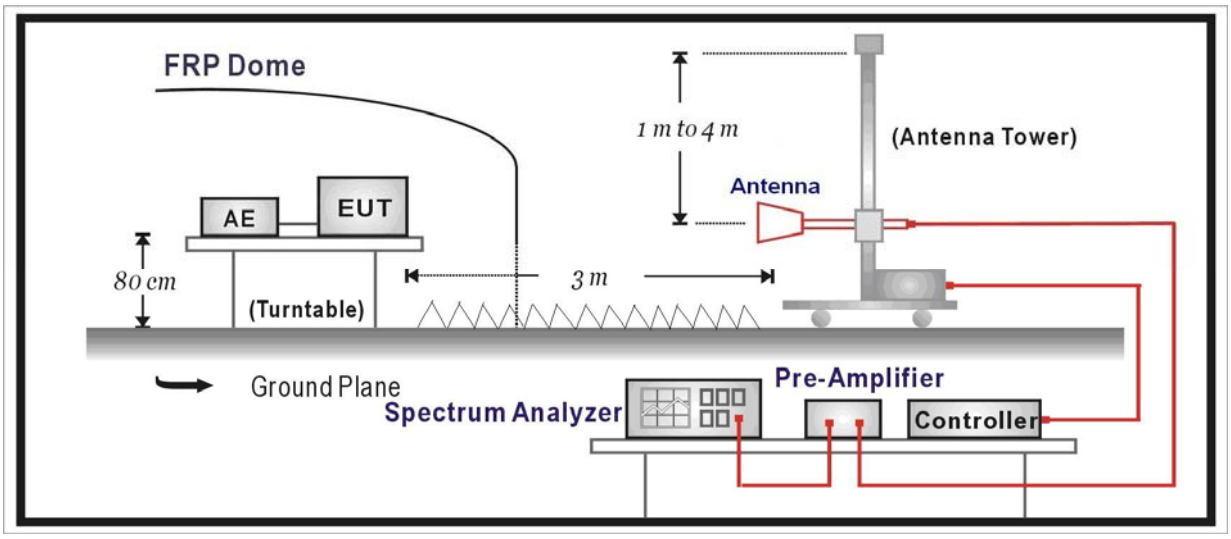
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2012.04.23
Preamplifier	QuieTek	AP-025C	CHM-0511006	2012.04.12
Preamplifier	Miteq	NSP1800-25	1364185	2012.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2012.05.05
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2012.10.18
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2012.06.11
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2012.03.07
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2012.03.07
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2012.03.07
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2012.01.14

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
2404	H	116.0	-15.6	100.4	114	-13.6	PK
	V	116.4	-15.6	100.8	114	-13.2	PK
2444	H	116.2	-15.7	100.5	114	-13.5	PK
	V	116.4	-15.7	100.7	114	-13.3	PK
2418	H	116.1	-15.7	100.4	114	-13.6	PK
	V	116.3	-15.7	100.6	114	-13.4	PK
2458	H	115.7	-15.6	100.1	114	-13.9	PK
	V	116.4	-15.6	100.8	114	-13.2	PK
2434	H	116.3	-15.8	100.5	114	-13.5	PK
	V	116.5	-15.8	100.7	114	-13.3	PK
2474	H	115.5	-15.6	99.9	114	-14.1	PK
	V	116.5	-15.6	100.9	114	-13.1	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
2404	H	56.9	-15.6	41.3	94	-52.7	AV
	V	59.2	-15.6	43.6	94	-50.4	AV
2444	H	56.8	-15.7	41.1	94	-52.9	AV
	V	59.3	-15.7	43.6	94	-50.4	AV
2418	H	55.3	-15.7	39.6	94	-54.4	AV
	V	57.9	-15.7	42.2	94	-51.8	AV
2458	H	54.5	-15.6	38.9	94	-55.1	AV
	V	57.3	-15.6	41.7	94	-52.3	AV
2434	H	57.5	-15.8	41.7	94	-52.3	AV
	V	59.6	-15.8	43.8	94	-50.2	AV
2474	H	55.1	-15.6	39.5	94	-54.5	AV
	V	58.6	-15.6	43.0	94	-51.0	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
4808.0	H	81.1	-11.0	70.1	74	-3.9	PK
4808.0	V	82.3	-11.0	71.3	74	-2.7	PK
4884.5	H	80.0	-10.8	69.2	74	-4.8	PK
4884.5	V	77.1	-10.8	66.3	74	-7.7	PK
7213.5	H	70.3	-3.0	67.3	74	-6.7	PK
7213.5	V	70.6	-3.0	67.6	74	-6.4	PK
7332.5	H	64.7	-2.8	61.9	74	-12.1	PK
7332.5	V	64.5	-2.8	61.7	74	-12.3	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
4808.0	H	60.6	-11.0	49.6	54	-4.4	AV
4808.0	V	58.7	-11.0	47.7	54	-6.3	AV
4884.5	H	59.0	-10.8	48.2	54	-5.8	AV
4884.5	V	56.1	-10.8	45.3	54	-8.7	AV
7213.5	H	47.9	-3.0	44.9	54	-9.1	AV
7213.5	V	48.1	-3.0	45.1	54	-8.9	AV
7332.5	H	47.3	-2.8	44.5	54	-9.5	AV
7332.5	V	46.4	-2.8	43.6	54	-10.4	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
4833.5	H	78.5	-10.6	67.9	74	-6.1	PK
4833.5	V	78.5	-10.6	67.9	74	-6.1	PK
4918.5	H	77.3	-10.8	66.5	74	-7.5	PK
4918.5	V	73.7	-10.8	62.9	74	-11.1	PK
7256.0	H	66.2	-2.9	63.3	74	-10.7	PK
7256.0	V	68.8	-2.9	65.9	74	-8.1	PK
7375..0	H	60.3	-2.7	57.6	74	-16.4	PK
7375..0	V	63.8	-2.7	61.1	74	-12.9	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
4833.5	H	57.0	-10.6	46.4	54	-7.6	AV
4833.5	V	56.4	-10.6	45.8	54	-8.2	AV
4918.5	H	54.6	-10.8	43.8	54	-10.2	AV
4918.5	V	55.2	-10.8	44.4	54	-9.6	AV
7256.0	H	48.6	-2.9	45.7	54	-8.3	AV
7256.0	V	49.2	-2.9	46.3	54	-7.7	AV
7375.0	H	44.6	-2.7	41.9	54	-12.1	AV
7375.0	V	45.2	-2.7	42.5	54	-11.5	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
4867.5	H	78.7	-11.0	67.7	74	-6.3	PK
4867.5	V	75.9	-11.0	64.9	74	10.9	PK
4944.0	H	75.6	-10.8	64.8	74	-9.2	PK
4944.0	V	73.1	-10.8	62.3	74	8.3	PK
7298.5	H	65.4	-2.9	62.5	74	-11.5	PK
7298.5	V	67.0	-2.9	64.1	74	10.1	PK
7417.5	H	61.1	-2.6	58.5	74	-15.5	PK
7417.5	V	61.7	-2.6	59.1	74	5.1	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
4867.5	H	56.5	-11.0	45.5	54	-8.5	AV
4867.5	V	54.6	-11.0	43.6	54	-10.4	AV
4944.0	H	55.5	-10.8	44.7	54	-9.3	AV
4944.0	V	54.6	-10.8	43.8	54	-10.2	AV
7298.5	H	45.5	-2.9	42.6	54	-11.4	AV
7298.5	V	46.9	-2.9	44.0	54	-10.0	AV
7417.5	H	43.2	-2.6	40.6	54	-13.4	AV
7417.5	V	45.0	-2.6	42.4	54	-11.6	AV

Note: Measure Level = Reading Level + Factor.

General Radiated Emission

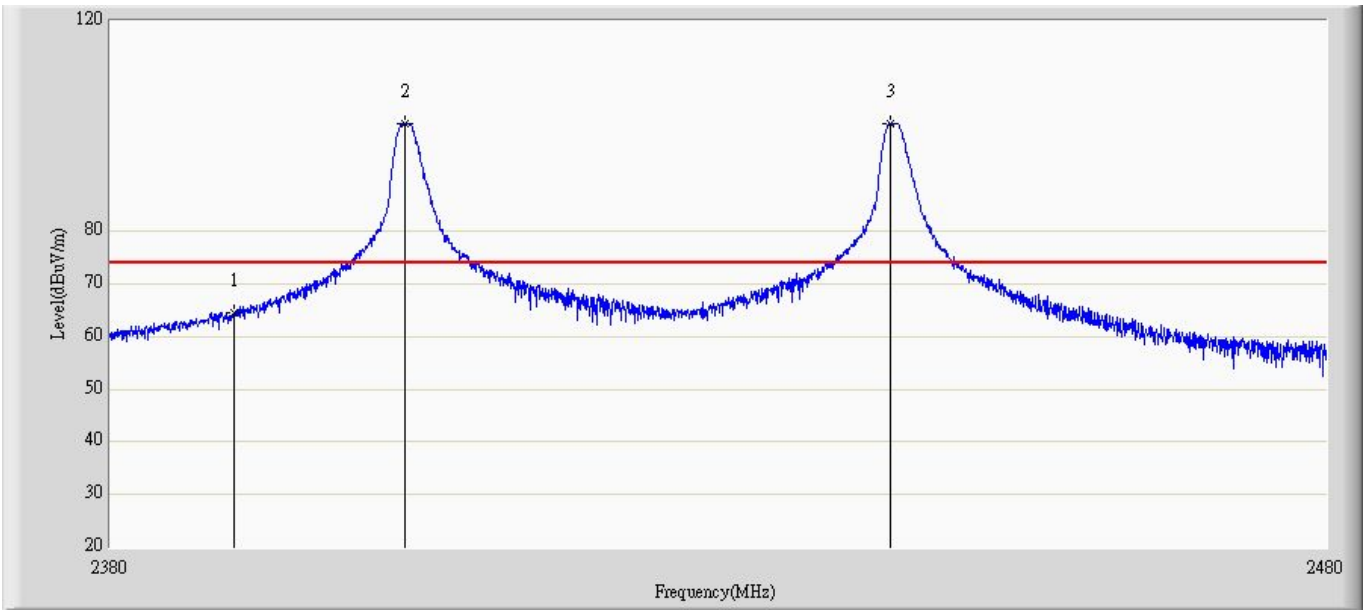
Product	:	Remote control
Test Item	:	General Radiated Emission
Test Mode	:	Mode 1: Transmit

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
133.4	H	12.4	14.5	26.9	43.5	-16.6	QP
133.4	V	10.9	19.2	30.1	43.5	-13.4	QP
303.1	H	13.6	17.2	30.8	46	-15.2	QP
303.1	V	11.2	20.3	31.5	46	-14.5	QP
4621.0	H	53.4	-11.3	42.1	74	-31.9	PK
4638.0	V	52.9	-11.4	41.5	74	-32.5	PK
6899.0	H	50.1	-4.8	45.3	74	-28.7	PK
7111.5	V	50.6	-3.7	46.9	74	-27.1	PK

Note:

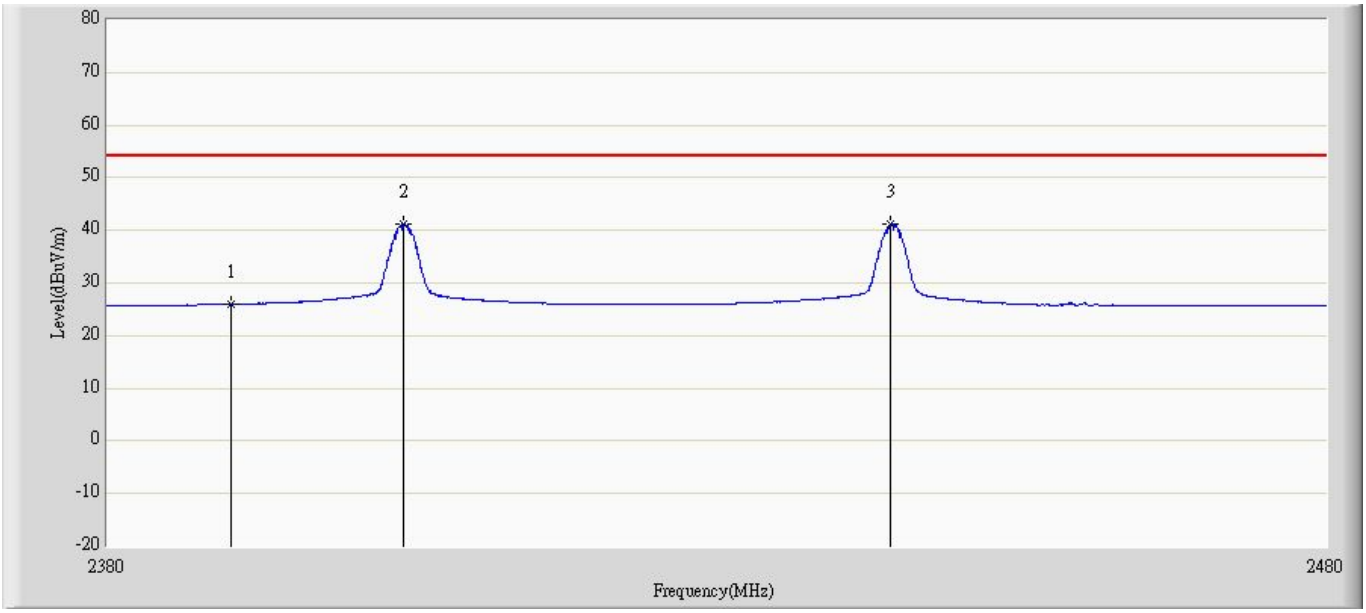
1. Measure Level = Reading Level + Factor.
2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

Engineer: Sunny	
Site: AC5	Time: 2012/01/10 - 10:22
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Remote control	Power: DC 6.0V
Note: Mode 1: Transmit at Low channel	



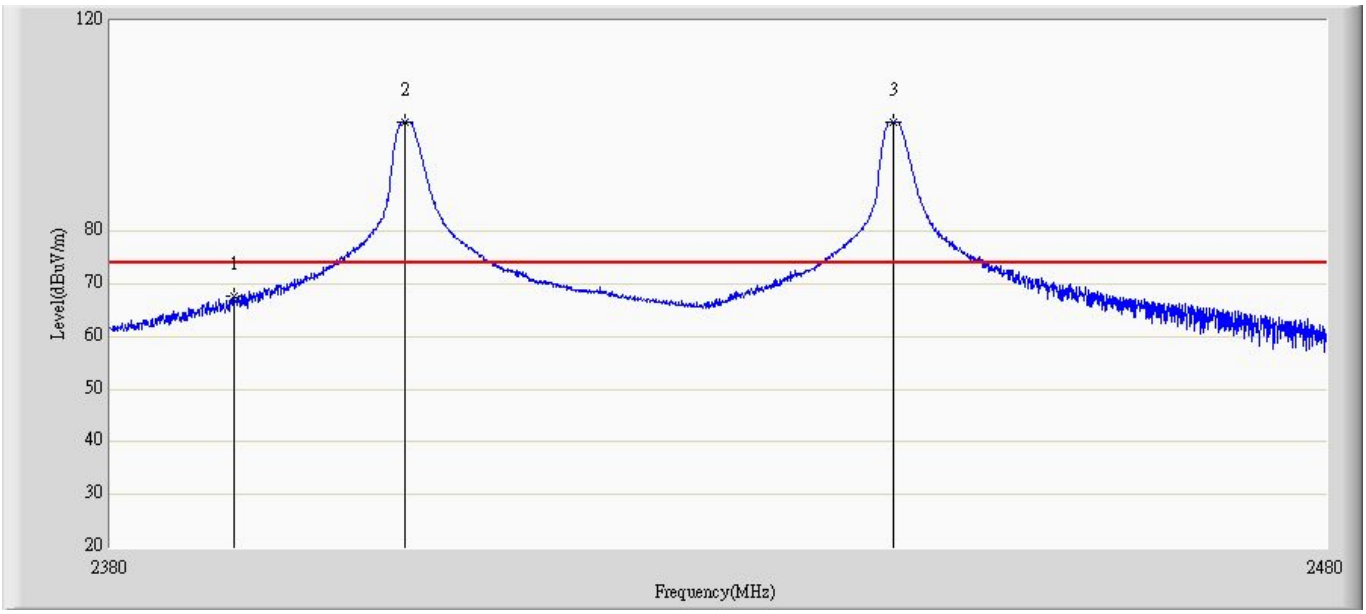
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	64.676	80.321	-9.324	74.000	-15.645	PK
2			2403.850	100.435	116.126	N/A	N/A	-15.692	PK
3		*	2443.700	100.564	116.295	N/A	N/A	-15.730	PK

Engineer: Sunny	
Site: AC5	Time: 2012/01/10 - 10:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Remote control	Power: DC 6.0V
Note: Mode 1: Transmit at Low channel	



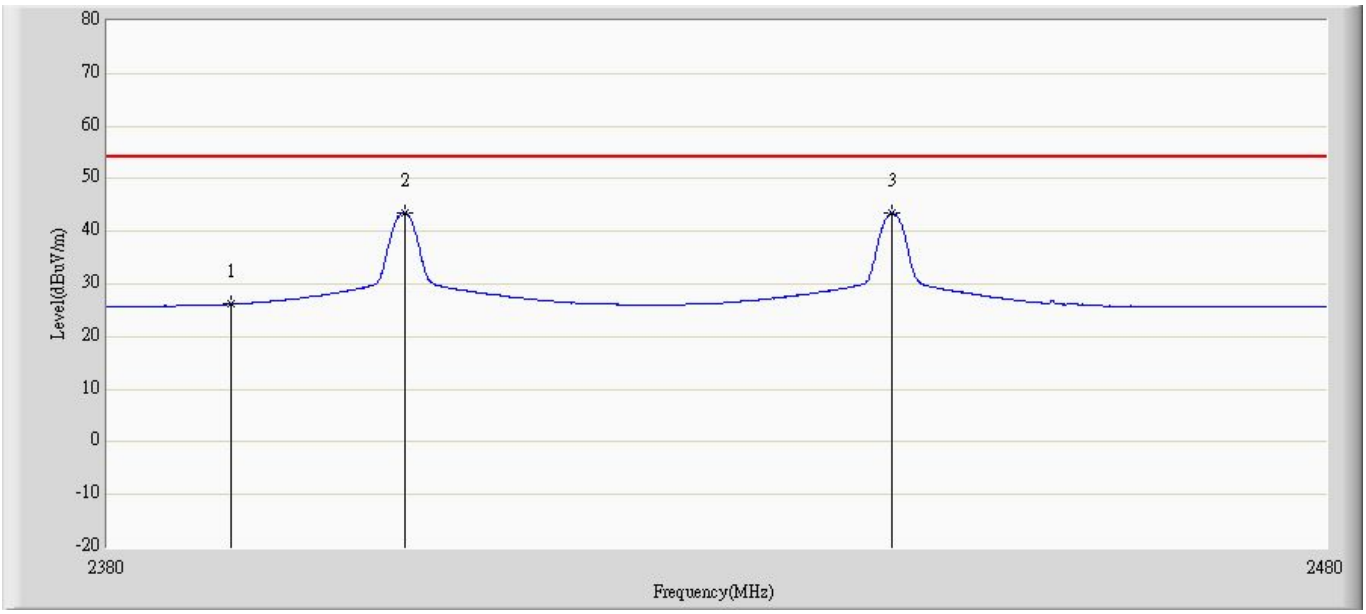
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	25.908	41.553	-28.092	54.000	-15.645	AV
2		*	2403.900	41.224	56.916	N/A	N/A	-15.692	AV
3			2443.850	41.114	56.843	N/A	N/A	-15.729	AV

Engineer: Sunny	
Site: AC5	Time: 2012/01/10 - 10:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Vertical
EUT: Remote control	Power: DC 6.0V
Note: Mode 1: Transmit at Low channel	



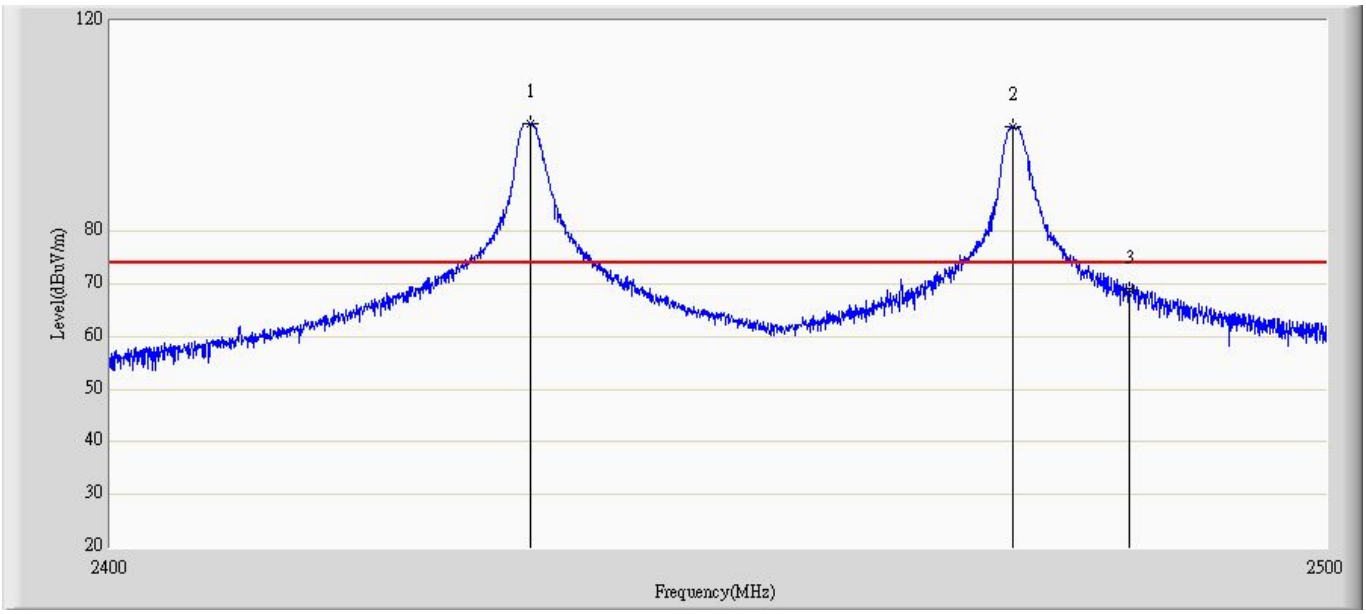
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	67.607	83.252	-6.393	74.000	-15.645	PK
2		*	2403.850	100.803	116.494	N/A	N/A	-15.692	PK
3			2444.000	100.773	116.501	N/A	N/A	-15.728	PK

Engineer: Sunny	
Site: AC5	Time: 2012/01/10 - 10:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Vertical
EUT: Remote control	Power: DC 6.0V
Note: Mode 1: Transmit at Low channel	



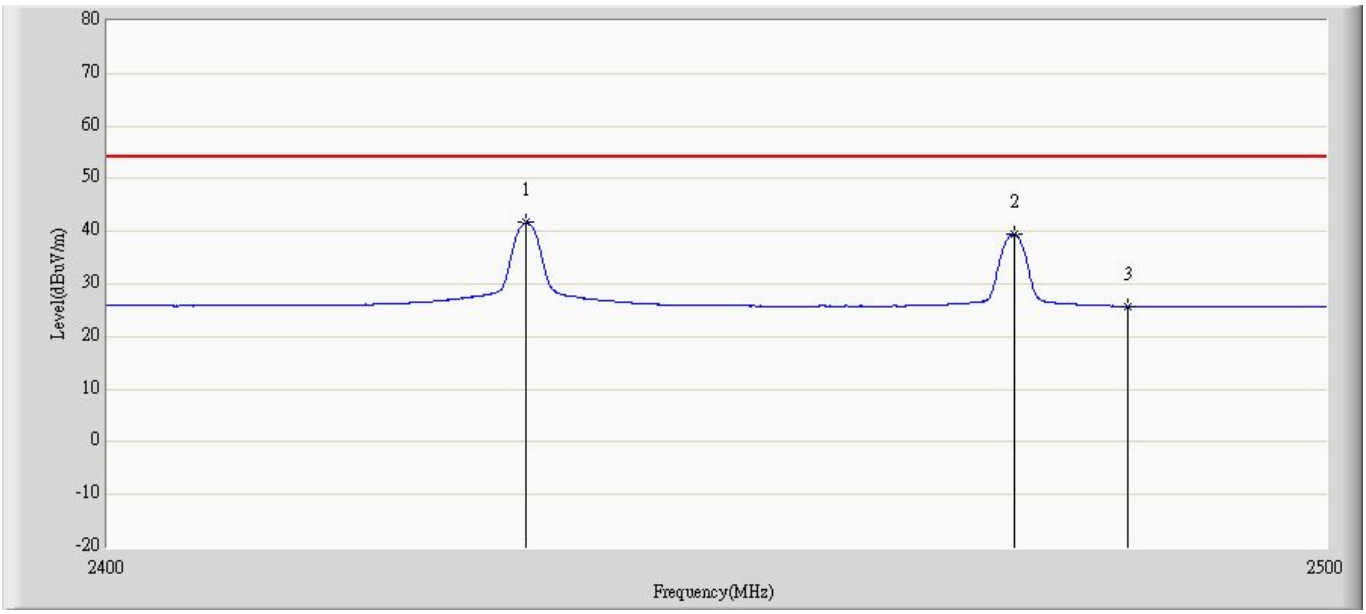
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	26.177	41.822	-27.823	54.000	-15.645	AV
2			2404.050	43.512	59.205	N/A	N/A	-15.693	AV
3		*	2443.950	43.537	59.265	N/A	N/A	-15.728	AV

Engineer: Sunny	
Site: AC5	Time: 2012/01/10 - 10:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Remote control	Power: DC 6.0V
Note: Mode 1: Transmit at Mid channel	



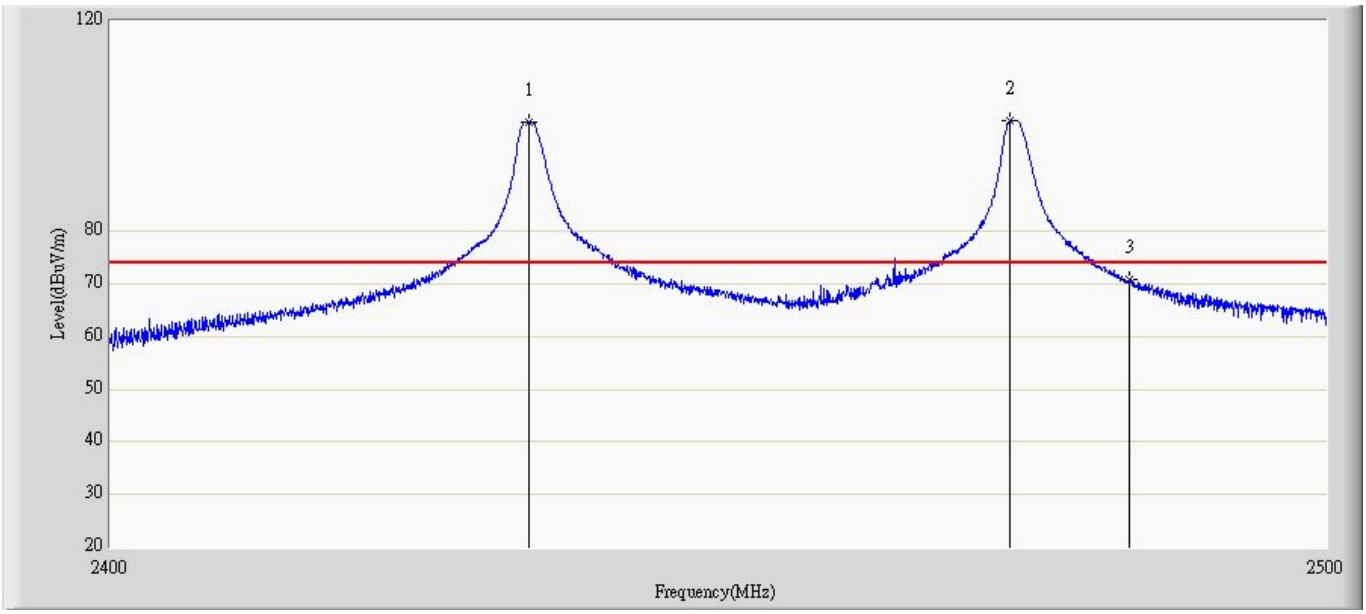
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2434.150	100.597	116.407	N/A	N/A	-15.811	PK
2			2473.850	99.978	115.635	N/A	N/A	-15.656	PK
3			2483.500	68.773	84.459	-5.227	74.000	-15.687	PK

Engineer: Sunny	
Site: AC5	Time: 2012/01/10 - 10:51
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Remote control	Power: DC 6.0V
Note: Mode 1: Transmit at Mid channel	



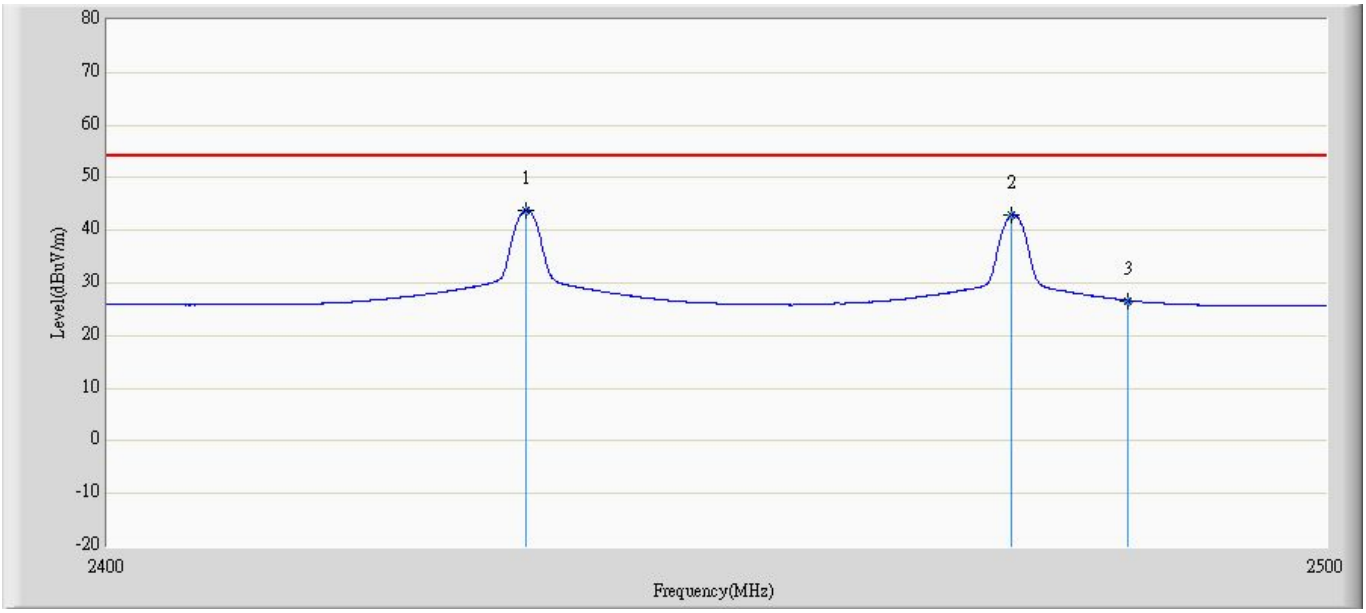
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2433.950	41.666	57.478	N/A	N/A	-15.811	AV
2			2474.050	39.478	55.134	N/A	N/A	-15.656	AV
3			2483.500	25.778	41.464	-28.222	54.000	-15.687	AV

Engineer: Sunny	
Site: AC5	Time: 2012/01/10 - 10:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Vertical
EUT: Remote control	Power: DC 6.0V
Note: Mode 1: Transmit at Mid channel	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2434.000	100.726	116.537	N/A	N/A	-15.812	PK
2		*	2473.650	100.925	116.582	N/A	N/A	-15.657	PK
3			2483.500	70.954	86.640	-3.046	74.000	-15.687	PK

Engineer: Sunny	
Site: AC5	Time: 2012/01/10 - 11:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Vertical
EUT: Remote control	Power: DC 6.0V
Note: Mode 1: Transmit at Mid channel	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2433.900	43.823	59.635	N/A	N/A	-15.811	AV
2			2473.800	42.914	58.571	N/A	N/A	-15.656	AV
3			2483.500	26.671	42.357	-27.329	54.000	-15.687	AV

5. Band-edge Compliance of RF Conducted Emissions

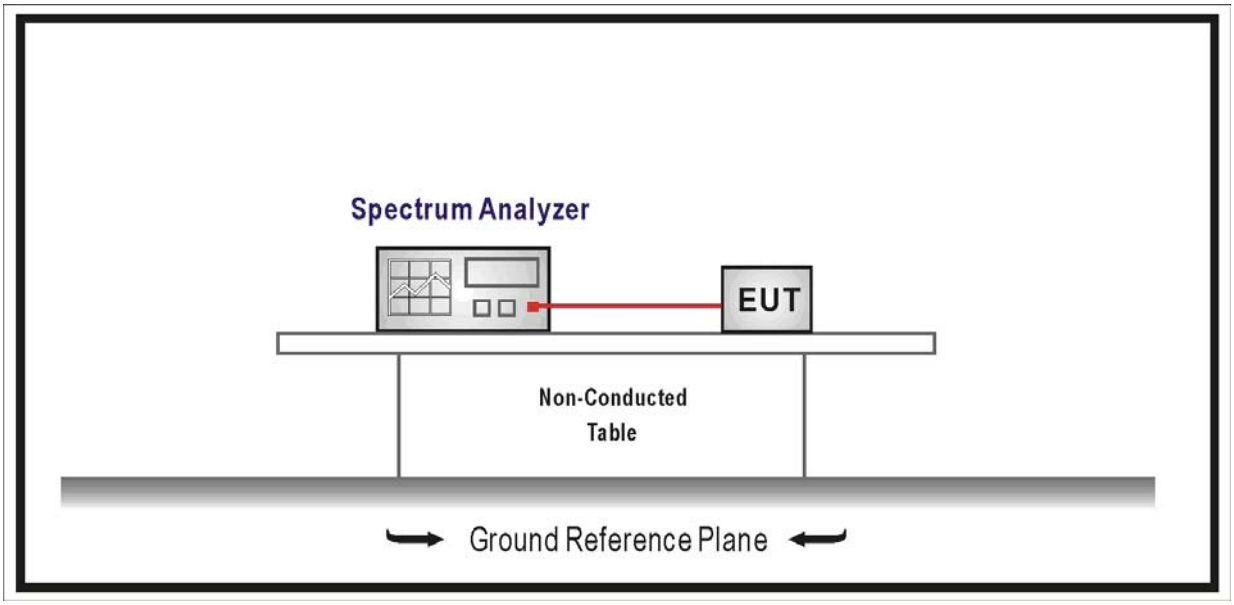
5.1. Test Equipment

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

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2012.04.30
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2012.05.03

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.

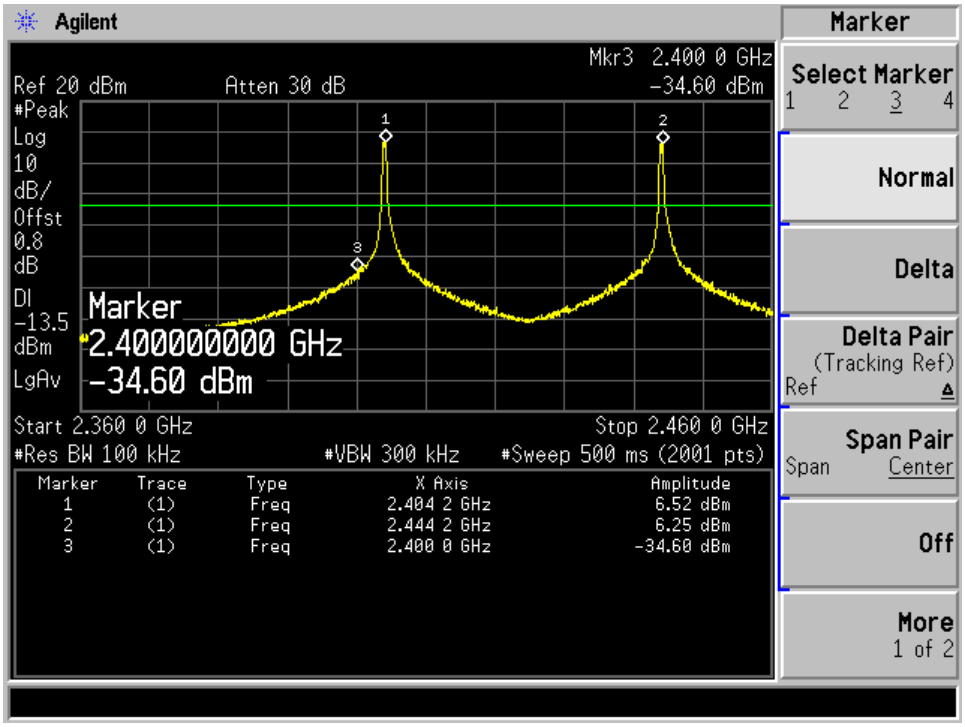
5.5. Uncertainty

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 01 (2404MHz)



Channel 16 (2474MHz)