

APPLICATION FOR CERTIFICATION
On Behalf of

AMIC Communication Corporation

2.4GHz Wireless Module

Model Number: M05A-C

FCC ID: V8UM7105A03081009

Prepared for : AMIC Communication Corporation
5F, No.2, Li-Hsin Rd.6, Hsinchu Science Park, Hsinchu,
Taiwan 300-78, R.O.C.

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block,
Shenzhen Science & Industrial Park,
Nantou, Shenzhen, Guangdong, China

Tel: (0755) 26639496

Report Number : ACS-F08423
Date of Test : Oct.10~Nov. 02, 2008
Date of Report : Nov.04, 2008

TABLE OF CONTENTS

Description	Page
1. SUMMARY OF STANDARDS AND RESULTS.....	1-1
1.1. Description of Standards and Results	1-1
2. GENERAL INFORMATION	2-1
2.1. Description of Device (EUT)	2-1
2.2. Test Facility	2-2
2.3. Measurement Uncertainty	2-2
3. POWER LINE CONDUCTED EMISSION TEST	3-1
4. RADIATED EMISSION TEST	4-1
4.1. Test Equipment	4-1
4.2. Block Diagram of Test Setup	4-1
4.3. Radiated Emission Limit	4-2
4.4. EUT Configuration on Test	4-3
4.5. Operating Condition of EUT	4-3
4.6. Test Procedure	4-3
4.7. Radiated Emission Test Results	4-4
5. CARRIER FREQUENCY SEPARATION TEST	5-7
5.1. Test Equipment	5-7
5.2. Test Information	5-7
5.3. Limit	5-7
5.4. Test Results (Pass.)	5-7
6. 20 DB BANDWIDTH TEST	6-1
6.1. Test Equipment	6-1
6.2. Test Information	6-1
6.3. Test Procedure	6-1
6.4. Test Results	6-1
7. NUMBER OF HOPPING FREQUENCY TEST	7-1
7.1. Test Equipment	7-1
7.2. Test Information	7-1
7.3. Test Results	7-1
8. DWELL TIME TEST	8-1
8.1. Test Equipment	8-1
8.2. Test Information	8-1
8.3. Test Results	8-1
9. MAXIMUM PEAK OUTPUT POWER TEST	9-4
9.1. Test Equipment	9-4
9.2. Test Procedure	9-4
9.3. Test Information	9-5
9.4. Test Results	9-5
10. BAND EDGE COMPLIANCE TEST	10-1
10.1. Test Equipment	10-1
10.2. Limit	10-1
10.3. Test Produce	10-1
10.4. Test Results	10-1
11. MPE ESTIMATION	11-1
11.1. Limit for General Population / Uncontrolled Exposures	11-1
11.2. Estimation Result	11-1

12.	ANTENNA REQUIREMENT	12-2
13.	DEVIATION TO TEST SPECIFICATIONS.....	13-1
14.	PHOTOGRAPH OF TEST	14-1
	14.1. Photos of Radiated Emission Test.....	14-1
15.	PHOTOGRAPH OF EUT	15-1

TEST REPORT CERTIFICATION

Applicant : AMIC Communication Corporation
 Manufacturer : AMIC Communication Corporation
 EUT Description : 2.4GHz Wireless Module
 FCC ID : V8UM7105A03081009
 (A) MODEL NO. : M05A-C
 (B) SERIAL NO. : N/A
 (C) POWER SUPPLY : DC 3.3V
 (D) TEST VOLTAGE : DC 3.3V

Test Procedure Used:

FCC Rules and Regulations Part 15 Subpart C 2007

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both radiated and conducted emissions.

The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Date of Test:

Oct.10~ Nov.02, 2008

Prepared by:

Edie Huang

Edie Huang / Assistant

Reviewer:

Jamy Yu

Jamy Yu / Senior Engineer

Approved & Authorized Signer:



Ken Lu / Deputy Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

Description of Test Item(FHSS)	Standard	Results
Conducted Emission Test	FCC Part 15: 15.207 ANSI C63.4: 2003	N/A
Radiated Emission Test	FCC Part 15: 15.209 ANSI C63.4: 2003	PASS
Carrier Frequency Separation Test	FCC Part 15: 15.247(a)(1) DA 00-705	PASS
20 dB Bandwidth Test	FCC Part 15: 15.247(a)(1) DA 00-705	PASS
Number Of Hopping Frequency Test	FCC Part 15: 15.247(a)(1)(iii) DA 00-705	PASS
Dwell Time Test	FCC Part 15: 15.247(a)(1)(iii)	PASS
Maximum Peak Output Power Test	FCC Part 15: 15.247(b)(1) DA 00-705	PASS
Band Edge Compliance Test	FCC Part 15: 15.247(d) DA 00-705	PASS
Antenna requirement	FCC Part 15: 15.203	PASS
N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

2.1.Description of Device (EUT)

Description	:	2.4GHz Wireless Module
Model Number	:	M05A-C
FCC ID	:	V8UM7105A03081009
Operation frequency	:	2.408GHz-----2.476GHz ISM Band
Operation Channel	:	16Channels
Modulation Technology	:	GFSK
Output power	:	1.64dBm (maximum measured)
Antenna Assembly Gain	:	0dBi (maximum)
Power Supply	:	DC 3.3V (Note: New batteries were used for all test.)
Applicant	:	AMIC Communication Corporation 5F, No.2, Li-Hsin Rd.6, Hsinchu Science Park, Hsinchu, Taiwan 300-78, R.O.C.
Manufacturer	:	AMIC Communication Corporation 5F, No.2, Li-Hsin Rd.6, Hsinchu Science Park, Hsinchu, Taiwan 300-78, R.O.C.
Date of Test	:	Oct.10~15, 2008
Date of Receipt	:	Oct.09, 2008
Sample Type	:	Prototype production
Note: This EUT is a Wireless Module, and it's need Limited Module approval, the representative host is wireless guitar and the below radiated emissions data are measured both with EUT in a stand alone configuration and operating conditions. In which the Module will be used to demonstrate comply with Limited modular approval requirements.		

2.2. Test Facility

Site Description

Name of Firm	:	Audix Technology (Shenzhen) Co., Ltd. No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China
3m Anechoic Chamber	:	Jun. 13, 2006 File on Federal Communication Commission Registration Number: 90454
3m & 10m Anechoic Chamber	:	Jan. 31, 2007 File on Federal Communication Commission Registration Number: 794232
EMC Lab.	:	Accredited by DATech, German Registration Number: DAT-P-091/99-01 Dec. 20, 2007 Accredited by NVLAP, USA NVLAP Code: 200372-0 Apr. 01, 2008

2.3. Measurement Uncertainty

No.	Item	MU	Remark
1.	Uncertainty for Conducted Emission Test	2.02dB	
2.	Uncertainty for Radiation Emission test in 3m chamber	3.44 dB	Polarize: V
		3.96 dB	Polarize: H
3.	Uncertainty for Radiation Emission test in 10m chamber	3.86dB	Distance: 10m Polarize: V
		4.18dB	Distance: 10m Polarize: H
		4.02dB	Distance: 3m Polarize: V
		4.36dB	Distance: 3m Polarize: H
4.	RF frequency	$\pm 0.5 \times 10^{-7}$	
5.	RF power, conducted	± 3 dB	

3. POWER LINE CONDUCTED EMISSION TEST

According to Paragraph (f) of FCC Part 15 section 15.207, Tests to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

4. RADIATED EMISSION TEST

4.1. Test Equipment

Frequency rang: 30~1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber	AUDIX	N/A	N/A	Jun.09, 08	1/2 Year
2.	EMI Spectrum	Agilent	E7403A	MY42000106	May 10, 08	1 Year
3.	Test Receiver	Rohde & Schwarz	ESVS20	830350/005	May 10, 08	1 Year
4.	Amplifier	HP	8447D	2648A04738	Jul.08.08	1/2 Year
5.	Bilog Antenna	Schaffner	CBL6112D	25237	Feb.21, 08	1 Year
6.	RF Cable	JINGCHENG	KLMR400	3# Chamber No.1	Jul.08.08	1/2 Year
7.	RF Cable	JINGCHENG	JB Y400	3# Chamber No.2	Jul.08.08	1/2 Year
8.	RF Cable	JINGCHENG	JB Y400	3# Chamber No.3	Jul.08.08	1/2 Year
9.	RF Cable	JINGCHENG	JB Y400	3# Chamber No.4	Jul.08.08	1/2 Year
10.	Coaxial Switch	Anritsu	MP59B	M73989	Jul.08.08	1/2 Year

Frequency rang: above 1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	MY41440292	May 10, 08	1 Year
2.	Amp	HP	8449B	3008A00863	May 10, 08	1 Year
3.	Antenna	EMCO	3115	9607-4877	May 27, 08	1.5 Year
4	Antenna	EMCO	3116	00060088	May 28, 07	1.5Year
5	RF Cable	Hubersuhner	SUCOFLEX	182769/4	May,28, 08	1 Year
6	RF Cable	Hubersuhner	SUCOFLEX	182768/4	May,28, 08	1 Year
7	RF Cable	Hubersuhner	SUCOFLEX	182771/4	May,28, 08	1 Year

4.2. Block Diagram of Test Setup

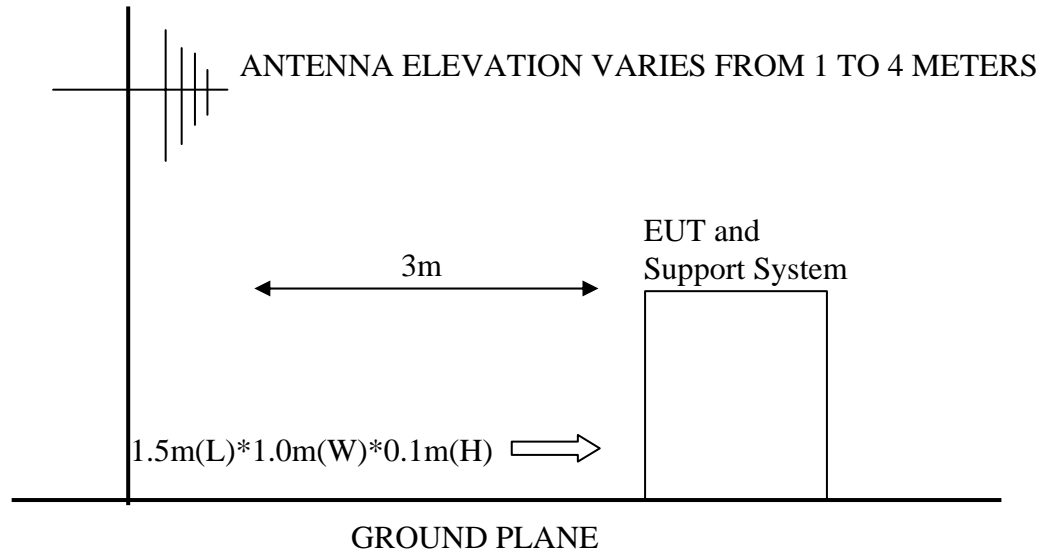
4.2.1. Block diagram of connection between the EUT and simulators

EUT

(EUT: 2.4GHz Wireless Module)

4.2.2. In Anechoic Chamber

ANTENNA TOWER



4.3. Radiated Emission Limit

4.3.1.15.209 limits

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

- Remark :
- (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V/m}$
 - (2) The smaller limit shall apply at the cross point between two frequency bands.

4.3.2. 15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

All the emissions appearing within these frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

4.4.EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.4.1.2.4GHz Wireless Module (EUT)

Model Number : M05A-C
Serial Number : N/A

4.5.Operating Condition of EUT

4.5.1.Setup the EUT as shown in Section 4.2..

4.5.2.Let the EUT work in test modes (stand alone configuration) and test it.

4.5.3.Repeat the test when EUT worked with a representative host(wireless Guitar)

4.6.Test Procedure

EUT and its simulators are placed on a ground plane. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it work normally, we use a keyboard test soft ware, let EUT working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

This test was performed with EUT in X, Y, Z position, and the worse case was found when EUT in X position as indicated in the test photo.

The bandwidth of the EMI test receiver (R&S ESVS20) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 1MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

4.7.Radiated Emission Test Results

PASS.

When in stand alone configuration:

All the emissions from 30MHz to 28GHz are comply with 15.209 limits

According product description the maximum dwell time per channel is 20ms.

So all the level reading obtained with the 10 Hz VBW were further adjusted by a duty cycle correction $20\log(20/100)= 14$

When tested with a representative host(wireless guitar):

All the emissions from 30MHz to 28GHz are comply with 15.209 limits

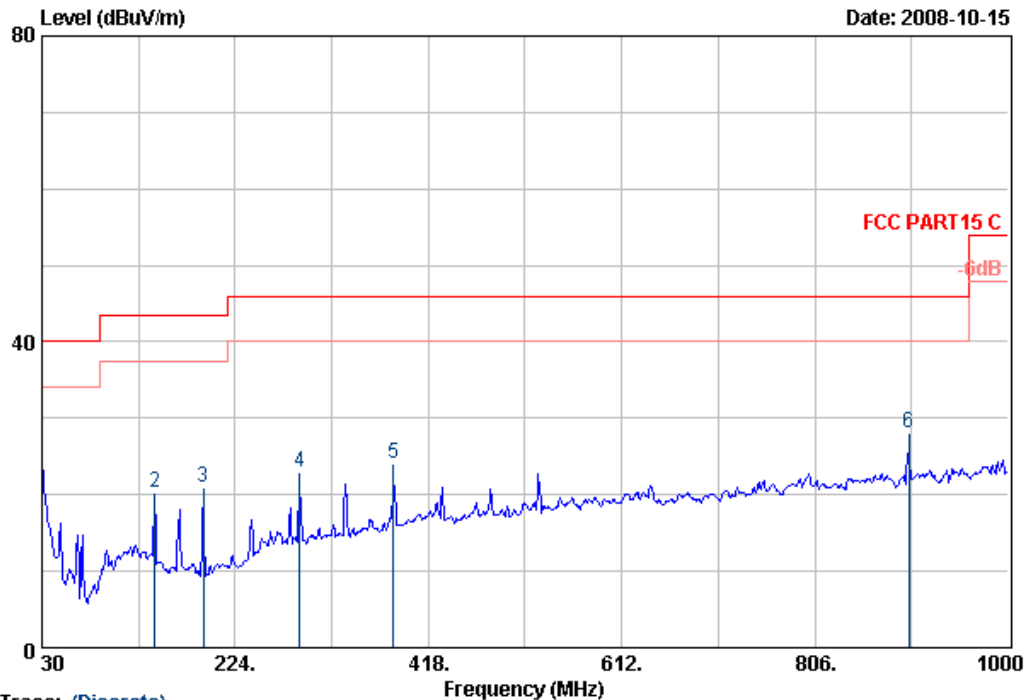
Test Frequency: 30MHz-1000MHz(stand alone configuration)



No.6,Ke Feng Road,Block 52,
Shenzhen Science&Industry Park
Nantou Shenzhen,Guangdong,China
Tel:+86-755-26639495
Fax:+86-755-26632877
Postcode:518057

Data: 1 File: D:\2008 Report Data\HHJT\ACS8Q1453.EMI (2)

Date: 2008-10-15



Trace: (Discrete)

Site no. : 3# Chamber Radiation Data no. : 1
Dis. / Ant. : 3m CBL6112D Ant. pol. : HORIZONTAL
Limit : FCC PART15 C
Env. / Ins. : 24°C/56% ESVS20 Engineer : Alan
EUT : 2.4GHz Wireless Module M/N: M05A-C
Power Rating : DC 3.3V
Test Mode : Running

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.00	19.51	0.71	4.76	24.98	40.00	15.02	QP
2	143.49	10.32	1.52	8.52	20.36	43.50	23.14	QP
3	191.99	8.99	1.82	10.03	20.84	43.50	22.66	QP
4	288.99	12.80	2.23	8.01	23.04	46.00	22.96	QP
5	383.08	14.35	2.55	7.10	24.00	46.00	22.00	QP
6	900.09	20.12	3.80	4.11	28.03	46.00	17.97	QP

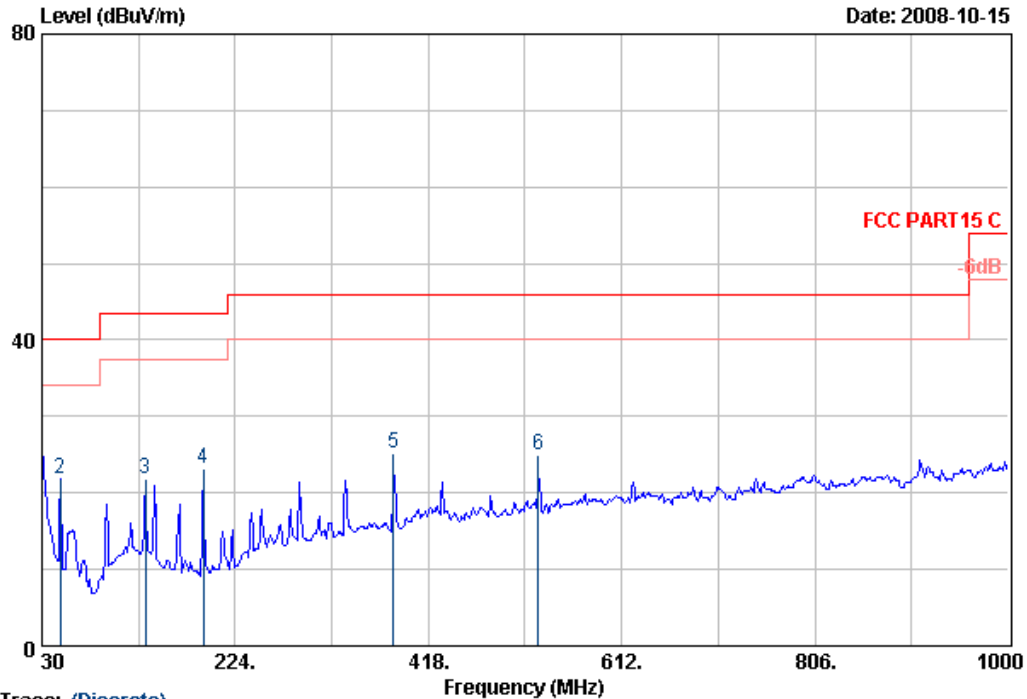
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6,Ke Feng Road,Block 52,
Shenzhen Science&Industry Park
Nantou Shenzhen,Guangdong,China
Tel:+86-755-26639495
Fax:+86-755-26632877
Postcode:518057

Data: 2 File: D:\2008 Report Data\HHJT\ACS8Q1453.EMI (2)

Date: 2008-10-15



Trace: (Discrete)

Site no. : 3# Chamber Radiation Data no. : 2
Dis. / Ant. : 3m CBL6112D Ant. pol. : VERTICAL
Limit : FCC PART15 C
Env. / Ins. : 24°C/56% ESVS20 Engineer : Alan
EUT : 2.4GHz Wireless Module M/N: M05A-C
Power Rating : DC 3.3V
Test Mode : Running

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.00	19.51	0.71	4.33	24.55	40.00	15.45	QP
2	48.43	9.19	1.00	11.75	21.94	40.00	18.06	QP
3	133.79	12.03	1.53	8.18	21.74	43.50	21.76	QP
4	191.99	8.99	1.82	12.47	23.28	43.50	20.22	QP
5	383.08	14.35	2.55	8.26	25.16	46.00	20.84	QP
6	528.58	17.93	3.05	4.07	25.05	46.00	20.95	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Test Frequency: 1GHz-18GHz(stand alone configuration)

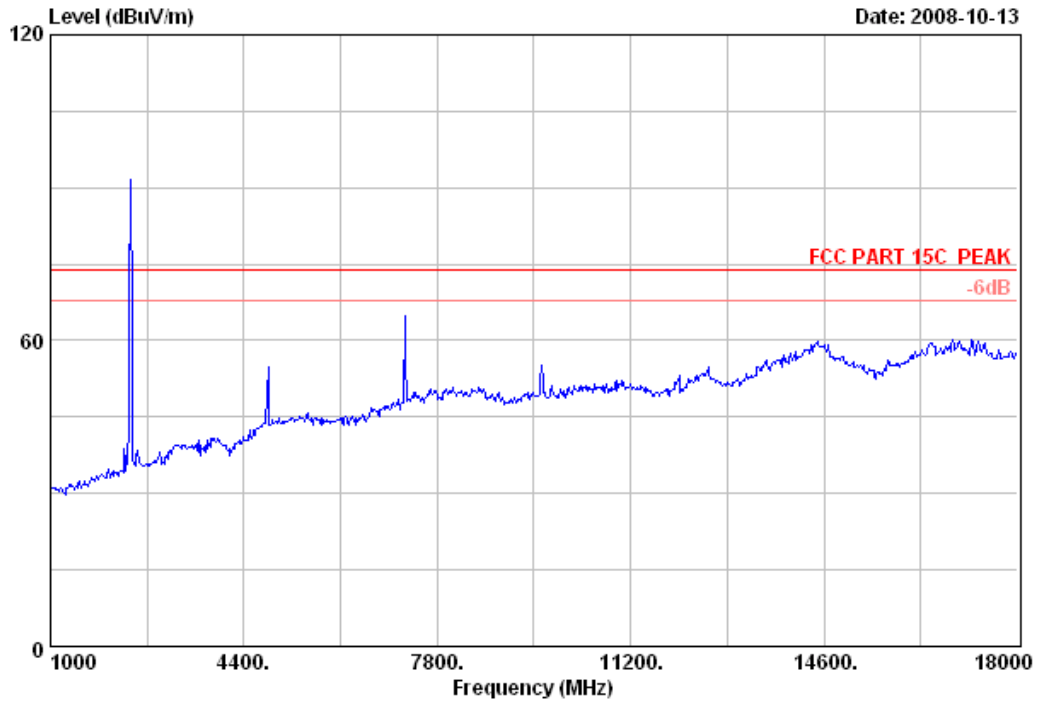


No.6 Ke Feng Road,B1;ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 3

File: E:\2008 test data\HHJT\2008-10-12.EMI (18)

Date: 2008-10-13



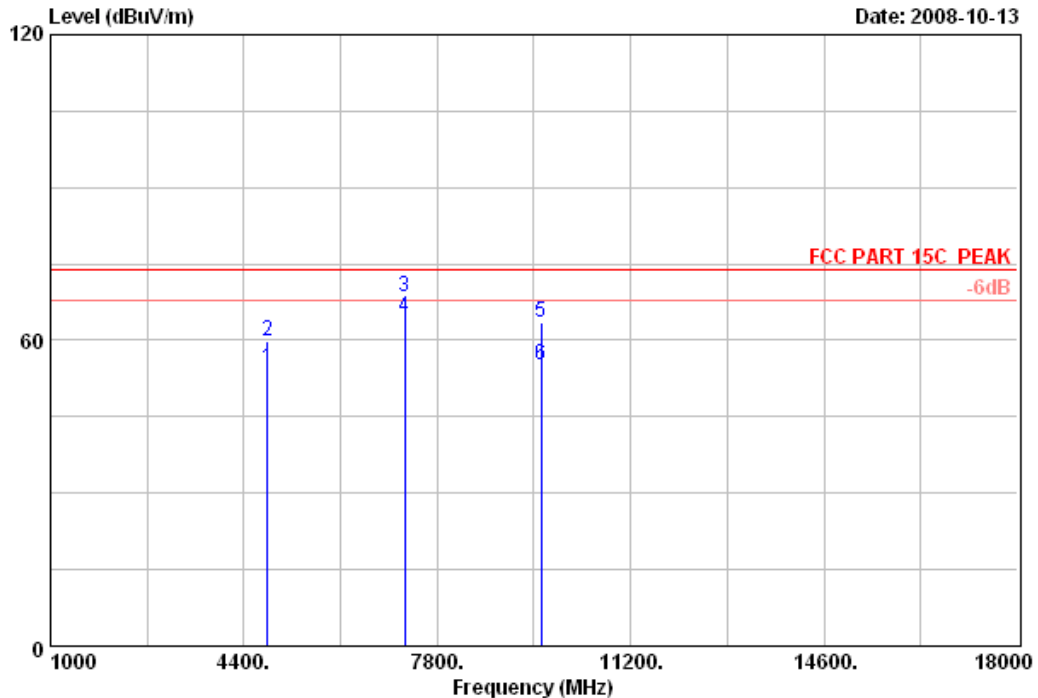
Site no.	: 3# Chamber	Data no.	: 3
Dis. / Ant.	: 3m 3115	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer	: Power
EUT	: 2.4GHz Wireless Module	M/N:	M05A-C
Power Rating:	DC 3.3V		
Test mode	: CH 2408 MHz		
	:		



No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 4 File: E:\2008 test data\HHJT\2008-10-12.EMI (18)

Date: 2008-10-13



Site no. : 3# Chamber Data no. : 4
Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N:M05A-C
Power Rating: DC 3.3V
Test mode : CH 2408 MHz
:

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4815.80	34.36	10.54	34.49	43.93	54.34	54.00	-0.34	Average
2	4815.80	34.36	10.54	34.49	49.50	59.91	74.00	14.09	Peak
3	7223.70	38.39	12.16	34.44	52.58	68.69	74.00	5.31	Peak
4	7223.70	38.39	12.16	34.44	48.47	64.58	54.00	-10.58	Average
5	9631.70	37.49	14.11	35.90	47.85	63.55	74.00	10.45	Peak
6	9631.70	37.49	14.11	35.90	39.41	55.11	54.00	-1.11	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Adjusted Average Level

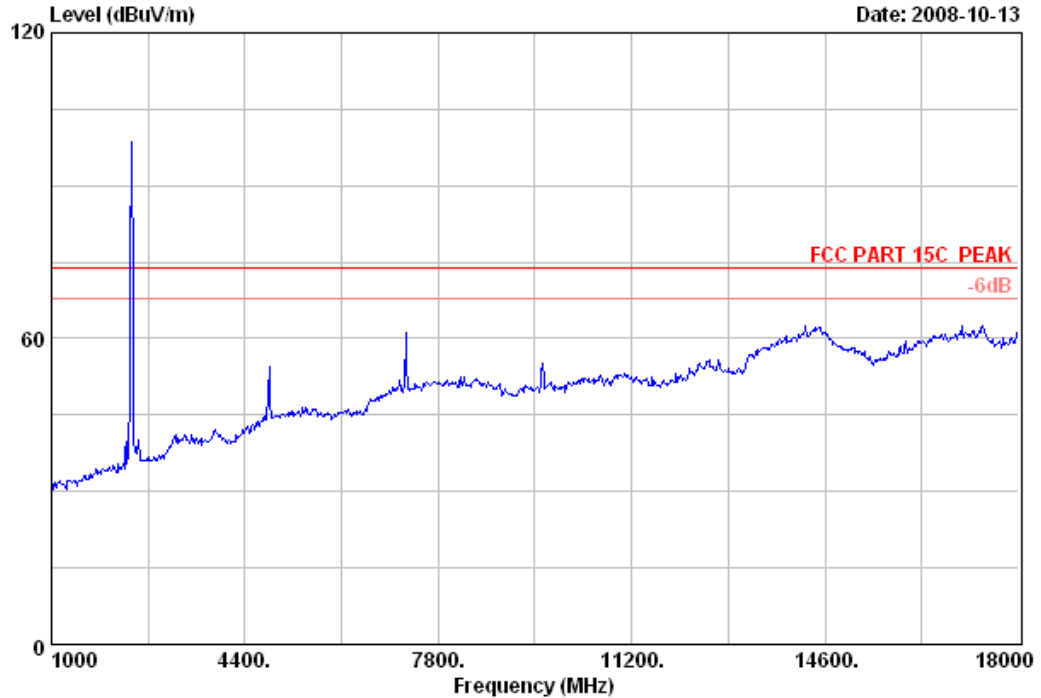
Frequency (MHz)	Reading Level (dBuV/m)	Adjusted Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4815.8	54.34	40.34	54	13.66
7223.7	64.58	50.58	54	3.42
9631.7	55.11	41.11	54	12.89



No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 1 File: E:\2008 test data\HHJT\2008-10-12.EMI (18)

Date: 2008-10-13



Site no. : 3# Chamber	Data no. : 1
Dis. / Ant. : 3m 3115	Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK	
Env. / Ins. : 23°C/54%	Engineer : Power
EUT : 2.4GHz Wireless Module	M/N:M05A-C
Power Rating: DC 3.3V	
Test mode : CH 2408 MHz	
:	

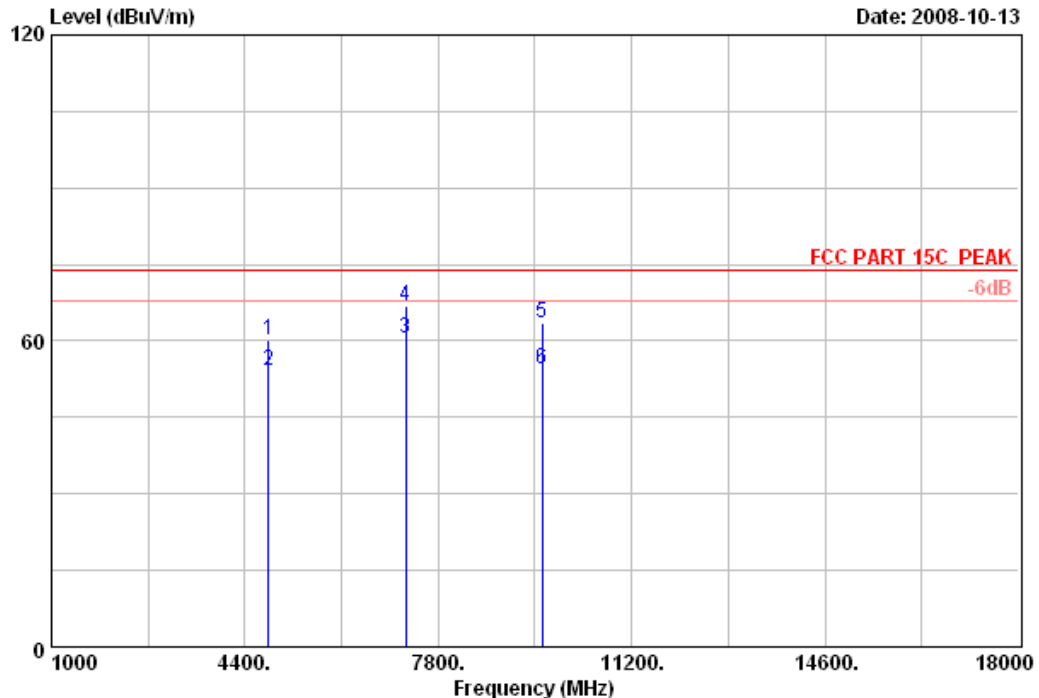


No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 2

File: E:\2008 test data\HHJT\2008-10-12.EMI (18)

Date: 2008-10-13



Site no. : 3# Chamber Data no. : 2
Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N:M05A-C
Power Rating: DC 3.3V
Test mode : CH 2408 MHz
:

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission Reading Level (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4815.60	34.36	10.54	34.49	49.64	60.05	74.00	13.95	Peak
2	4815.60	34.36	10.54	34.49	43.70	54.11	54.00	-0.11	Average
3	7223.70	38.39	12.16	34.44	44.26	60.37	54.00	-6.37	Average
4	7223.70	38.39	12.16	34.44	50.64	66.75	74.00	7.25	Peak
5	9631.60	37.49	14.11	35.90	47.85	63.55	74.00	10.45	Peak
6	9631.60	37.49	14.11	35.90	38.66	54.36	54.00	-0.36	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Adjusted Average Level

Frequency (MHz)	Reading Level (dBuV/m)	Adjusted Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4815.6	54.11	40.11	54	13.89
7223.7	60.37	46.37	54	7.63
9631.7	54.36	40.36	54	13.64

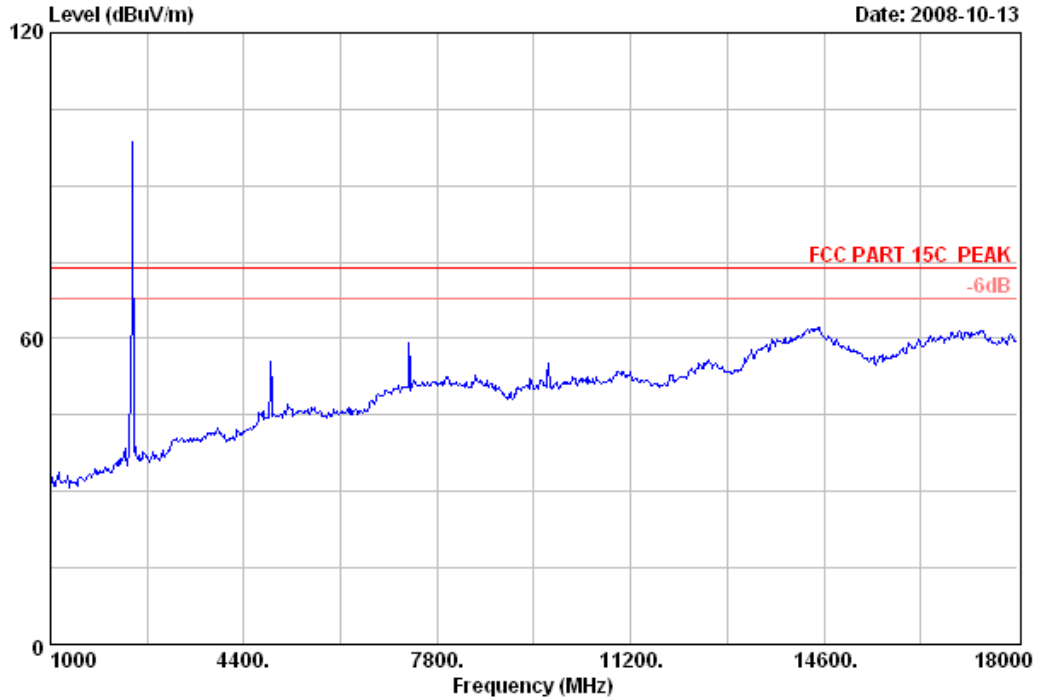


No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 5

File: E:\2008 test data\HHJT\2008-10-12.EMI (18)

Date: 2008-10-13

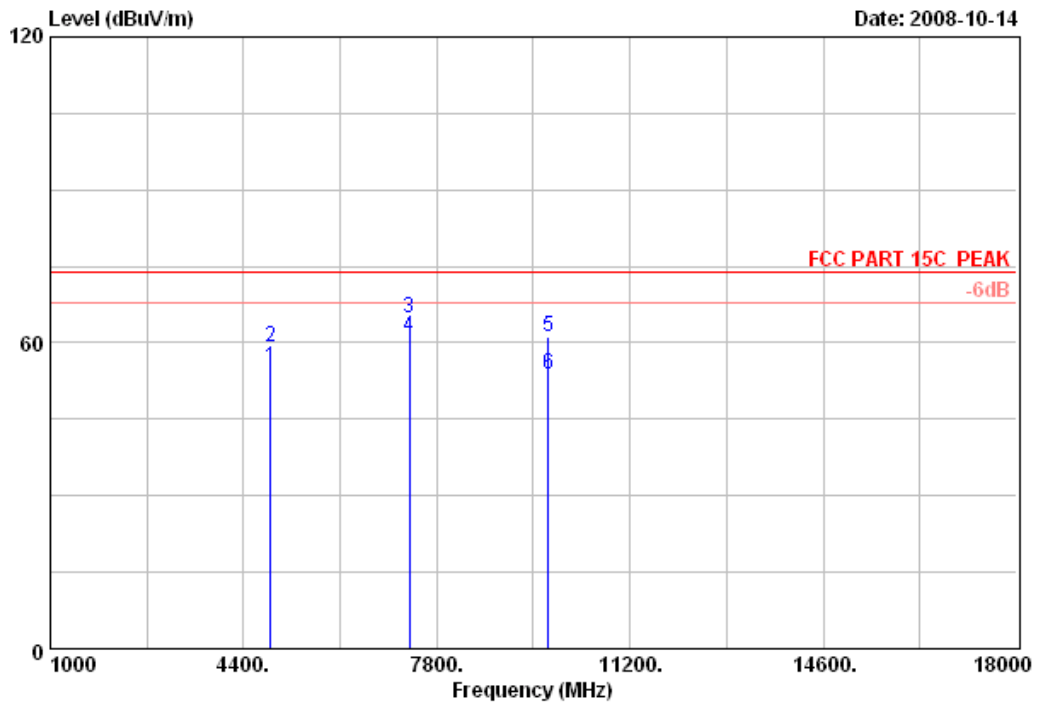


Site no.	: 3# Chamber	Data no.	: 5
Dis. / Ant.	: 3m 3115	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer	: Power
EUT	: 2.4GHz Wireless Module	M/N:	M05A-C
Power Rating:	DC 3.3V		
Test mode	: CH 2440MHz		
	:		



No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou, ShenZhen, GuangDong, China
Tel: +86-755-26639495-7
Fax: +86-755-26632877
Postcode: 518057

Data: 6 File: E:\2008 test data\HHJT\2008-10-12.EMI (18)



Site no. : 3# Chamber Data no. : 6
Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N: M05A-C
Power Rating: DC 3.3V
Test mode : CH 2440MHz
:

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4879.80	34.78	10.56	34.48	44.14	55.00	54.00	-1.00	Average
2	4879.95	34.78	10.56	34.48	48.16	59.02	74.00	14.98	Peak
3	7319.70	38.62	12.20	34.47	48.66	65.01	74.00	8.99	Peak
4	7319.70	38.62	12.20	34.47	44.66	61.01	54.00	-7.01	Average
5	9759.60	37.66	14.27	36.00	45.22	61.15	74.00	12.85	Peak
6	9759.60	37.66	14.27	36.00	38.03	53.96	54.00	0.04	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Adjusted Average Level

Frequency (MHz)	Reading Level (dBuV/m)	Adjusted Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4879.8	55.00	41.00	54	13.00
7319.7	61.01	47.01	54	6.99
9759.60	53.96	39.96	54	14.04

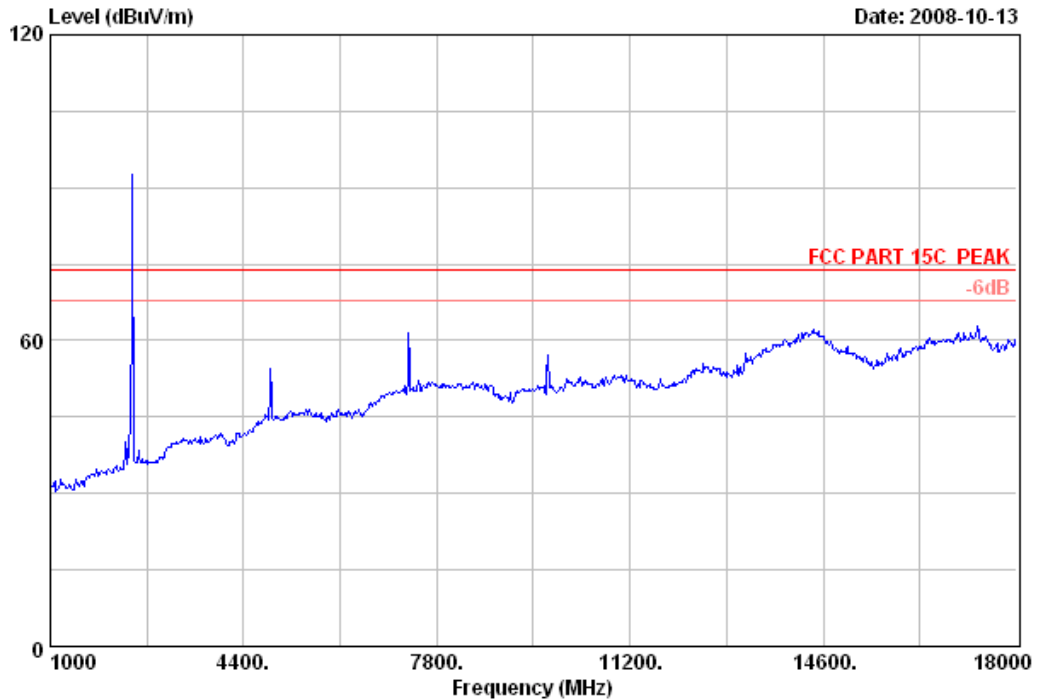


No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou, ShenZhen, GuangDong, China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 7

File: E:\2008 test data\H\HJT\2008-10-12.EMI (18)

Date: 2008-10-13

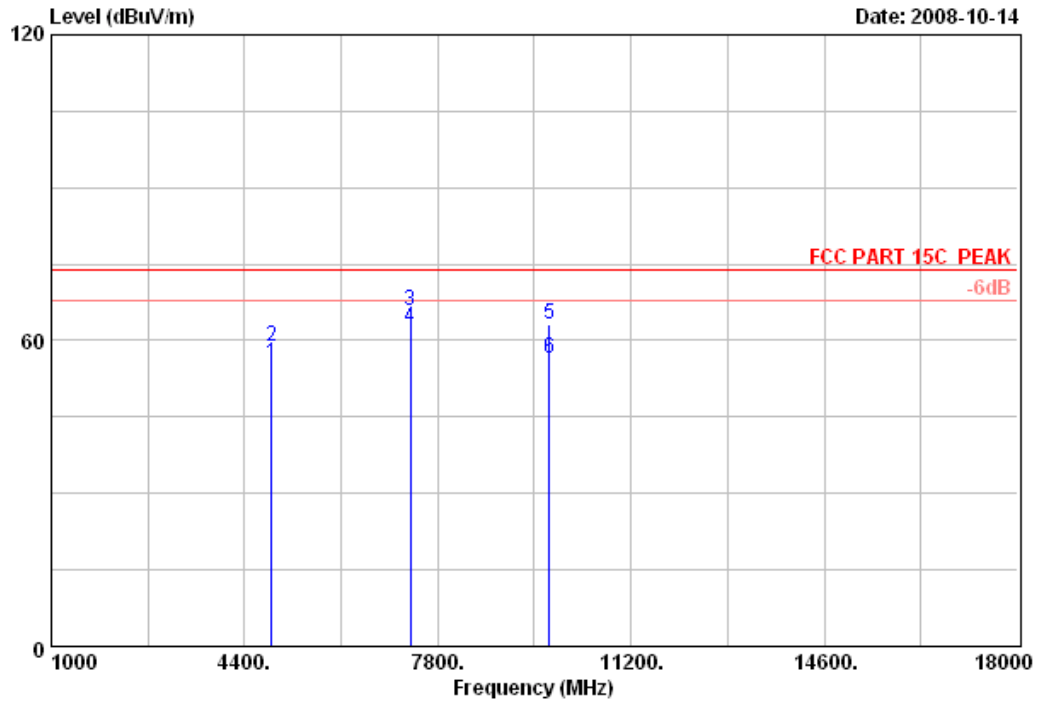


Site no.	: 3# Chamber	Data no.	: 7
Dis. / Ant.	: 3m 3115	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer	: Power
EUT	: 2.4GHz Wireless Module	M/N:	M05A-C
Power Rating:	DC 3.3V		
Test mode	: CH 2440MHz		
	:		



No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 8 File: E:\2008 test data\HHJT\2008-10-12.EMI (18)



Site no. : 3# Chamber Data no. : 8
Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N:MO5A-C
Power Rating: DC 3.3V
Test mode : CH 2440MHz
:

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4879.80	34.78	10.56	34.48	44.72	55.58	74.00	18.42	Peak
2	4879.90	34.78	10.56	34.48	48.00	58.86	54.00	-4.86	Average
3	7319.70	38.62	12.20	34.47	49.48	65.83	74.00	8.17	Peak
4	7319.70	38.62	12.20	34.47	46.21	62.56	54.00	-8.56	Average
5	9759.60	37.66	14.27	36.00	47.32	63.25	74.00	10.75	Peak
6	9759.60	37.66	14.27	36.00	40.50	56.43	54.00	-2.43	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Adjusted Average Level

Frequency (MHz)	Reading Level (dBuV/m)	Adjusted Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4879.90	58.86	44.86	54	9.14
7319.7	62.56	48.56	54	5.44
9759.6	56.43	42.43	54	11.57

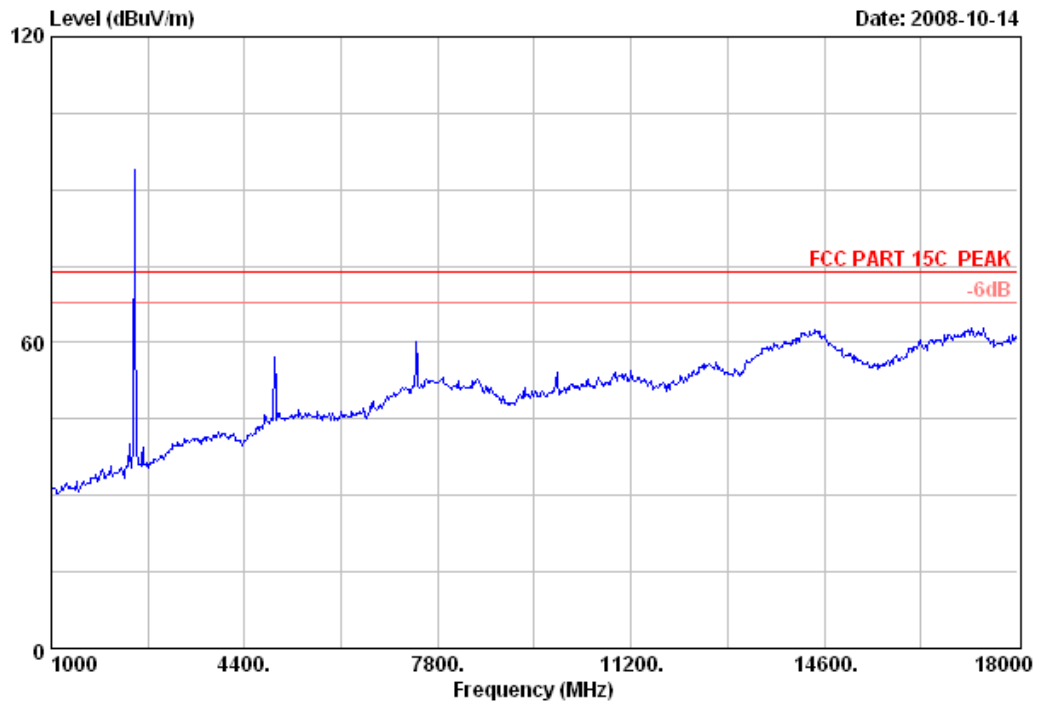


No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou, ShenZhen, GuangDong, China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 9

File: E:\2008 test data\HHJT\2008-10-12.EMI (18)

Date: 2008-10-14



Site no. : 3# Chamber
Dis. / Ant. : 3m 3115
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54%
EUT : 2.4GHz Wireless Module
Power Rating: DC 3.3V
Test mode : CH 2476 MHz
:

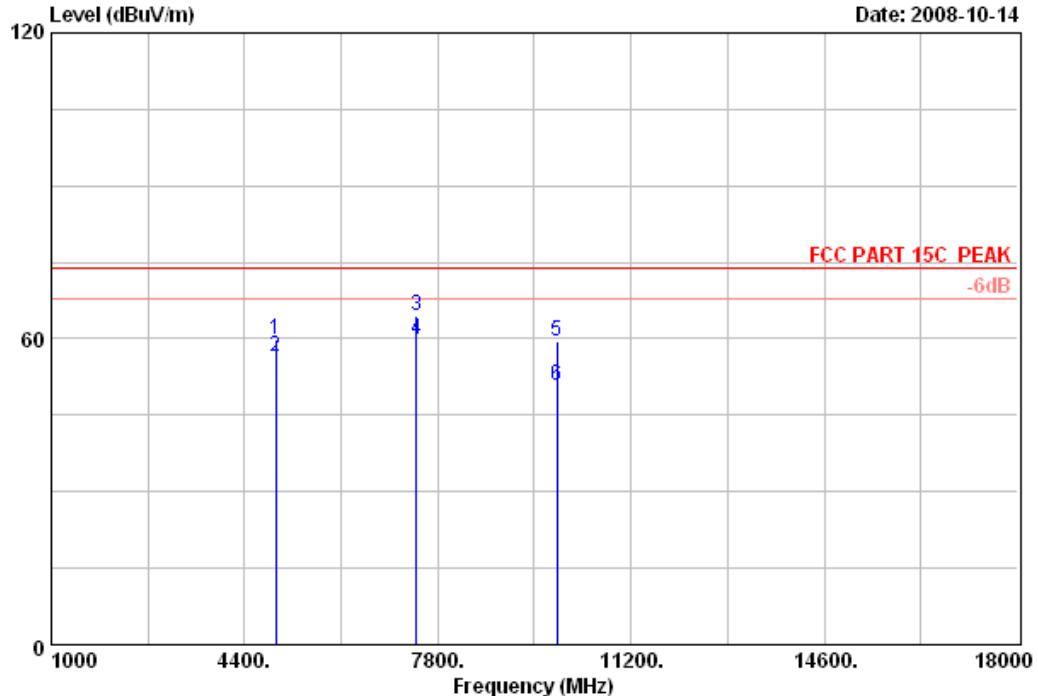
Data no. : 9
Ant. pol. : HORIZONTAL
Engineer : Power
M/N: M05A-C



No.6 Ke Feng Road,B1;ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 10 File: E:\2008 test data\H\HJT\2008-10-12.EMI (18)

Date: 2008-10-14



Site no. : 3# Chamber Data no. : 10
Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N:M05A-C
Power Rating: DC 3.3V
Test mode : CH 2476MHz
:

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading Level (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	4951.80	35.19	10.58	34.46	48.62	59.93	74.00	14.07	Peak
2	4951.80	35.19	10.58	34.46	45.02	56.33	54.00	-2.33	Average
3	7427.70	38.85	12.32	34.49	47.73	64.41	74.00	9.59	Peak
4	7427.70	38.85	12.32	34.49	43.04	59.72	54.00	-5.72	Average
5	9903.60	37.88	14.43	36.12	43.41	59.60	74.00	14.40	Peak
6	9903.60	37.88	14.43	36.12	34.57	50.76	54.00	3.24	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Adjusted Average Level

Frequency (MHz)	Reading Level (dBUV/m)	Adjusted Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)
4951.80	56.33	42.33	54	11.67
7427.7	59.72	45.72	54	8.28
9903.6	50.76	36.76	54	17.24

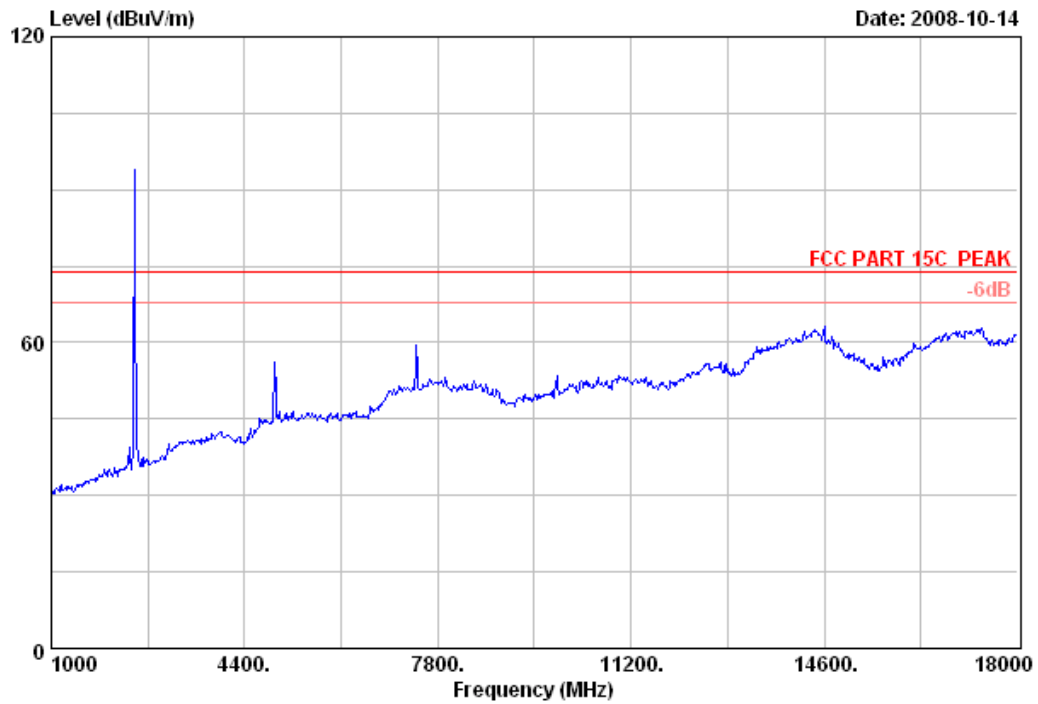


No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou, ShenZhen, GuangDong, China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 11

File: E:\2008 test data\HHJT\2008-10-12.EMI (18)

Date: 2008-10-14



Site no. : 3# Chamber
Dis. / Ant. : 3m 3115
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54%
EUT : 2.4GHz Wireless Module
Power Rating: DC 3.3V
Test mode : CH 2476 MHz
:

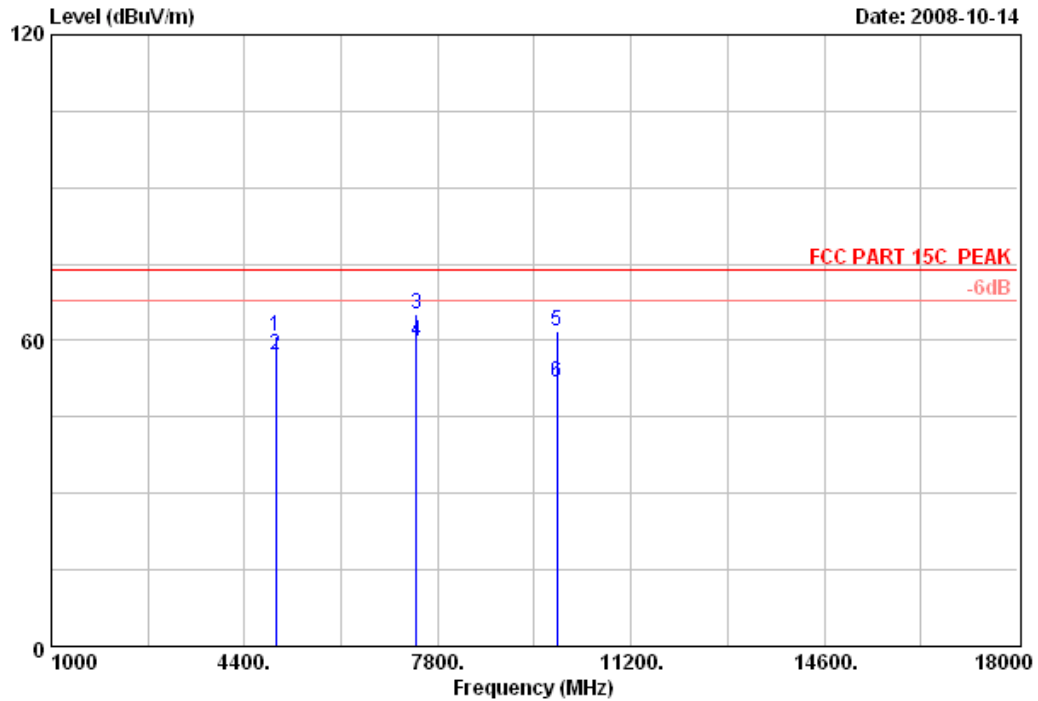
Data no. : 11
Ant. pol. : VERTICAL
Engineer : Power
M/N: M05A-C



No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 12 File: E:\2008 test data\HHJT\2008-10-12.EMI (18)

Date: 2008-10-14



Site no. : 3# Chamber Data no. : 12
Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N:M05A-C
Power Rating: DC 3.3V
Test mode : CH 2476MHz
:

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4951.80	35.19	10.58	34.46	49.61	60.92	74.00	13.08	Peak
2	4951.80	35.19	10.58	34.46	45.92	57.23	54.00	-3.23	Average
3	7427.70	38.85	12.32	34.49	48.54	65.22	74.00	8.78	Peak
4	7427.70	38.85	12.32	34.49	43.24	59.92	54.00	-5.92	Average
5	9903.60	37.88	14.43	36.12	45.49	61.68	74.00	12.32	Peak
6	9903.60	37.88	14.43	36.12	35.78	51.97	54.00	2.03	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Adjusted Average Level

Frequency (MHz)	Reading Level (dBuV/m)	Adjusted Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4951.80	57.23	43.23	54	10.77
7427.70	59.92	45.92	54	8.08
9903.60	51.97	37.97	54	16.03

Test Frequency: 30MHz-1GHz(Tested with a representative host: wireless guitar)

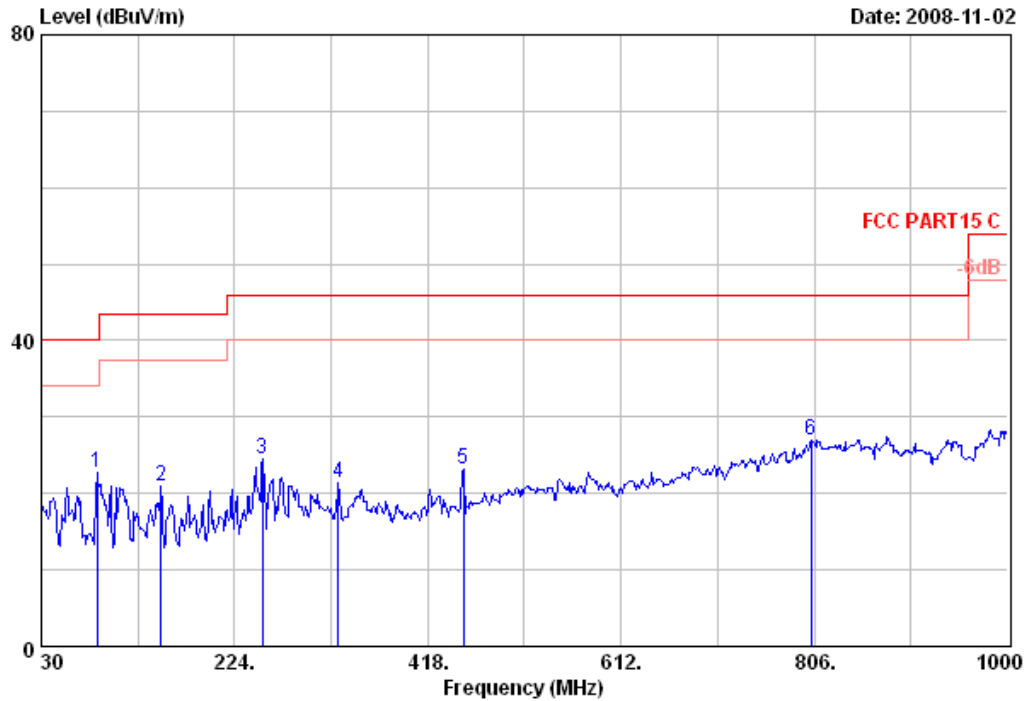


No.6 Ke Feng Road, Block 52,
Shenzhen Science & Industry Park
Noutou, Shenzhen, Guangdong, China
Tel: +86-755-26639495-7
Fax: +86-755-26632877
Postcode: 518057

Data: 50

File: E:\2008 report data\J\Jess\ACS8Q1234.EMI (148)

Date: 2008-11-02



Site no. : 3# Chamber Data no. : 50
Dis. / Ant. : 3m 2598 Ant. pol. : VERTICAL
Limit : FCC PART15 C
Env. / Ins. : 24°C/56% ESVS20 Engineer : Jamy
EUT : 2.4G Wireless Module
Power Rating: DC 3.3V
Test Mode : Tx Mode
Memo : Tested with a representative Host

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	86.26	8.52	1.20	13.01	22.73	40.00	17.27	QP
2	150.28	11.40	1.54	8.07	21.01	43.50	22.49	QP
3	252.13	12.90	2.12	9.55	24.57	46.00	21.43	QP
4	327.79	14.46	2.40	4.56	21.42	46.00	24.58	QP
5	453.89	17.18	2.79	3.21	23.18	46.00	22.82	QP
6	803.09	21.86	3.80	1.30	26.96	46.00	19.04	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

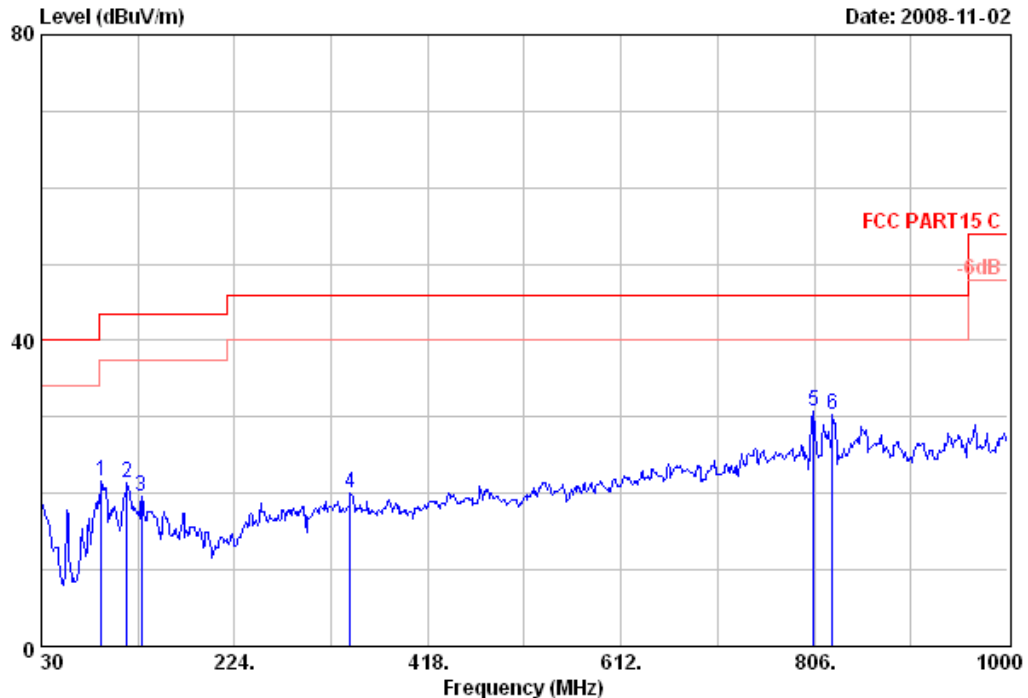


No.6 Ke Feng Road,B1;ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 49

File: E:\2008 report data\J\Jess\ACS8Q1234.EMI (148)

Date: 2008-11-02



Site no. : 3# Chamber Data no. : 49
Dis. / Ant. : 3m 2598 Ant. pol. : HORIZONTAL
Limit : FCC PART15 C
Env. / Ins. : 24°C/56% ESVS20 Engineer : Jamy
EUT : 2.4G Wireless Module
Power Rating: DC 3.3V
Test Mode : Tx Mode
Memo : Tested with a representative Host

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	90.14	9.00	1.20	11.40	21.60	43.50	21.90	QP
2	116.33	11.72	1.42	8.21	21.35	43.50	22.15	QP
3	130.88	12.06	1.42	6.14	19.62	43.50	23.88	QP
4	340.40	14.80	2.40	2.80	20.00	46.00	26.00	QP
5	805.03	21.90	3.80	5.09	30.79	46.00	15.21	QP
6	824.43	22.25	3.85	4.11	30.21	46.00	15.79	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Test Frequency: 1GHz-18GHz(Tested with a representative host: wireless guitar)

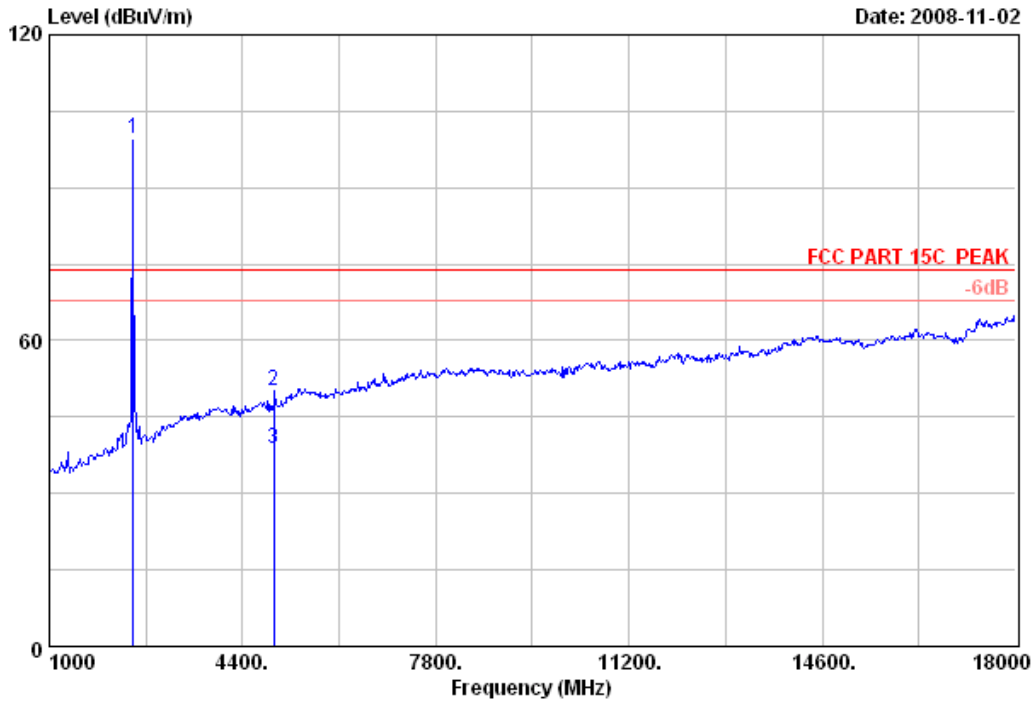


No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 24

File: E:\2008 report data\J\Jess\ACS8Q1234.EMI (148)

Date: 2008-11-02



Site no. : 3# Chamber Data no. : 24
Dis. / Ant. : 3m 3115 FACTOR Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module
Power Rating: DC 3.3V
Test mode : TX 2476MHz
MEMO : Tested with a representative Host

		Ant.	Cable	Amp	Emission				
Freq.	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)		
1	2476.00	29.19	6.87	35.16	98.63	99.53	74.00	-25.53	Peak
2	4952.00	34.34	10.58	34.46	39.79	50.25	74.00	23.75	Peak
3	4952.00	34.34	10.58	34.46	28.24	38.70	54.00	15.30	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

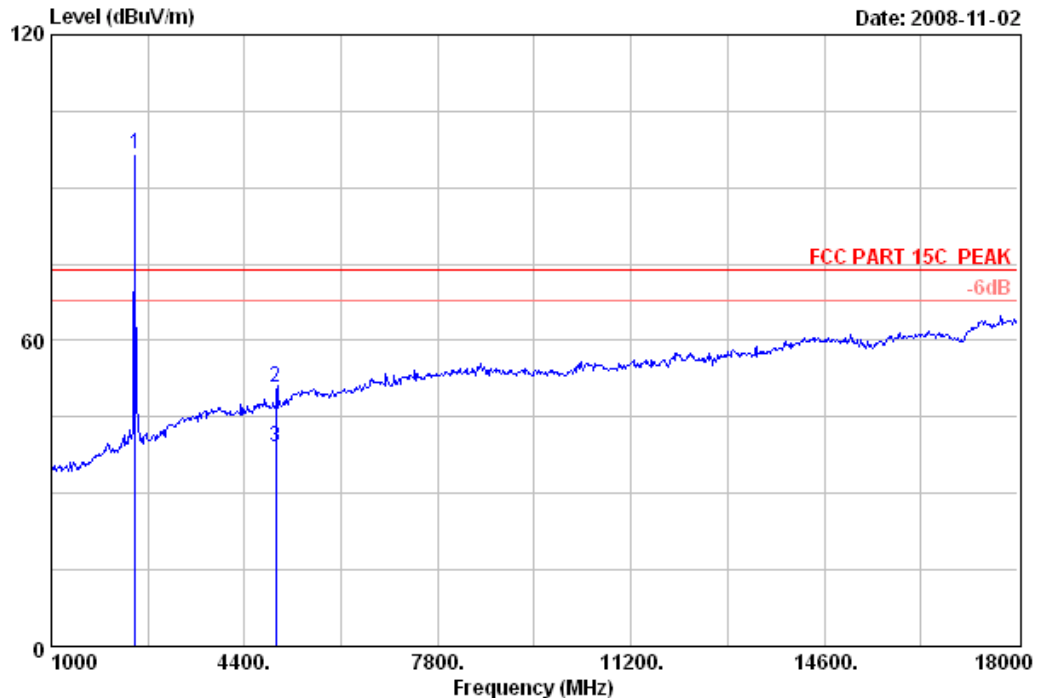


No.6 Ke Feng Road,B1;ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 23

File: E:\2008 report data\J\Jess\ACS8Q1234.EMI (148)

Date: 2008-11-02



Site no. : 3# Chamber Data no. : 23
Dis. / Ant. : 3m 3115 FACTOR Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module
Power Rating: DC 3.3V
Test mode : TX 2476MHz
MEMO : Tested with a representative Host

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2476.00	29.19	6.87	35.16	95.67	96.57	114.00	17.43	Peak
2	4952.00	34.34	10.58	34.46	40.29	50.75	74.00	23.25	Peak
3	4952.00	34.34	10.58	34.46	28.80	39.26	54.00	14.74	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

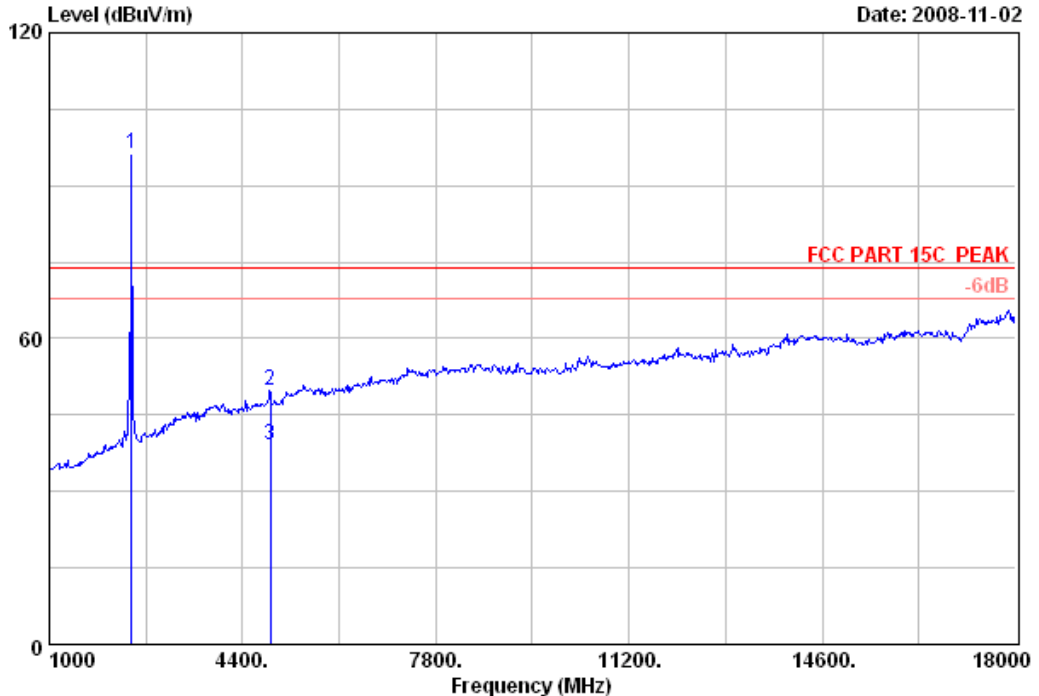


No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 22

File: E:\2008 report data\J\Jess\ACS8Q1234.EMI (148)

Date: 2008-11-02



Site no. : 3# Chamber Data no. : 22
Dis. / Ant. : 3m 3115 FACTOR Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module
Power Rating: DC 3.3V
Test mode : TX 2440MHz
MEMO : Tested with a representative Host

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2440.00	29.11	6.80	35.17	95.69	96.43	74.00	-22.43	Peak
2	4880.00	34.16	10.57	34.48	39.52	49.77	74.00	24.23	Peak
3	4880.00	34.16	10.57	34.48	28.79	39.04	54.00	14.96	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

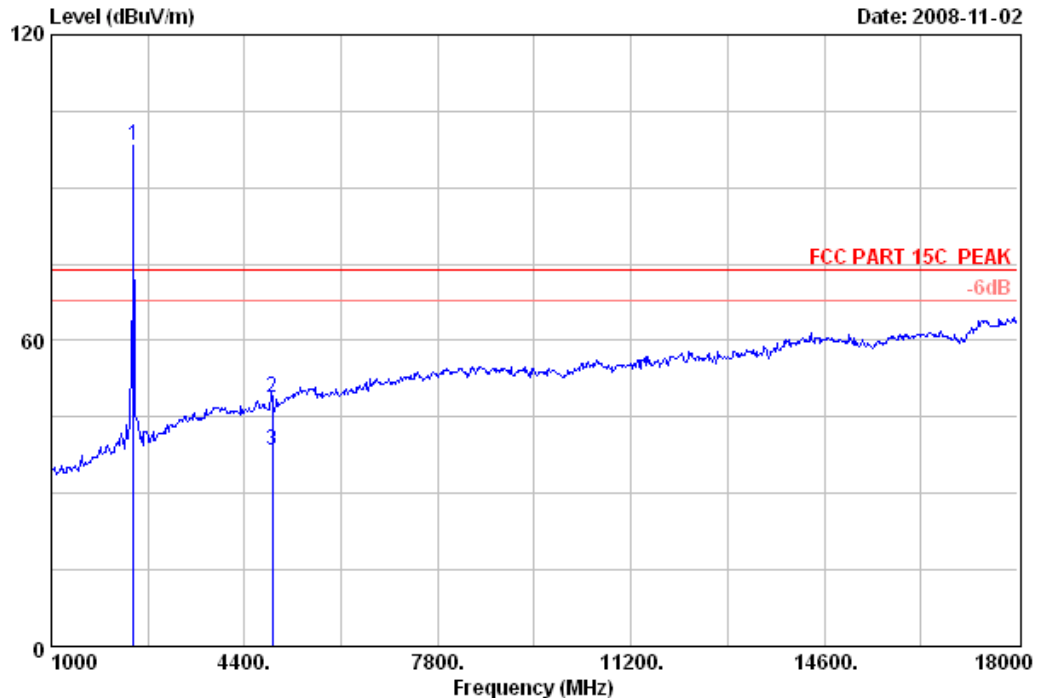


No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 21

File: E:\2008 report data\J\Jess\ACS8Q1234.EMI (148)

Date: 2008-11-02



Site no. : 3# Chamber Data no. : 21
Dis. / Ant. : 3m 3115 FACTOR Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module
Power Rating: DC 3.3V
Test mode : TX 2440MHz
MEMO : Tested with a representative Host

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2440.00	29.11	6.80	35.17	97.53	98.27	74.00	-24.27	Peak
2	4880.00	34.16	10.57	34.48	38.51	48.76	74.00	25.24	Peak
3	4880.00	34.16	10.57	34.48	28.22	38.47	54.00	15.53	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

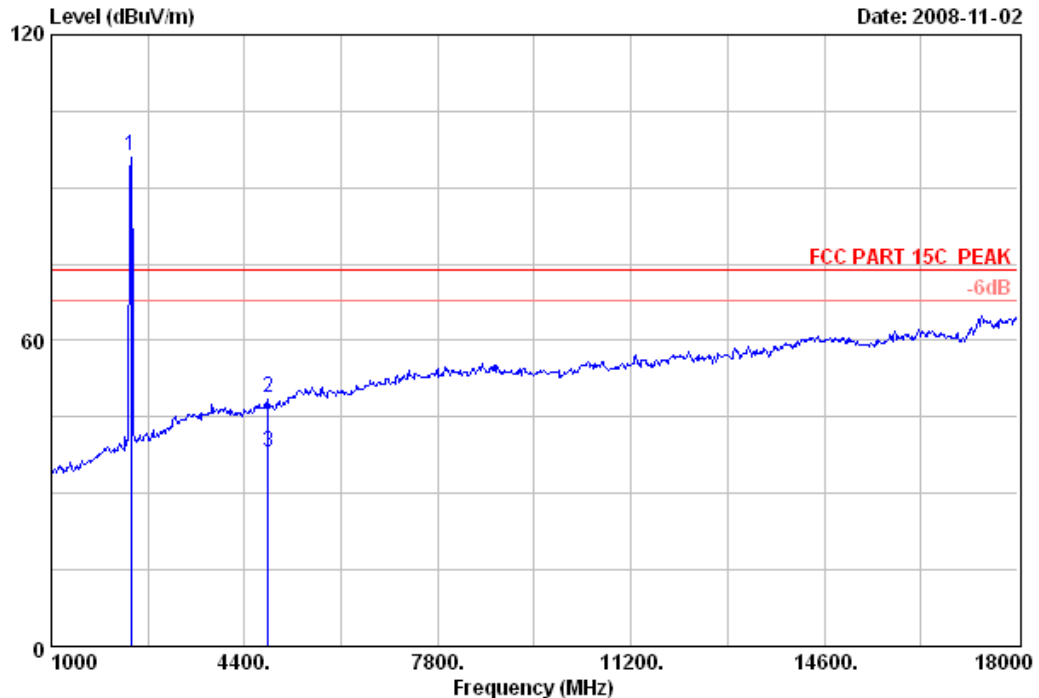


No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 20

File: E:\2008 report data\J\Jess\ACS8Q1234.EMI (148)

Date: 2008-11-02



Site no. : 3# Chamber Data no. : 20
Dis. / Ant. : 3m 3115 FACTOR Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module
Power Rating: DC 3.3V
Test mode : TX 2408MHz
MEMO : Tested with a representative Host

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2408.00	29.03	6.73	35.18	95.65	96.23	74.00	-22.23	Peak
2	4816.00	33.98	10.54	34.49	38.85	48.88	74.00	25.12	Peak
3	4816.00	33.98	10.54	34.49	28.20	38.23	54.00	15.77	Average

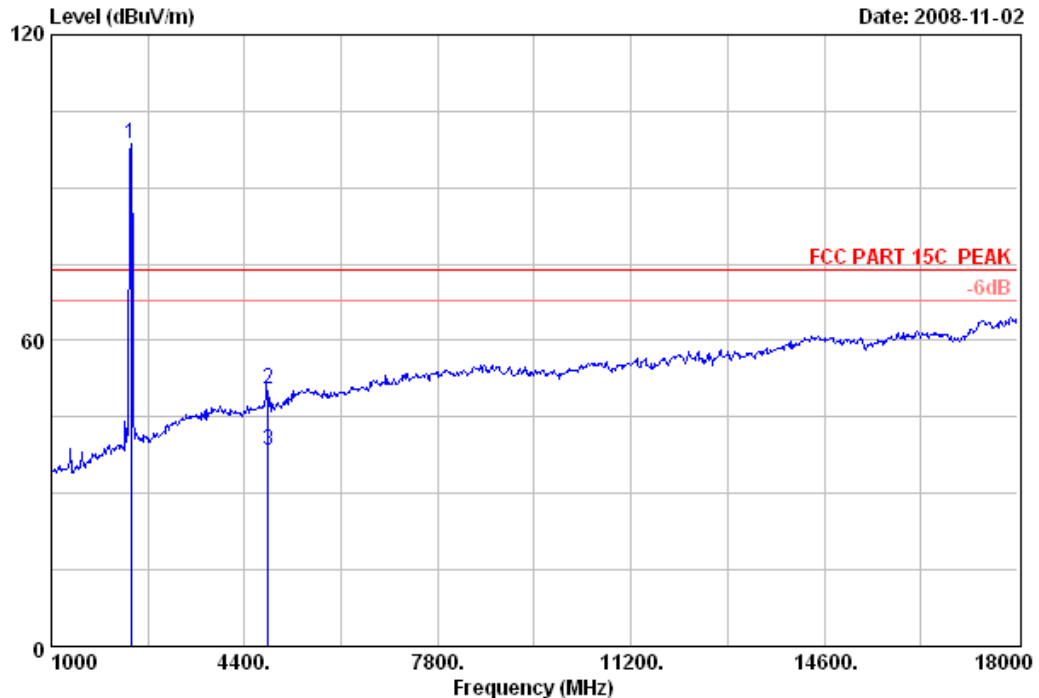
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 19 File: E:\2008 report data\J\Jess\ACS8Q1234.EMI (148)

Date: 2008-11-02



Site no. : 3# Chamber Data no. : 19
Dis. / Ant. : 3m 3115 FACTOR Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module
Power Rating: DC 3.3V
Test mode : TX 2408MHz
MEMO : Tested with a representative Host

		Ant.	Cable	Amp	Emission				
	Freq.	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2408.00	29.03	6.73	35.18	98.17	98.75	74.00	-24.75	Peak
2	4816.00	33.98	10.54	34.49	40.32	50.35	74.00	23.65	Peak
3	4816.00	33.98	10.54	34.49	28.51	38.54	54.00	15.46	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

5. CARRIER FREQUENCY SEPARATION TEST

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May,10, 08	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	May,27, 08	1.5 Year
3	RF Cable	Hubersuhner	SUCOFLEX 102	2861812	May,28, 08	1 Year
4	RF Cable	Hubersuhner	SUCOFLEX 102	28862212	May,28, 08	1 Year

5.2. Test Information

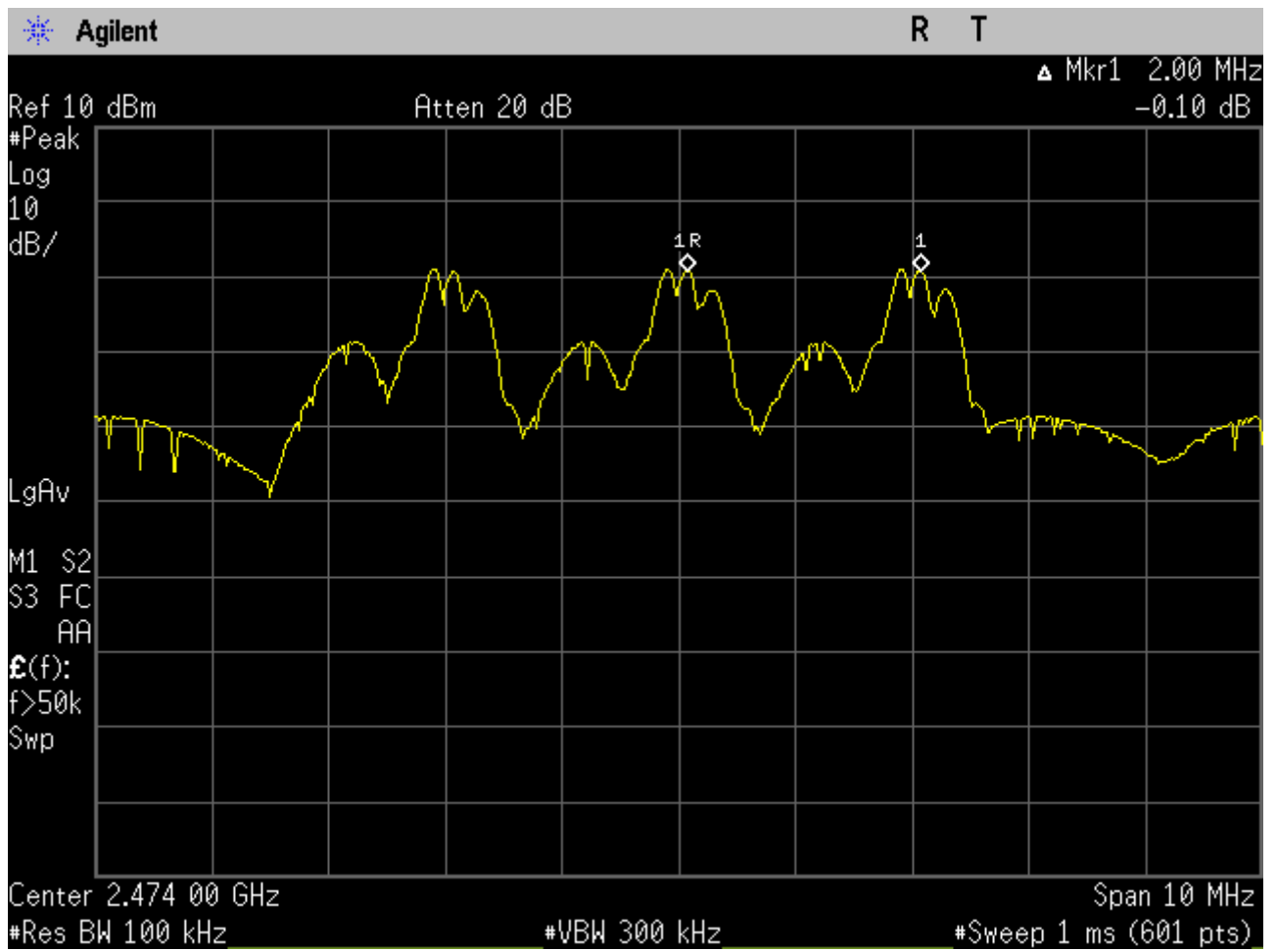
EUT:	2.4GHz Wireless Module
M/N:	M05A-C
Test Date:	Oct.10, 2008
Ambient Temperature:	23°C
Relative Humidity:	54%
Test standard:	FCC PART 15C: 15.247(a)(1)
Test mode:	TX (Hopping on)
Test By:	Power

5.3. Limit

Frequency hopping systems shall have hopping channel carrier frequency separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

5.4. Test Results (Pass.)

carrier frequency separating	20dB Bandwidth (MHz)	Conclusion
2MHz(minimum)	1.067(see below test data)	PASS



6. 20 DB BANDWIDTH TEST

6.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May,10, 08	1 Year
2	Attenuator	Agilent	8491B	MY39262165	May,28, 08	1 Year
3	Horn Antenna	EMCO	3115	9607-4877	May, 27, 08	1.5 Year
4	RF Cable	Hubersuhner	SUCOFLEX 102	2861812	May,28, 08	1Year
5	RF Cable	Hubersuhner	SUCOFLEX 102	28862212	May,28, 08	1 Year

6.2.Test Information

EUT:	2.4GHz Wireless Module
M/N:	M05A-C
Test Date:	Oct.12, 2008
Ambient Temperature:	23°C
Relative Humidity:	54%
Test standard:	FCC PART 15C: 15.247(a)(1)
Test mode:	TX (Hopping off)
Test Frequency:	Low: 2408MHz Mid: 2440MHz High: 2476MHz
Test By:	Power

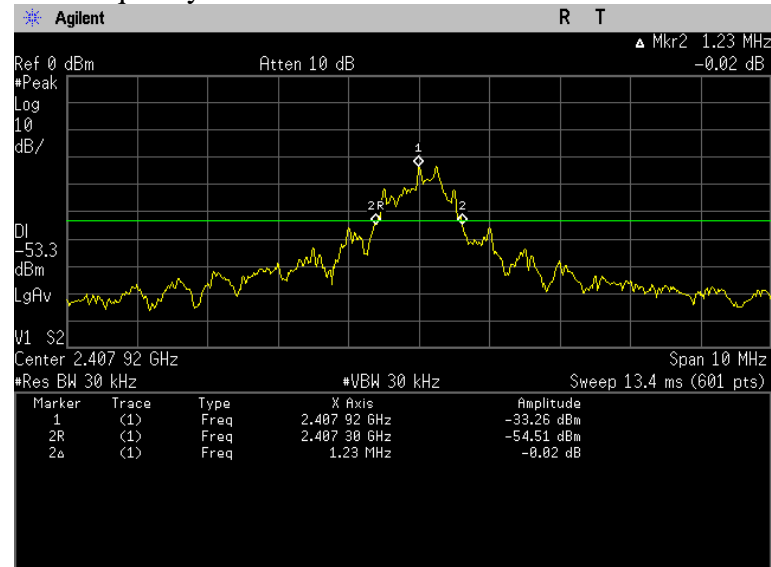
6.3.Test Procedure

The transmitter output was coupled to a spectrum analyzer via a antenna. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 30kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

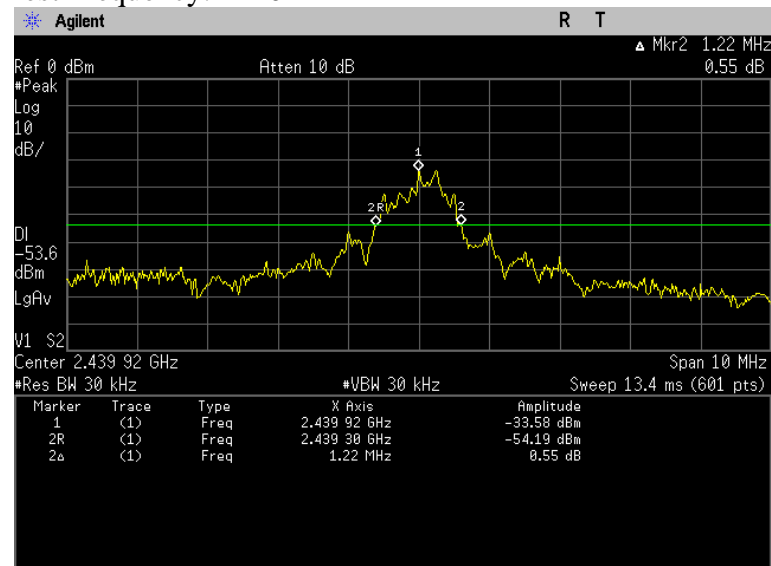
6.4.Test Results

CH	20dB Bandwidth (MHz)	Limit (kHz)	Conclusion
(Low)	1.23	---	PASS
(Mid)	1.22	---	PASS
(High)	1.27	---	PASS

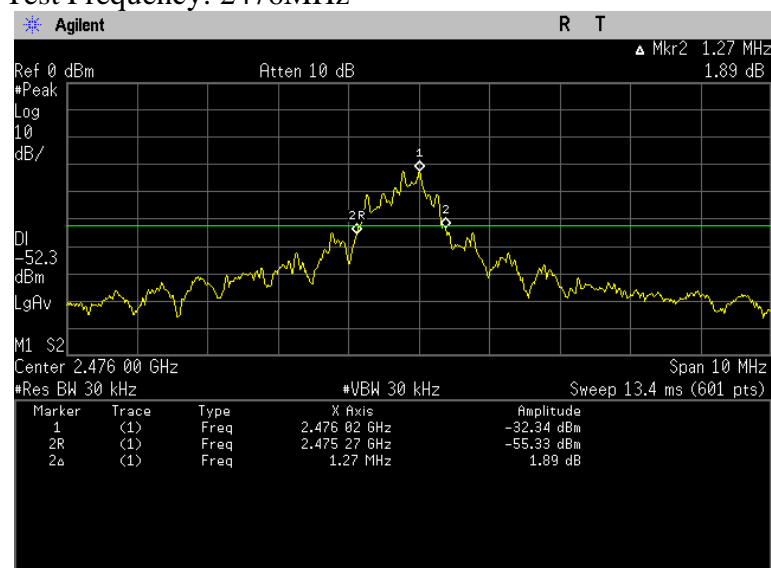
Test Frequency: 2408MHz



Test Frequency: 2440MHz



Test Frequency: 2476MHz



7. NUMBER OF HOPPING FREQUENCY TEST

7.1. Test Equipment

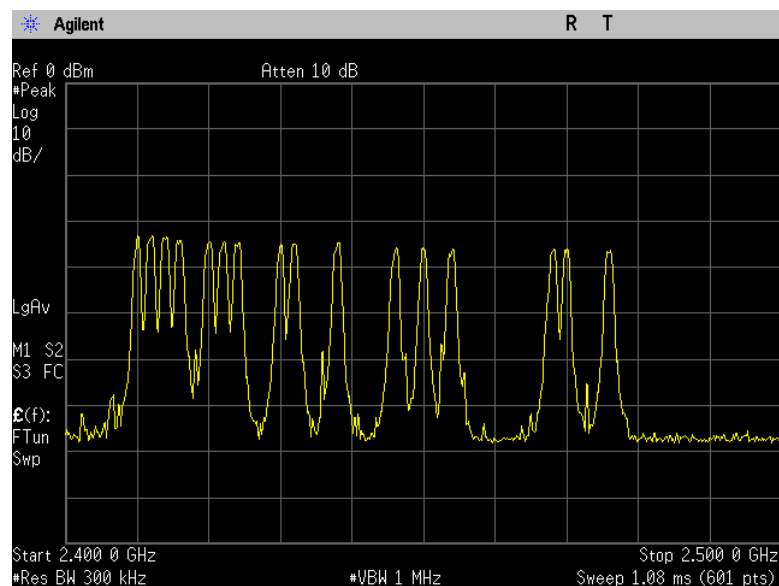
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May,10, 08	1 Year
2	Attenuator	Agilent	8491B	MY39262165	May,28, 08	1 Year
3	Horn Antenna	EMCO	3115	9607-4877	May, 27, 08	1.5 Year
4	RF Cable	Hubersuhner	SUCOFLEX 102	2861812	May,28, 08	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX 102	28862212	May,28, 08	1 Year

7.2. Test Information

EUT:	2.4GHz Wireless Module
M/N:	M05A-C
Test Date:	Oct.12, 2008
Ambient Temperature:	23°C
Relative Humidity:	54%
Test standard:	FCC PART 15C: 15.247(a)(1)(iii)
Test mode:	TX (Hopping on)
Test By:	Power

7.3. Test Results

Number of channel	Limit	Conclusion
16	>=15	PASS



8. DWELL TIME TEST

8.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May,10, 08	1 Year
2	Attenuator	Agilent	8491B	MY39262165	May,28, 08	1 Year
3	Horn Antenna	EMCO	3115	9607-4877	May, 27, 08	1.5 Year
4	RF Cable	Hubersuhner	SUCOFLEX 102	2861812	May,28, 08	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX 102	28862212	May,28, 08	1 Year

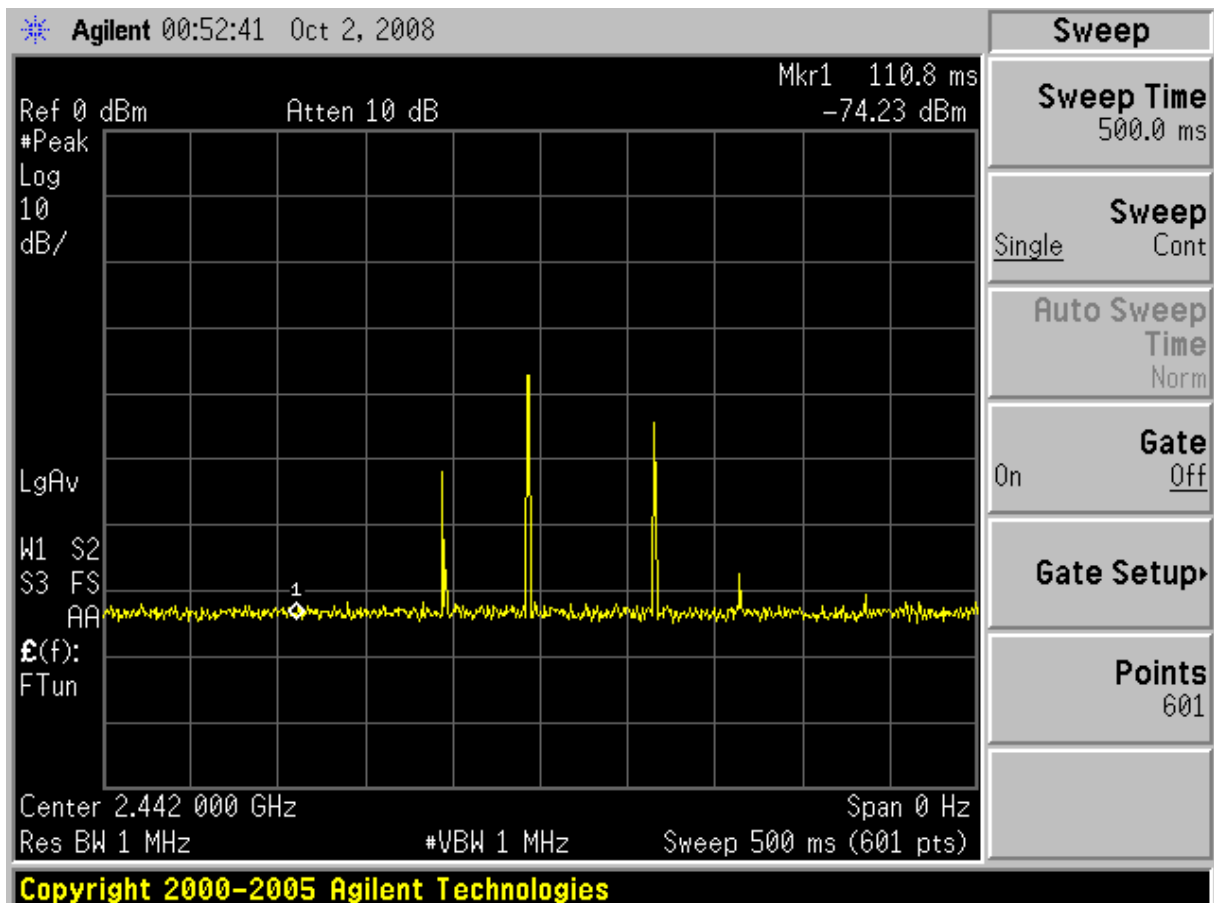
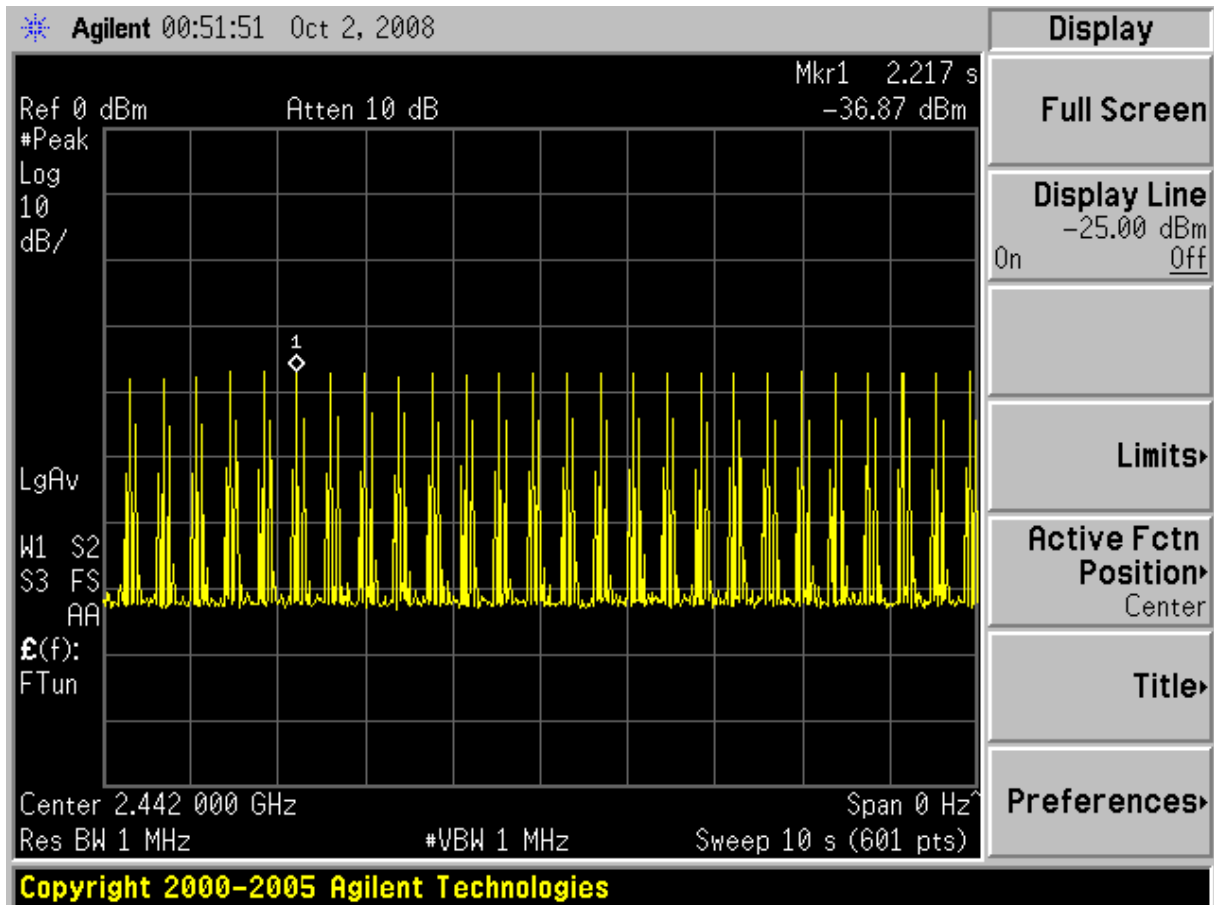
8.2. Test Information

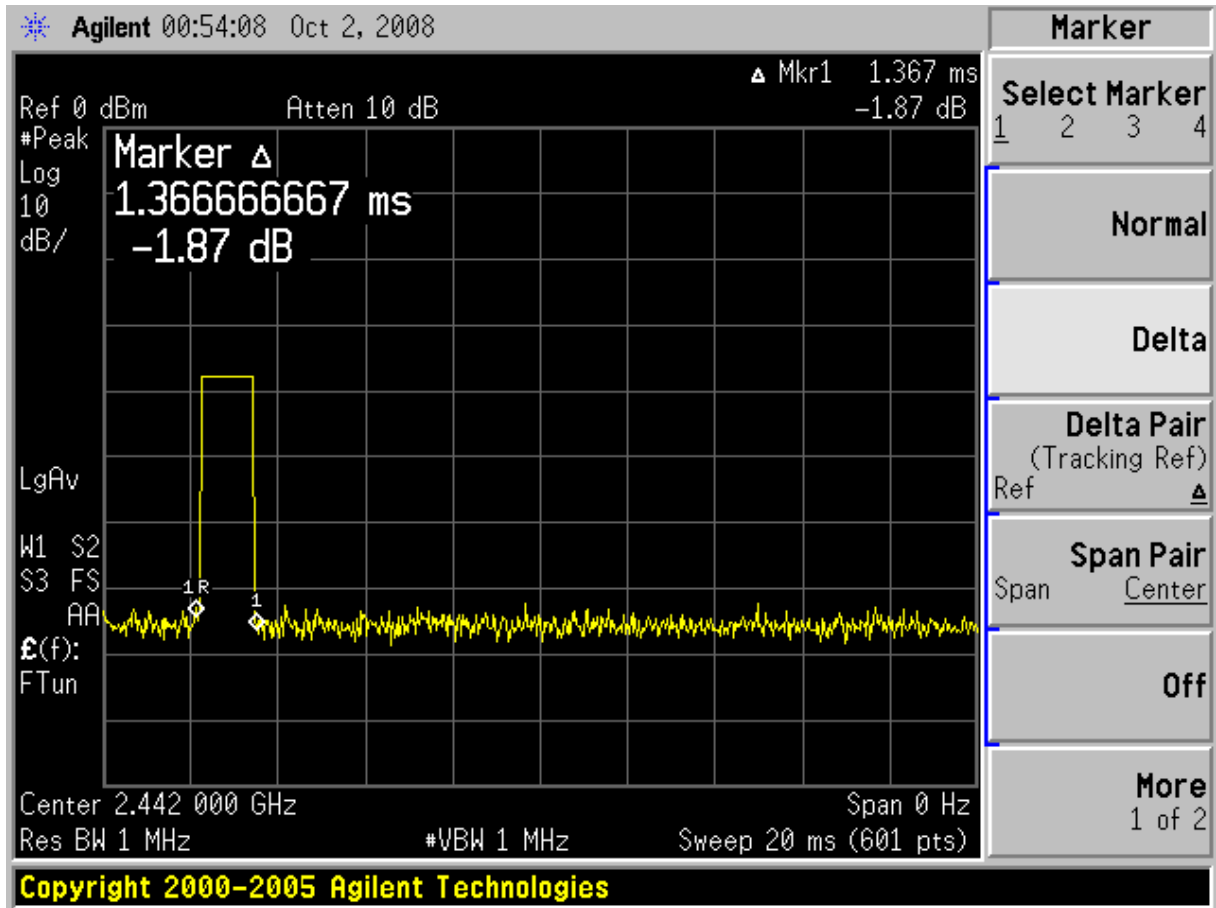
EUT:	2.4GHz Wireless Module
M/N:	M05A-C
Test Date:	Oct.12, 2008
Ambient Temperature:	23°C
Relative Humidity:	54%
Test standard:	FCC PART 15C: 15.247(a)(1)(iii)
Test mode:	Transmitting, Hopping off
Test Frequency:	Normal
Test By:	Power

8.3. Test Results

As next page plot 1 indicated within a period of 0.4 seconds multiplied by the number of hopping channels, each hopping channels were average used, the device will transmit three pulses in each channel and each pulse will dwell 1.37ms, so average time of occupancy on any channel is $1.37 \times 3 = 4.11\text{ms}$

dwell time	Limit	Conclusion
4.11ms	<400ms	PASS





9. MAXIMUM PEAK OUTPUT POWER TEST

9.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May,10, 08	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	May, 27, 08	1.5 Year
3	Horn Antenna	EMCO	3115	9510-4580	May,11, 07	1.5 Year
4	Signal Generator	HP	83732B	6K00003262	May,10, 08	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX	182769/4	May,28, 08	1Year
6	RF Cable	Hubersuhner	SUCOFLEX	182768/4	May,28, 08	1Year
7	RF Cable	Hubersuhner	SUCOFLEX	182771/4	May,28, 08	1Year
8	RF Cable	Hubersuhner	SUCOFLEX 102	2861812	May,28, 08	1Year
9	RF Cable	Hubersuhner	SUCOFLEX 104	27147314	May,28, 08	1Year
10	Amplifier	HP	8449B	3008A00863	May,10, 08	1 Year

9.2. Test Procedure

- (1). The EUT was placed on a 0.8m high table in the chamber and turned on in continuously transmitting mode.
- (2). The maximum fundamental emission at 3m distance was measured and recorded with receive antenna in both vertical and horizontal by rotating the turntable and by lowering the receive antenna.
- (3). The EUT was then removed and replaced with a substitution antenna in the same position and the substitution antenna must have the same polarization with the receive antenna.
- (4). A signal which have the same frequency obtained in step 2 was fed to the substitution, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver, the level of the signal generator was adjusted until the measured field strength level in step 2 was obtained, recorded the level of the signal generator.
- (5). Repeated step 4 with both antenna polarizations
- (6). The radiated power is equal to the power supplied by the signal generator and corrections due to the gain of the substitution antenna and the cable loss between the signal generator and the substitution antenna.

9.3. Test Information

EUT:	2.4GHz Wireless Module
M/N:	M05A-C
Test Date:	Oct.12, 2008
Ambient Temperature:	25°C
Relative Humidity:	56%
Test standard:	FCC PART 15C: 15.247(b)(1)
Test mode:	TX (Hopping off)
Test Frequency:	Low: 2407.9MHz Mid: 2439.9MHz High: 2475.9MHz
Test By:	Power

9.4. Test Results

CH	Freq (MHz)	Ant Pol.	Electric Field Strength (dBuV/m)	SG Reading (dBm)	Tx Cable Loss (dB)	Tx Ant. Gain (dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
Low	2408	H	98.78	-1.57	6.06	9.25	1.62	20.97	19.35
	2408	V	92.10	-8.25	6.06	9.25	-5.06	20.97	26.03
Mid	2440	H	98.80	-1.58	6.08	9.30	1.64	20.97	19.33
	2440	V	94.19	-6.19	6.08	9.30	-2.97	20.97	23.94
Hig	2476	H	98.59	-1.75	6.15	9.33	1.43	20.97	19.54
	2476	V	93.65	-6.69	6.15	9.33	-3.51	20.97	24.48
Result = SG Reading – Tx Cable Loss + Tx Antenna Gain – Antenna Gain									

10.BAND EDGE COMPLIANCE TEST

10.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May,10, 08	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	May,27, 08	1.5 Year
3	Amplifier	HP	8449B	3008A00863	May,10, 08	1 Year
4	RF Cable	Hubersuhner	SUCOFLEX	182769/4	May,28, 08	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX	182768/4	May,28, 08	1 Year
6	RF Cable	Hubersuhner	SUCOFLEX	182771/4	May,28, 08	1 Year

10.2.Limit

According to §15.247(c), in any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

10.3.Test Produce

1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upperband-edges of the emission:
 - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO/PK Detector
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO /PK Detector

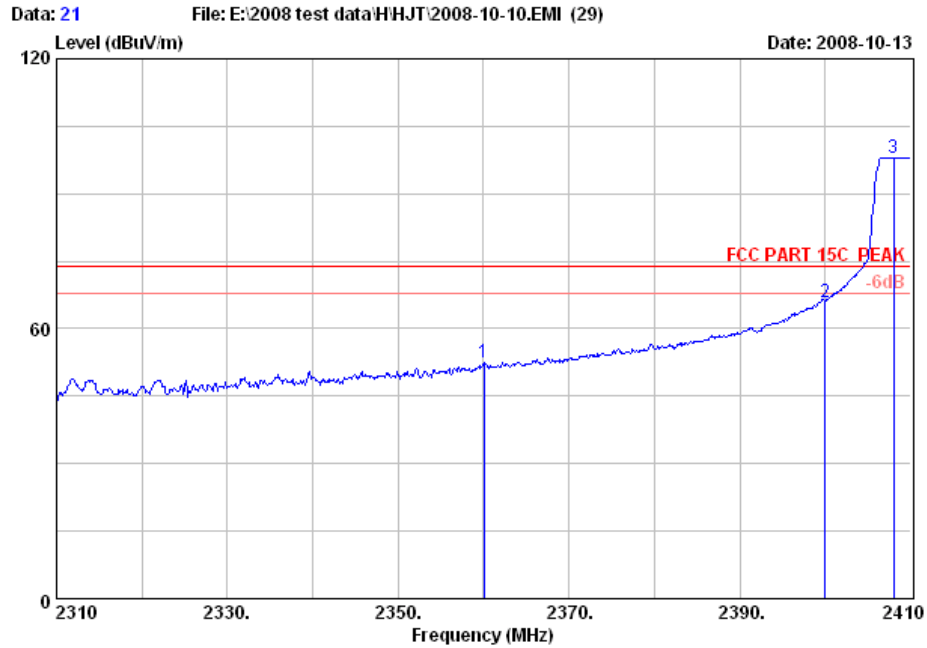
10.4.Test Results

Pass (The testing data was attached in the next pages.)

Hopping on:



No.6 Ke Feng Road,B1:ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



Site no. : 3# Chamber Data no. : 21
Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N:M05A-C
Power Rating: DC 3.3V
Test mode : Hopping on
:

		Ant.	Cable	Amp	Emission					
	Freq.	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark	
	(MHz)	(dB/m)	(dB)	(dB)	(dBUV)	(dBUV/m)	(dBUV/m)	(dB)		
1	2360.05	28.41	6.69	35.19	52.71	52.62	74.00	21.38	Peak	
2	2400.00	28.46	6.73	35.18	65.97	65.98	74.00	8.02	Peak	
3	2408.00	28.48	6.73	35.18	98.00	98.03	74.00	-24.03	Peak	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Adjusted Average Level

Frequency (MHz)	Reading Level (dBUV/m)	Adjusted Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)
2360.05	52.62	38.62	54	15.38

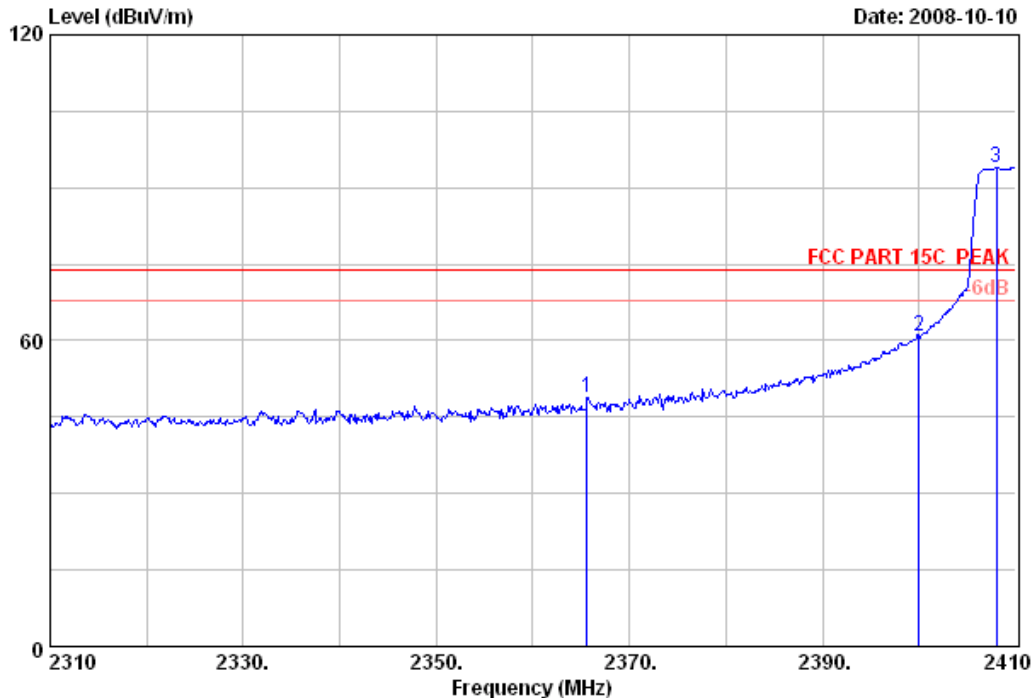


No.6 Ke Feng Road,B1;ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 20

File: E:\2008 test data\HHJT\2008-10-10.EMI (29)

Date: 2008-10-10



Site no. : 3# Chamber Data no. : 20
Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N:M05A-C
Power Rating: DC 3.3V
Test mode : Hopping on
:

	Freq.	Ant.	Cable	Amp	Emission				
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2365.60	28.41	6.69	35.19	49.00	48.91	74.00	25.09	Peak
2	2400.00	28.46	6.73	35.18	60.93	60.94	74.00	13.06	Peak
3	2408.00	28.48	6.73	35.18	93.74	93.77	74.00	-19.77	Peak

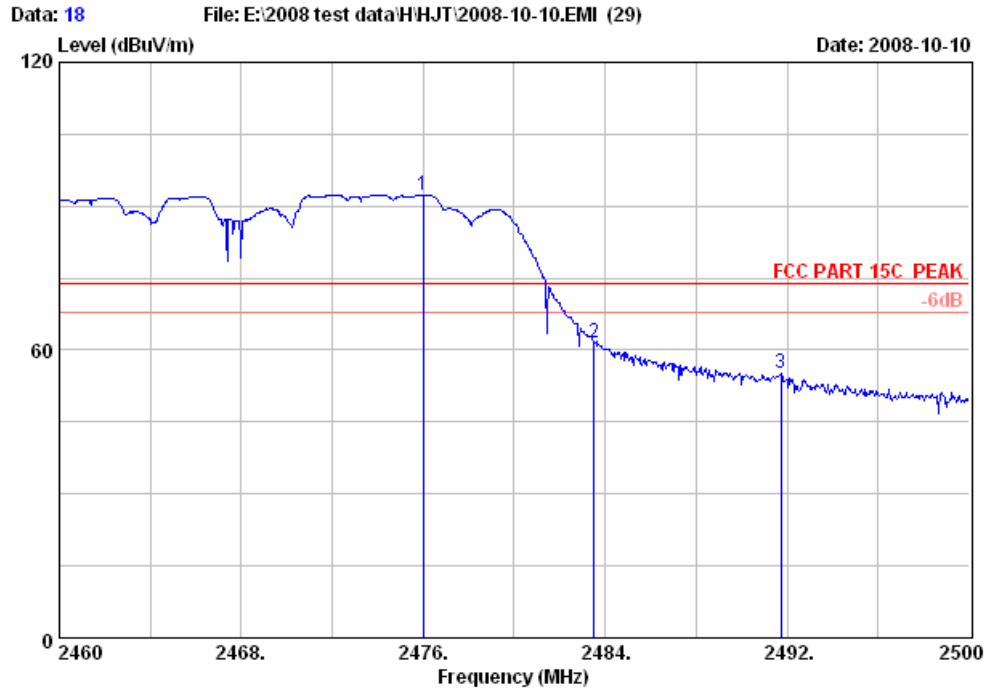
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Adjusted Average Level

Frequency (MHz)	Reading Level (dBuV/m)	Adjusted Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2365.60	48.91	34.91	54	19.09



No.6 Ke Feng Road,B1;ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



Site no. : 3# Chamber Data no. : 18
Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N:M05A-C
Power Rating: DC 3.3V
Test mode : Hopping on
:

	Ant.	Cable	Amp		Emission				
Freq.	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dBUV)	(dBUV/m)	(dBUV/m)	(dB)		
1	2476.00	28.58	6.87	35.16	91.85	92.14	74.00	-18.14	Peak
2	2483.50	28.58	6.87	35.16	61.15	61.44	74.00	12.56	Peak
3	2491.72	28.60	6.91	35.15	54.94	55.30	74.00	18.70	Peak

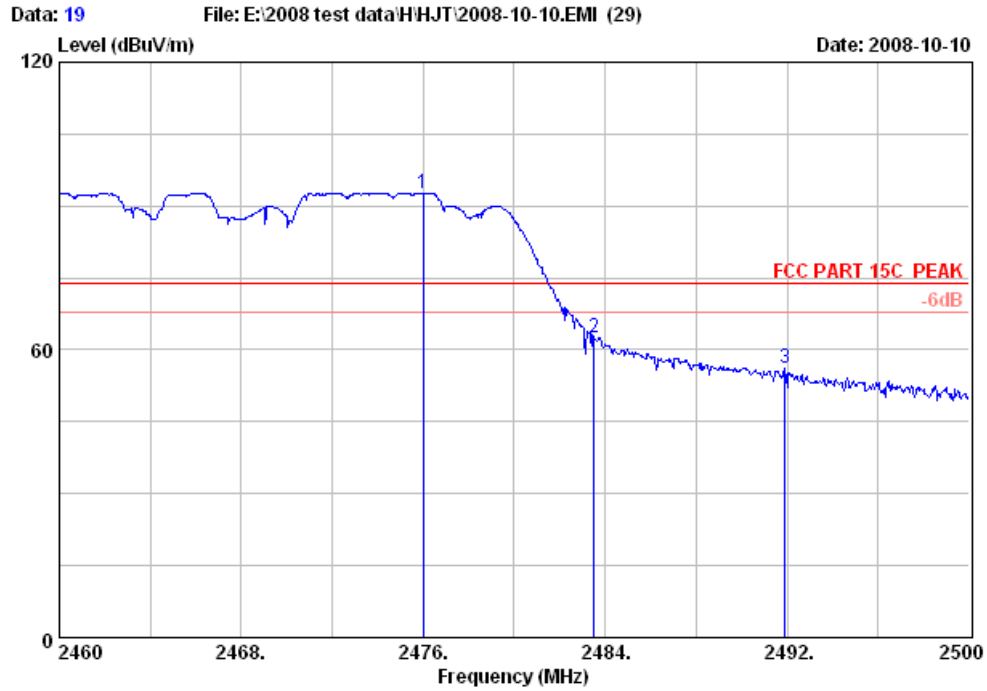
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Adjusted Average Level

Frequency (MHz)	Reading Level (dBUV/m)	Adjusted Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)
2483.50	61.44	47.44	54	19.09
2491.72	55.30	41.3	54	12.7



No.6 Ke Feng Road,B1;ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



Site no. : 3# Chamber Data no. : 19
Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N:M05A-C
Power Rating: DC 3.3V
Test mode : Hopping on
:

	Ant.	Cable	Amp	Emission					
Freq.	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dBUV)	(dBUV/m)	(dBUV/m)	(dB)		
1 2476.00	28.58	6.87	35.16	92.32	92.61	74.00	-18.61	Peak	
2 2483.50	28.58	6.87	35.16	62.22	62.51	74.00	11.49	Peak	
3 2491.92	28.60	6.91	35.15	55.81	56.17	74.00	17.83	Peak	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Adjusted Average Level

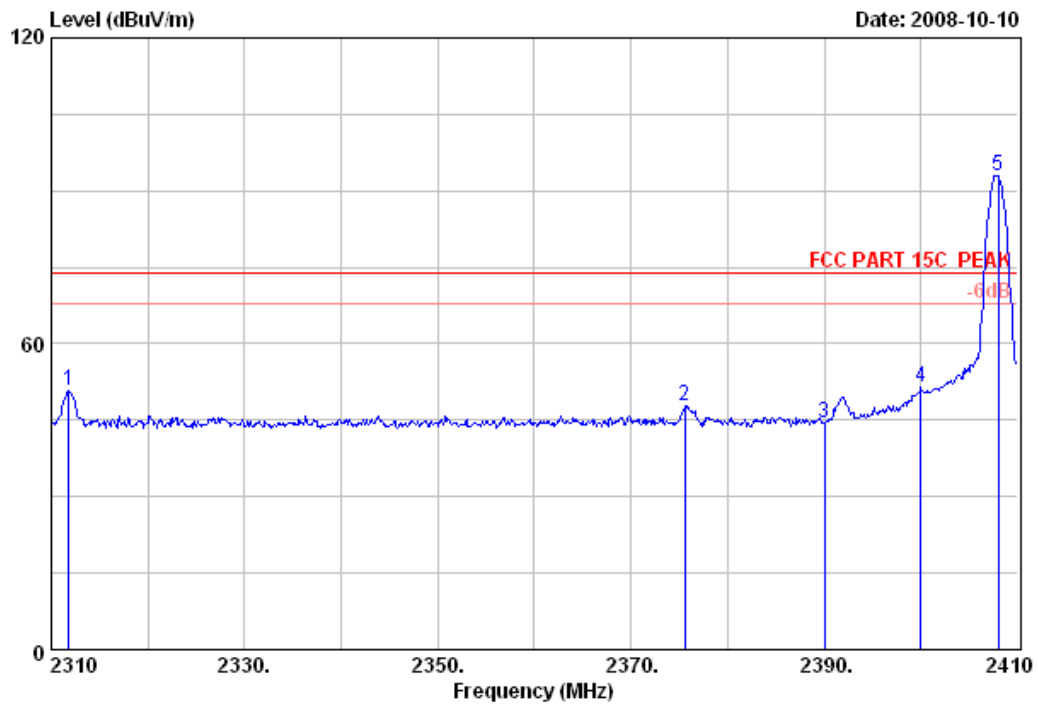
Frequency (MHz)	Reading Level (dBUV/m)	Adjusted Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)
2483.50	62.51	48.51	54	5.49
2491.92	56.17	42.17	54	11.83

Hopping off:



No.6 Ke Feng Road,B1;ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 7 File: E:\2008 test data\HHJT\2008-10-10.EMI (25)



Site no. : 3# Chamber Data no. : 7
Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N:M05A-C
Power Rating: DC 3.3V
Test mode : CH 2408MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2311.80	28.33	6.63	35.21	50.90	50.65	74.00	23.35	Peak
2	2375.60	28.43	6.71	35.19	47.81	47.76	74.00	26.24	Peak
3	2390.00	28.46	6.71	35.18	44.36	44.35	74.00	29.65	Peak
4	2400.00	28.46	6.73	35.18	51.37	51.38	74.00	22.62	Peak
5	2408.00	28.48	6.73	35.18	92.95	92.98	74.00	-18.98	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

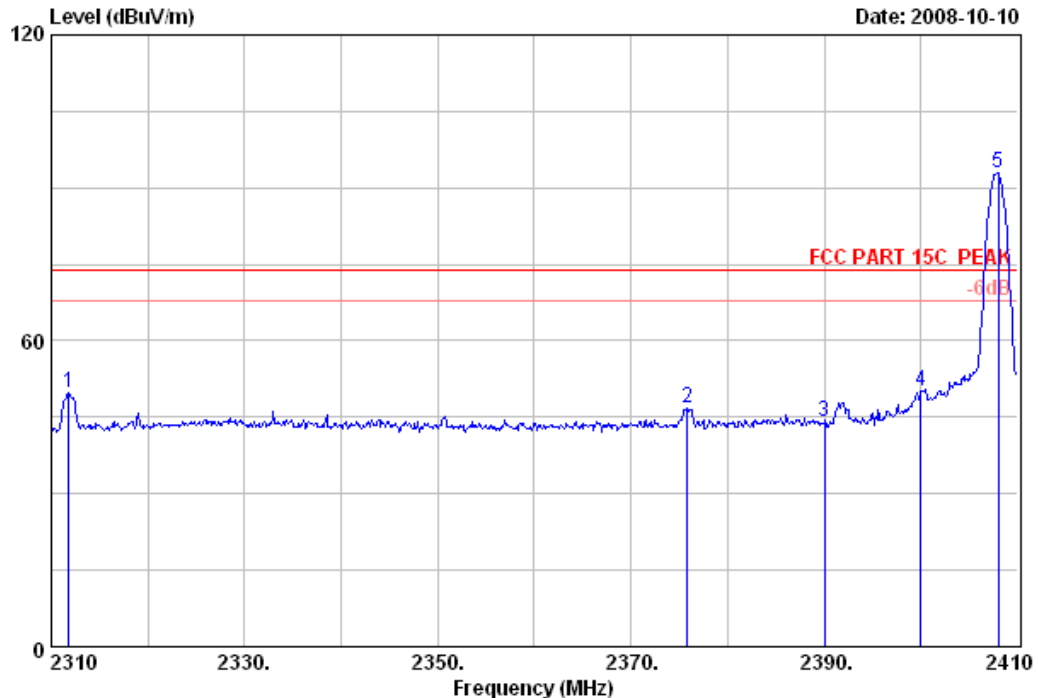
Note: All the PK emissions in Restricted bands comply with average Limit, and the average level were deemed to comply with average limit.



No.6 Ke Feng Road,B1;ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 8 File: E:\2008 test data\H\HJT\2008-10-10.EMI (25)

Date: 2008-10-10



Site no. : 3# Chamber Data no. : 8
Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Power
EUT : 2.4GHz Wireless Module M/N:M05A-C
Power Rating: DC 3.3V
Test mode : CH 2408MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2311.80	28.33	6.63	35.21	49.98	49.73	74.00	24.27	Peak
2	2375.80	28.43	6.71	35.19	47.00	46.95	74.00	27.05	Peak
3	2390.00	28.46	6.71	35.18	44.04	44.03	74.00	29.97	Peak
4	2400.00	28.46	6.73	35.18	50.08	50.09	74.00	23.91	Peak
5	2408.00	28.48	6.73	35.18	92.73	92.76	74.00	-18.76	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Note: All the PK emissions in Restricted bands comply with average Limit, and the average level were deemed to comply with average limit.

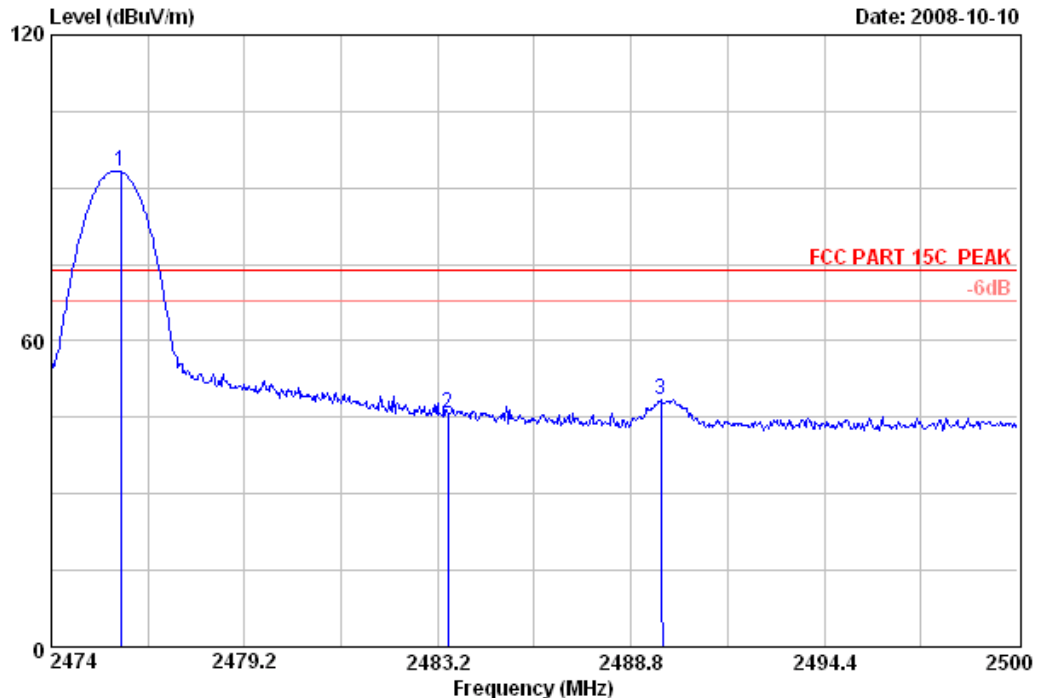


No.6 Ke Feng Road,B1;ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 9

File: E:\2008 test data\H\HJT\2008-10-10.EMI (25)

Date: 2008-10-10



Site no. : 3# Chamber	Data no. : 9
Dis. / Ant. : 3m 3115	Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK	
Env. / Ins. : 23°C/54%	Engineer : Power
EUT : 2.4GHz Wireless Module	M/N:M05A-C
Power Rating: DC 3.3V	
Test mode : CH 2476MHz	

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2476.00	28.58	6.87	35.16	92.99	93.28	74.00	-19.28	Peak
2	2483.50	28.58	6.87	35.16	45.42	45.71	74.00	28.29	Peak
3	2489.67	28.60	6.91	35.15	48.15	48.51	74.00	25.49	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Note: All the PK emissions in Restricted bands comply with average Limit, and the average level were deemed to comply with average limit.

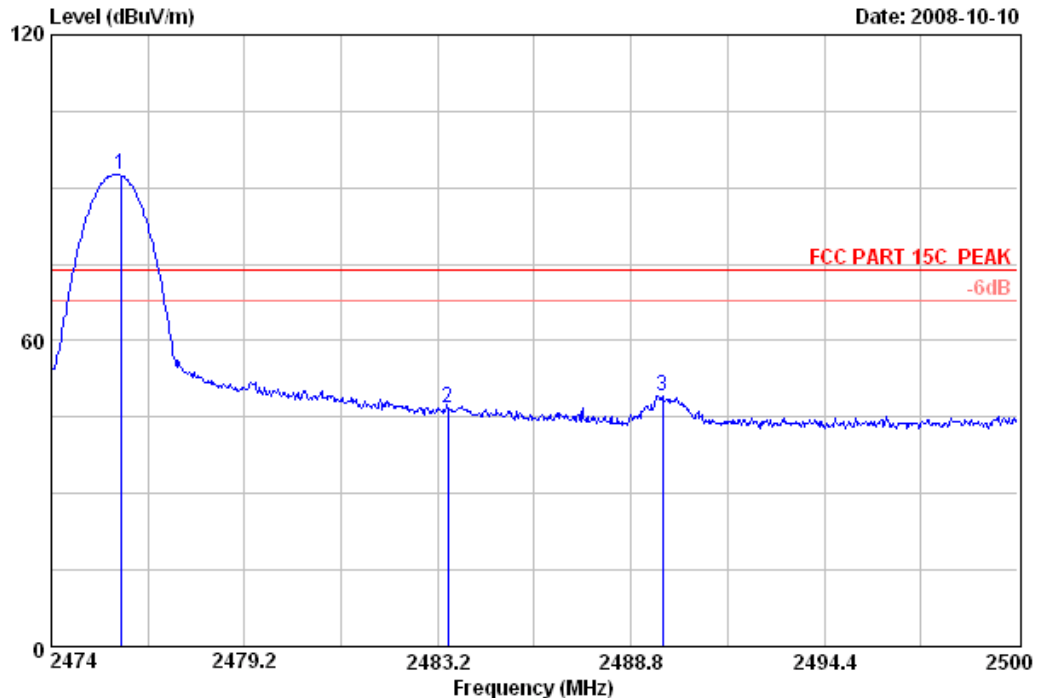


No.6 Ke Feng Road,B1;ck 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 10

File: E:\2008 test data\H\HJT\2008-10-10.EMI (25)

Date: 2008-10-10



Site no. : 3# Chamber	Data no. : 10
Dis. / Ant. : 3m 3115	Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK	
Env. / Ins. : 23°C/54%	Engineer : Power
EUT : 2.4GHz Wireless Module	M/N:M05A-C
Power Rating: DC 3.3V	
Test mode : CH 2476MHz	

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2476.00	28.58	6.87	35.16	92.15	92.44	74.00	-18.44	Peak
2	2483.50	28.58	6.87	35.16	46.39	46.68	74.00	27.32	Peak
3	2489.72	28.60	6.91	35.15	48.74	49.10	74.00	24.90	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Note: All the PK emissions in Restricted bands comply with average Limit, and the average level were deemed to comply with average limit.

11.MPE ESTIMATION

11.1.Limit for General Population / Uncontrolled Exposures

Frequency	Power density (mW/cm ²)	Averaging time (minutes)
300MHz~1.5GHz	F/1500	30
1.5GHz~100GHz	1.0	30

Frequency (MHz)	Power density (mW/cm ²)	Averaging time (minutes)
2412	1	30
2437	1	30
2462	1	30

Note: F = Frequency in MHz

11.2.Estimation Result

IEEE 802.11b Mode

Channel	Frequency(MHz)	Peak output power(dBm)	antenna gain(dBi)	antenna gain (Linear)
Low	2408	1.62	0	1
Mid	2440	1.64	0	1
High	2476	1.43	0	1

Channel	Frequency(MHz)	Peak output power to antenna (mW)	Power density at 20cm(mW/ cm ²)
Low	2408	1.45	0.0003
Mid	2440	1.46	0.0003
High	2476	1.39	0.0003

12. ANTENNA REQUIREMENT

10.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used for this product is a PCB integral antenna that no antenna other than that furnished by the responsible party shall be used with the device, The maximum peak gain of this antenna is only 0dBi.

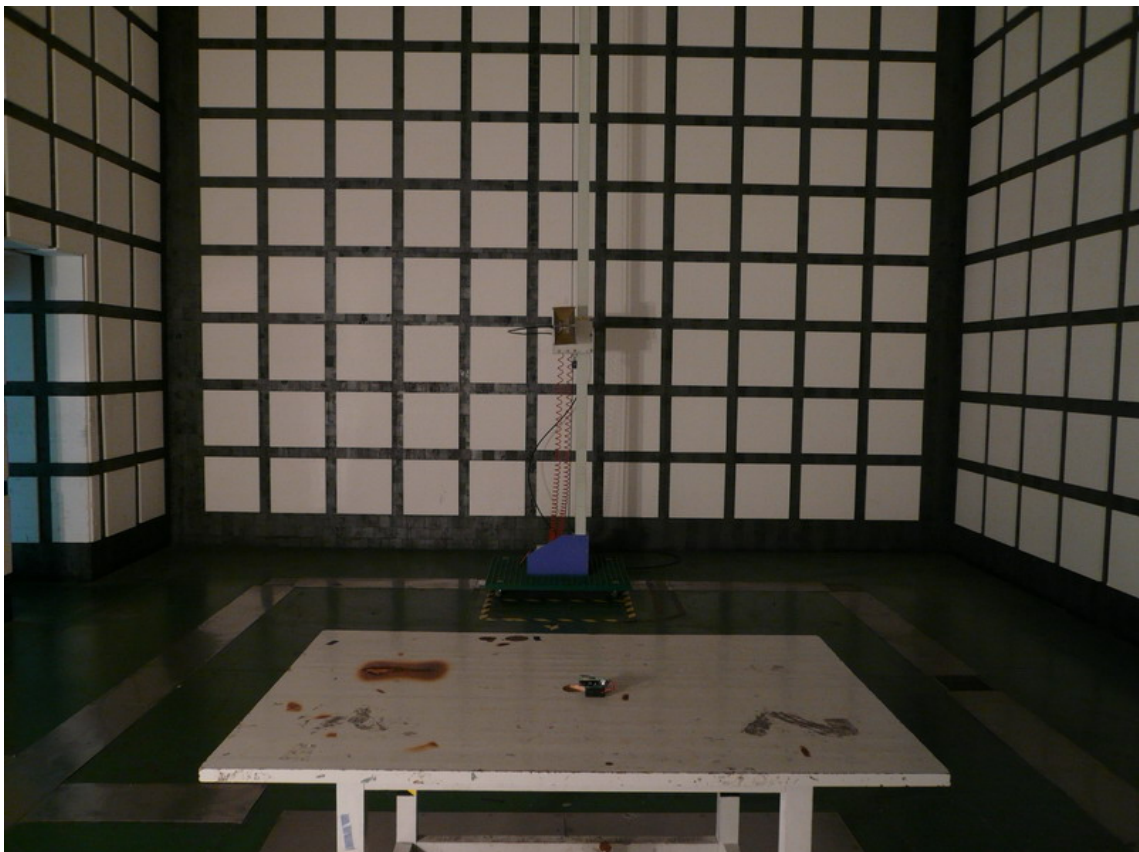
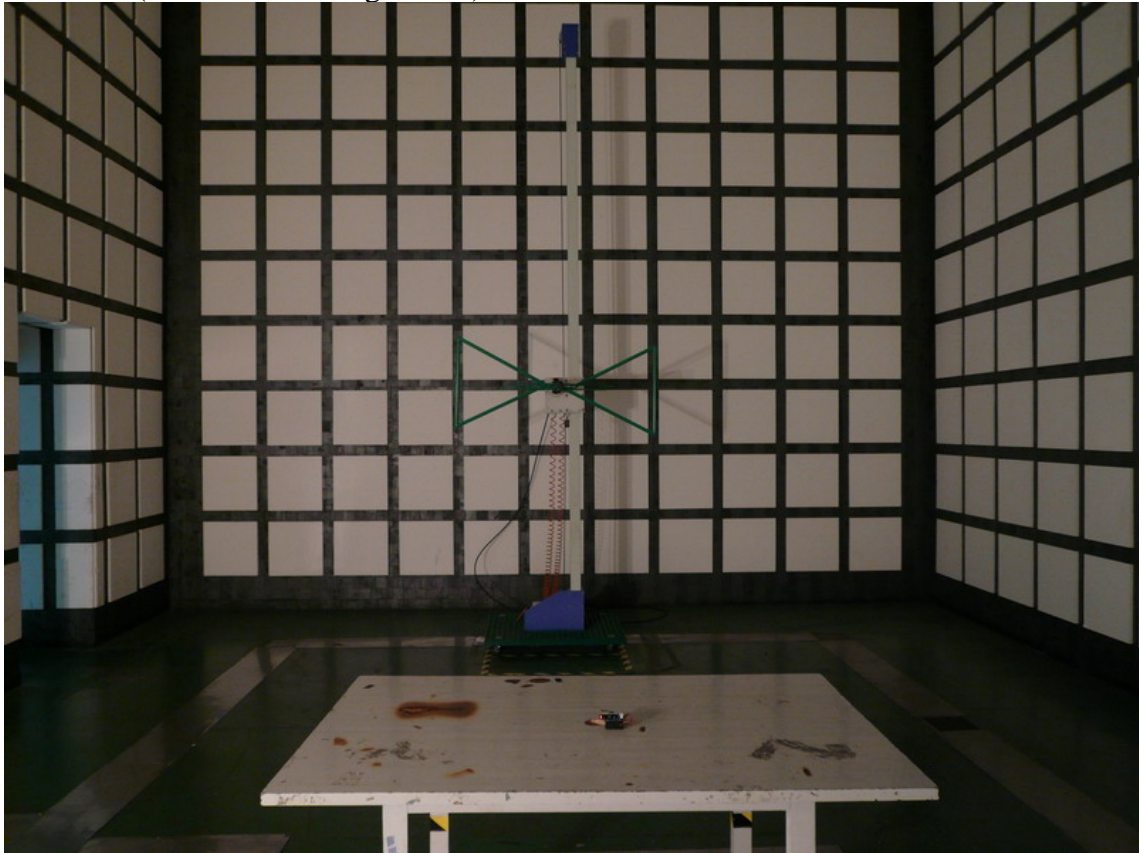
13.DEVIATION TO TEST SPECIFICATIONS

[NONE]

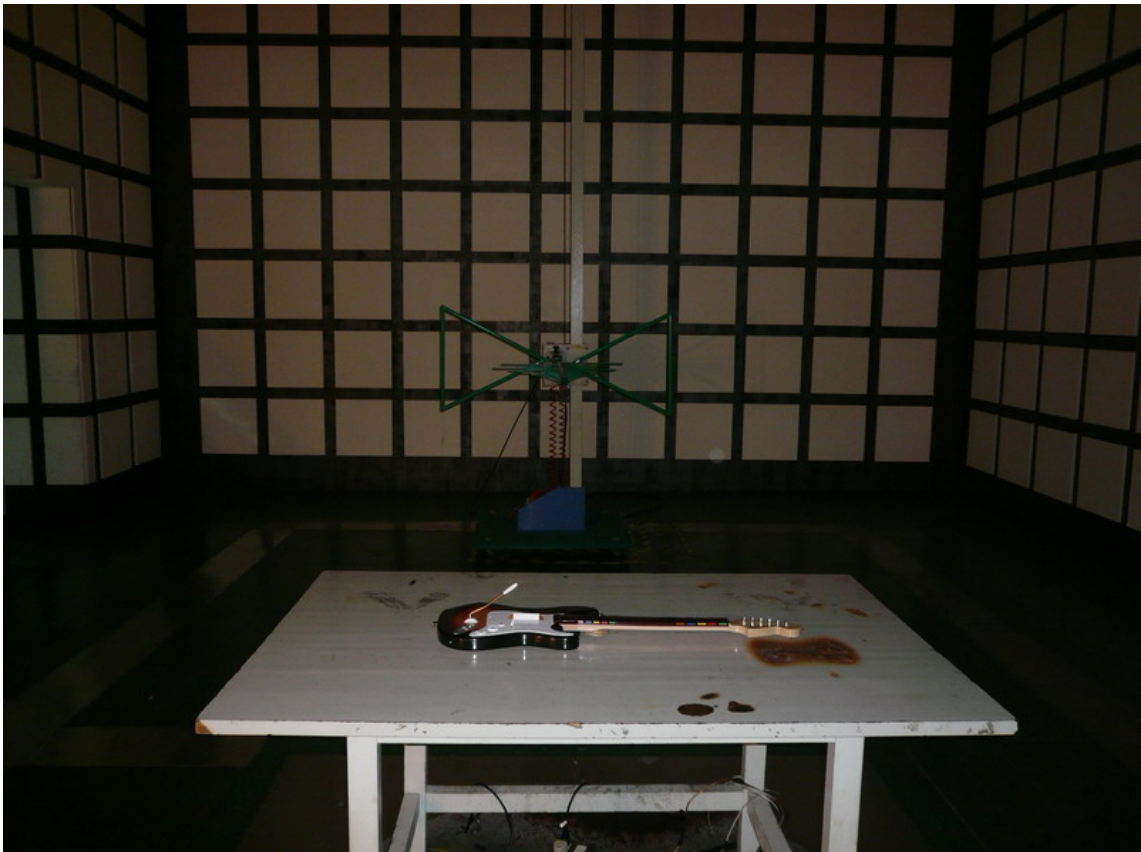
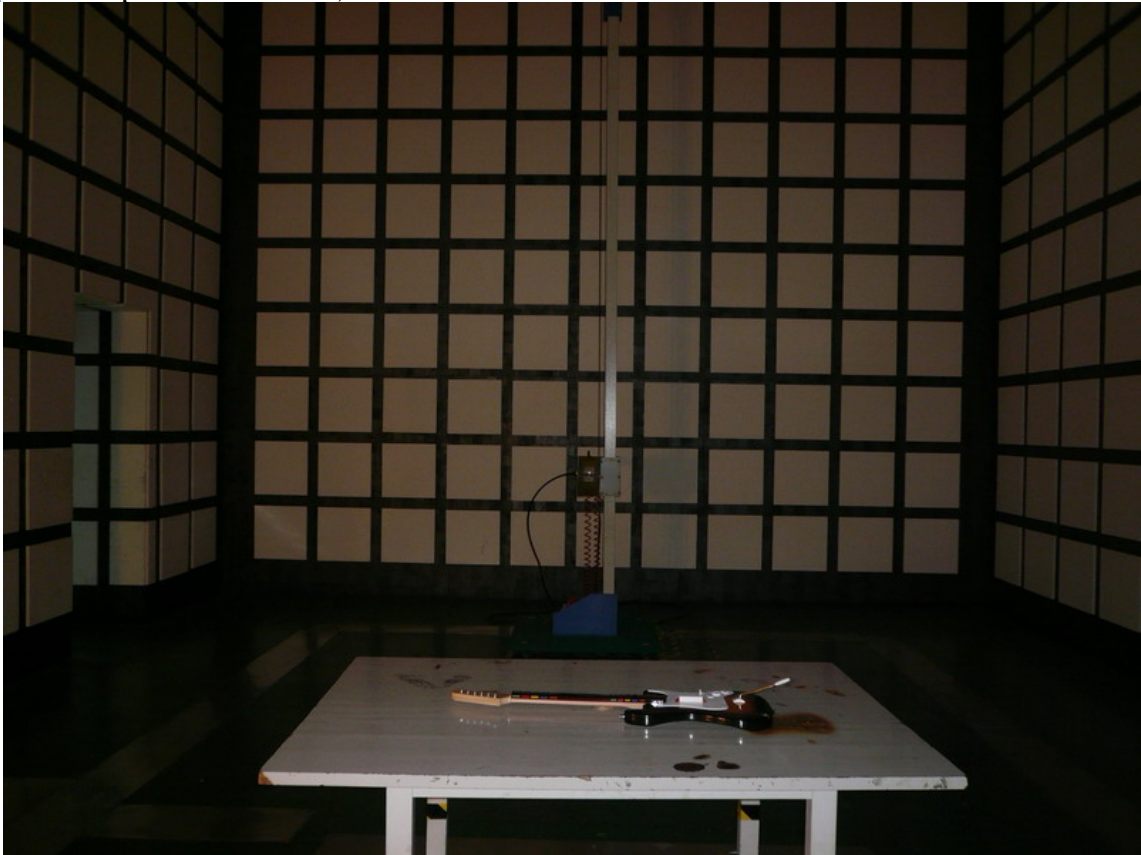
14.PHOTOGRAPH OF TEST

14.1.Photos of Radiated Emission Test

(stand alone configuration)



(With a representative host)



15.PHOTOGRAPH OF EUT

