APPLICATION FOR CERTIFICATION

On Behalf of

Microsoft Corporation

Wireless Controller

Model Number: 1460

FCC ID: C3K1460

Prepared for : Microsoft Corporation
1 Microsoft Way, Redmond WA 98052, USA

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-F10132
Date of Test	:	Jun.09~16, 2010
Date of Report	:	Jun.18, 2010

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Description Page

TEST REPORT CERTIFICATION

Applicant	:	Microsoft Corporation
Manufacturer	:	Fugang Electronic (Dongguan) Co., Ltd.
EUT Description	:	Wireless Controller
MODEL NO.	:	1460
FCC ID	:	C3K1460
POWER SUPPLY	:	DC 5V
TEST VOLTAGE	:	DC 5V

Test Procedure Used:

FCC Rules and Regulations Part 15 Subpart C 2008

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 for 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 tests. Also, this report shows that EUT is technically compliant with 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 : Jun.09~16, 2010

Prepared by : Edie Huang
Edie Huang / Assistant

Reviewer : Jamy Yu
Jamy Yu / Supervisor

AUDIX 信華科技(深圳)有限公司
Audix Technology (Shenzhen) Co., Ltd.
EMC 部門報告專用章
Stamp only for EMC Dept. Report
Signature: Ken Lu 6/18 10

Approved & Authorized Signer :
Ken Lu / 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.

EMISSION		
Description of Test Item	**Standard**	**Results**
Power Line Conducted Emission Test	FCC Part 15: 15.207 ANSI C63.10 :2009	PASS
Radiated Emission Test	FCC Part 15: 15.209 FCC Part 15: 15.247(d) ANSI C63.10 :2009	PASS
Conducted Emission Test	FCC Part 15: 15.247(d) ANSI C63.10 :2009	PASS
Carrier Frequency Separation Test	FCC Part 15: 15.247(a)(1) ANSI C63.10 :2009	PASS
20dB Bandwidth Test	FCC Part 15: 15.215 ANSI C63.10 :2009	PASS
Number Of Hopping Frequency Test	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 :2009	PASS
Dwell Time Test	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 :2009	PASS
Maximum Peak Output Power Test	FCC Part 15: 15.247(b)(1)\ ANSI C63.10 :2009	PASS
Band Edge Compliance Test	FCC Part 15: 15.247(d) ANSI C63.10 :2009	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)

Product name	:	Wireless Controller
Model Number	:	1460
FCC ID	:	C3K1460
Operation frequency	:	2402MHz~2482MHz
Modulation	:	GMSK
Applicant	:	Microsoft Corporation 1 Microsoft Way, Redmond WA 98052, USA
Manufacturer	:	Fugang Electronic (Dongguan) Co., Ltd. Industry Street, Dong-Keng, Dong-Guan, Guang-Dong, P.R.China
USB Cable	:	3m long (Bond two ferrite cores)
Date of Test	:	Jun.09~16, 2010
Date of Receipt	:	Jun.07, 2010
Sample Type	:	Prototype production

2.2. Test information

The test software "WirelessDeviceTest.exe" was used to control EUT work in Continuous TX mode, and select test channel.

Tested mode, channel, and data rate information			
Mode	data rate (Mpbs)(see Note)	Channel	Frequency (MHz)
Tx Mode	N/A	Low :CH 0	2402
	N/A	Middle: CH20	2442
	N/A	High: CH40	2482
Note1: This device only have one modulation mode and data rate. Note2: A charging mode also test with host device.			

2.3. Tested Supporting System Details

2.3.1. Notebook

M/N	:	PP09S
S/N	:	N/A
Manufacturer	:	DELL
Power Adaptor	:	Manufacturer: DELL, M/N: LA65NS1-00 Cable: Unshielded, Detachabled, 4.0m (Bond one ferrite core)

2.3.2. Xbox 360 Wired Headset

Manufacturer	:	Microsoft Corporation

2.3.3. TV

EMC CODE	:	ACS-EMC-TV01T
M/N	:	1419A
Manufacturer	:	TCL
Power cord	:	Unshielded, Undetachabled, 1.8m

2.3.4. X-Box

EMC CODE	:	ACS-EMC-X01
M/N	:	WA 98052-6399
Manufacturer	:	Microsoft
Data Cable	:	Unshielded, Undetachabled , 1.8m
Power Cord	:	Unshielded, Undetachabled , 2.0m

2.4. 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	:	Mar.31, 2009 File on Federal Communication Commission Registration Number: 90454
3m & 10m Anechoic Chamber	:	Dec. 30, 2009 File on Federal Communication Commission Registration Number: 794232
EMC Lab.	:	Accredited by DATech, German Registration Number: DAT-P-091/99-01 Feb. 02, 2009 Accredited by NVLAP, USA NVLAP Code: 200372-0 Apr. 01, 2010

2.5. Test Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	2.40dB
Uncertainty for Radiation Emission test in 3m chamber	3.82 dB (Polarize: V)
	4.32 dB (Polarize: H)
Uncertainty for Radiated Spurious Emission test in RF chamber	2.70 dB (Bilog antenna 30M~1000MHz)
	2.27 dB (Horn antenna 1000M~25000MHz)
Uncertainty for Temperature and humidity test	2%
	1℃
Uncertainty for Bandwidth test	$1x10^{-9}$
Uncertainty for DC power test	0.038 %
Uncertainty for test site temperature and humidity	0.6℃
	3%

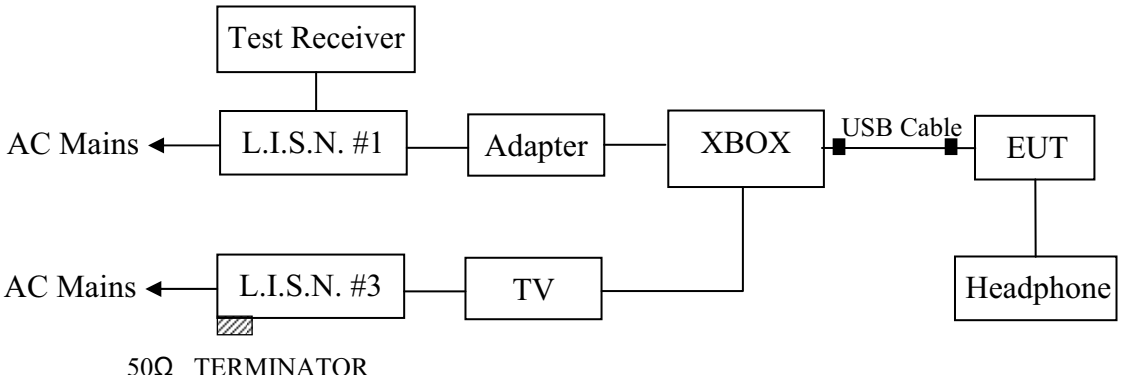
3. POWER LINE CONDUCTED EMISSION TEST

3.1.Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Dec.18, 09	1 Year
2.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	834066/011	Mar.30, 10	1 Year
3.	L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	May.08, 10	1 Year
4.	Terminator	Hubersuhner	50Ω	No. 1	May.08, 10	1 Year
5.	RF Cable	Fujikura	3D-2W	LISN Cable 1#	May.08, 10	1Year
6.	Coaxial Switch	Anritsu	MP59B	M55367	May.08, 10	1 Year
7.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 10	1 Year

3.2.Block Diagram of Test Setup

3.2.1. Block diagram of connection between the EUT and Supporting System



(EUT: Wireless Controller)

3.3.Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.4. Configuration of EUT on Test

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

3.4.1. Wireless Controller (EUT)

Model Number : 1460
Serial Number : N/A

3.4.2. Support Equipment : As Tested Supporting System Detail, in Section 2.2

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 3.2.

3.5.2. Turned on the power of all equipment.

3.5.3. Let the EUT worked in test modes (Charging Mode) and measured it.

3.6. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power Via XBOX connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#3).This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). Both the AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2009 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESHS10) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked.

The test result are reported on Section 3.7.

3.7. Power Line Conducted Emission Test Results

PASS. **(**All emissions not reported below are too low against the prescribed limits.)

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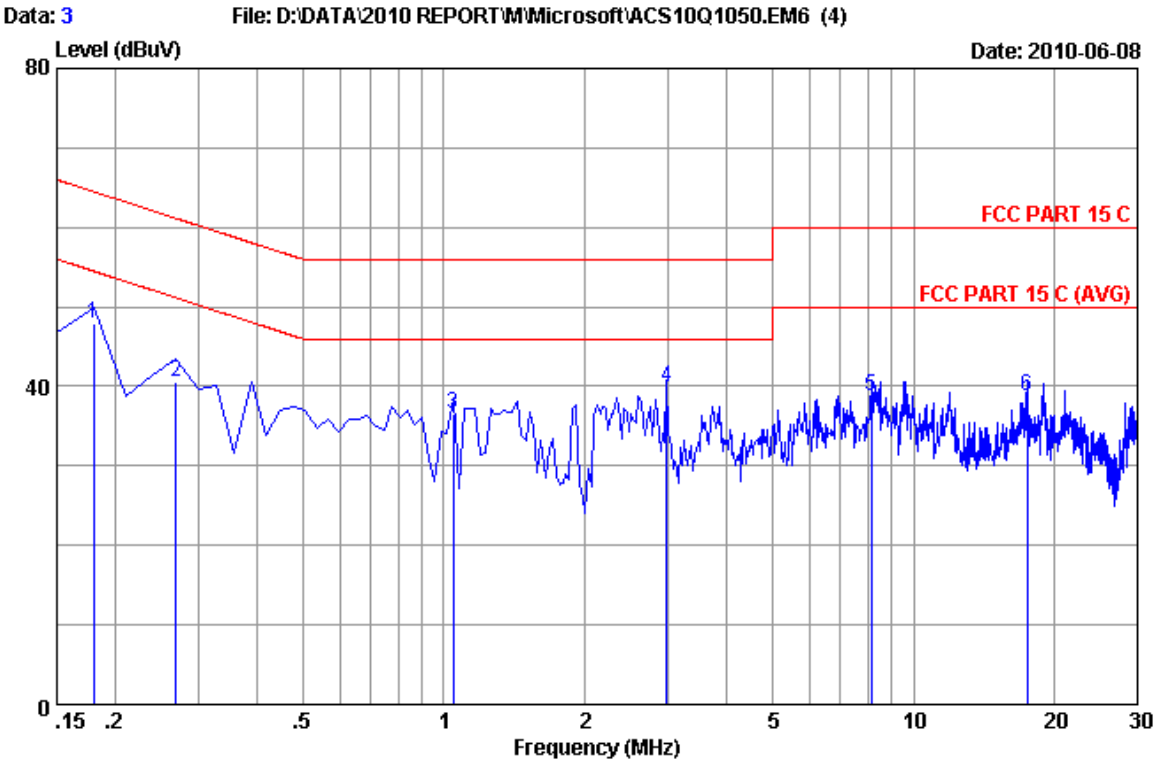

Site no :Audix No.1 Conduction Data no :3
Dis./Ant. :** 2010 ESH2-Z5 LINE
Limit :FCC PART 15 C
Env./Ins. :Temp:23'C Humi:54% Engineer :Leo-Li
EUT :Wireless Controller M/N:1460
Power Rating :DC 5V From X-Box Input AC 120V/60Hz
Test Mode :Charging Mode
M/N :

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.17985	0.22	9.88	37.75	47.85	64.49	16.64	QP
2	0.26940	0.22	9.88	30.39	40.49	61.14	20.65	QP
3	1.046	0.22	9.89	26.42	36.53	56.00	19.47	QP
4	2.986	0.26	9.93	29.65	39.84	56.00	16.16	QP
5	8.150	0.34	9.98	28.46	38.78	60.00	21.22	QP
6	17.463	0.52	10.06	28.30	38.88	60.00	21.12	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

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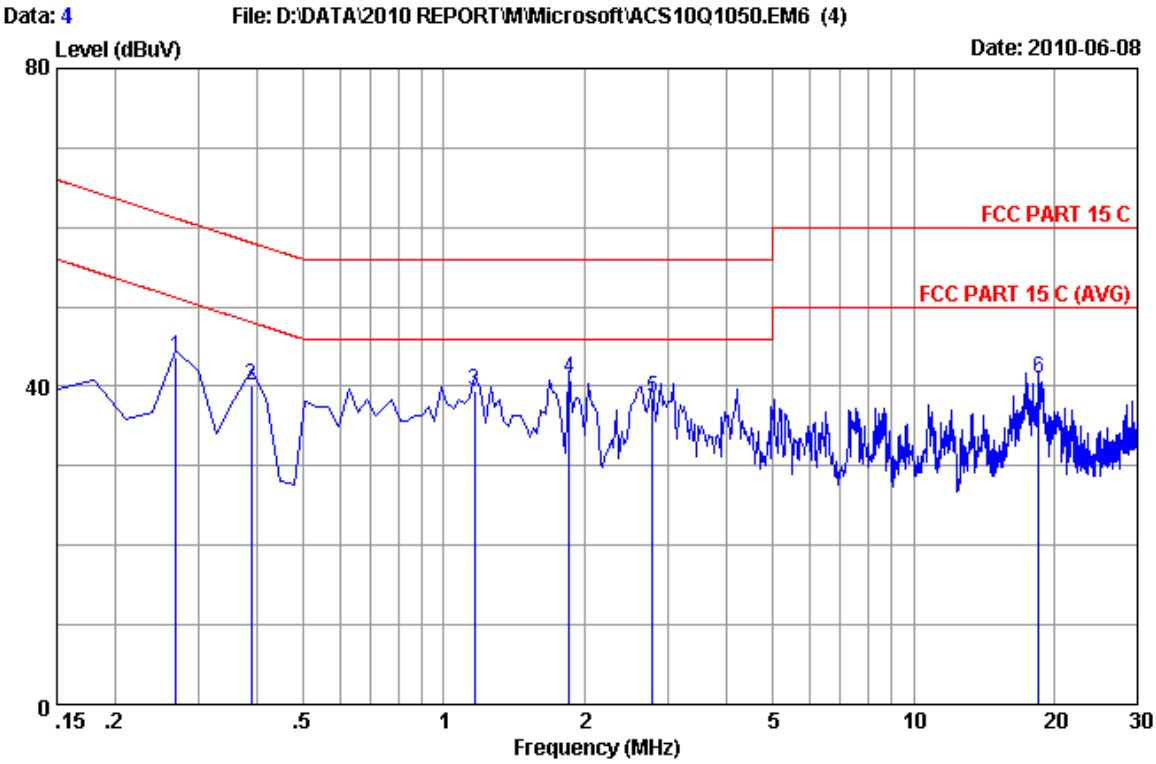


Site no :Audix No.1 Conduction Data no :4
Dis./Ant. :** 2010 ESH2-Z5 NEUTRAL
Limit :FCC PART 15 C
Env./Ins. :Temp:23'C Humi:54% Engineer :Leo-Li
EUT :Wireless Controller M/N:1460
Power Rating :DC 5V From X-Box Input AC 120V/60Hz
Test Mode :Charging Mode
M/N :

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.26940	0.21	9.88	33.52	43.61	61.14	17.53	QP
2	0.38880	0.22	9.88	29.94	40.04	58.09	18.05	QP
3	1.165	0.25	9.89	29.32	39.46	56.00	16.54	QP
4	1.851	0.26	9.90	30.73	40.89	56.00	15.11	QP
5	2.777	0.27	9.93	28.30	38.50	56.00	17.50	QP
6	18.508	0.74	10.07	30.12	40.93	60.00	19.07	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

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	Dec.05,09	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 10	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 10	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 10	1 Year
5	Bilog Antenna	Schaffner	CBL6111C	2598	Dec.14, 09	1 Year
6	RF Cable	MIYAZAKI	8D-FB	3# Chamber No.1	May.08, 10	1 Year
7	Coaxial Switch	Anritsu	MP59B	M73989	May.08, 10	1 Year

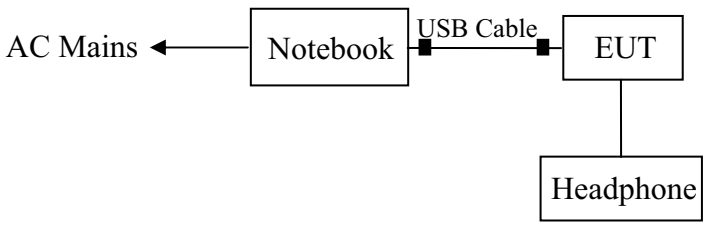
Frequency rang: above 1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 10	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	Nov.25, 09	1.5 Year
3	Horn Antenna	EMCO	3116	00060089	Nov.25, 09	1.5 Year
4	Amplifier	Agilent	8449B	3008A00863	May.08, 10	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	May.08, 10	1 Year
6	RF Cable	Hubersuhner	SUCOFLEX102	29091/2	May.08, 10	1 Year

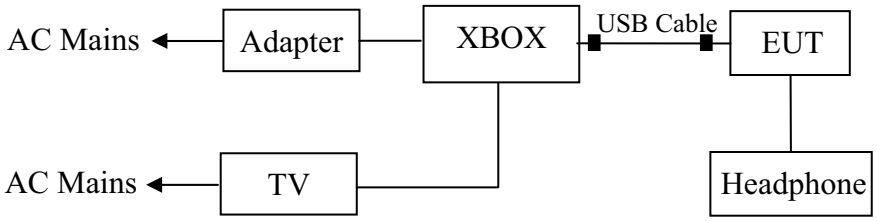
4.2. Block Diagram of Test Setup

4.2.1. Block Diagram of connection between EUT and simulators

TX Mode

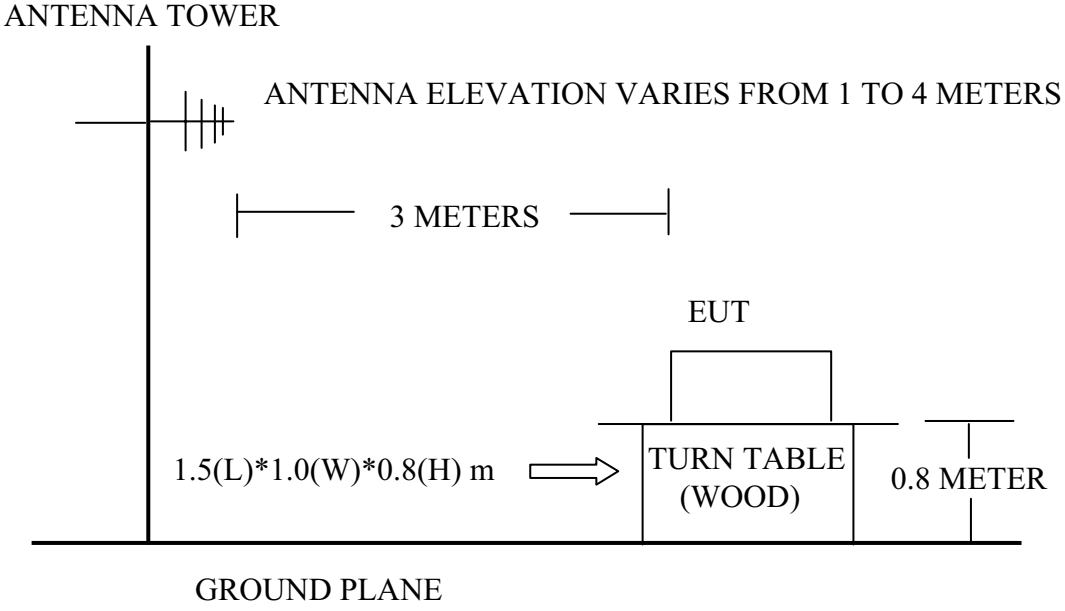


Charging Mode



(EUT: Wireless Controller)

4.2.2. Anechoic Chamber Setup Diagram



4.3. Radiated Emission Limit

4.3.1.15.209 limits

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/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 960MHz	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark： (1) Emission level dBμV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

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 15.205 restricted 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. Wireless Controller(EUT)

Model Number : 1460
Serial Number : N/A

4.4.2. Support Equipment: As Tested Supporting System Detail, in Section 2.2.

4.5. Operating Condition of EUT

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

4.5.2. Turned on the power of all equipment.

4.5.3. Let the EUT worked in test mode (Tx Mode / Charging Mode) and tested it.

4.6. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it 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 test photo indicated.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz

This device is pulse modulated, a duty cycle factor was used to calculate average level based measured peak level.

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

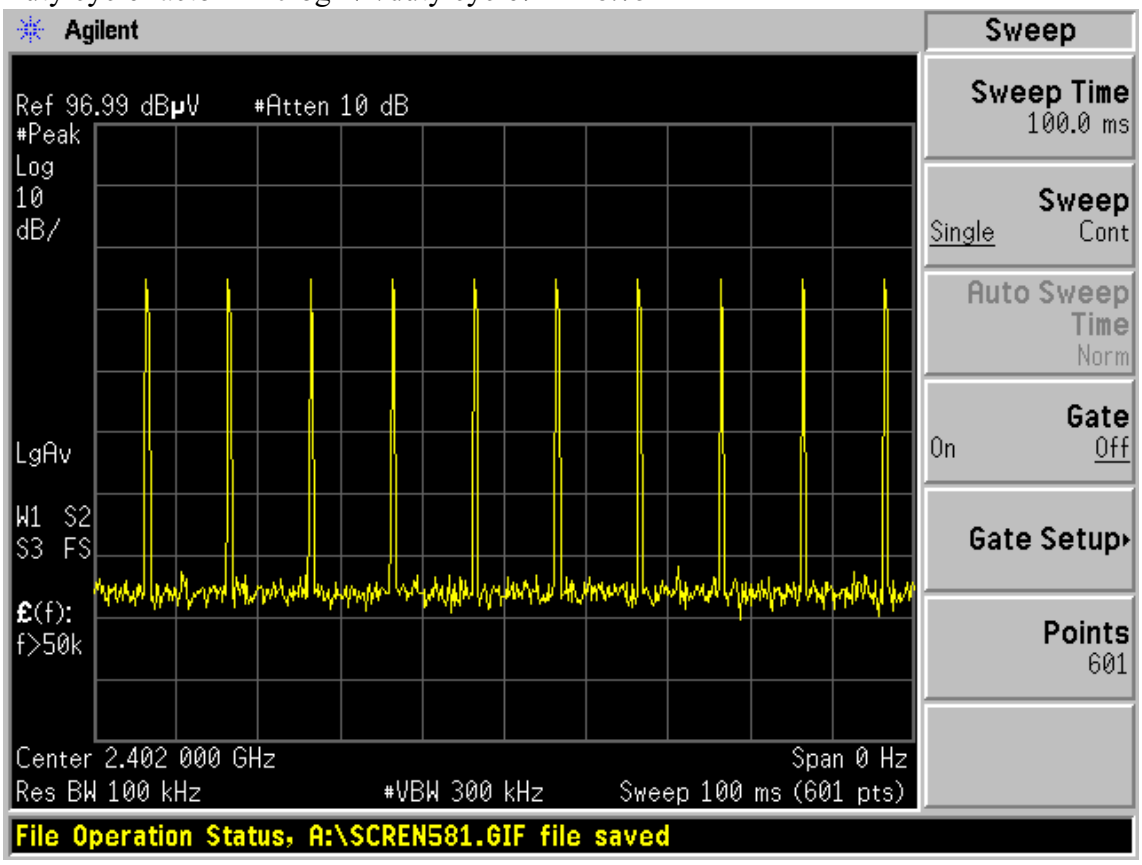
PASS

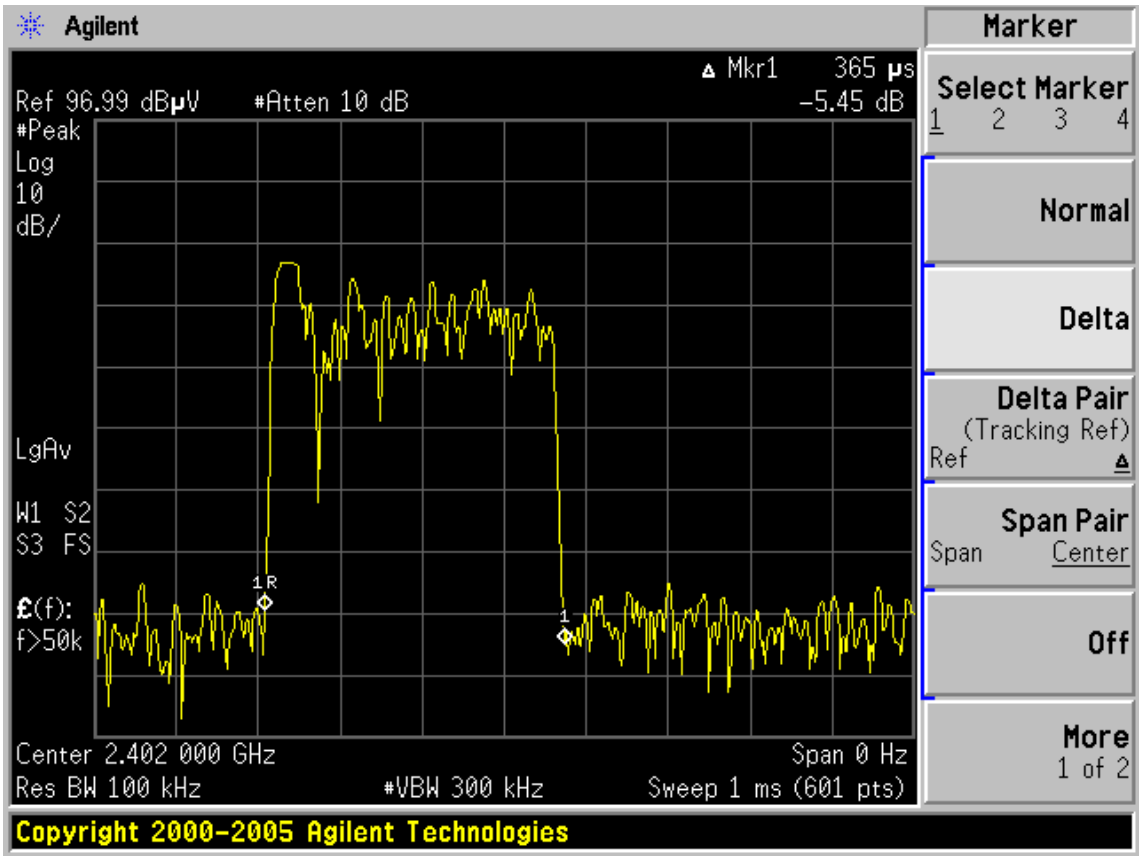
All the emissions from 30MHz to 25 GHz are comply with 15.209 limits

Note: The points 2402MHz, 2442MHz, 2482MHz are fundamental emissions of device, and no need to comply with the radiated emissions limit, just for reference in here.

Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

Duty cycle: 365us*10times /10000us *100% = 3.65%
Duty cycle factor = 20log（1/duty cycle）= 28.75





Frequency: 30MHz~1GHz

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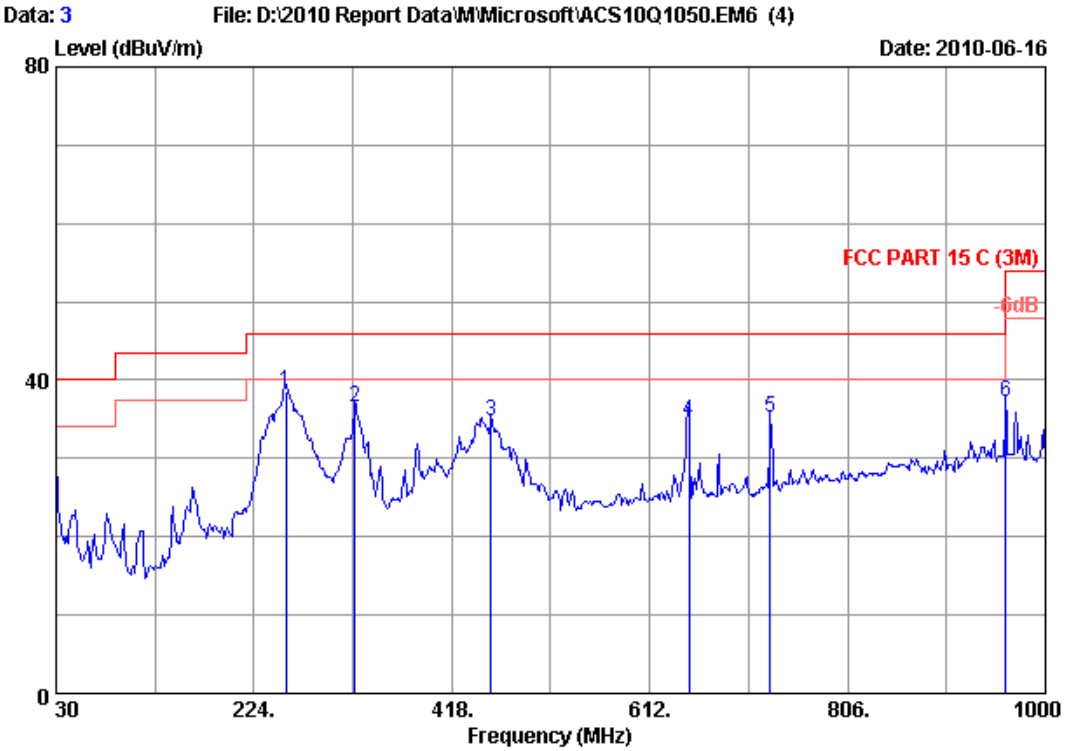

Site no. : 3m Chamber
Dis. / Ant. : 3m 2010 CBL6111C
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24*C/56%
EUT : Wireless Controller
Power Rating : DC 5V
Test Mode : Tx Mode
M/N:1460

Data no. : 3
Ant. pol. : HORIZONTAL

Engineer : Leo-Li

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	255.040	13.30	2.20	23.00	38.50	46.00	7.50	QP
2	322.940	14.26	2.58	19.63	36.47	46.00	9.53	QP
3	456.800	17.07	3.27	14.39	34.73	46.00	11.27	QP
4	650.800	20.42	4.31	9.97	34.70	46.00	11.30	QP
5	730.340	21.30	4.62	9.27	35.19	46.00	10.81	QP
6	961.200	24.38	5.43	7.36	37.17	54.00	16.83	QP

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

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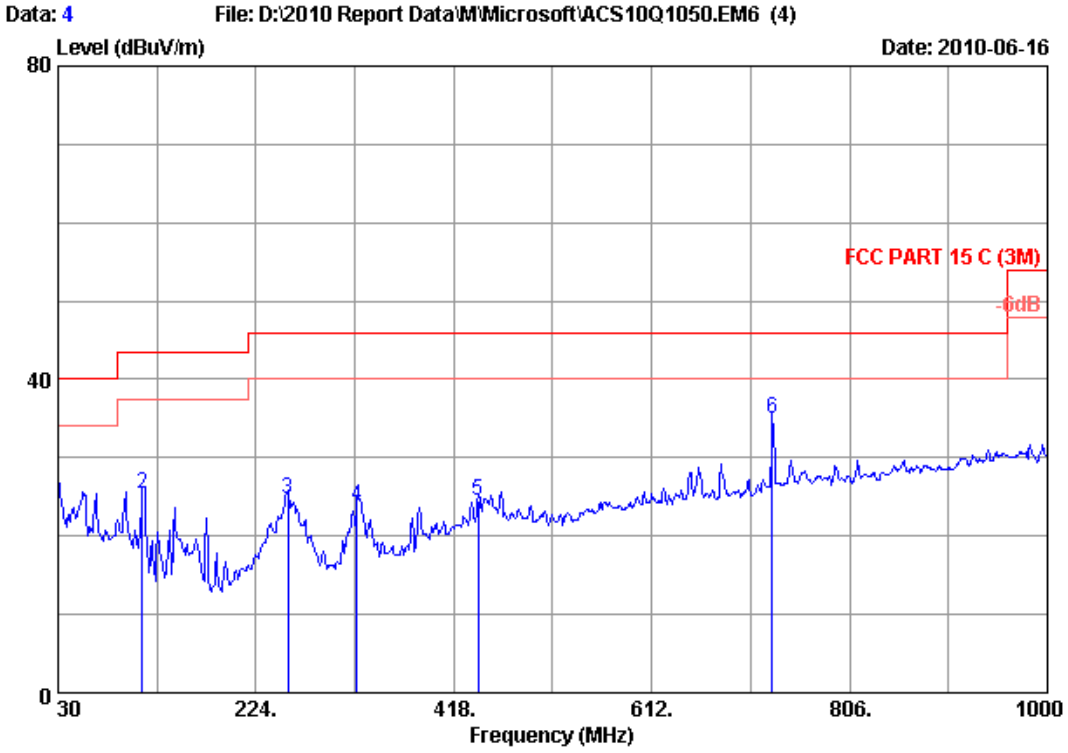

Site no. : 3m Chamber
Dis. / Ant. : 3m 2010 CBL6111C
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24*C/56%
EUT : Wireless Controller
Power Rating : DC 5V
Test Mode : Tx Mode
M/N:1460

Data no. : 4
Ant. pol. : VERTICAL
Engineer : Leo-Li

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.000	20.00	0.61	5.82	26.43	40.00	13.57	QP
2	112.450	11.55	1.12	12.71	25.38	43.50	18.12	QP
3	255.040	13.30	2.20	9.25	24.75	46.00	21.25	QP
4	322.940	14.26	2.58	7.11	23.95	46.00	22.05	QP
5	442.250	17.16	3.18	4.15	24.49	46.00	21.51	QP
6	730.340	21.30	4.62	9.05	34.97	46.00	11.03	QP

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

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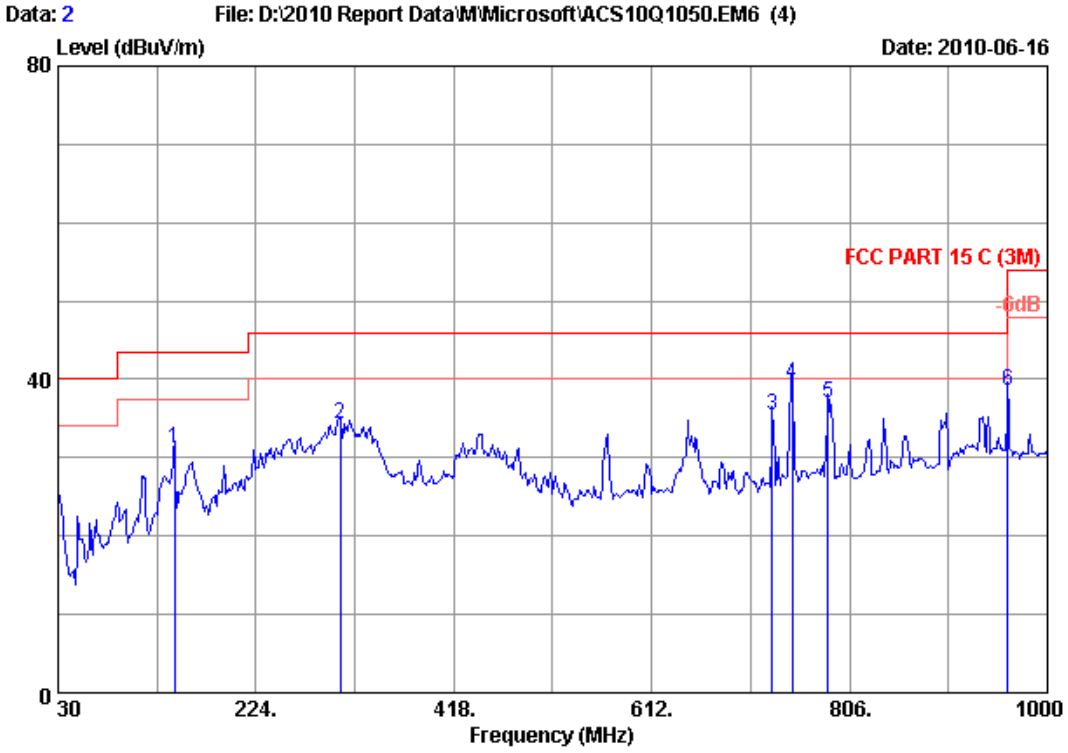

Site no. : 3m Chamber Data no. : 2
Dis. / Ant. : 3m 2010 CBL6111C Ant. pol. : HORIZONTAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24*C/56% Engineer : Leo-Li
EUT : Wireless Controller
Power Rating : DC 5V From Xbox Input AC 120V/60Hz
Test Mode : Charging
M/N:1460

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	144.460	11.92	1.14	18.03	31.09	43.50	12.41	QP
2	306.450	13.89	2.51	17.86	34.26	46.00	11.74	QP
3	730.340	21.30	4.62	9.54	35.46	46.00	10.54	QP
4	749.740	22.00	4.70	12.84	39.54	46.00	6.46	QP
5	784.660	22.10	4.84	10.08	37.02	46.00	8.98	QP
6	961.200	24.38	5.43	8.81	38.62	54.00	15.38	QP

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

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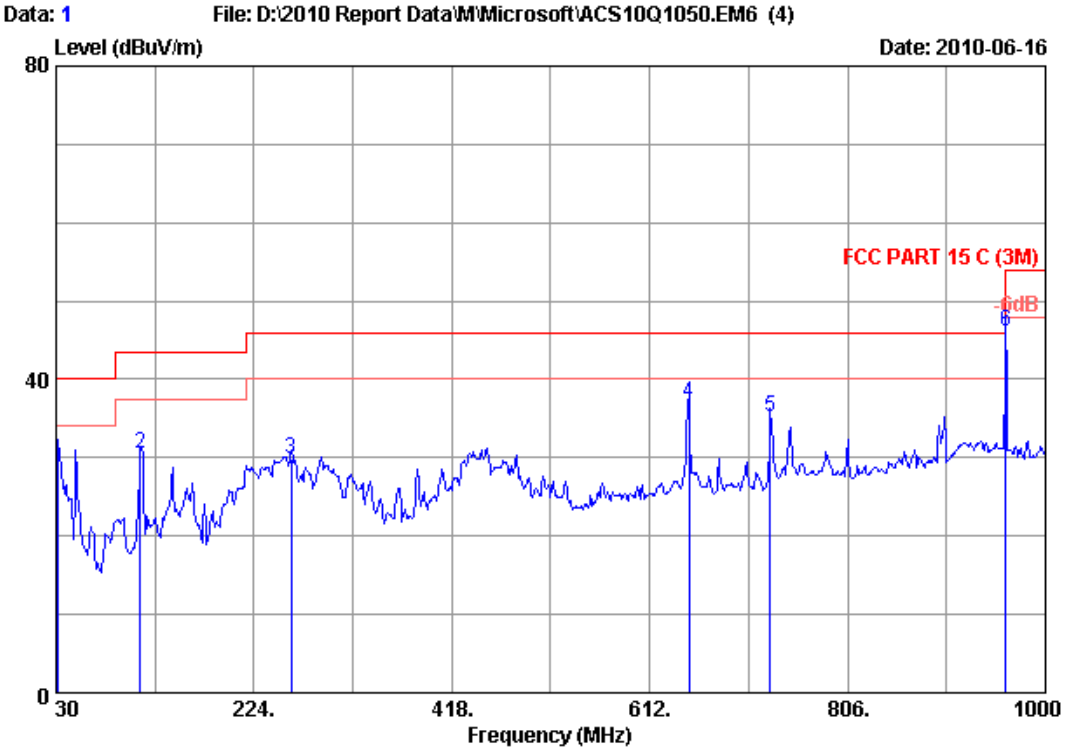

Site no. : 3m Chamber Data no. : 1
Dis. / Ant. : 3m 2010 CBL6111C Ant. pol. : VERTICAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24*C/56% Engineer : Leo-Li
EUT : Wireless Controller
Power Rating : DC 5V From Xbox Input AC 120V/60Hz
Test Mode : Charging
M/N:1460

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.970	19.44	0.62	11.36	31.42	40.00	8.58	QP
2	112.450	11.55	1.12	17.80	30.47	43.50	13.03	QP
3	260.860	13.80	2.24	13.84	29.88	46.00	16.12	QP
4	650.800	20.42	4.31	12.16	36.89	46.00	9.11	QP
5	730.340	21.30	4.62	9.31	35.23	46.00	10.77	QP
6	961.200	24.38	5.43	16.30	46.11	54.00	7.89	QP

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

Frequency: 1GHz~18GHz

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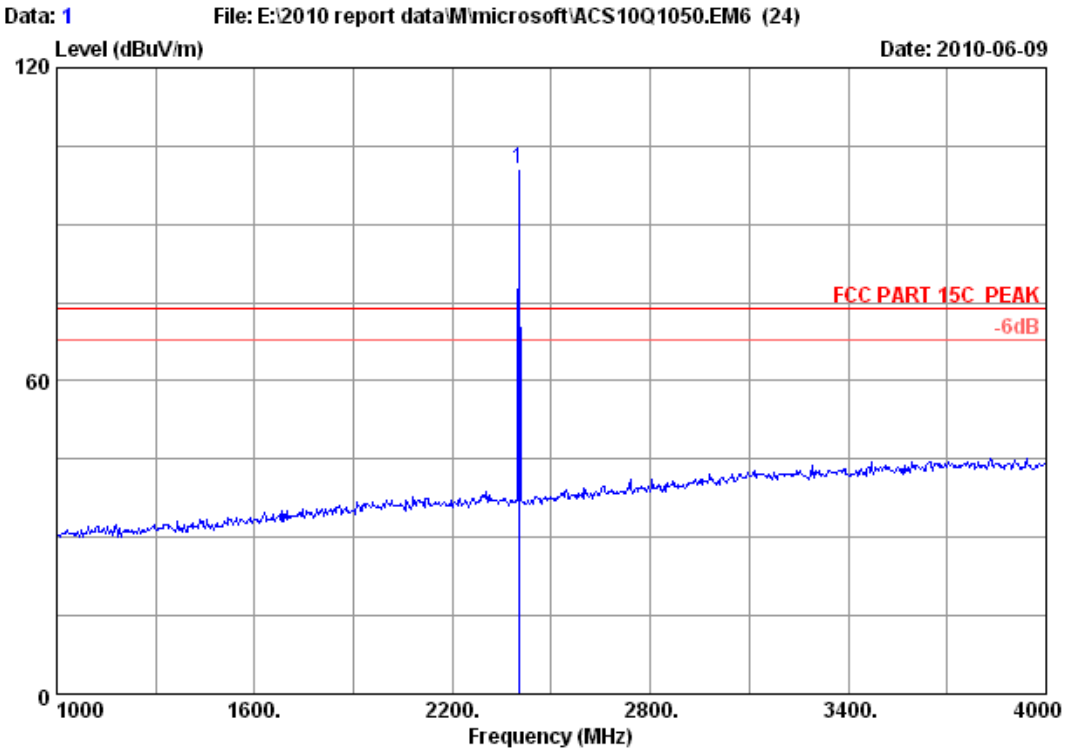

Site no. : 3m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH0 2402MHz
M/N : 1460

Data no. : 1
Ant. pol. : HORIZONTAL
Engineer : Leo-Li

	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	2402.000	29.44	8.72	36.09	98.62	100.69	74.00	-26.69	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.

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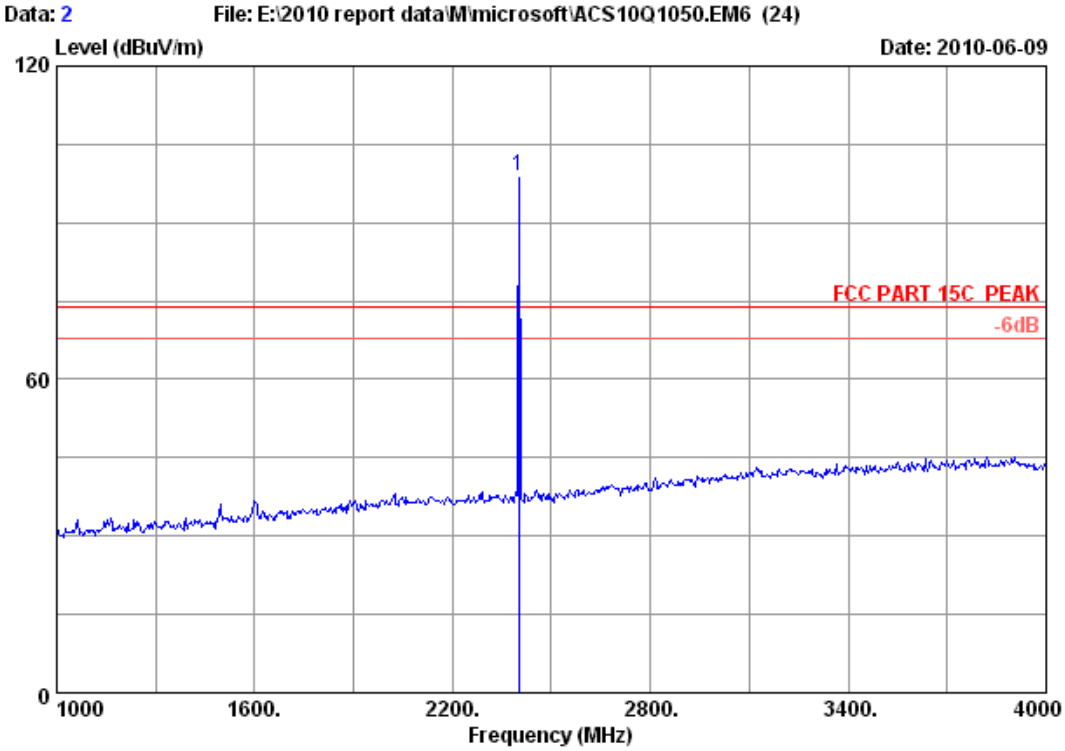

Site no. : 3m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH0 2402MHz
M/N : 1460

Data no. : 2
Ant. pol. : VERTICAL
Engineer : Leo-Li

	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	2402.000	29.44	8.72	36.09	96.98	99.05	74.00	-25.05	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.

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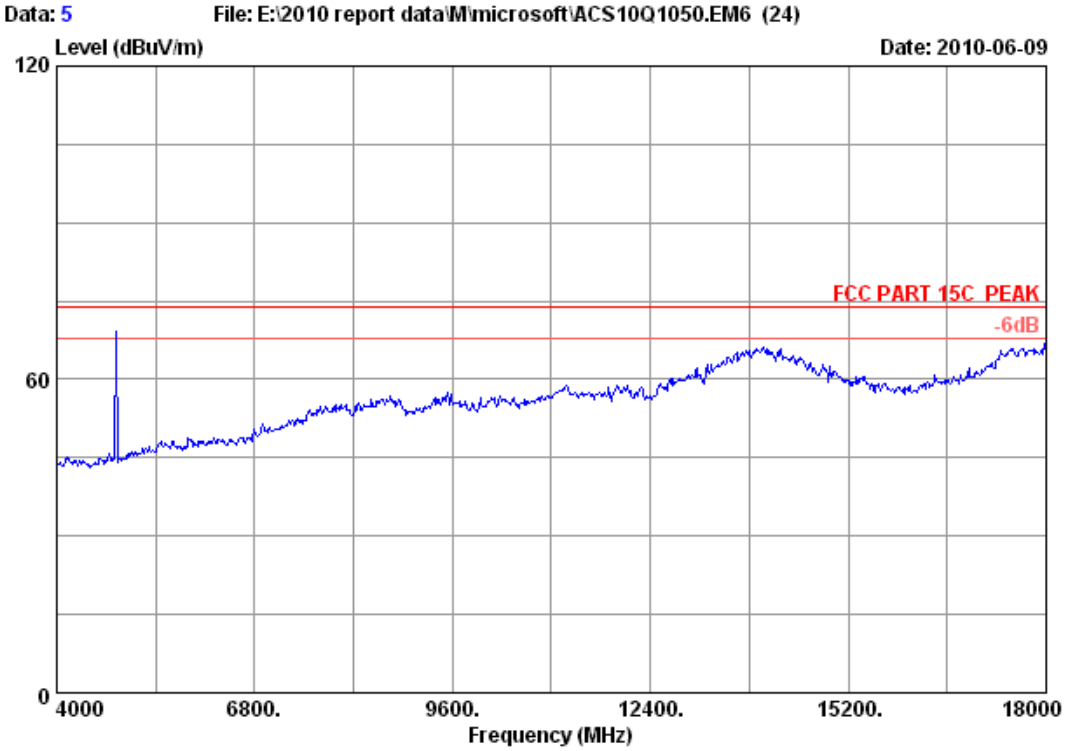

Site no.	: 3m Chamber	Data no.	: 5
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: Wireless Controller		
Power	: DC 5V		
Test mode	: Tx CH0 2402MHz		
M/N	: 1460		

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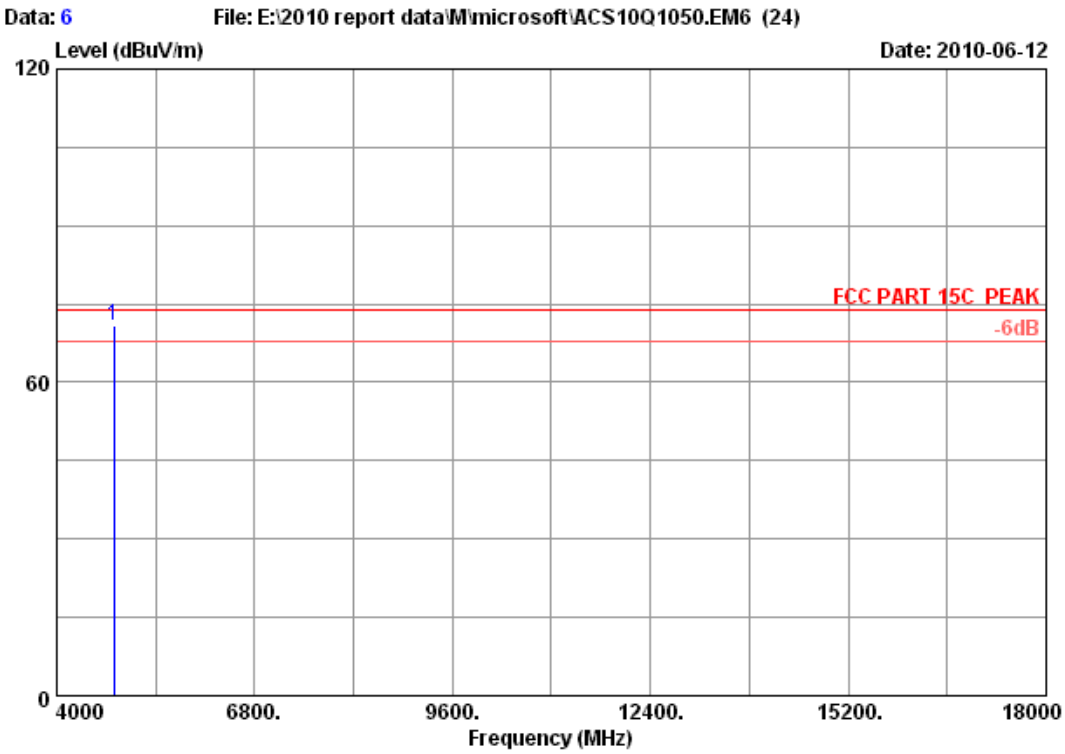

Site no. : 3m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH0 2402MHz
M/N : 1460

Data no. : 6
Ant. pol. : VERTICAL
Engineer : Leo-Li

	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	4804.000	34.30	12.35	35.37	59.72	71.00	74.00	3.00	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.

Frequency （MHz）	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
4804	71.00	28.75	42.25	54	PASS

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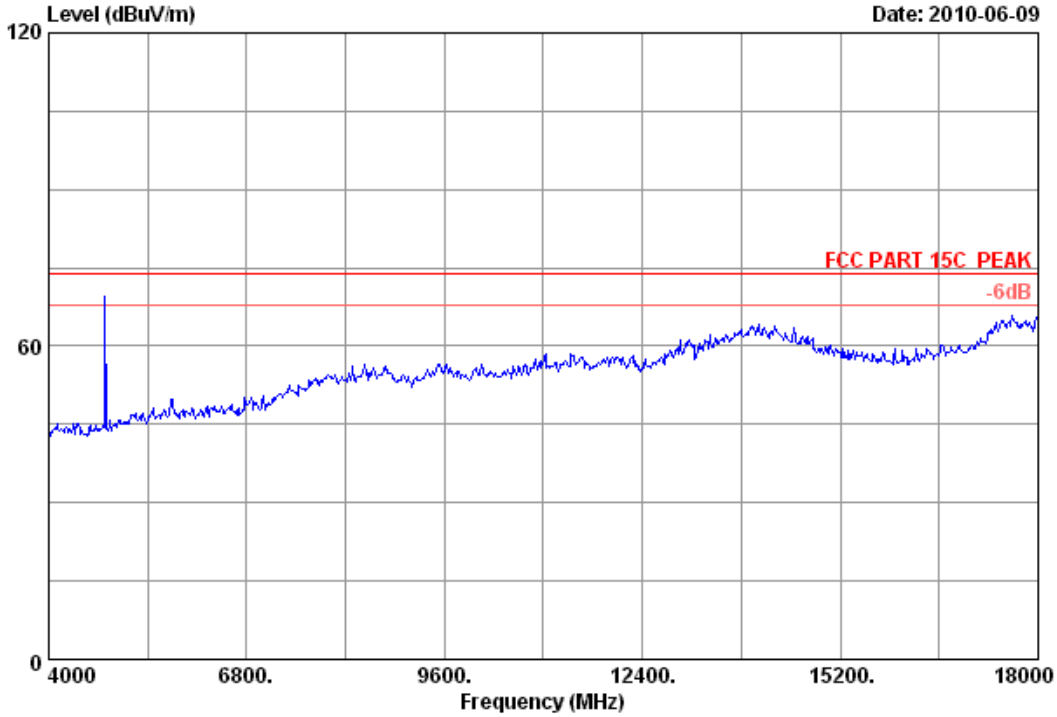
Data: 7 File: E:\2010 report data\M\microsoft\ACS10Q1050.EM6 (24)



Site no.	: 3m Chamber	Data no.	: 7
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: Wireless Controller		
Power	: DC 5V		
Test mode	: Tx CH0 2402MHz		
M/N	: 1460		

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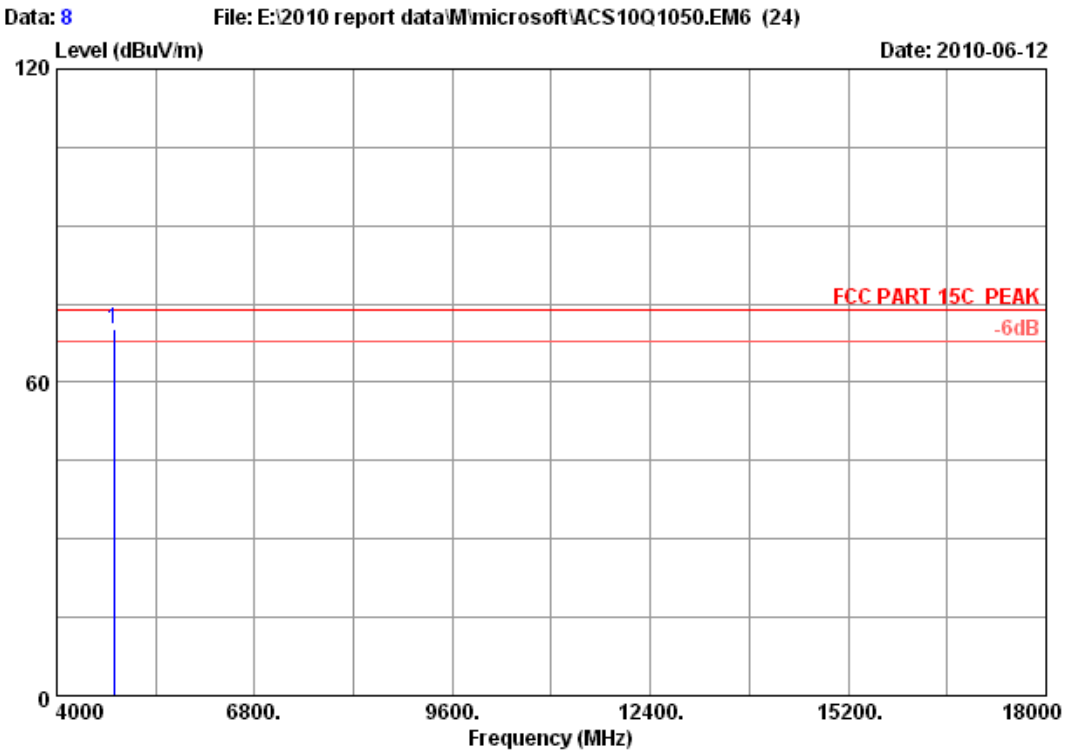

Site no. : 3m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH0 2402MHz
M/N : 1460

Data no. : 8
Ant. pol. : HORIZONTAL
Engineer : Leo-Li

	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	4804.000	34.30	12.35	35.37	59.01	70.29	74.00	3.71	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.

Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
4804	70.29	28.75	41.54	54	PASS

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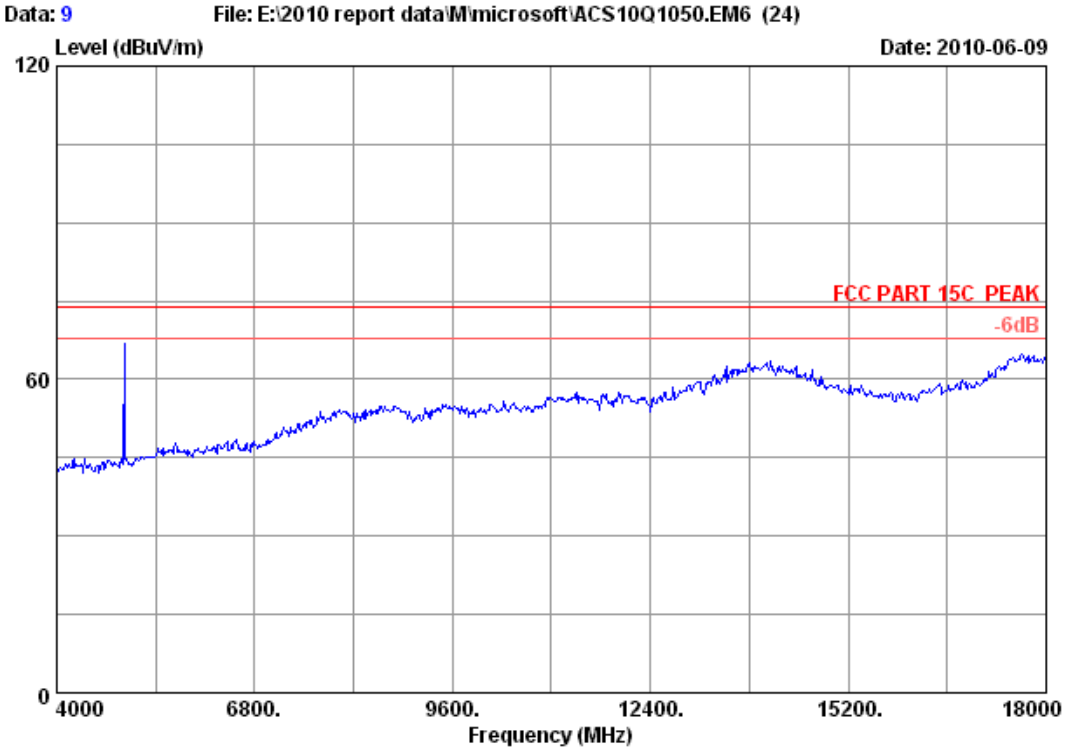

Site no.	: 3m Chamber	Data no.	: 9
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: Wireless Controller		
Power	: DC 5V		
Test mode	: Tx CH40 2482MHz		
M/N	: 1460		

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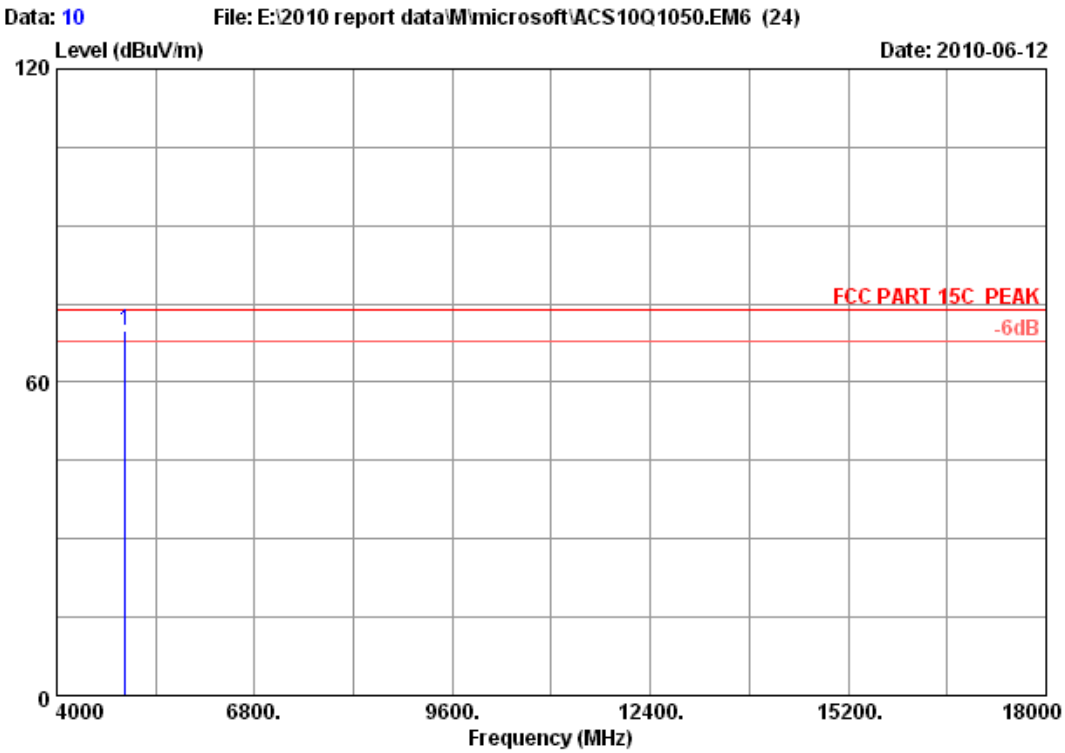

Site no. : 3m Chamber
Data no. : 10
Dis. / Ant. : 3m 3115(0911)
Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
Engineer : Leo-Li
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH40 2482MHz
M/N : 1460

	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	4964.000	34.54	12.53	35.37	58.09	69.79	74.00	4.21	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.

Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
4964	69.79	28.75	41.04	54	PASS

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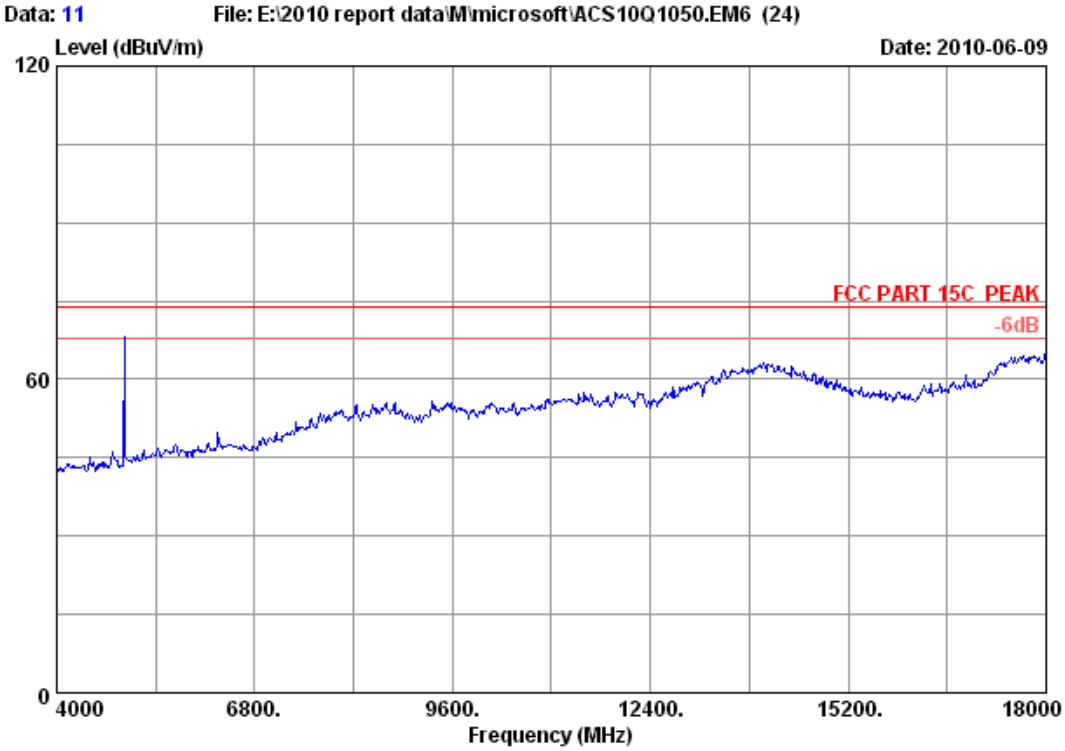

Site no.	: 3m Chamber	Data no.	: 11
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: Wireless Controller		
Power	: DC 5V		
Test mode	: Tx CH40 2482MHz		
M/N	: 1460		

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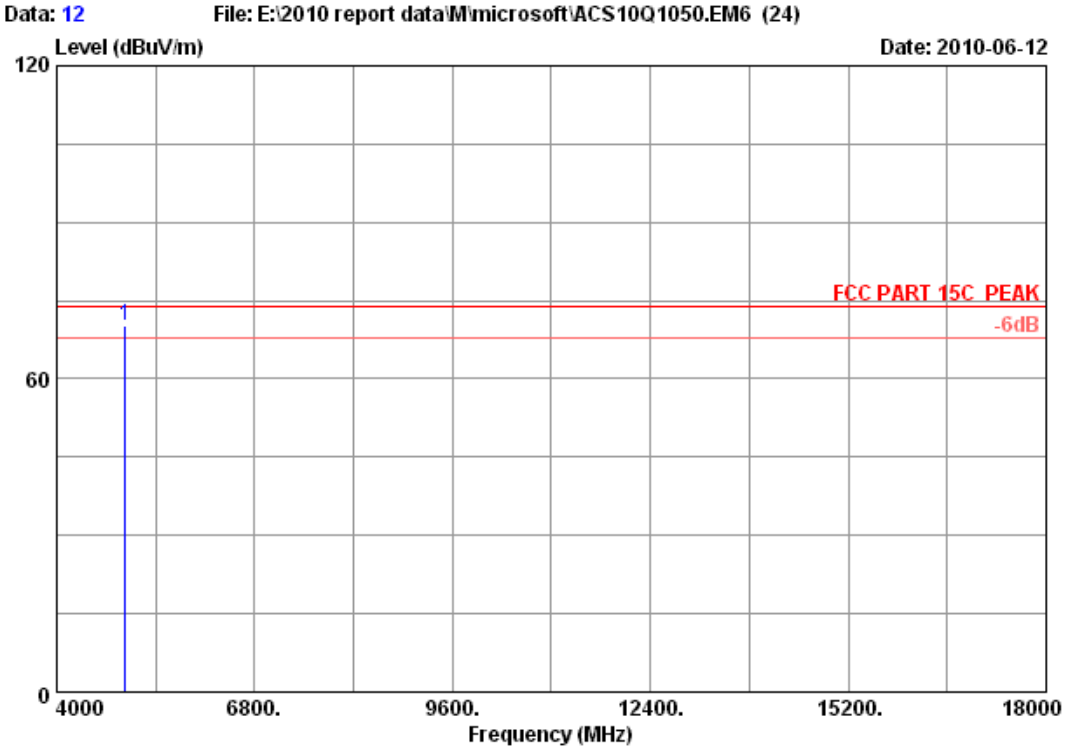

Site no. : 3m Chamber
Data no. : 12
Dis. / Ant. : 3m 3115(0911)
Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
Engineer : Leo-Li
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH40 2482MHz
M/N : 1460

	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	4964.000	34.54	12.53	35.37	58.45	70.15	74.00	3.85	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.

Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
4964	70.15	28.75	41.40	54	PASS

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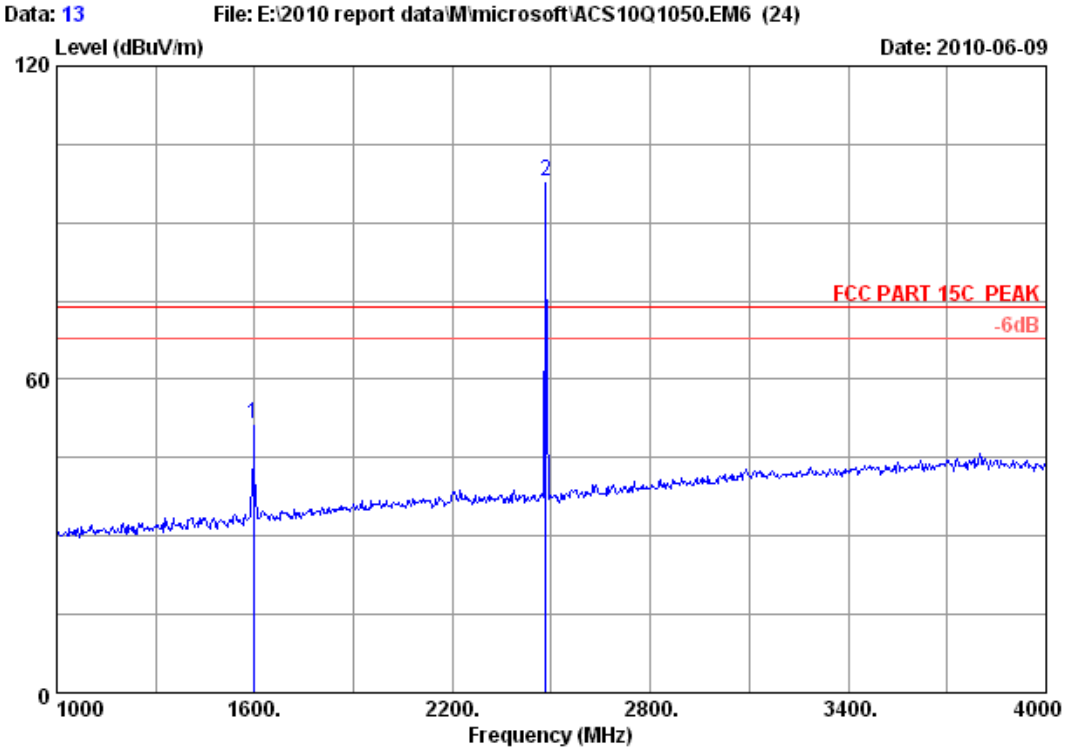

Site no. : 3m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH40 2482MHz
M/N : 1460

Data no. : 13
Ant. pol. : VERTICAL
Engineer : Leo-Li

	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	1597.000	26.96	6.98	36.43	54.09	51.60	74.00	22.40	Peak
2	2482.000	29.49	8.87	35.97	95.58	97.97	74.00	-23.97	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.

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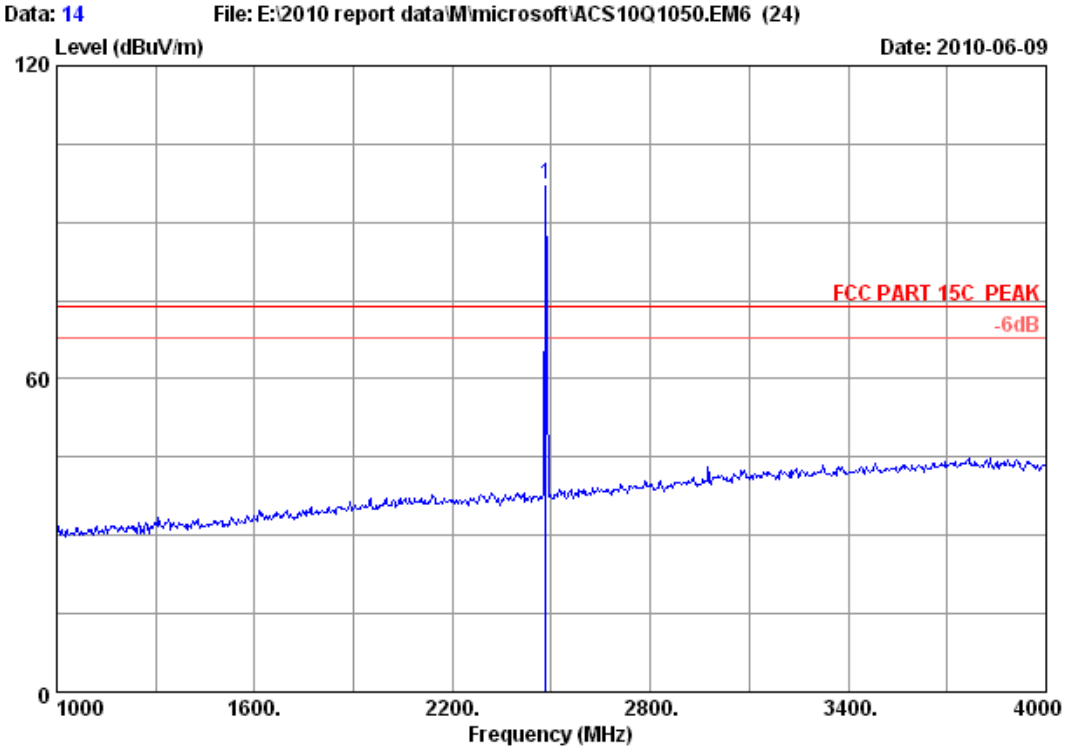

Site no. : 3m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH40 2482MHz
M/N : 1460

Data no. : 14
Ant. pol. : HORIZONTAL
Engineer : Leo-Li

	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	2482.000	29.49	8.87	35.97	94.86	97.25	74.00	-23.25	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.

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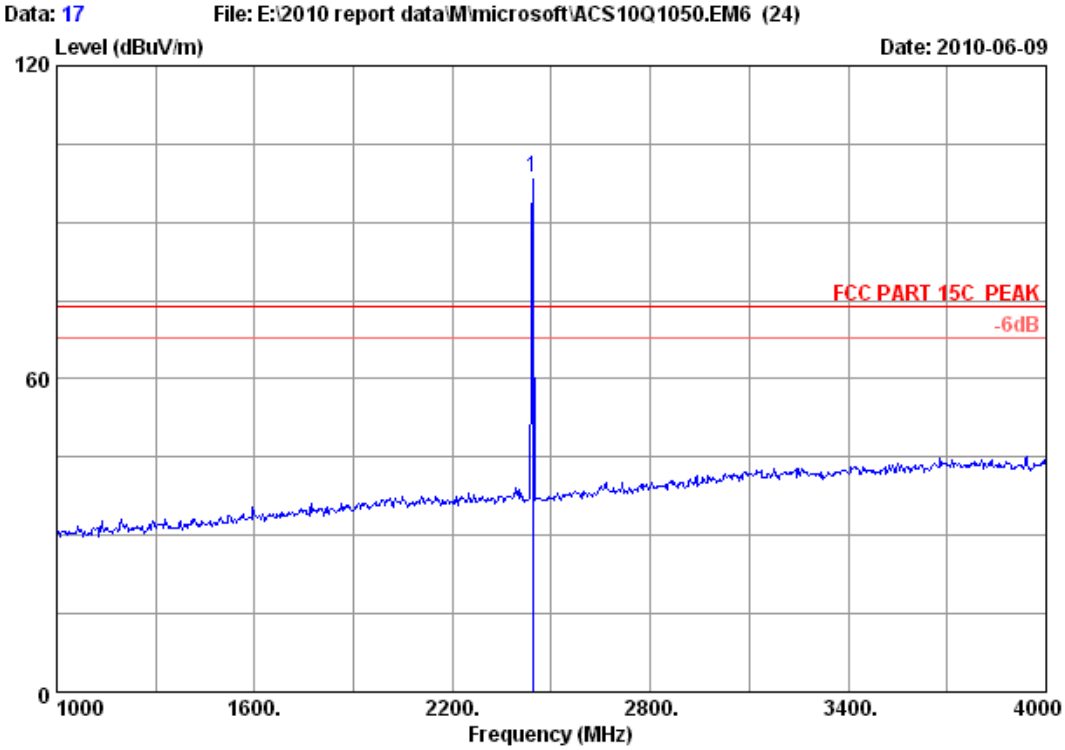

Site no. : 3m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH20 2442MHz
M/N : 1460

Data no. : 17
Ant. pol. : VERTICAL
Engineer : Leo-Li

	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	2442.000	29.47	8.77	36.06	96.32	98.50	74.00	-24.50	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.

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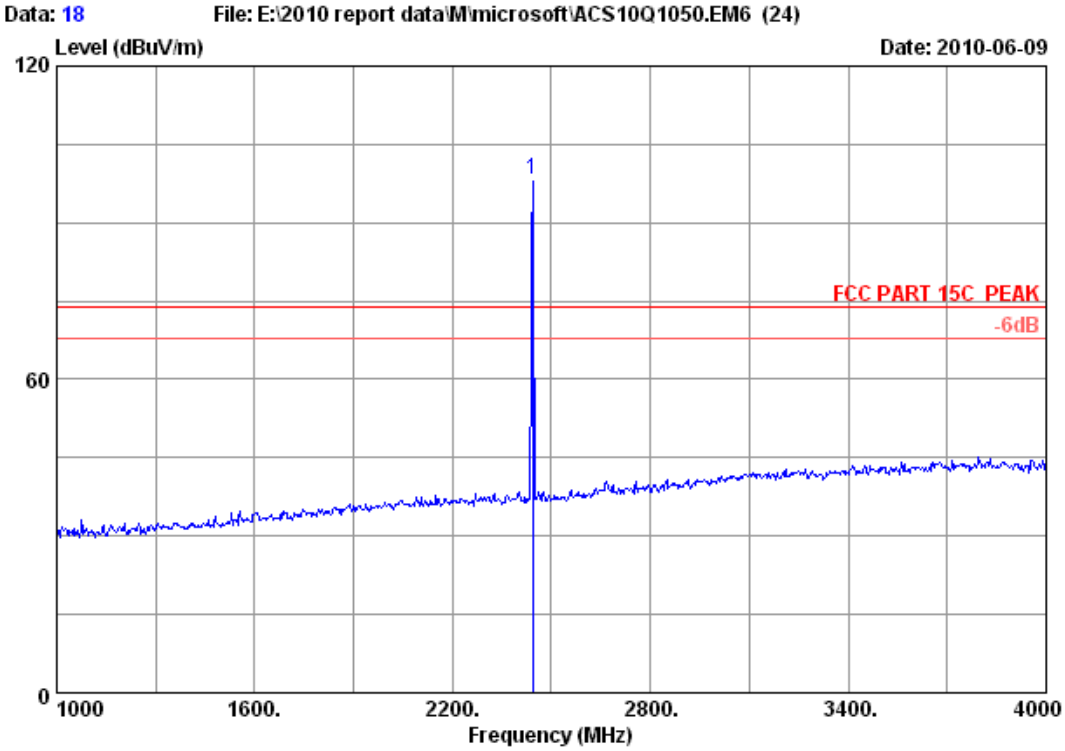

Site no. : 3m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH20 2442MHz
M/N : 1460

Data no. : 18
Ant. pol. : HORIZONTAL
Engineer : Leo-Li

	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	2442.000	29.47	8.77	36.06	96.00	98.18	74.00	-24.18	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.

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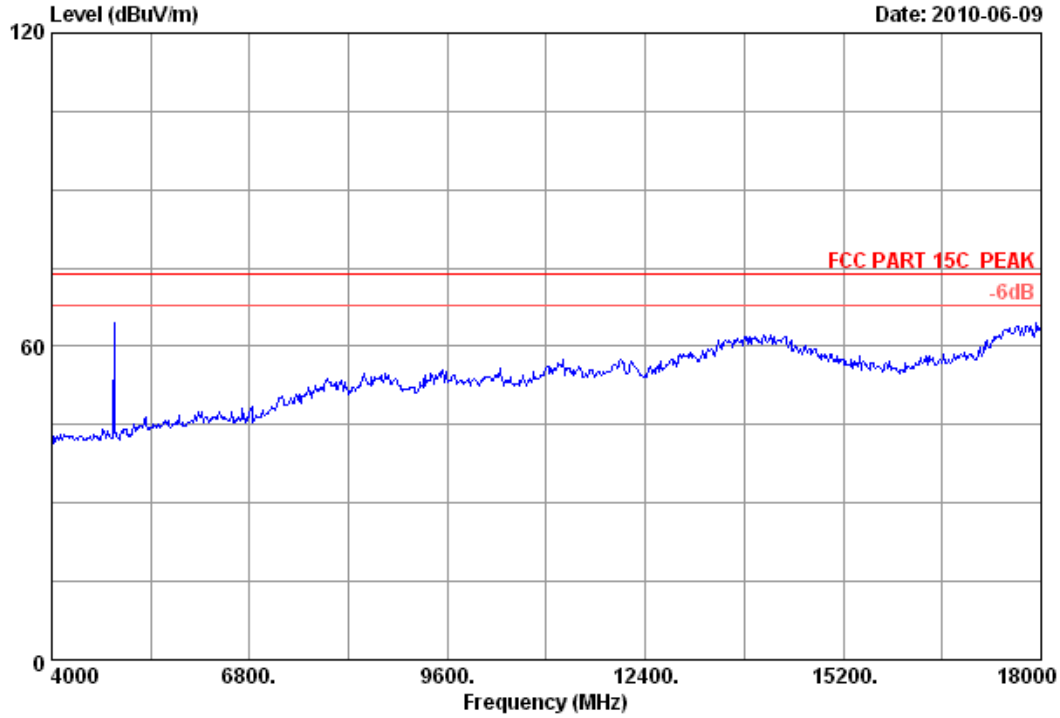
Data: 19 File: E:\2010 report data\M\microsoft\ACS10Q1050.EM6 (24)



Site no.	: 3m Chamber	Data no.	: 19
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: Wireless Controller		
Power	: DC 5V		
Test mode	: Tx CH20 2442MHz		
M/N	: 1460		

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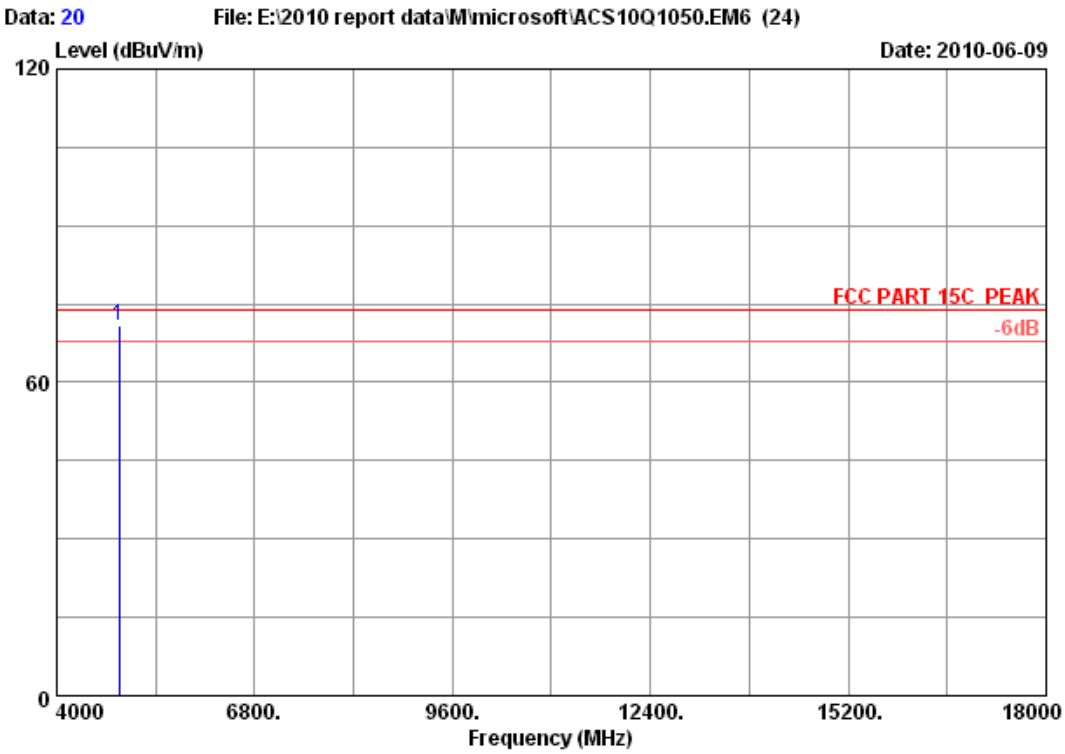


Site no. : 3m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH20 2442MHz
M/N : 1460

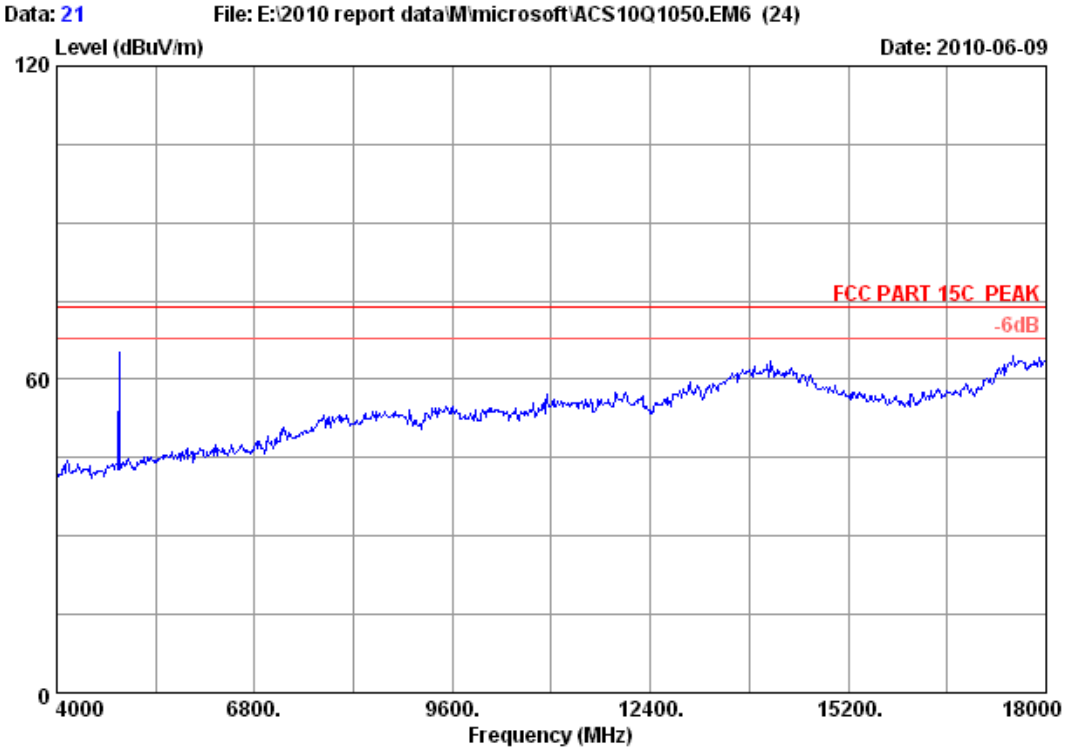
Data no. : 20
Ant. pol. : HORIZONTAL
Engineer : Leo-Li

	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	4884.000	34.41	12.44	35.36	59.47	70.96	74.00	3.04	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.

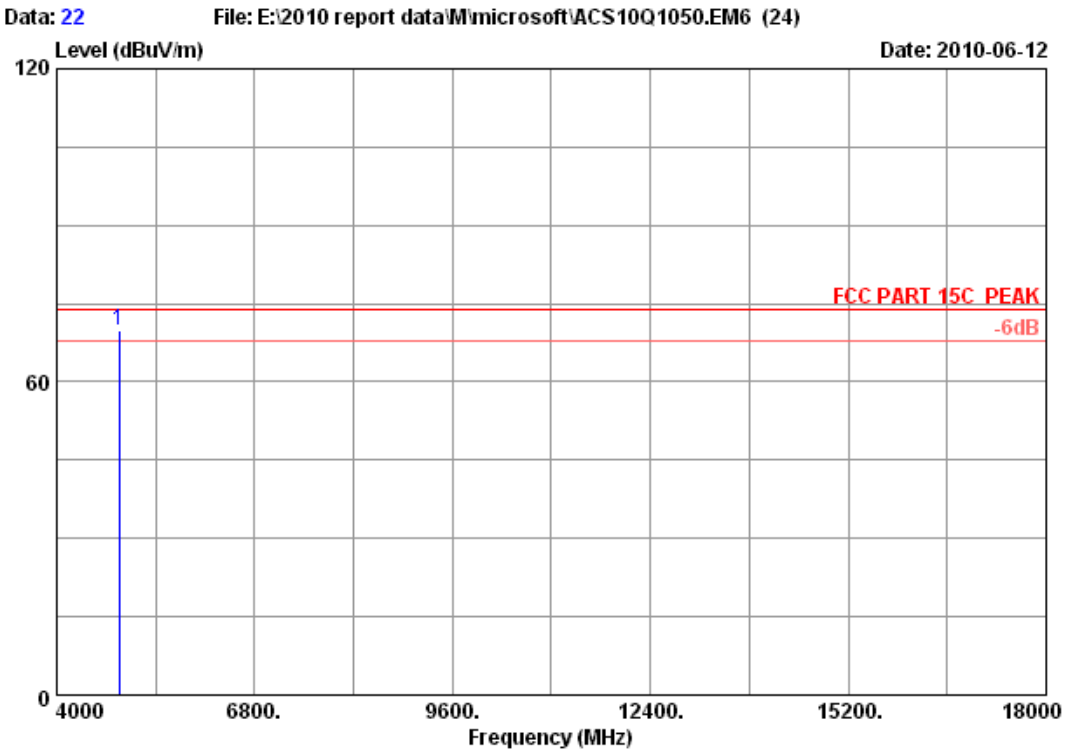
Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
4884	70.96	28.75	42.21	54	PASS

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



Site no.	: 3m Chamber	Data no.	: 21
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: Wireless Controller		
Power	: DC 5V		
Test mode	: Tx CH20 2442MHz		
M/N	: 1460		

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



Site no. : 3m Chamber
Data no. : 22
Dis. / Ant. : 3m 3115(0911)
Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
Engineer : Leo-Li
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH20 2442MHz
M/N : 1460

	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	4884.000	34.41	12.44	35.36	58.45	69.94	74.00	4.06	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.

Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
4884	69.94	28.75	41.19	54	PASS

5. CONDUCTED SPURIOUS EMISSIONS

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 10	1 Year
2.	RF Cable	Hubersuhner	SUCOFLEX 102	28618/2	May.08, 10	1Year

5.2. Limit

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in 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).

5.3. Test Procedure

1, Connected the EUT's antenna port to spectrum analyzer by 20dB attenuator.

2, Measure all the conducted emissions form antenna port by spectrum analyzer as below set:
RBW=100KHz; VBW=300KHz; Detector: Peak; Sweep time: Auto

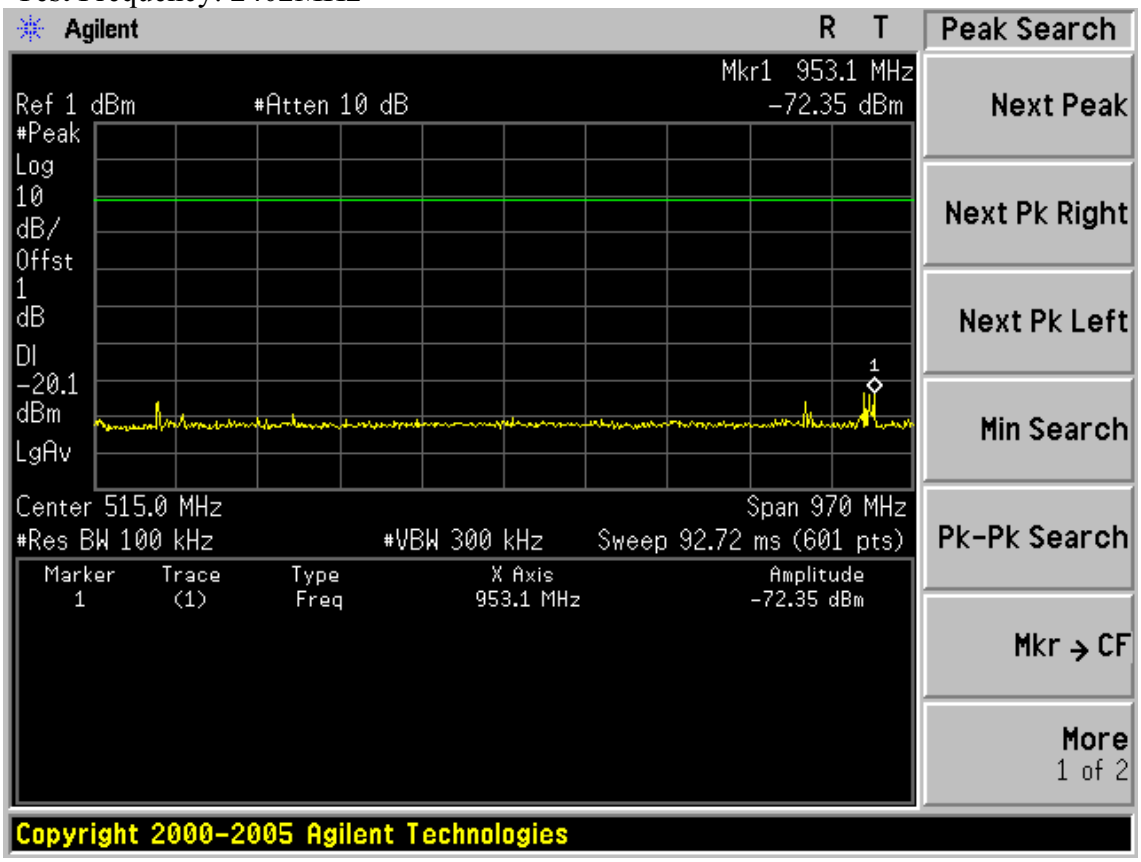
Note: The cable loss was offset into spectrum analyzer as amplitude offset.

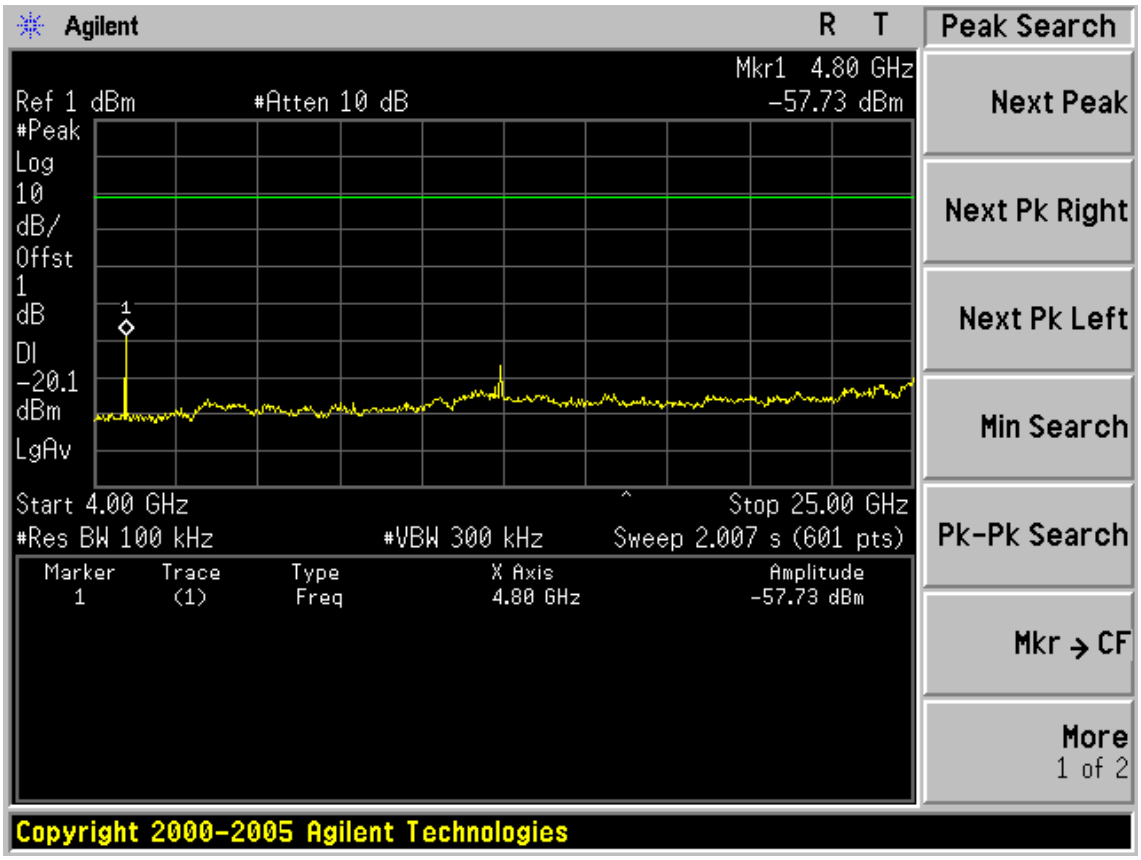
5.4. Test result

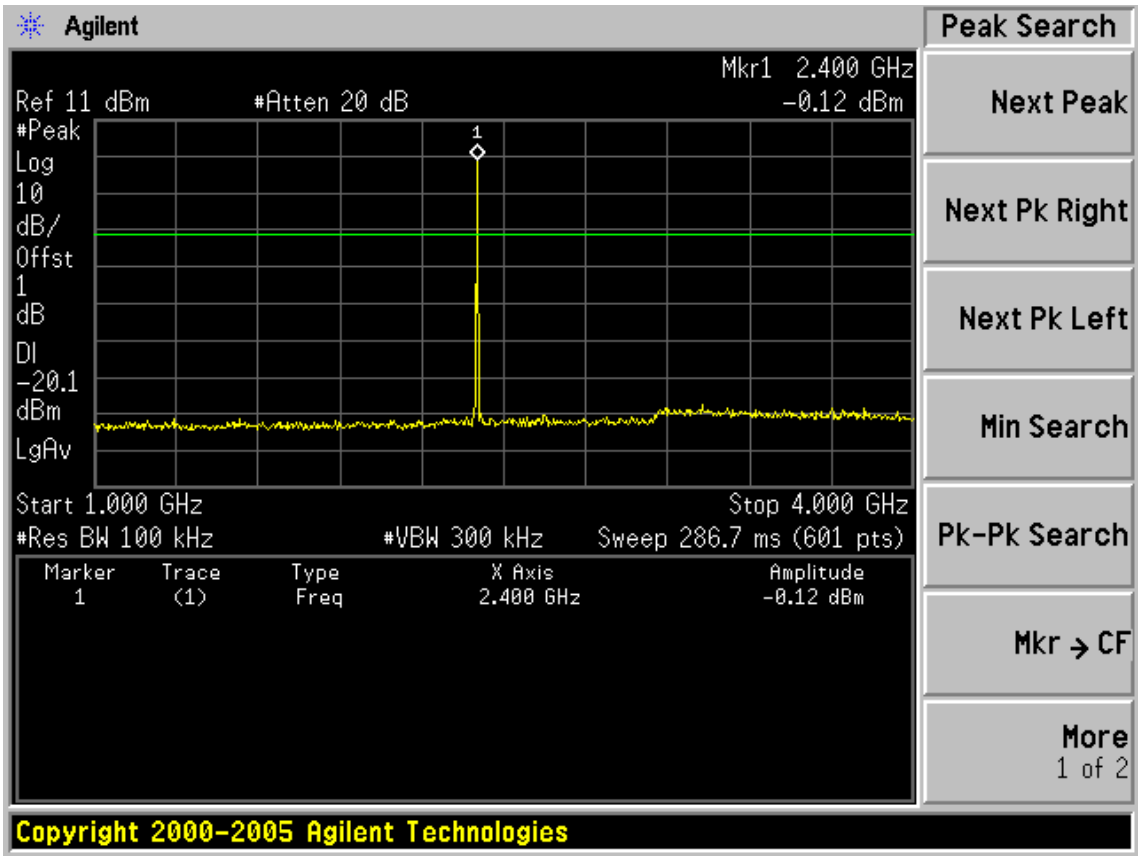
PASS (The testing data was attached in the next pages.)

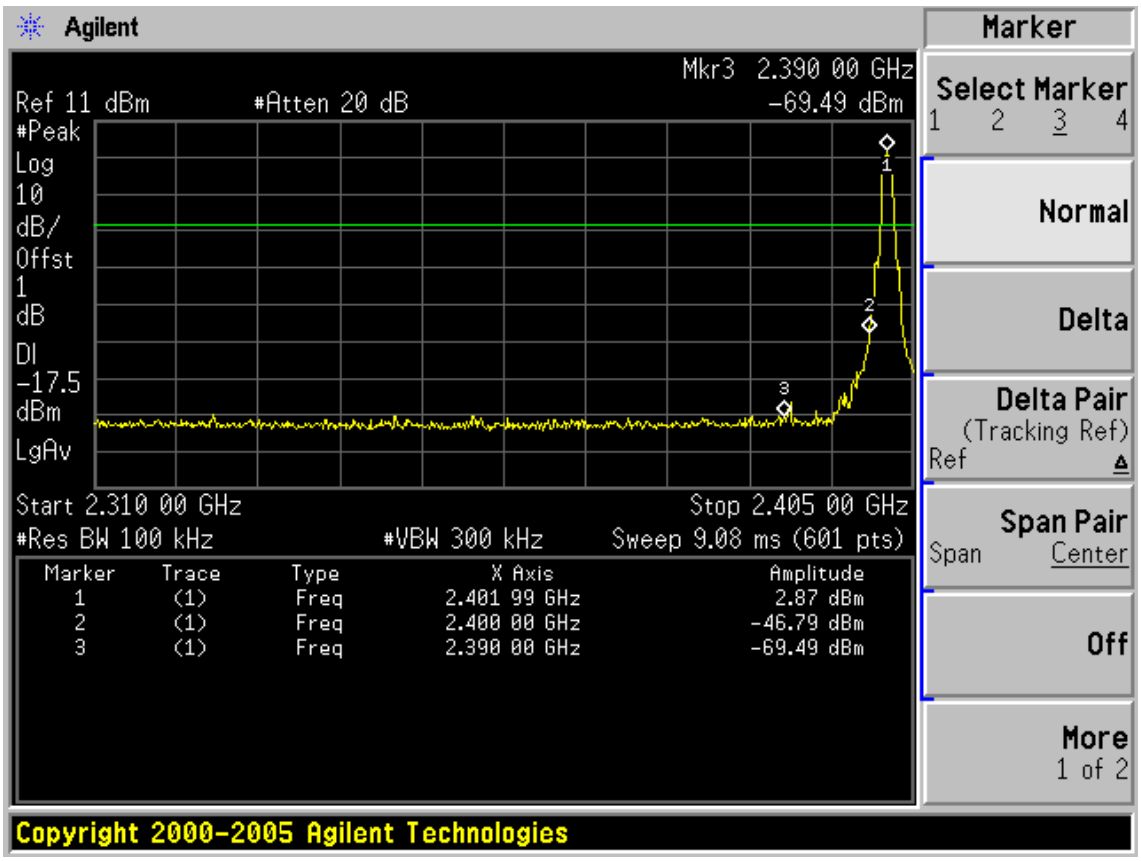
Conducted emission test data:

Test Frequency: 2402MHz

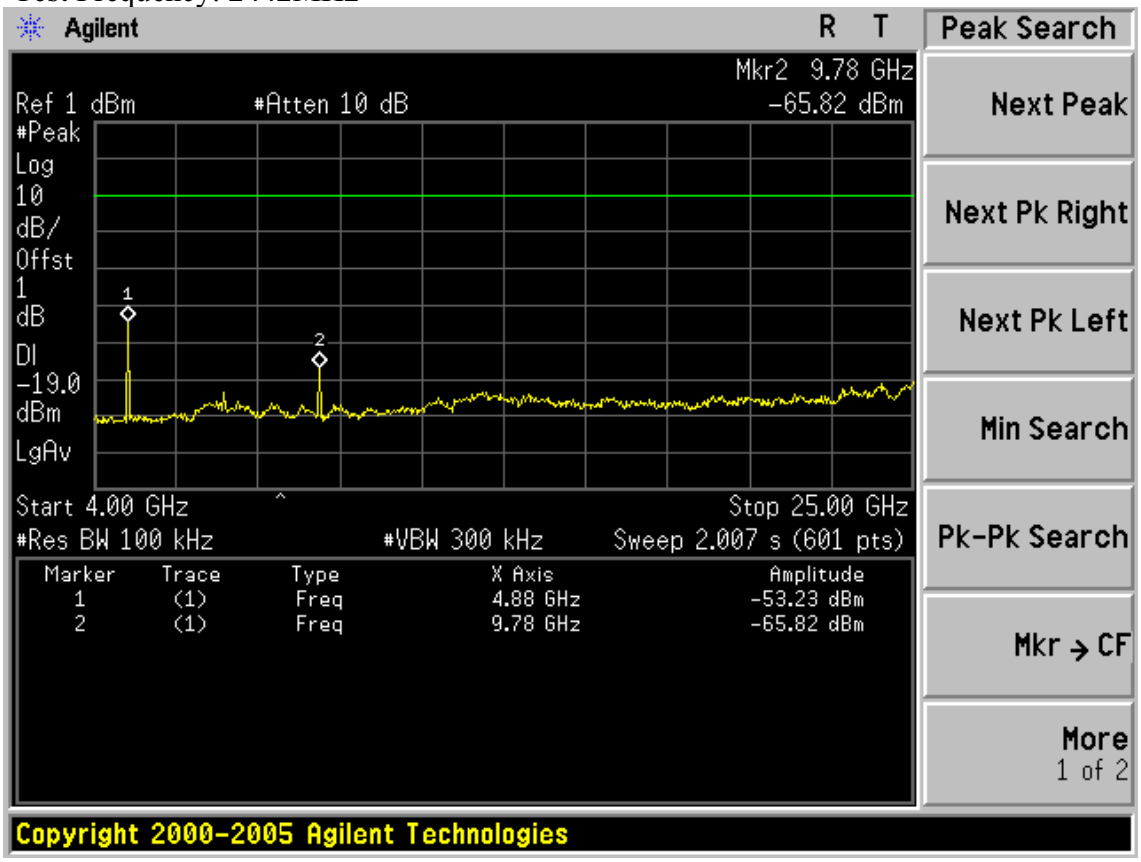


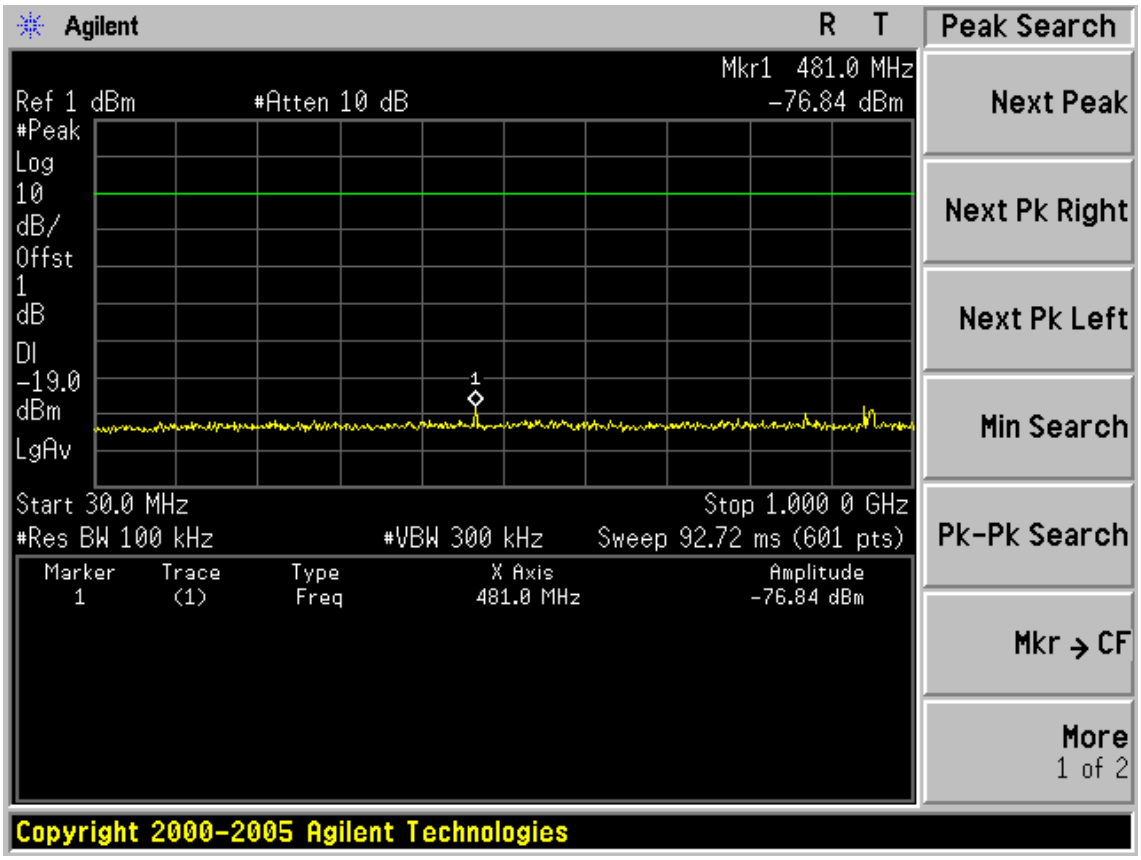


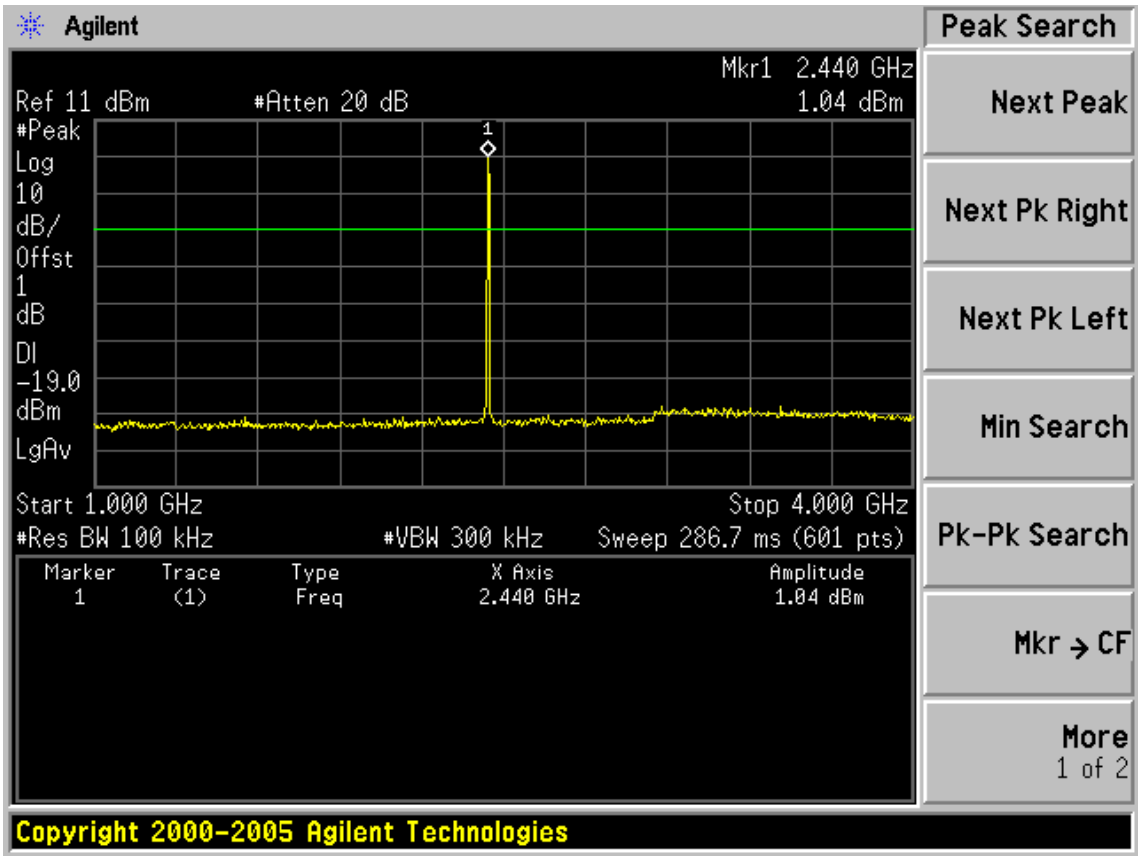

Agilent
Peak Search
Mkr1 2.400 GHz
Ref 11 dBm
#Atten 20 dB
-0.12 dBm
#Peak
Log
10
dB/
Offst
1
dB
Dl
-20.1
dBm
LgAv
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
Start 1.000 GHz
Stop 4.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 286.7 ms (601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.400 GHz -0.12 dBm
Copyright 2000-2005 Agilent Technologies


Agilent
Marker
Mkr3 2.390 00 GHz
Ref 11 dBm
#Atten 20 dB
-69.49 dBm
#Peak
Log
10
dB/
Offst
1
dB
Dl
-17.5
dBm
LgAv
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
Start 2.310 00 GHz
Stop 2.405 00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 9.08 ms (601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.401 99 GHz 2.87 dBm
2 (1) Freq 2.400 00 GHz -46.79 dBm
3 (1) Freq 2.390 00 GHz -69.49 dBm
Copyright 2000-2005 Agilent Technologies

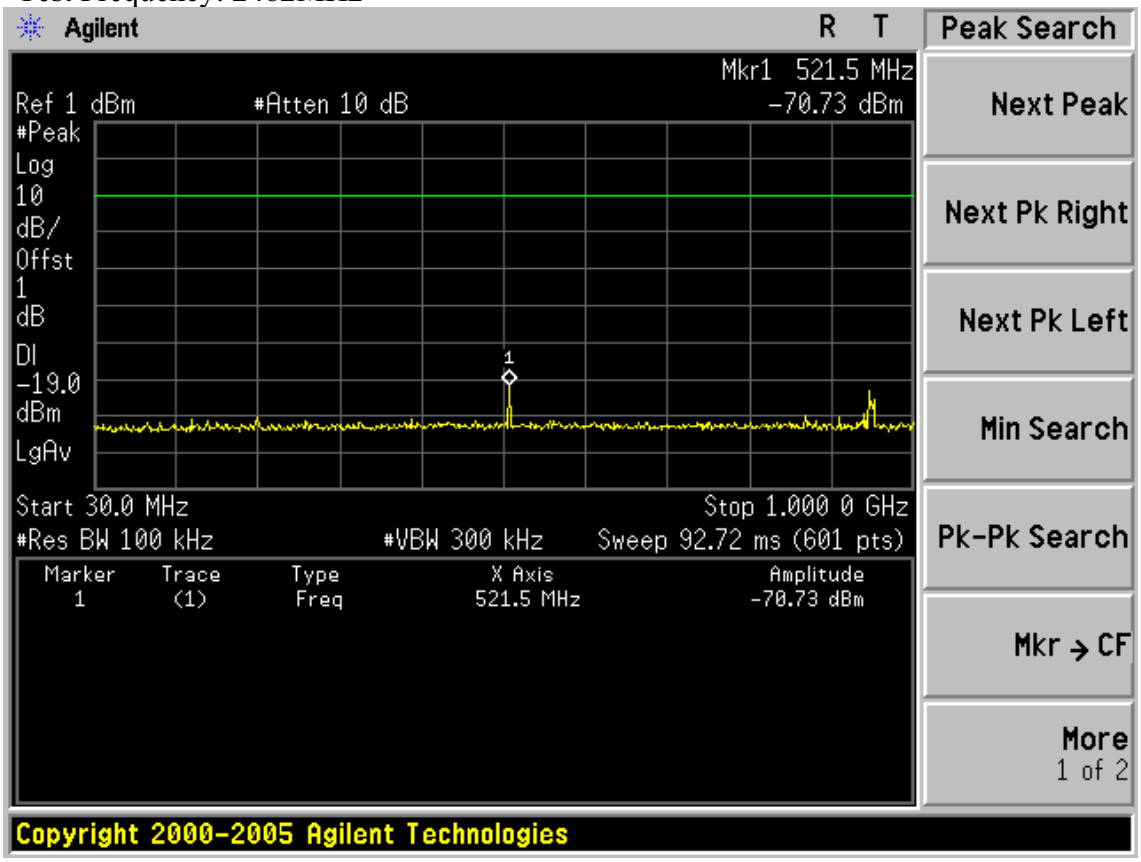
Test Frequency: 2442MHz

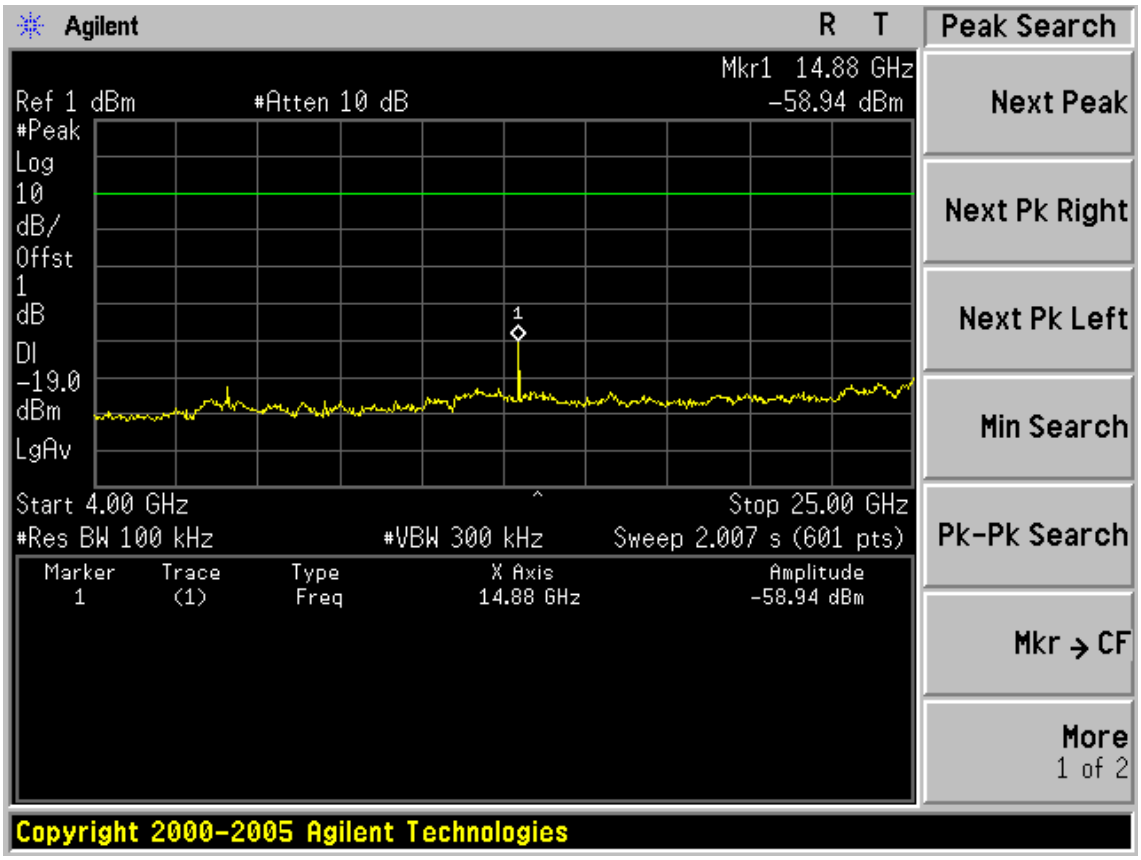


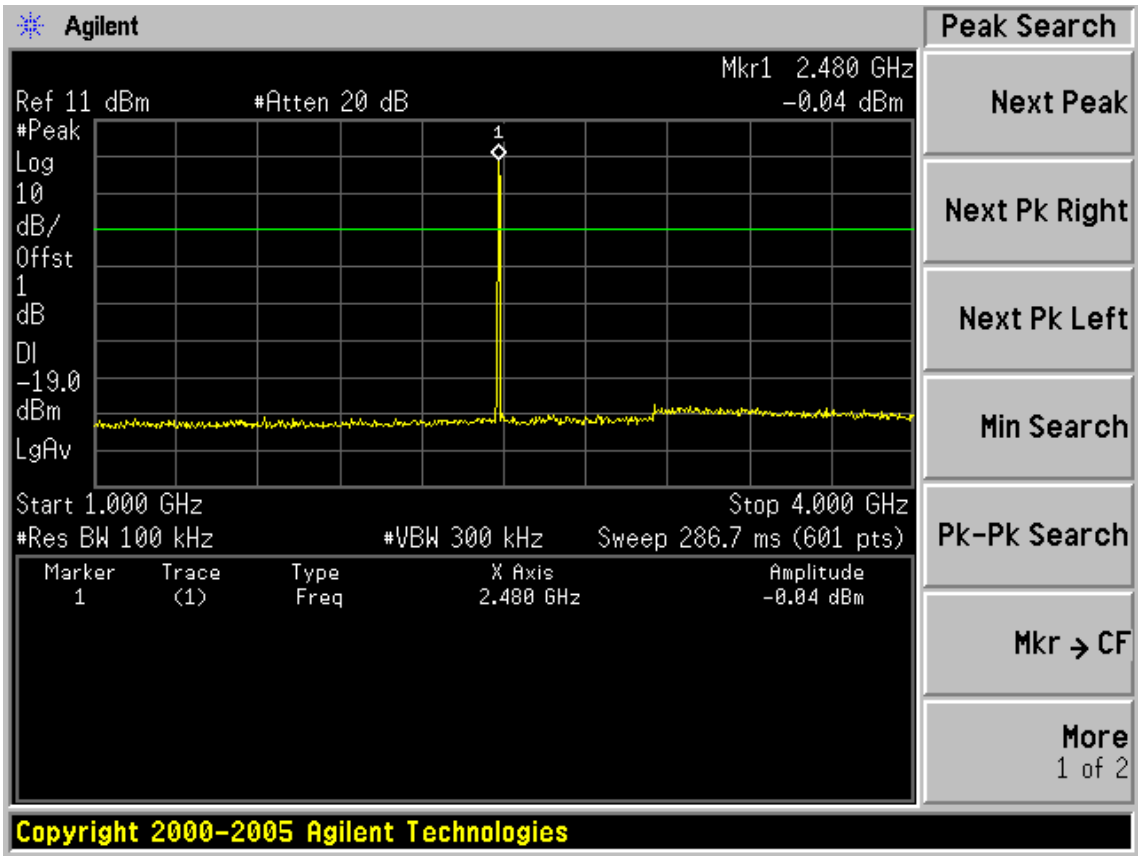


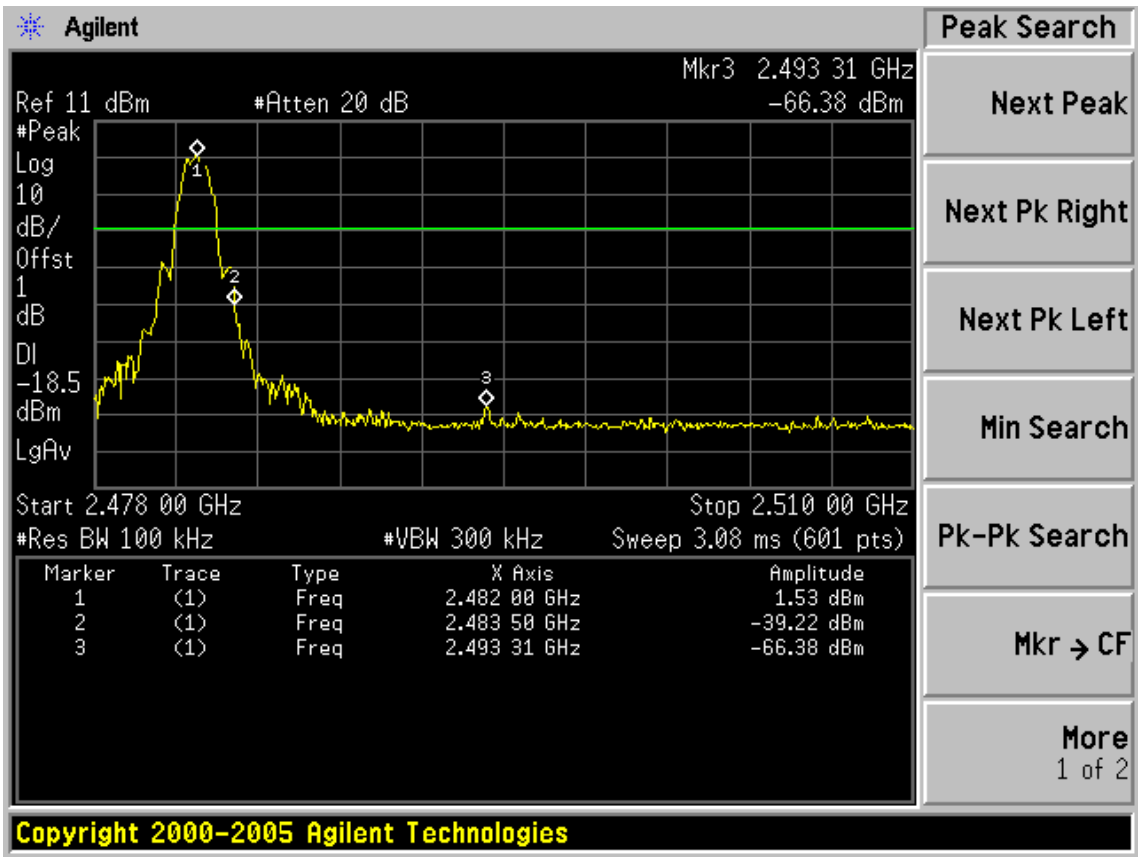

Agilent
Peak Search
Mkr1 2.440 GHz
Ref 11 dBm
#Atten 20 dB
1.04 dBm
#Peak
Log
10
dB/
Offst
1
dB
Dl
-19.0
dBm
LgAv
Next Peak
Next Pk Right
Next Pk Left
Min Search
Start 1.000 GHz
Stop 4.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 286.7 ms (601 pts)
Pk-Pk Search
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.440 GHz 1.04 dBm
Mkr → CF
More
1 of 2
Copyright 2000-2005 Agilent Technologies

Test Frequency: 2482MHz






Agilent
Peak Search
Mkr1 2.480 GHz
Ref 11 dBm
#Atten 20 dB
-0.04 dBm
#Peak
Log
10
dB/
Offst
1
dB
Dl
-19.0
dBm
LgAv
Next Peak
Next Pk Right
Next Pk Left
Min Search
Start 1.000 GHz
Stop 4.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 286.7 ms (601 pts)
Pk-Pk Search
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.480 GHz -0.04 dBm
Mkr → CF
More
1 of 2
Copyright 2000-2005 Agilent Technologies


Agilent
Peak Search
Mkr3 2.493 31 GHz
Ref 11 dBm
#Atten 20 dB
-66.38 dBm
#Peak
Log
10
dB/
Offst
1
dB
Dl
-18.5
dBm
LgAv
Next Peak
Next Pk Right
Next Pk Left
Min Search
Start 2.478 00 GHz
Stop 2.510 00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 3.08 ms (601 pts)
Pk-Pk Search
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.482 00 GHz 1.53 dBm
2 (1) Freq 2.483 50 GHz -39.22 dBm
3 (1) Freq 2.493 31 GHz -66.38 dBm
Mkr → CF
More
1 of 2
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6. CARRIER FREQUENCY SEPARATION TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 10	1 Year
2.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,10	1Year

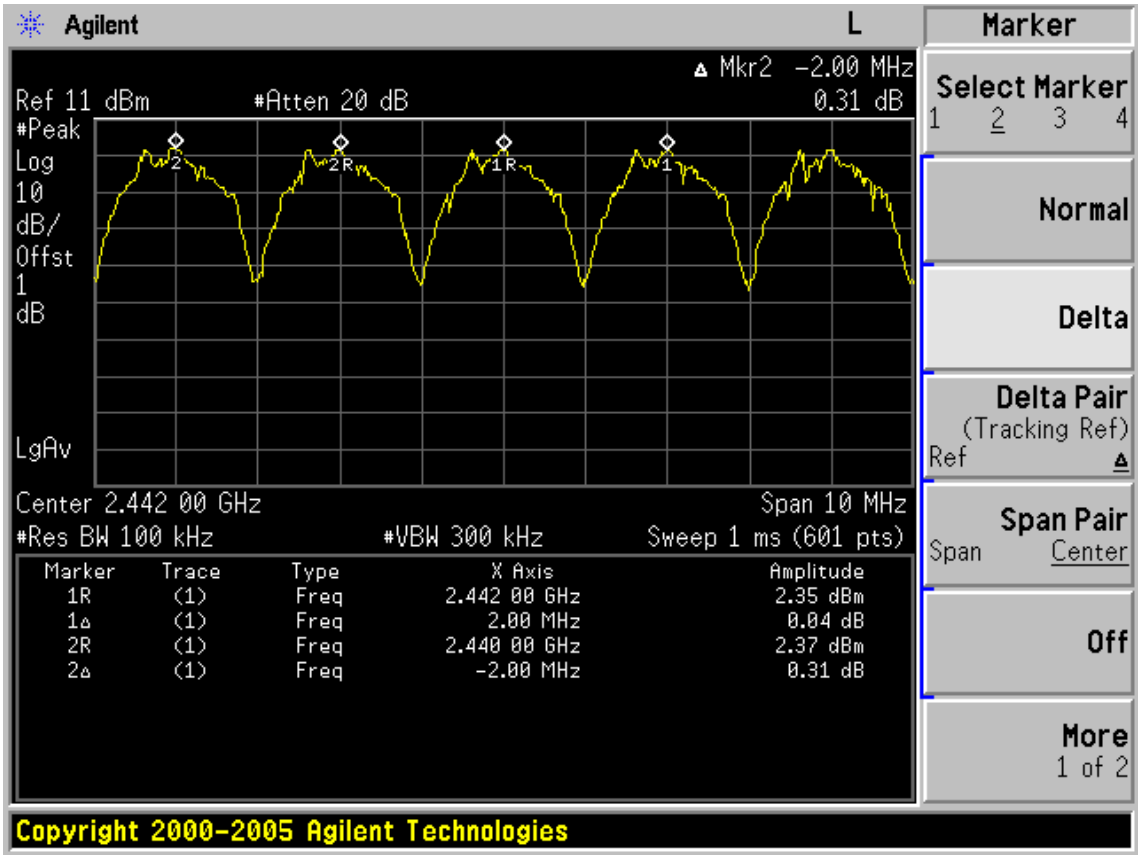
6.2. Limit

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.

6.3. Test Results.

EUT: Wireless Controller		
M/N: 1460		
Test date:2010-06-10	Pressure:100.6 kpa	Humidity:53%
Tested by: Paul Tian	Test site: RF site	Temperature:25 ℃

Channel separation	Conclusion
2.00MHz	PASS



7. 20 DB BANDWIDTH TEST

7.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08,10	1 Year
2.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,10	1Year

7.2. Limit

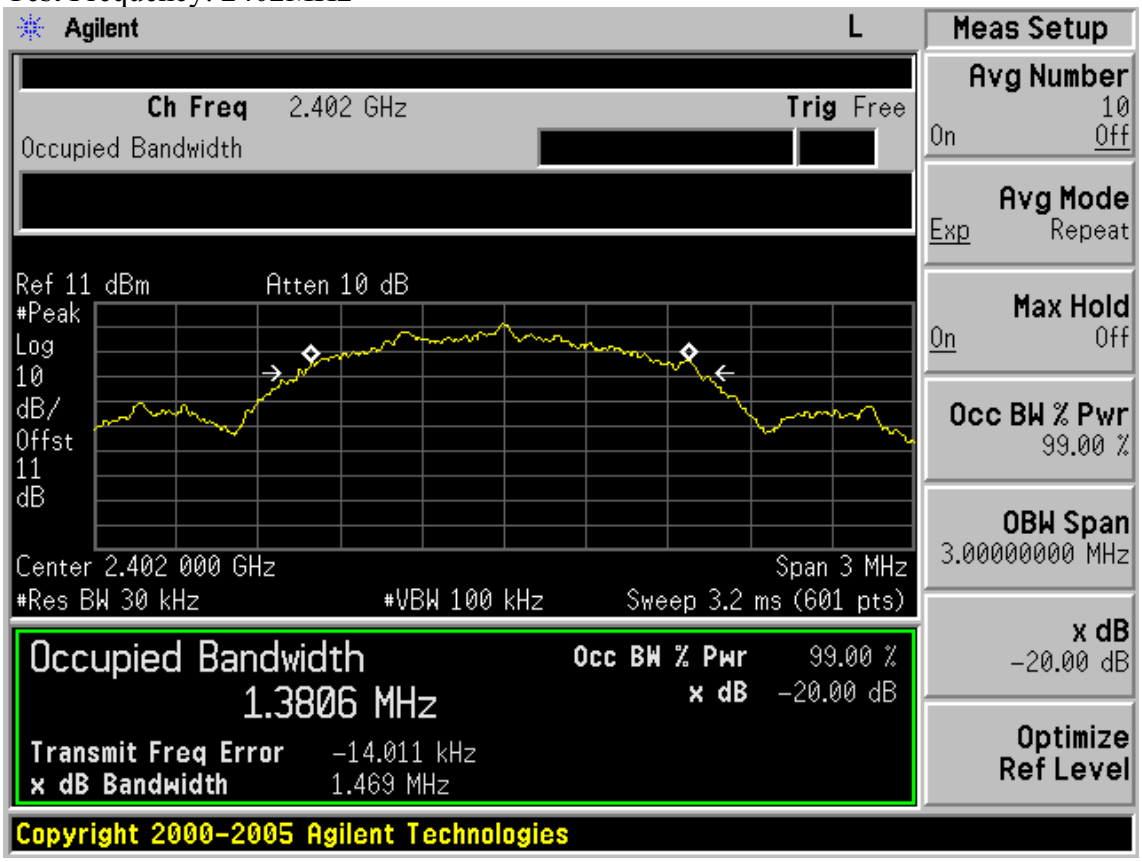
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific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

7.3. Test Results

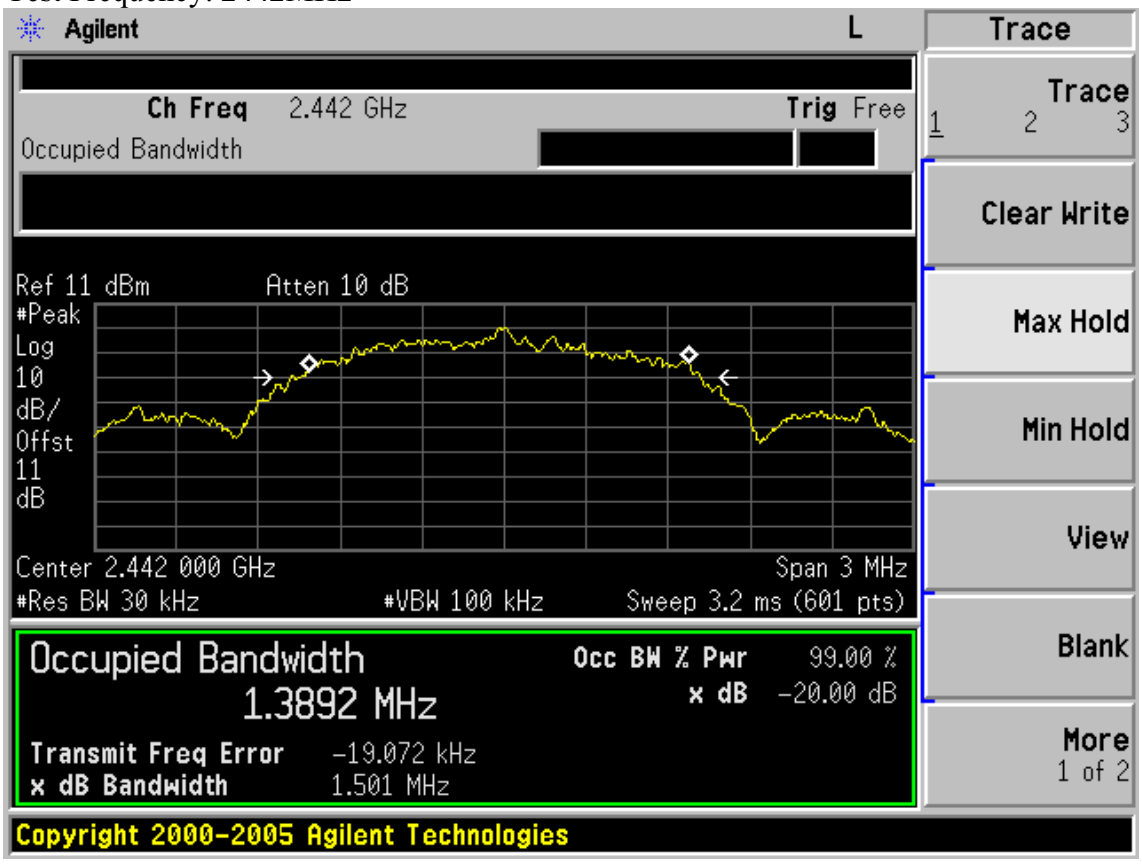
EUT: Wireless Controller		
M/N: 1460		
Test date: 2010-06-10	Pressure:100.6 kpa	Humidity:52 %
Tested by: Paul Tian	Test site: RF site	Temperature：25 ℃

Frequency (MHz)	20dB bandwidth (KHz)	Limit (KHz)
2402	1469	NA
2442	1501	NA
2482	1492	NA
Conclusion：PASS		

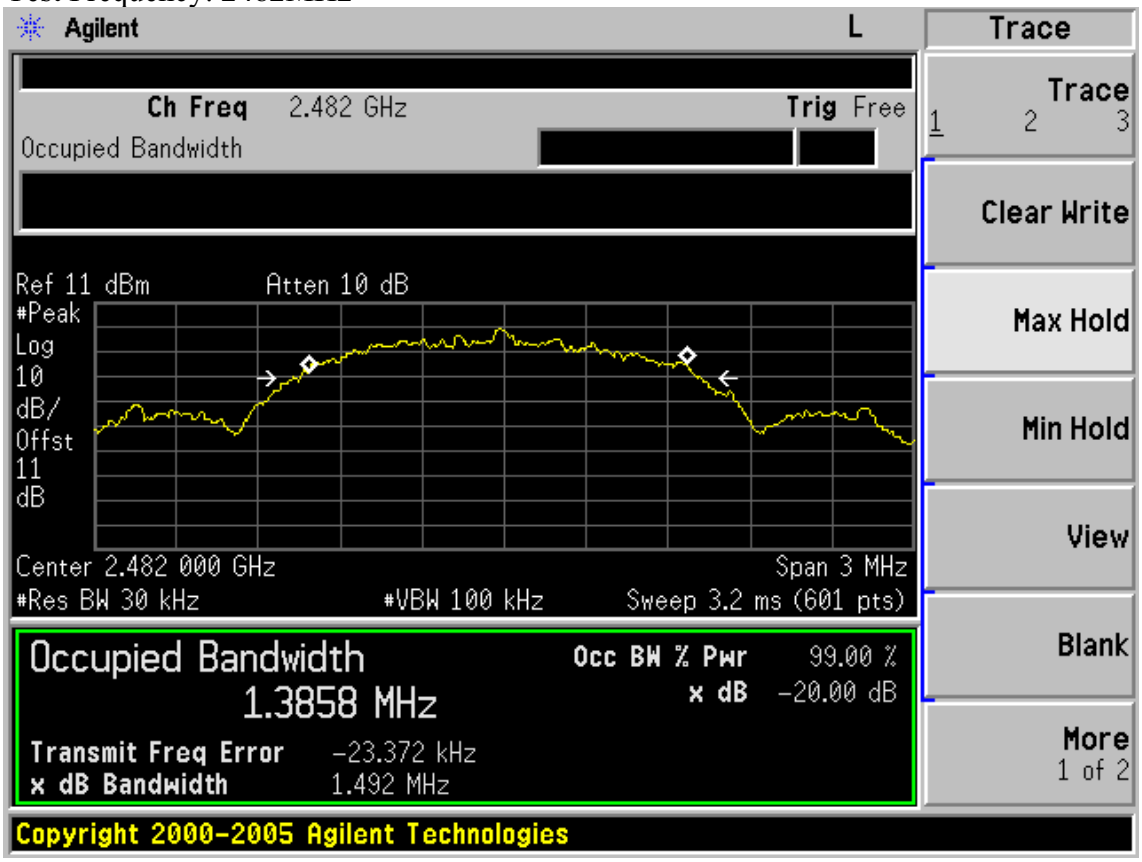
Test Frequency: 2402MHz



Test Frequency: 2442MHz



Test Frequency: 2482MHz



8. NUMBER OF HOPPING FREQUENCY TEST

8.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 10	1 Year
2	RF Cable	Hubersuhner	SUCOFLEX 102	28618/2	May,08, 10	1Year

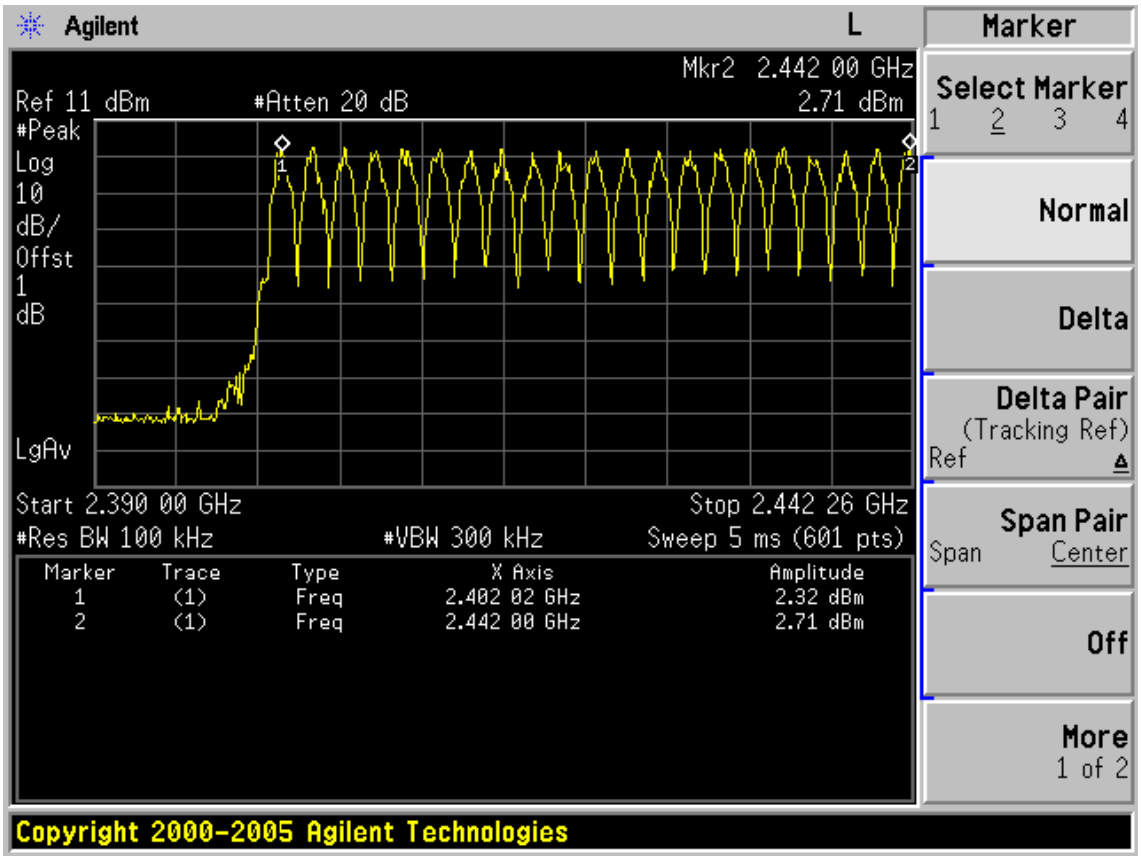
8.2.Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

8.3.Test Result

EUT: Wireless Controller		
M/N: 1460		
Test date:2010-06-10	Pressure:100.6 kpa	Humidity:53%
Tested by: Paul Tian	Test site: RF site	Temperature:25 ℃

Number of channel	Limit	Conclusion
41	>=15	PASS


Agilent
L
Marker
Mkr2 2.442 00 GHz
Ref 11 dBm
#Atten 20 dB
2.71 dBm
#Peak
Log
10
dB/
Offst
1
dB
LgAv
Start 2.390 00 GHz
Stop 2.442 26 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 5 ms (601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.402 02 GHz 2.32 dBm
2 (1) Freq 2.442 00 GHz 2.71 dBm
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
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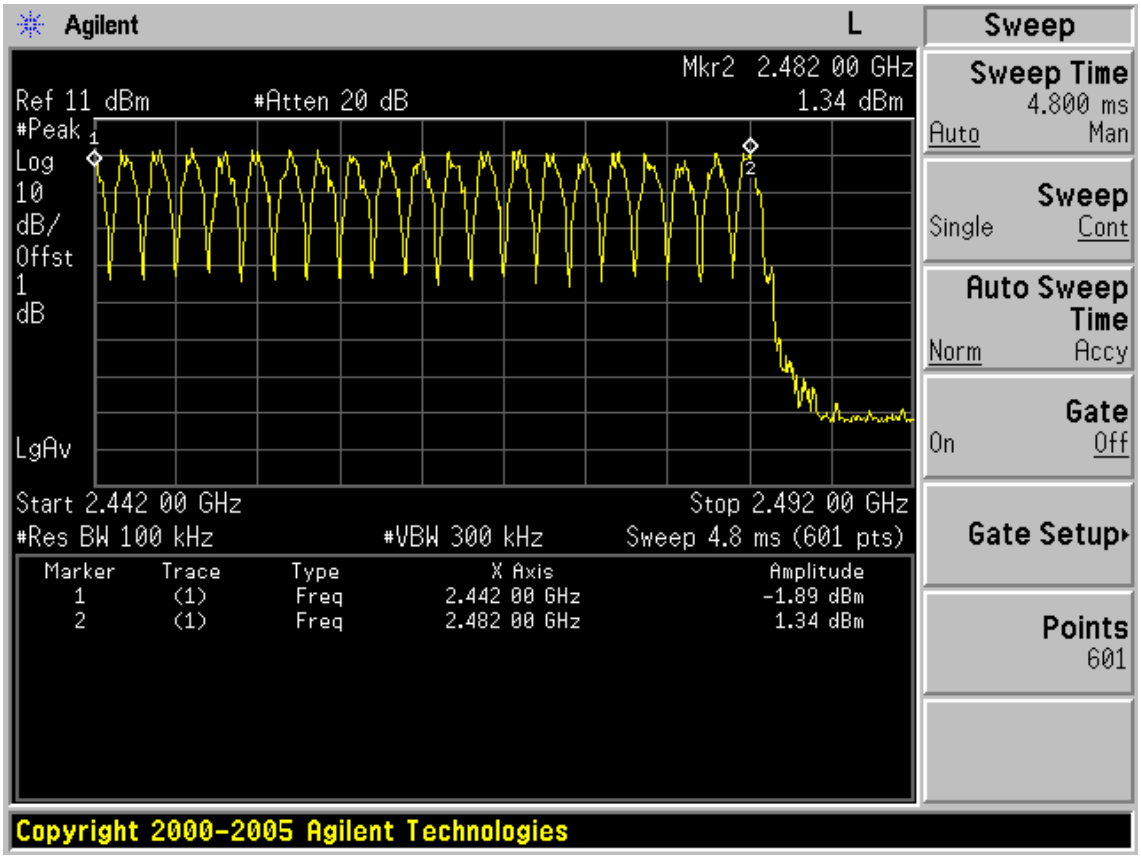

Agilent
L
Sweep
Mkr2 2.482 00 GHz
Ref 11 dBm
#Atten 20 dB
1.34 dBm
#Peak
Log
10
dB/
Offst
1
dB
LgAv
Start 2.442 00 GHz
Stop 2.492 00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 4.8 ms (601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.442 00 GHz -1.89 dBm
2 (1) Freq 2.482 00 GHz 1.34 dBm
Sweep Time
4.800 ms
Auto Man
Sweep
Single Cont
Auto Sweep Time
Norm Accy
Gate
On Off
Gate Setup
Points
601
Copyright 2000-2005 Agilent Technologies

9. DWELL TIME

9.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 10	1 Year
2	RF Cable	Hubersuhner	SUCOFLEX 102	28618/2	May,08, 10	1Year

9.2.Limit

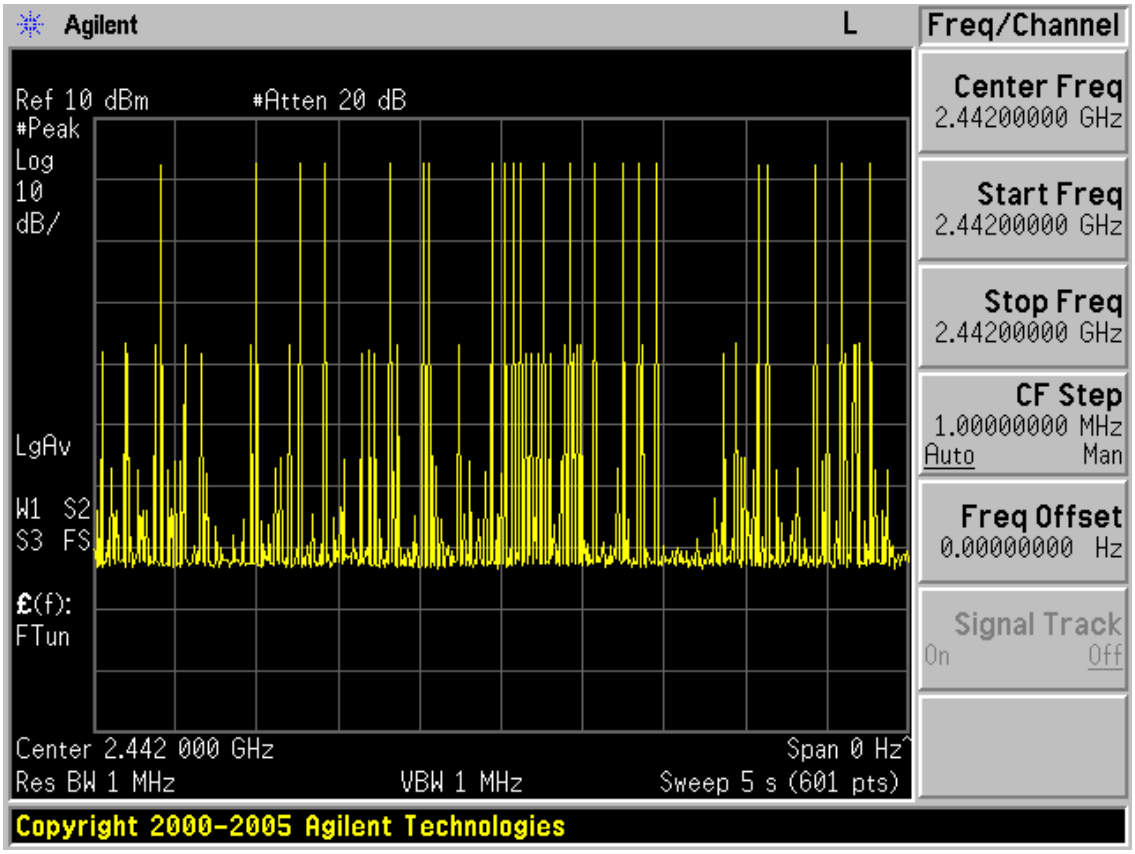
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

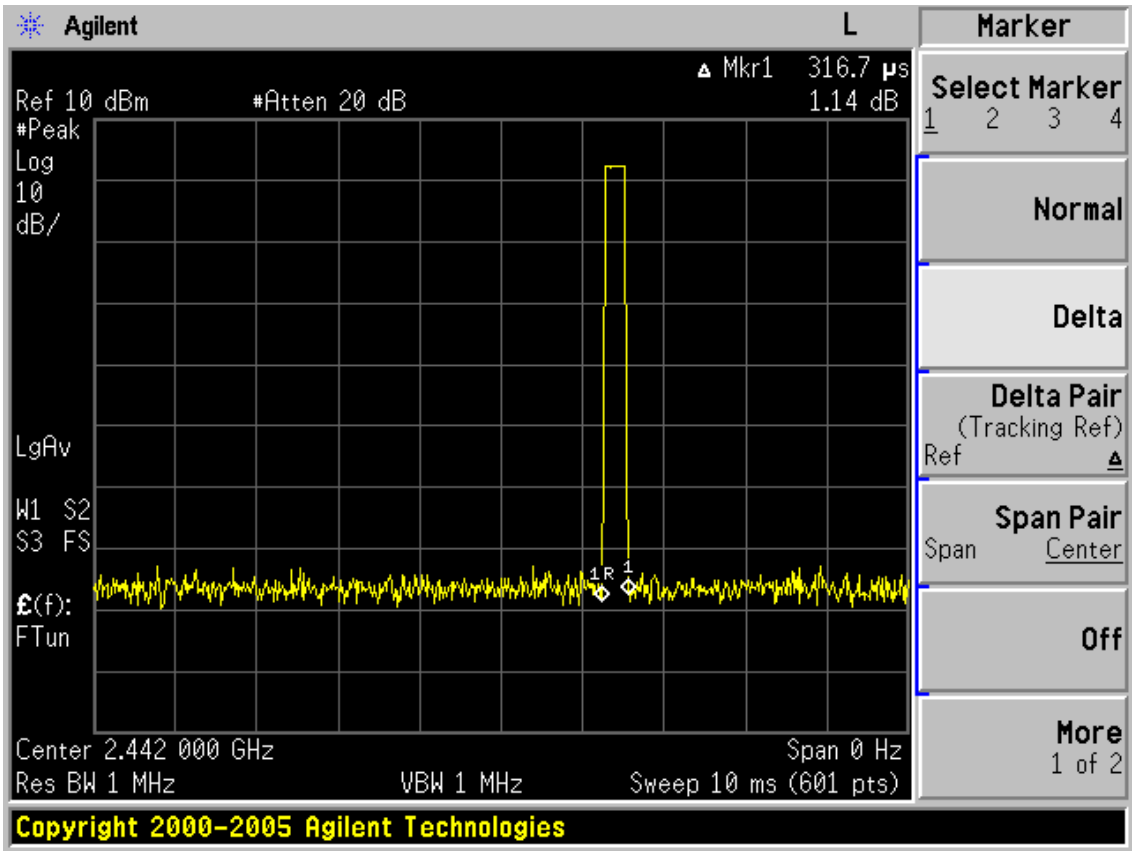
9.3.Test Results

EUT: Wireless Controller		
M/N: 1460		
Test date: 2010-06-10	Pressure:100.6 kpa	Humidity:53%
Tested by: Paul Tian	Test site: RF site	Temperature:25 ℃

dwell time	Limit	Conclusion
22hops/5s*0.4*41chanels*0.3167ms =22.85ms	<400ms	PASS

Note: All the lower levels were signal from receiver's, and should not considered in here.


Agilent
L
Freq/Channel
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 FS
£(f):
FTun
Center Freq
2.44200000 GHz
Start Freq
2.44200000 GHz
Stop Freq
2.44200000 GHz
CF Step
1.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 2.442 000 GHz
Span 0 Hz
Res BW 1 MHz
VBW 1 MHz
Sweep 5 s (601 pts)
Copyright 2000-2005 Agilent Technologies


Agilent
L
Marker
Δ Mkr1 316.7 µs
1.14 dB
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 FS
£(f):
FTun
1R 1
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Δ
Span Pair
Span Center
Off
More
1 of 2
Center 2.442 000 GHz
Span 0 Hz
Res BW 1 MHz
VBW 1 MHz
Sweep 10 ms (601 pts)
Copyright 2000-2005 Agilent Technologies

10. MAXIMUM PEAK OUTPUT POWER TEST

10.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	RF Cable	Hubersuhner	SUCOFLEX 102	28618/2	May.08, 10	1Year
2.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 10	1 Year

10.2. Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

10.3. Test Procedure

1, Connected the EUT's antenna port to Spectrum analyzer

2, Set Spectrum analyzer's RBW=2MHz, VBW=3MHz, measure the PK output power of device.

Note: The cable loss was offset into measure device as an amplitude offset.

10.4. Test Results

EUT: Wireless Controller		
M/N: 1460		
Test date: 2010-06-10	Pressure:100.6 kpa	Humidity:53%
Tested by: Paul Tian	Test site: RF site	Temperature:25 ℃

Frequency (MHz)	Result (dBm)	Limit (dBm)
2402	3.31	30
2442	2.89	30
2482	1.72	30
Conclusion：PASS		

11. BAND EDGE COMPLIANCE TEST

11.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08,10	1 Year
2.	Horn Antenna	EMCO	3115	9607-4877	Nov.25, 09	1.5 Year
3.	Amplifier	Agilent	8449B	3008A02495	May.08, 10	1 Year
4.	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	May.08,10	1 Year
5.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,10	1 Year
6.	RF Cable	Hubersuhner	SUCOFLEX102	28610/2	May.08,10	1 Year

11.2. Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

11.3. Test Produce

For upper band emissions that are up to two bandwidths(2MHz) away (2483.5MHz to 2485.5MHz） from the band-edge use below produce:

1. Choose a spectrum analyzer span that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set the analyzer RBW to 100KHz and with a video bandwidth 300KHz. Record the peak levels of the fundamental emission and the relevant band-edge emission, Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not a field strength measurement, it is only a relative measurement to determine the amount by which the emission drops at the band edge relative to the highest fundamental emission level.
2. Subtract the delta measured in step (1) from the maximum field strengths measured in clause 4 .The resultant field strengths are then used to determine band-edge compliance as required by Section 15.205

For emissions above two bandwidths away from the band-edge use below 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=1MHz ;VBW=3MHz, PK detector, Sweep=AUTO
   (b)This device is pulse modulated, a duty cycle factor was used to calculate average level based measured peak level.

11.4. Test Results

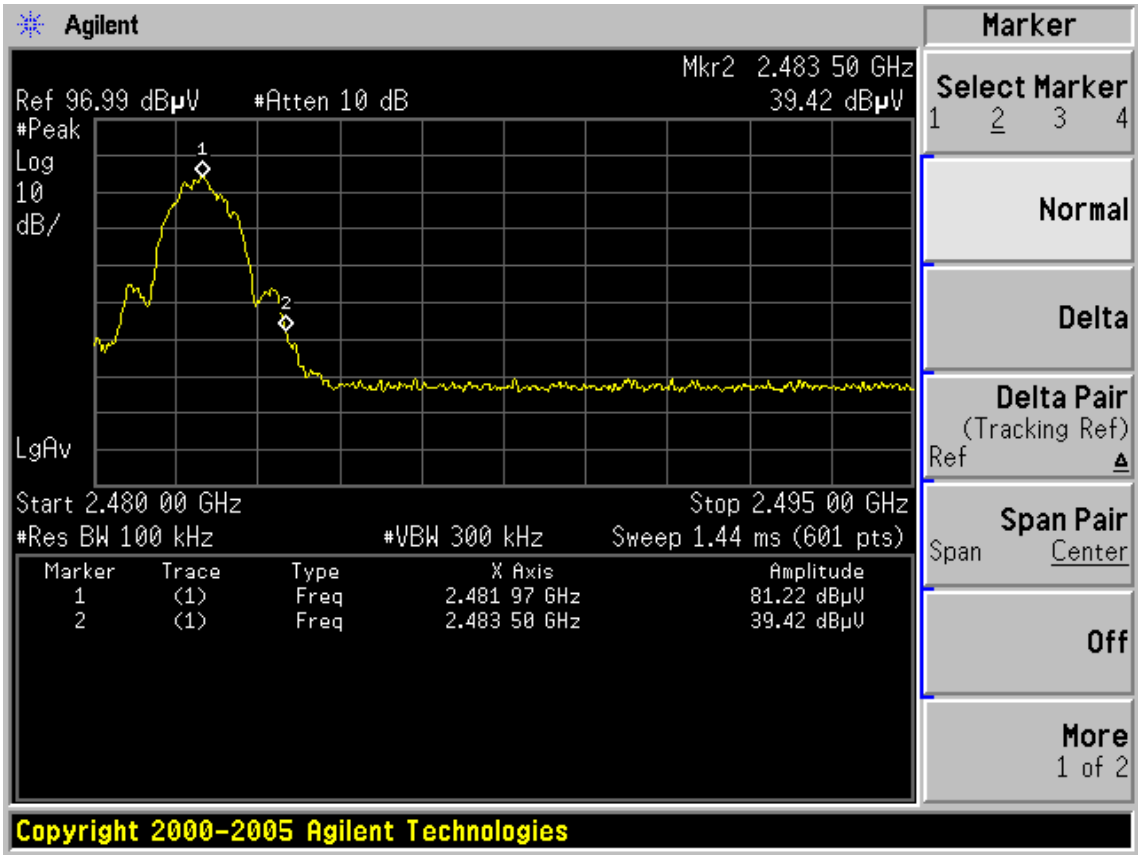
Pass (The testing data was attached in the next pages.)

Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

Emissions in two bandwidths away from the band-edge

CH	Frequency (MHz)	Maximum PK Fundamental level (dBuV/m)	Marker delta (dB) (Note2)	PK band edge level (dBuV/m)	PK Limit (dBuV/m)	Result
High 2482MHz	2483.5	97.96	41.80	56.16	74	PASS
CH	Frequency (MHz)	PK band edge level (dBuV/m)	Duty cycle factor	Average band edge level (dBuV/m)	Average Limit (dBuV/m)	Result
High 2482MHz	2483.5	56.16	28.75	27.41	54	PASS

Band edge marker delta-plot:



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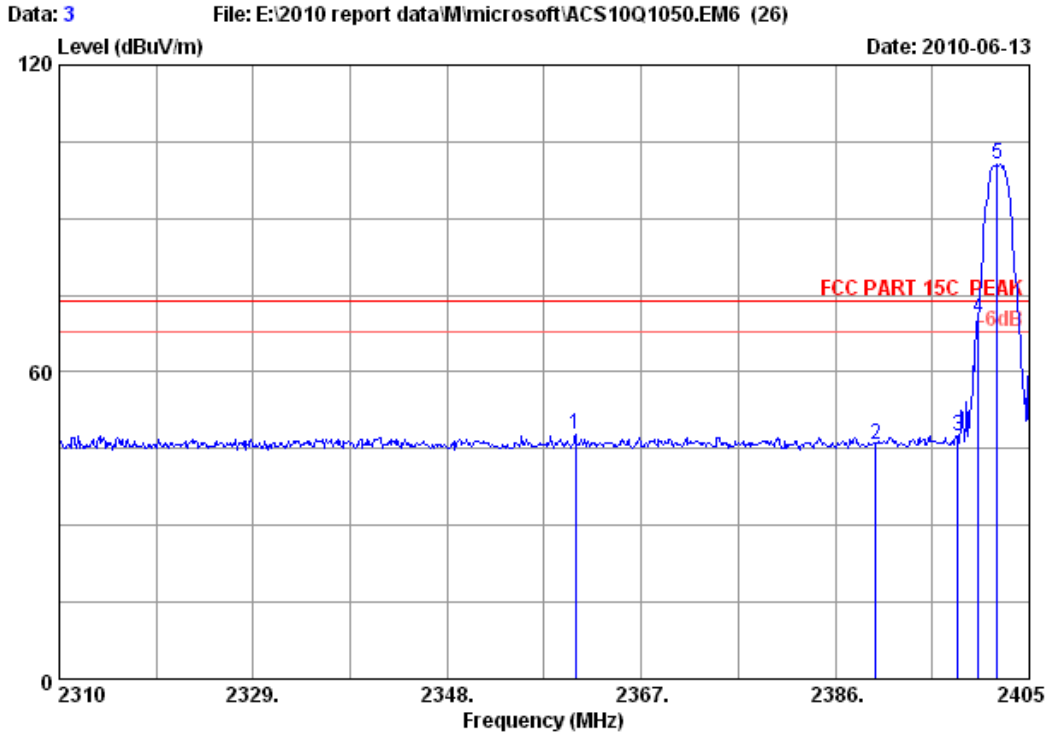

Site no. : 3m Chamber
Data no. : 3
Dis. / Ant. : 3m 3115(0911)
Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
Engineer : Leo-Li
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH0 2402MHz
M/N : 1460

	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	2360.540	29.42	8.62	35.91	45.81	47.94	74.00	26.06	Peak
2	2390.000	29.44	8.67	36.09	43.81	45.83	74.00	28.17	Peak
3	2398.000	29.44	8.72	36.09	45.32	47.39	74.00	26.61	Peak
4	2400.000	29.44	8.72	36.09	68.46	70.53	74.00	3.47	Peak
5	2401.865	29.44	8.72	36.09	98.51	100.58	74.00	-26.58	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.

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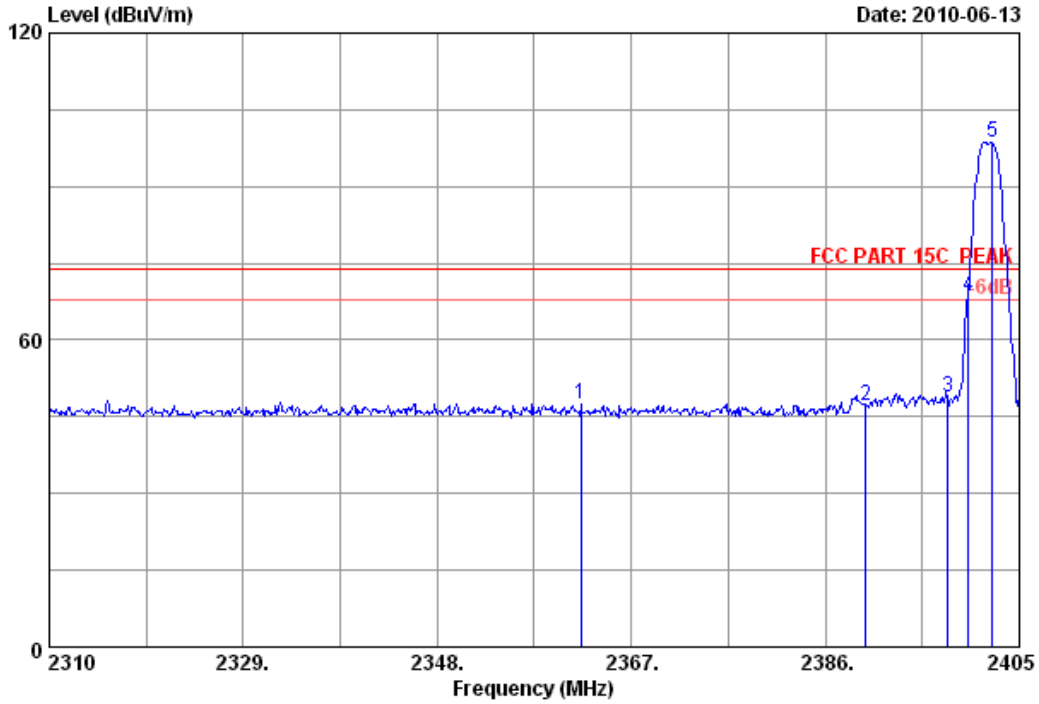
Data: 4 File: E:\2010 report data\M\microsoft\ACS10Q1050.EM6 (26)



Site no. : 3m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH0 2402MHz
M/N : 1460

Data no. : 4
Ant. pol. : VERTICAL
Engineer : Leo-Li

	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	2362.060	29.42	8.62	35.91	45.24	47.37	74.00	26.63	Peak
2	2390.000	29.44	8.67	36.09	45.19	47.21	74.00	26.79	Peak
3	2398.000	29.44	8.72	36.09	46.59	48.66	74.00	25.34	Peak
4	2400.000	29.44	8.72	36.09	66.56	68.63	74.00	5.37	Peak
5	2402.340	29.44	8.72	36.09	96.46	98.53	74.00	-24.53	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.

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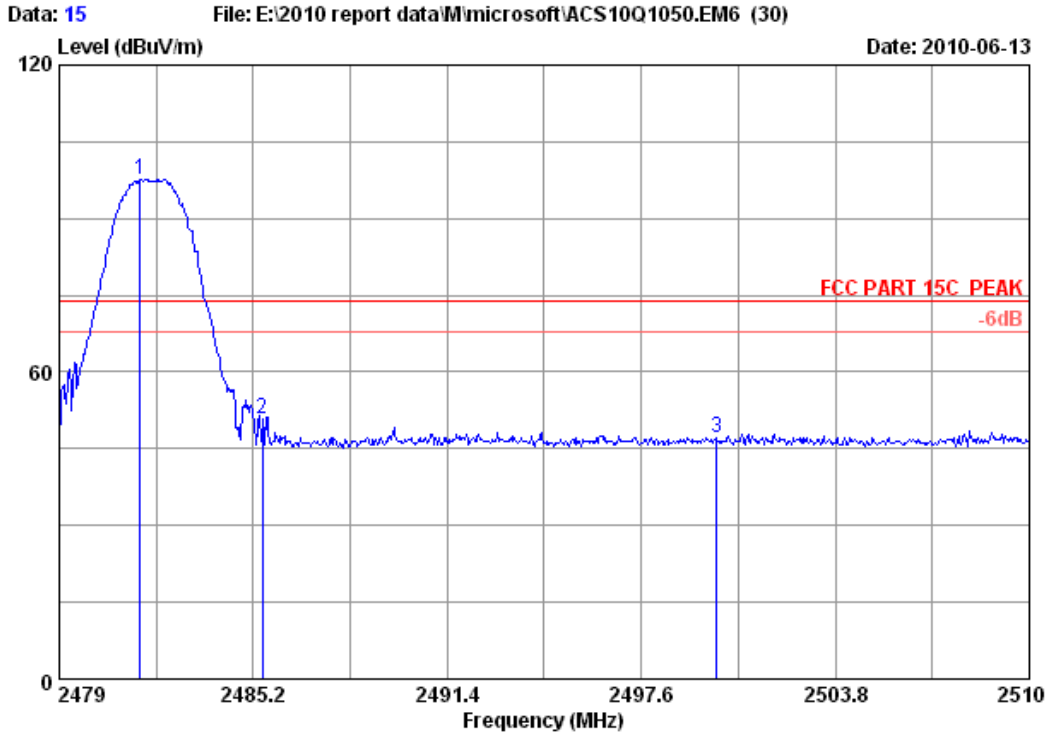

Site no. : 10m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH40 2482MHz
M/N : 1460

Data no. : 15
Ant. pol. : HORIZONTAL
Engineer : Leo-Li

	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	2481.573	29.49	8.87	35.97	95.35	97.74	74.00	-23.74	Peak
2	2485.500	29.49	8.87	35.97	48.34	50.73	74.00	23.27	Peak
3	2500.000	29.50	8.92	36.00	44.69	47.11	74.00	26.89	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.

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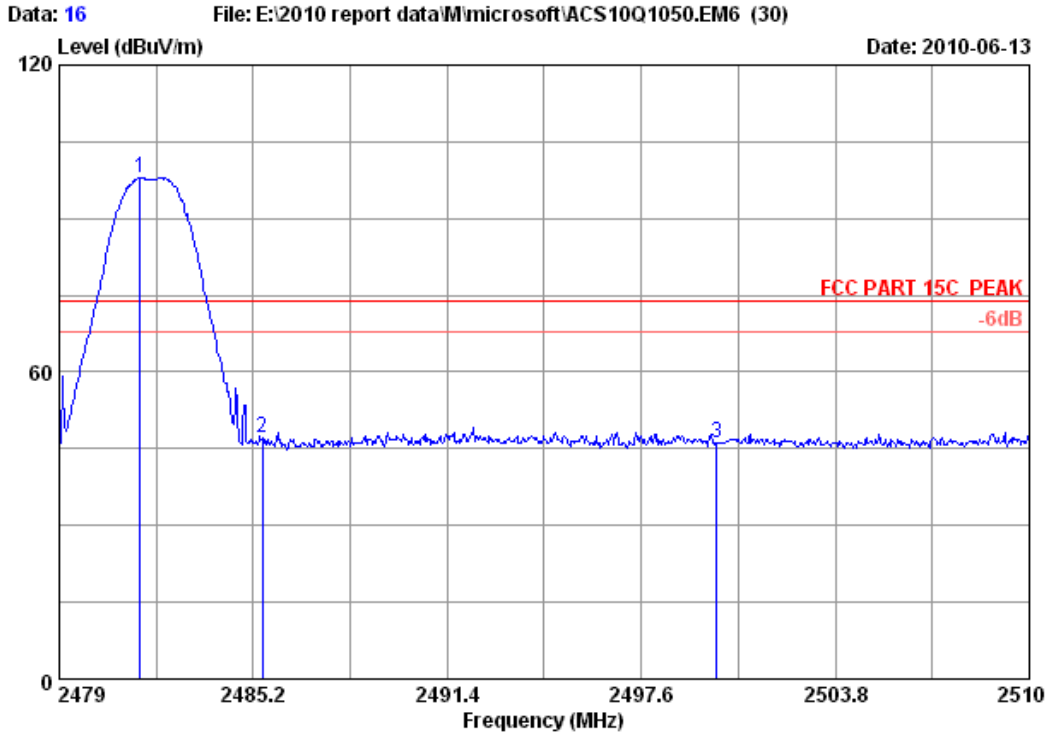

Site no. : 10m Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Wireless Controller
Power : DC 5V
Test mode : Tx CH40 2482MHz
M/N : 1460

Data no. : 16
Ant. pol. : VERTICAL
Engineer : Leo-Li

	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	2481.573	29.49	8.87	35.97	95.57	97.96	74.00	-23.96	Peak
2	2485.500	29.49	8.87	35.97	44.82	47.21	74.00	26.79	Peak
3	2500.000	29.50	8.92	36.00	43.62	46.04	74.00	27.96	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.

12. ANTENNA REQUIREMENT

11.1 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.

11.2 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]