

APPLICATION FOR CERTIFICATION  
On Behalf of

Mad Catz, Inc.

Rock Band Wireless Pro Keyboard for Wii (Dongle)

Model Number: 96161-R (RB3)

FCC ID: P25M796161Y2310R

Prepared for : Mad Catz, Inc.  
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California, 92108, USA

Prepared By : Audix Technology (Shenzhen) Co., Ltd.  
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Report Number : ACS-F10124  
Date of Test : May.28~Jun.03, 2010  
Date of Report : Jun.09, 2010

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## TEST REPORT CERTIFICATION

Applicant : Mad Catz, Inc.  
 EUT Description : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 MODEL NO. : 96161-R (RB3)  
 FCC ID : P25M796161Y2310R  
 POWER SUPPLY : DC 5V  
 TEST VOLTAGE : DC 5V From Wii Input AC 120V/60Hz

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 : May.28~Jun.03, 2010

Prepared by :

Edie Huang  
 Edie Huang / Assistant

Reviewer :

Jamy Yu  
 Jamy Yu / Supervisor

Approved & Authorized Signer :



Ken Lu  
 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 15C: 15.207 ANSI C63.10-2009	PASS
Radiated Emission Test	FCC Part 15C: 15.209 FCC Part 15C: 15.249 ANSI C63.10-2009	PASS
Band Edge Compliance Test	FCC Part 15: 15.249 ANSI C63.10-2009	PASS
20dB Bandwidth Test	FCC Part 15: 15.215 ANSI C63.10-2009	PASS

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

Product name : Rock Band Wireless Pro Keyboard for Wii (Dongle)

Model Number : 96161-R (RB3)

FCC ID : P25M796161Y2310R

Operation frequency : 2408MHz~2476MHz

Modulation : GFSK

Applicant : Mad Catz, Inc.  
7480 Mission Valley Road, Suite 101, San Diego, California,  
92108, USA

Date of Test : May.28~Jun.03, 2010

Date of Receipt : May.20, 2010

Sample Type : Prototype production

### 2.2. Tested Supporting System Details

#### 2.2.1. TV

EMC CODE : ACS-EMC-TV01T

M/N : 1419A

Manufacturer : TCL

Power cord : Unshielded, Undetachabled, 1.8m

#### 2.2.2. Wii

S/N : LJH11347884

### 2.3. 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

### 2.4. 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°C
Uncertainty for Bandwidth test	$1 \times 10^{-9}$
Uncertainty for DC power test	0.038 %
Uncertainty for test site temperature and humidity	0.6°C
	3%

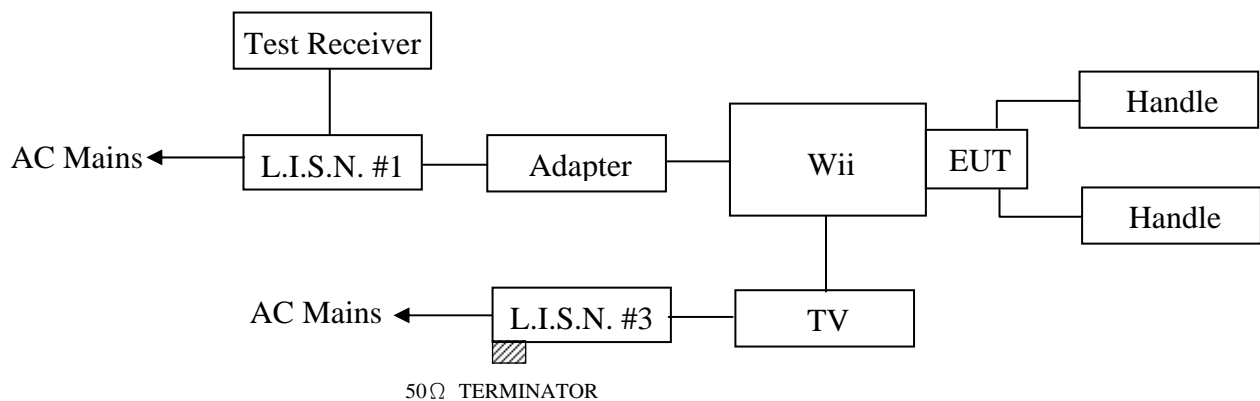
### 3. POWER LINE CONDUCTED EMISSION TEST

#### 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: Rock Band Wireless Pro Keyboard for Wii (Dongle))*

#### 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. Rock Band Wireless Pro Keyboard for Wii (Dongle) (EUT)

Model Number : 96161-R (RB3)  
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 mode (Tx 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 Wii 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). 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.)

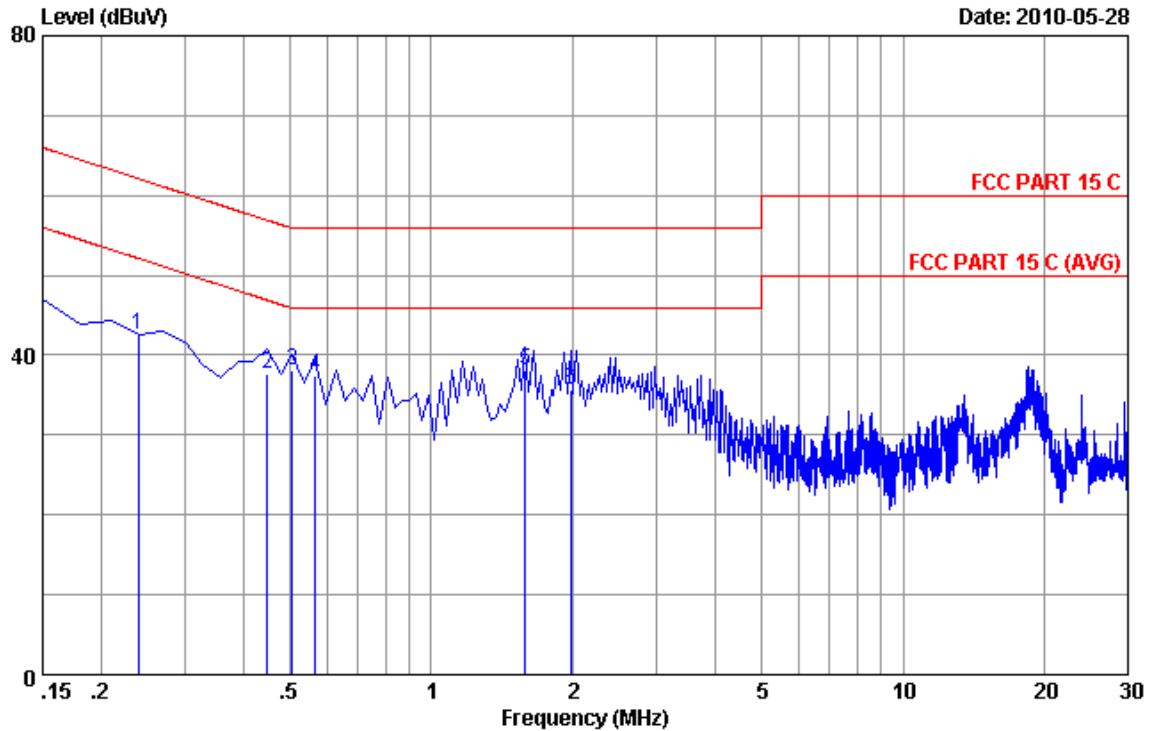




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Data: 4 File: D:\DATA\2010 REPORT\MMAD CATZ\ACS10QH139.EM6 (6)

Date: 2010-05-28



Site no :Audix No.1 Conduction Data no :4  
 Dis./Ant. \*\*: 2009 ESH2-Z5 NEUTRAL  
 Limit :FCC PART 15 C  
 Env./Ins. :Temp:23'C Humi:54% Engineer :Leo-Li  
 EUT :Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power Rating :DC 5V From Wii Input AC 120V/60Hz  
 Test Mode :Tx Mode  
 M/N :96161-R(RB3)

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.23955	0.20	9.88	32.42	42.50	62.11	19.61	QP
2	0.44850	0.20	9.89	27.64	37.73	56.90	19.17	QP
3	0.50820	0.20	9.89	28.10	38.19	56.00	17.81	QP
4	0.56790	0.20	9.89	27.40	37.49	56.00	18.51	QP
5	1.583	0.21	9.89	27.90	38.00	56.00	18.00	QP
6	1.971	0.21	9.90	25.53	35.64	56.00	20.36	QP

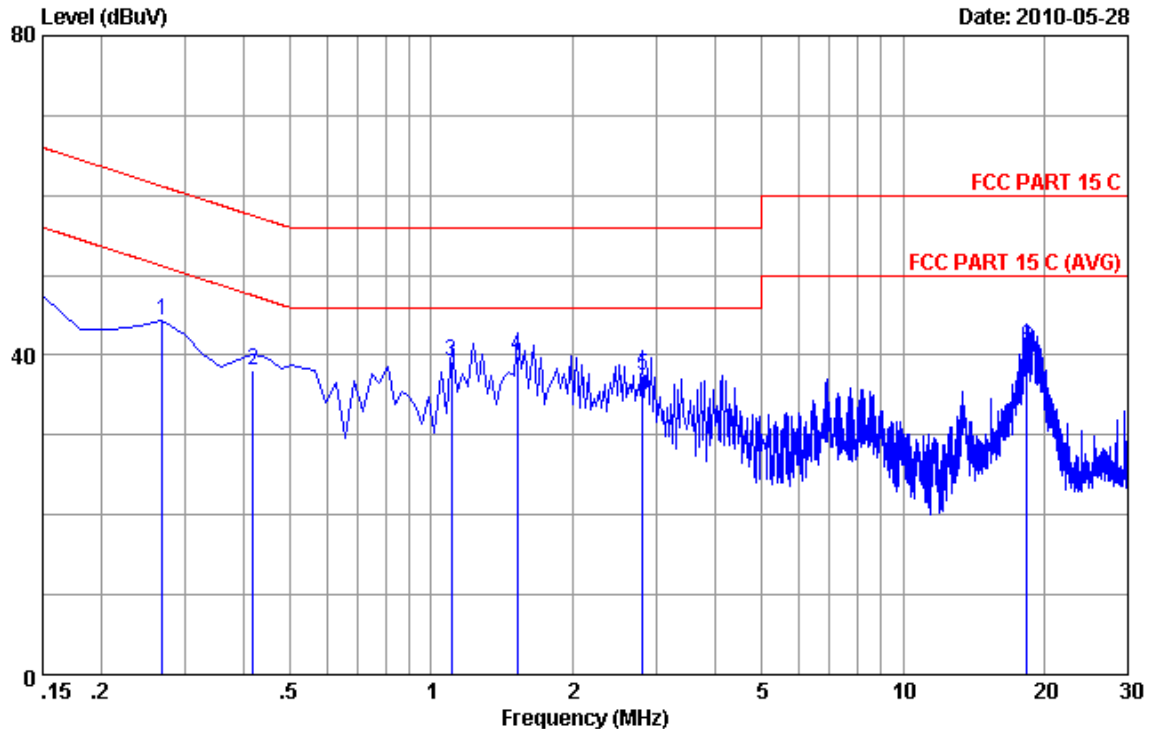
Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.  
 2.If the average limit is met when using a quasi-peak detector.  
 the EUT shall be deemed to meet both limits and measurement  
 with average detector is unnecessary.



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Data: 3 File: D:\DATA\2010 REPORT\MMAD CATZ\ACS10QH139.EM6 (6)

Date: 2010-05-28



Site no :Audix No.1 Conduction Data no :3  
 Dis./Ant. \*\*: 2009 ESH2-25 LINE  
 Limit :FCC PART 15 C  
 Env./Ins. :Temp:23'C Humi:54% Engineer :Leo-Li  
 EUT :Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power Rating :DC 5V From Wii Input AC 120V/60Hz  
 Test Mode :Tx Mode  
 M/N :96161-R(RB3)

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.26940	0.18	9.88	34.35	44.41	61.14	16.73	QP
2	0.41865	0.18	9.89	28.03	38.10	57.47	19.37	QP
3	1.105	0.20	9.89	29.23	39.32	56.00	16.68	QP
4	1.523	0.21	9.89	29.70	39.80	56.00	16.20	QP
5	2.807	0.23	9.91	27.38	37.52	56.00	18.48	QP
6	18.329	0.56	10.00	30.41	40.97	60.00	19.03	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.  
 2.If the average limit is met when using 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

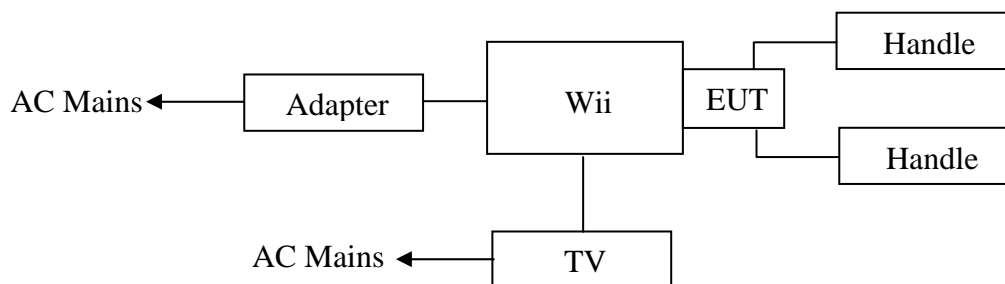
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Dec.05,09	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 10	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 10	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 10	1 Year
5	Bilog 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

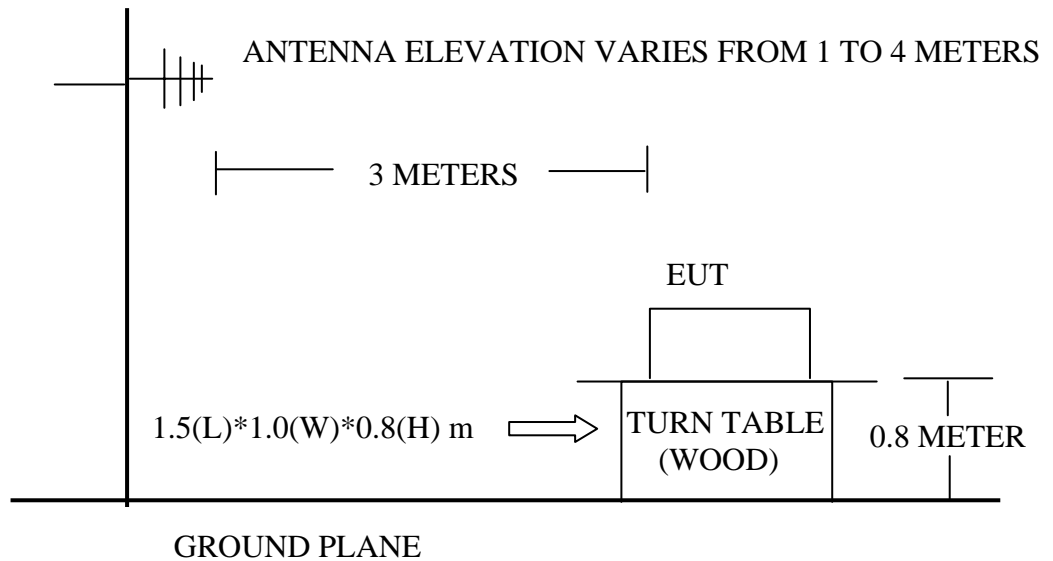
#### 4.2.1. Block Diagram of connection between EUT and simulators



*(EUT: Rock Band Wireless Pro Keyboard for Wii (Dongle))*

#### 4.2.2. Anechoic Chamber Setup Diagram

##### ANTENNA TOWER



#### 4.3. Radiated Emission Limit Standard: FCC 15.209 and 15.249

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
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 1000MHz	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	
Field Strength of Fundamental emission for 2.4GHz-2.4835GHz	3	94.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average) 114.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak)	
Field Strength of Harmonics	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  $\mu\text{V}/\text{m}$
  - (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) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

#### 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. Rock Band Wireless Pro Keyboard for Wii (Dongle)(EUT)

Model Number : 96161-R (RB3)  
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) and tested it.

#### 4.6. Test Procedure

The 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. The 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 is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10-2009 on radiated emission Test.

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 RBW is set at 1MHz and VBW is set at 3MHz 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.

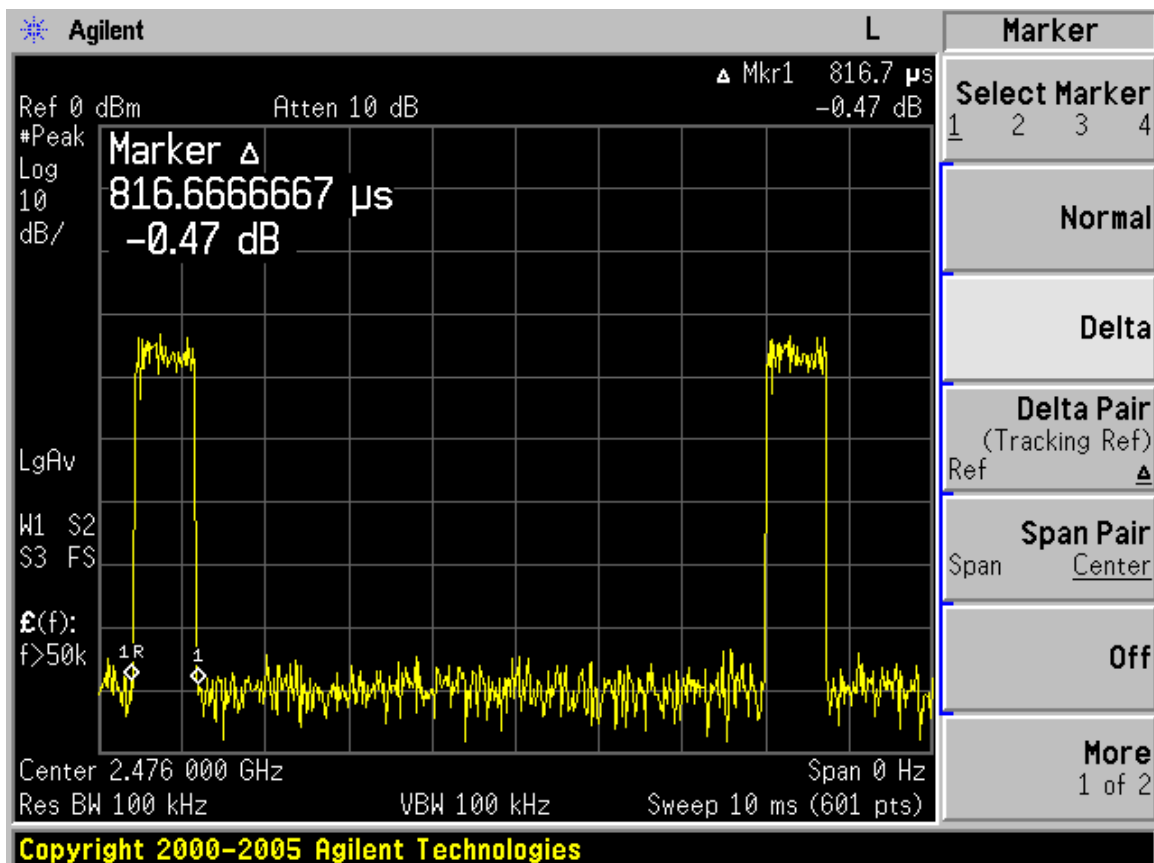
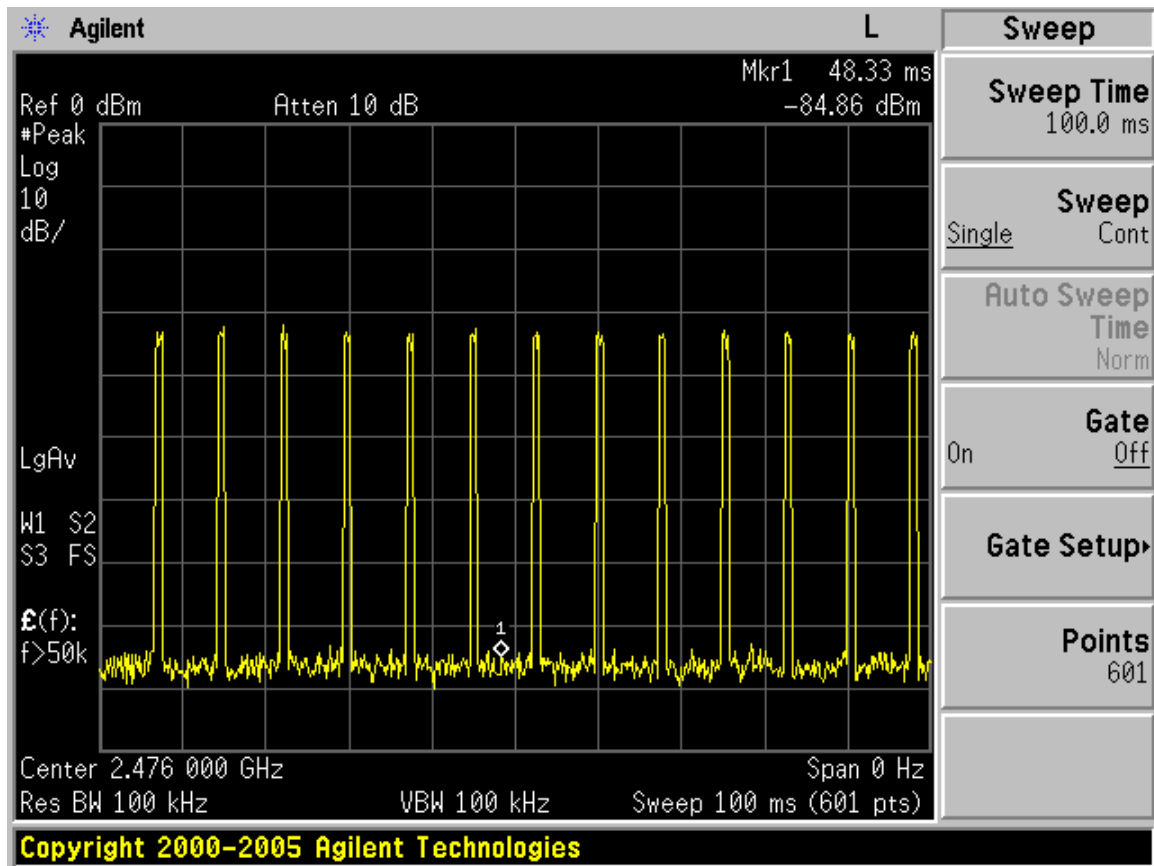
The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

#### 4.7. Radiated Emission Test Results

##### **PASS**

All the emissions from 30MHz to 25GHz were comply with the 15.209 and 15.249 Limit.

Duty cycle:  $0.8167\mu s * 13 \text{ times} / 100\text{ms} * 100\% = 10.6\%$   
 Duty cycle factor =  $20\log(1/\text{duty cycle}) = 19.49\text{dB}$

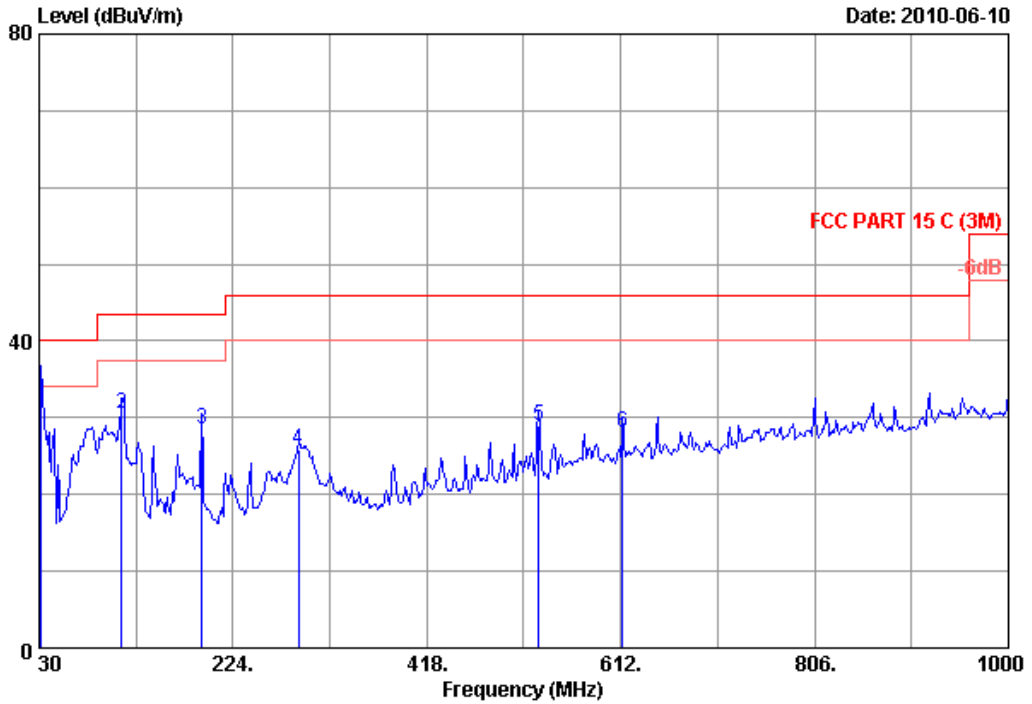


Radiated spurious emissions from 30MHz to 1GHz test result



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Data: 7 File: D:\2010 Report Data\M\Mad Catz\ACS10QH139.EM6 (12)



Site no. : 3m Chamber Data no. : 7  
Dis. / Ant. : 3m 2010 CBL6111C Ant. pol. : VERTICAL  
Limit : FCC PART 15 C (3M)  
Env. / Ins. : 24°C/56% Engineer : Leo-Li  
EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
Power Rating : DC 5 V From Wii input AC 120V/60Hz  
Test Mode : Tx Mode

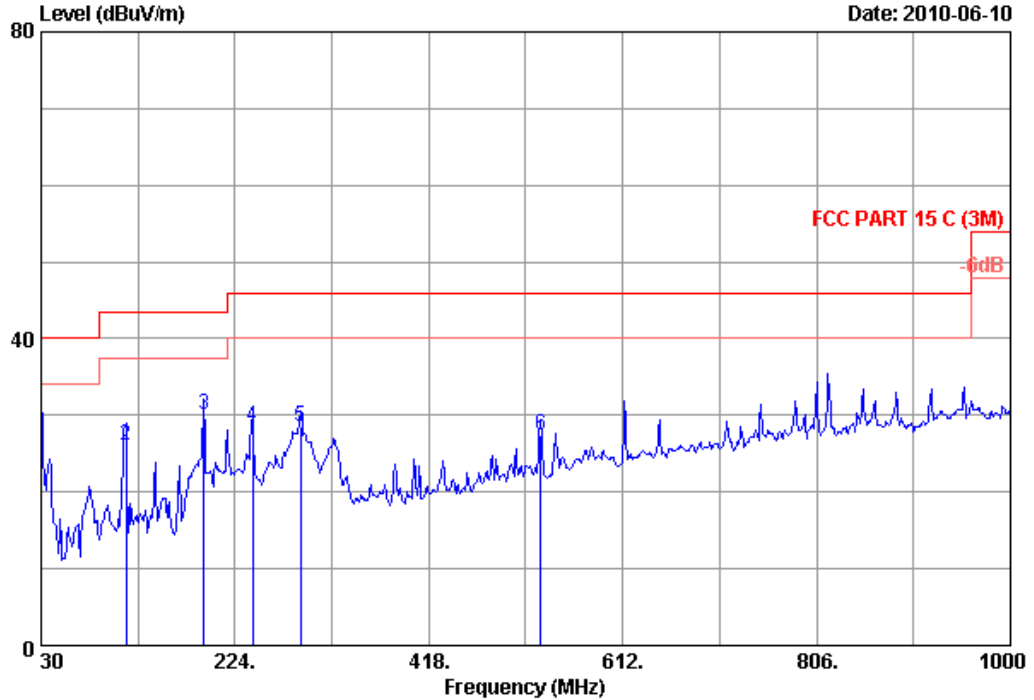
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.940	18.88	0.63	14.63	34.14	40.00	5.86	QP
2	112.450	11.55	1.12	17.93	30.60	43.50	12.90	QP
3	192.960	9.58	1.64	17.21	28.43	43.50	15.07	QP
4	289.960	13.60	2.42	9.77	25.79	46.00	20.21	QP
5	529.550	18.30	3.72	6.91	28.93	46.00	17.07	QP
6	613.940	19.82	4.17	4.12	28.11	46.00	17.89	QP

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



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Data: 8 File: D:\2010 Report Data\MMad Catz\ACS10QH139.EM6 (12)



Site no. : 3m Chamber Data no. : 8  
Dis. / Ant. : 3m 2010 CBL6111C Ant. pol. : HORIZONTAL  
Limit : FCC PART 15 C (3M)  
Env. / Ins. : 24°C/56% Engineer : Leo-Li  
EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
Power Rating : DC 5 V From Wii input AC 120V/60Hz  
Test Mode : Tx Mode

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	9.24	29.85	40.00	10.15	QP
2	115.360	11.70	1.13	13.21	26.04	43.50	17.46	QP
3	192.960	9.58	1.64	18.86	30.08	43.50	13.42	QP
4	241.460	11.93	2.09	14.47	28.49	46.00	17.51	QP
5	289.960	13.60	2.42	12.40	28.42	46.00	17.58	QP
6	529.550	18.30	3.72	5.37	27.39	46.00	18.61	QP

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

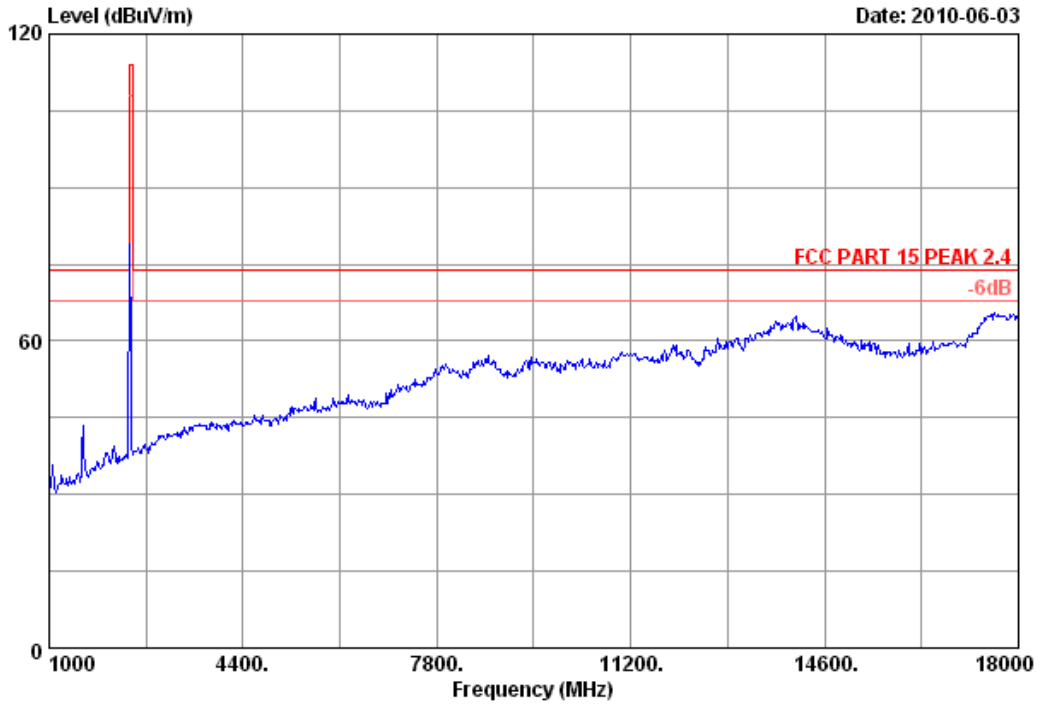


Radiated emissions from 1GHz to 18GHz (include fundamental) test result



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Data: 35 File: E:\2010 report data\MMadcatz\ACS10QH139.EM6 (64)

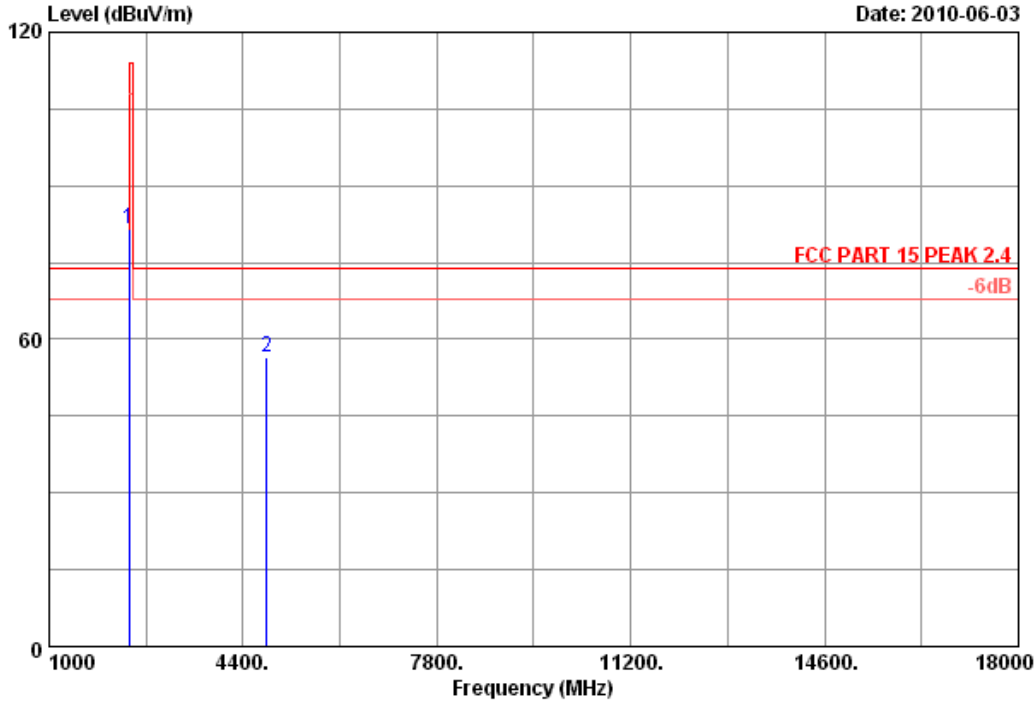


Site no. : 3m Chamber Data no. : 35  
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL  
Limit : FCC PART 15 PEAK 2.4  
Env. / Ins. : 23\*C/54% Engineer : Paul Tian  
EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
Power : DC 5V  
Test mode : Tx 2408MHz  
M/N : 96161-R(RB3)  
Memo :



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Data: 36 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 36  
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL  
 Limit : FCC PART 15 PEAK 2.4  
 Env. / Ins. : 23\*C/54% Engineer : Paul Tian  
 EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power : DC 5V  
 Test mode : Tx 2408MHz  
 M/N : 96161-R(RB3)  
 Memo :

	Ant. Freq. (MHz)	Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2408.000	29.45	8.72	35.95	79.25	81.47	114.00	32.53	Peak
2	4816.000	34.30	12.35	35.37	45.38	56.66	74.00	17.34	Peak

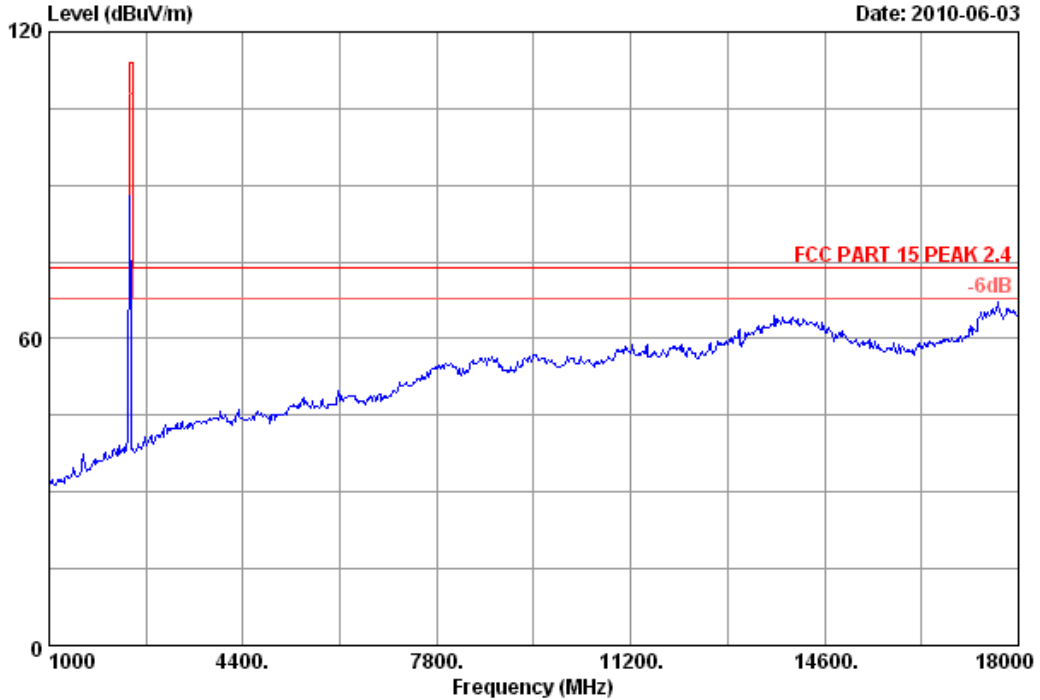
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
2408	81.47	19.49	61.98	94	PASS
4816	56.66	19.49	37.17	54	PASS



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Postcode:518057

Data: 37 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)

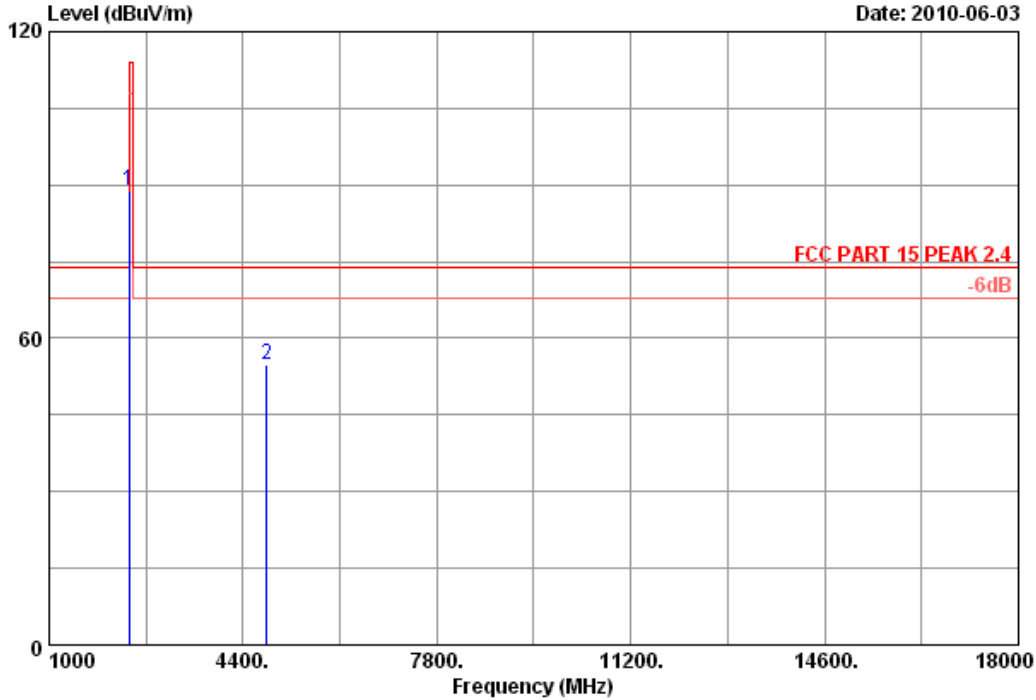


Site no. : 3m Chamber Data no. : 37  
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL  
Limit : FCC PART 15 PEAK 2.4  
Env. / Ins. : 23°C/54% Engineer : Paul Tian  
EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
Power : DC 5V  
Test mode : Tx 2408MHz  
M/N : 96161-R(RB3)  
Memo :



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Data: 38 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 38  
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 PEAK 2.4  
 Env. / Ins. : 23\*C/54% Engineer : Paul Tian  
 EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power : DC 5V  
 Test mode : Tx 2408MHz  
 M/N : 96161-R(RB3)  
 Memo :

	Ant. Freq. (MHz)	Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2408.000	29.45	8.72	35.95	86.85	89.07	114.00	24.93	Peak
2	4816.000	34.30	12.35	35.37	43.56	54.84	74.00	19.16	Peak

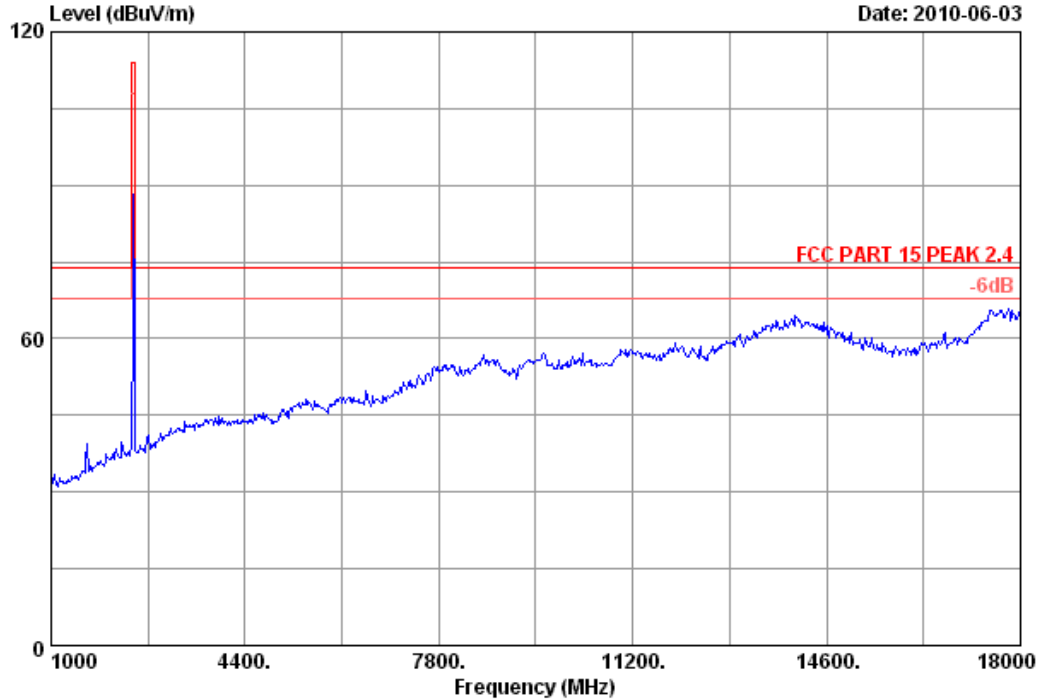
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
2408	89.07	19.49	69.58	94	PASS
4816	54.84	19.49	35.35	54	PASS



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Data: 39 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)

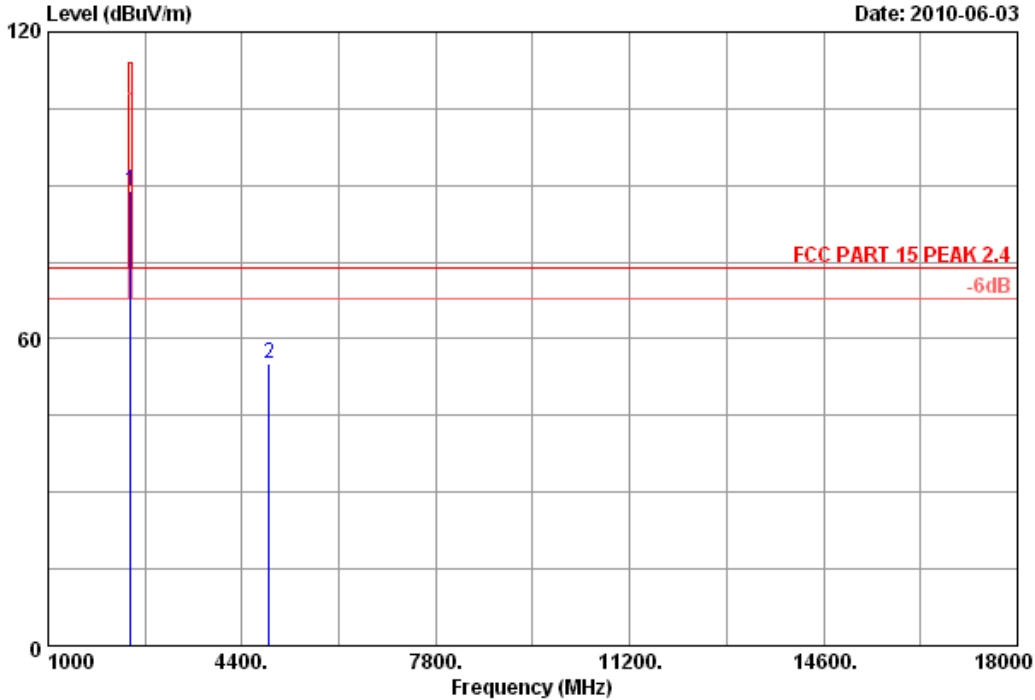


Site no. : 3m Chamber Data no. : 39  
Dis. / Ant. : 3m 3115(O911) Ant. pol. : HORIZONTAL  
Limit : FCC PART 15 PEAK 2.4  
Env. / Ins. : 23\*C/54% Engineer : Paul Tian  
EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
Power : DC 5V  
Test mode : Tx 2440MHz  
M/N : 96161-R(RB3)  
Memo :



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Data: 40 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 40  
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 PEAK 2.4  
 Env. / Ins. : 23\*C/54% Engineer : Paul Tian  
 EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power : DC 5V  
 Test mode : Tx 2440MHz  
 M/N : 96161-R(RB3)  
 Memo :

	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	2440.000	29.47	8.77	36.06	86.64	88.82	114.00	25.18	Peak
2	4880.000	34.41	12.44	35.36	43.70	55.19	74.00	18.81	Peak

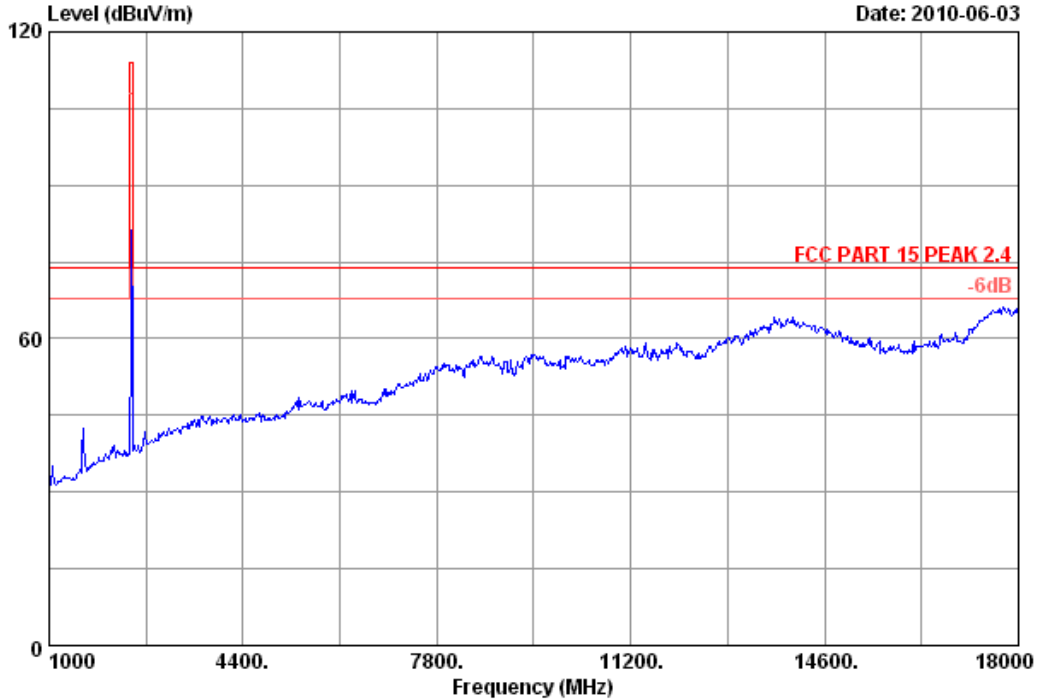
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
2440	88.82	19.49	69.33	94	PASS
4880	55.19	19.49	35.70	54	PASS



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Data: 41 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)

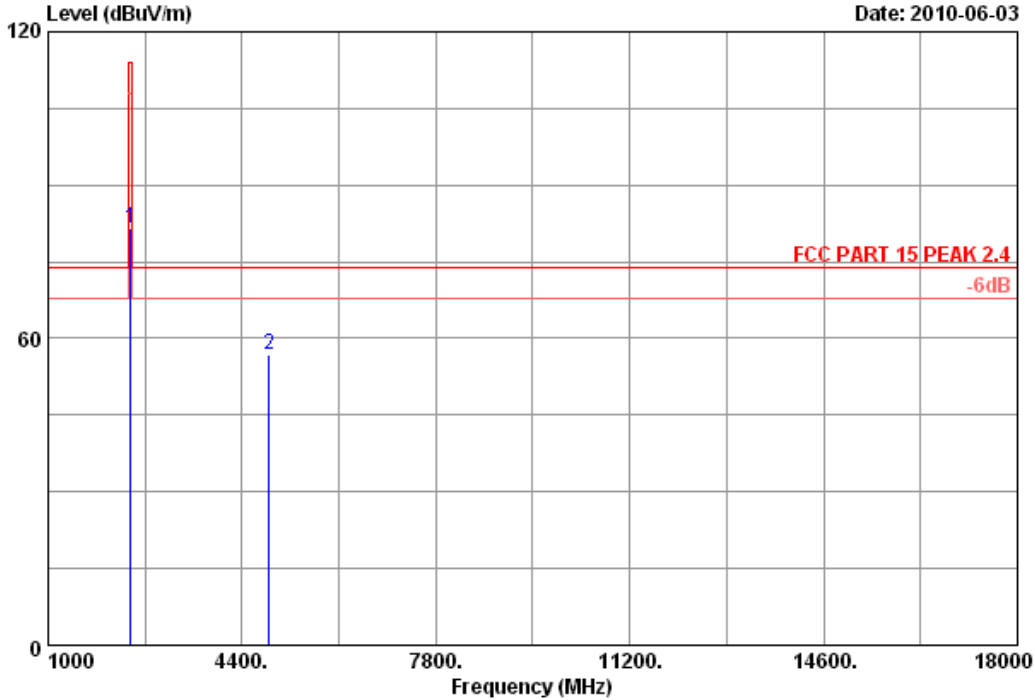


Site no. : 3m Chamber Data no. : 41  
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL  
Limit : FCC PART 15 PEAK 2.4  
Env. / Ins. : 23\*C/54% Engineer : Paul Tian  
EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
Power : DC 5V  
Test mode : Tx 2440MHz  
M/N : 96161-R(RB3)  
Memo :



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Data: 42 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 42  
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL  
 Limit : FCC PART 15 PEAK 2.4  
 Env. / Ins. : 23\*C/54% Engineer : Paul Tian  
 EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power : DC 5V  
 Test mode : Tx 2440MHz  
 M/N : 96161-R(RB3)  
 Memo :

	Ant. Freq. (MHz)	Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2440.000	29.47	8.77	36.06	79.24	81.42	114.00	32.58	Peak
2	4880.000	34.41	12.44	35.36	45.28	56.77	74.00	17.23	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.

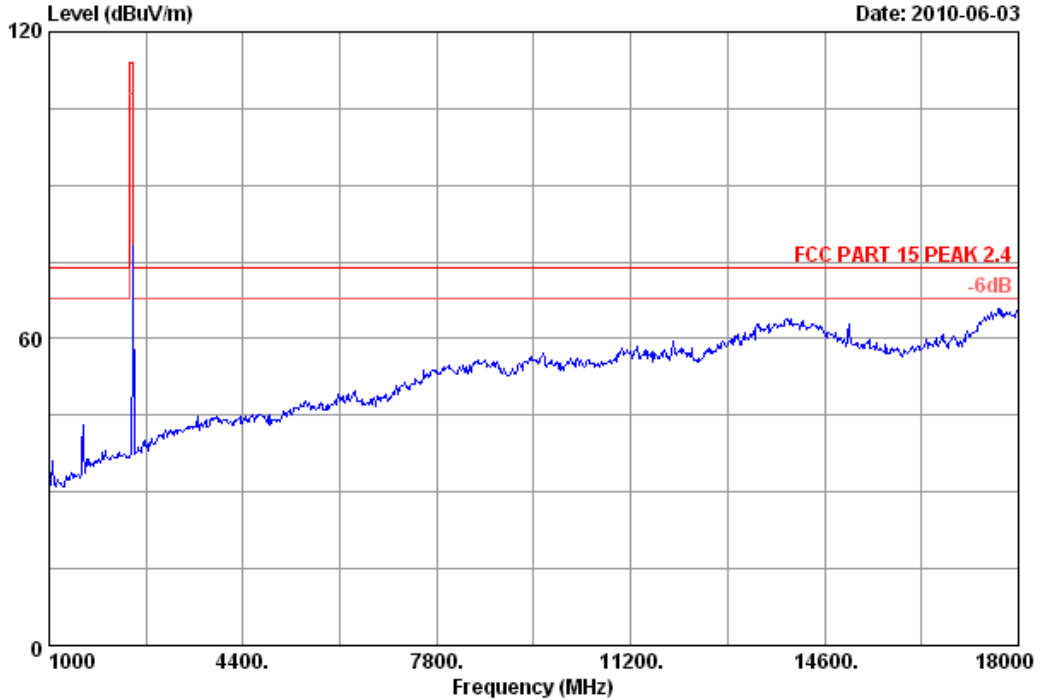
Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
2440	81.42	19.49	61.93	94	PASS
4880	56.77	19.49	37.28	54	PASS





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Data: 43 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)

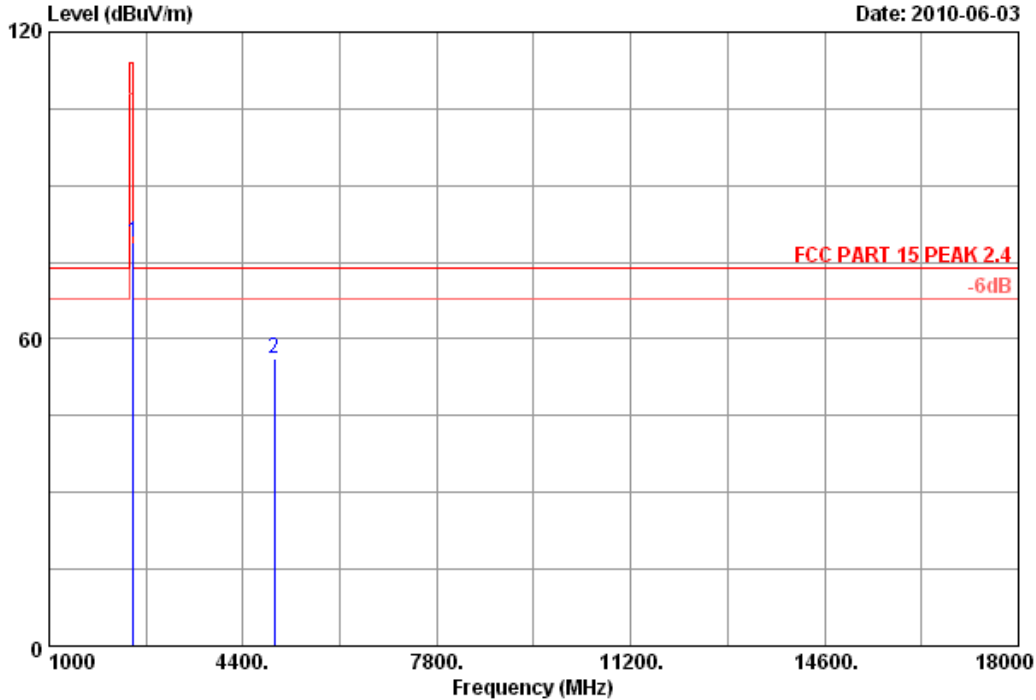


Site no. : 3m Chamber Data no. : 43  
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL  
Limit : FCC PART 15 PEAK 2.4  
Env. / Ins. : 23°C/54% Engineer : Paul Tian  
EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
Power : DC 5V  
Test mode : Tx 2476MHz  
M/N : 96161-R(RB3)  
Memo :



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Data: 44 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 44  
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL  
 Limit : FCC PART 15 PEAK 2.4  
 Env. / Ins. : 23\*C/54% Engineer : Paul Tian  
 EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power : DC 5V  
 Test mode : Tx 2476MHz  
 M/N : 96161-R(RB3)  
 Memo :

	Ant. Freq. (MHz)	Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2476.000	29.49	8.87	35.97	76.51	78.90	114.00	35.10	Peak
2	4952.000	34.52	12.53	35.40	44.57	56.22	74.00	17.78	Peak

Remarks:

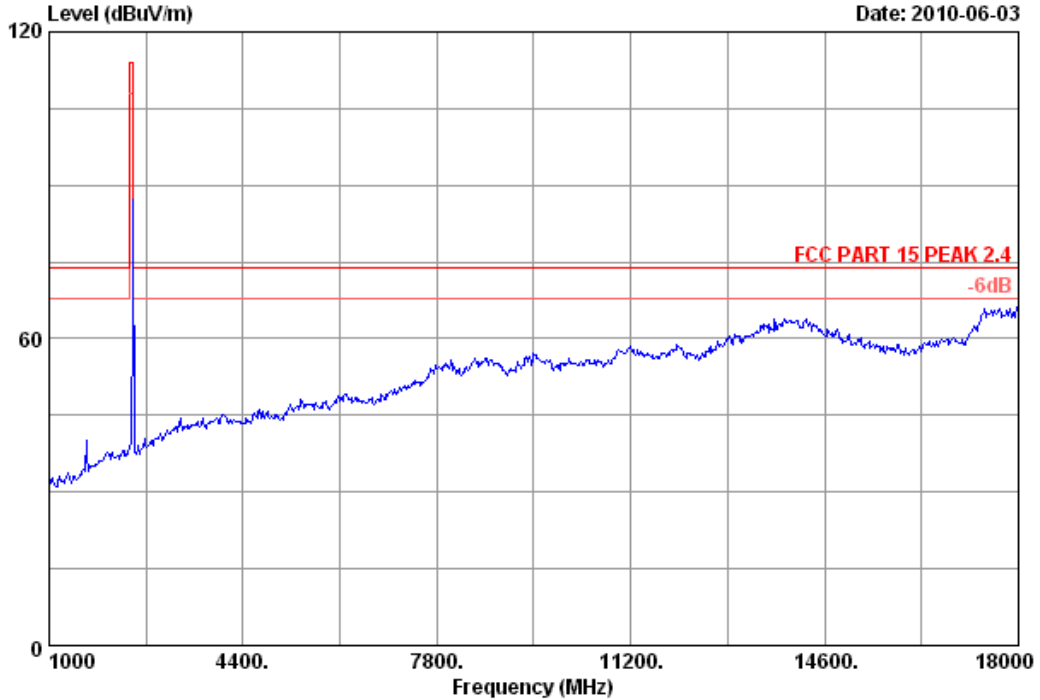
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
2476	78.90	19.49	59.41	94	PASS
4952	56.22	19.49	36.73	54	PASS



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Data: 45 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)

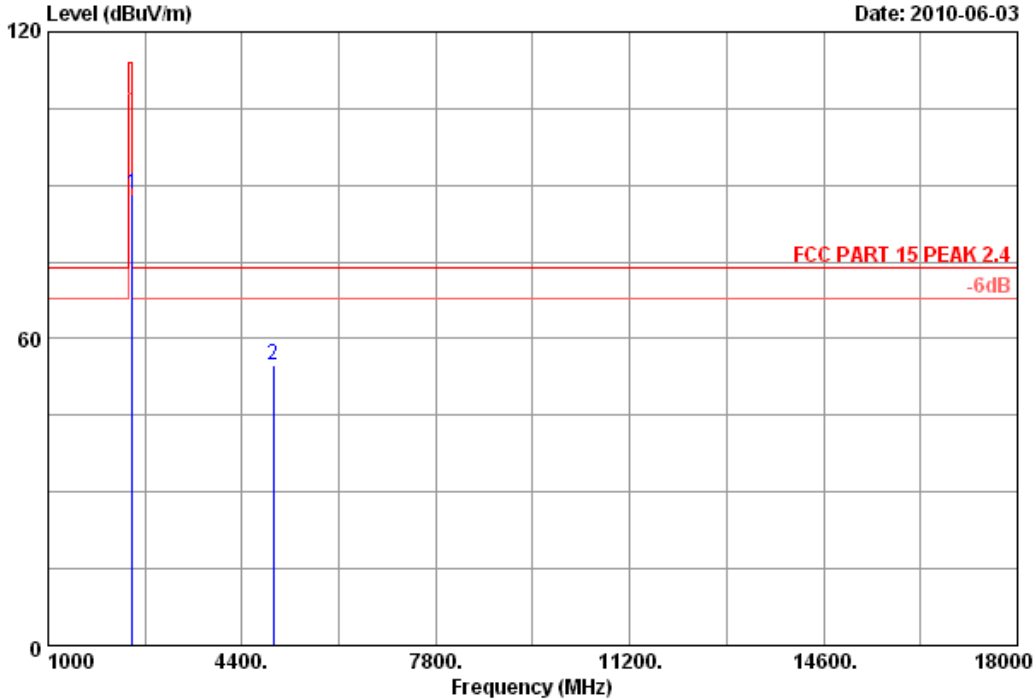


Site no. : 3m Chamber Data no. : 45  
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL  
Limit : FCC PART 15 PEAK 2.4  
Env. / Ins. : 23\*C/54% Engineer : Paul Tian  
EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
Power : DC 5V  
Test mode : Tx 2476MHz  
M/N : 96161-R(RB3)  
Memo :



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Data: 46 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 46  
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 PEAK 2.4  
 Env. / Ins. : 23\*C/54% Engineer : Paul Tian  
 EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power : DC 5V  
 Test mode : Tx 2476MHz  
 M/N : 96161-R(RB3)  
 Memo :

	Ant. Freq. (MHz)	Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2476.000	29.49	8.87	35.97	85.85	88.24	114.00	25.76	Peak
2	4952.000	34.52	12.53	35.40	43.12	54.77	74.00	19.23	Peak

Remarks:

- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- 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
2476	88.24	19.49	68.75	94	PASS
4952	54.77	19.49	35.28	54	PASS

## 5. BAND EDGE COMPLIANCE TEST

### 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.	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

### 5.2. Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in section 15.209, which is the lesser attenuation.

### 5.3. 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=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.

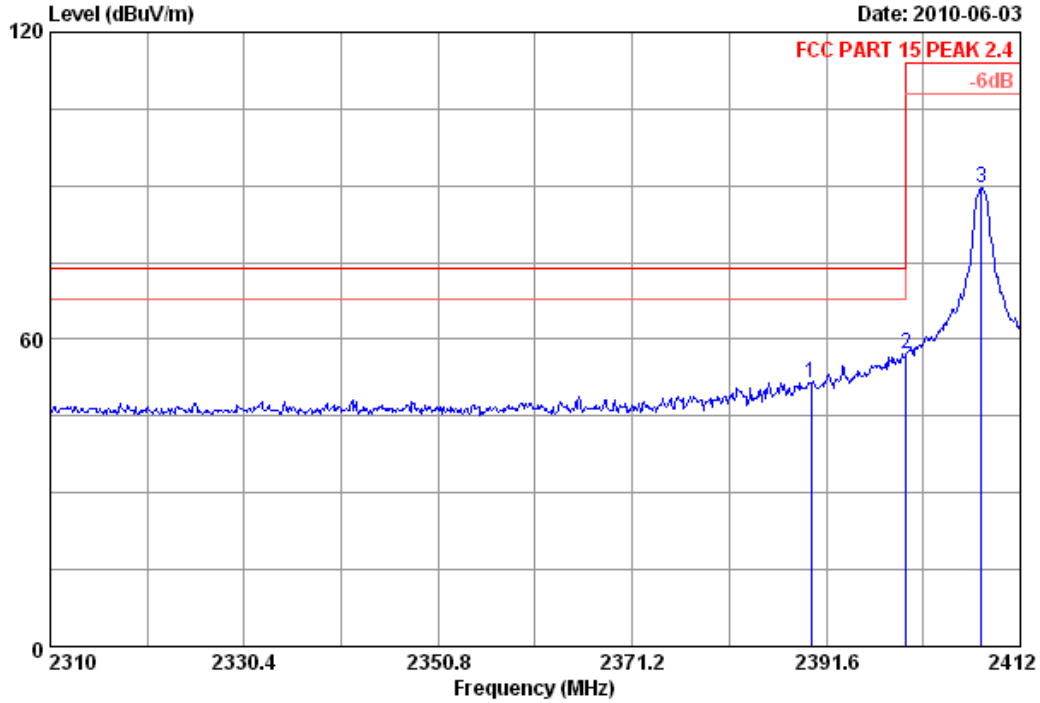
### 5.4. Test Results

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



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Data: 33 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 33  
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 PEAK 2.4  
 Env. / Ins. : 23°C/54% Engineer : Paul Tian  
 EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power : DC 5V  
 Test mode : Tx 2408MHz  
 M/N : 96161-R(RB3)  
 Memo :

	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 2390.000	29.44	8.67	36.09	49.32	51.34	74.00	22.66	Peak	
2 2400.000	29.44	8.72	36.09	54.92	56.99	74.00	17.01	Peak	
3 2407.920	29.45	8.72	35.95	87.25	89.47	114.00	24.53	Peak	

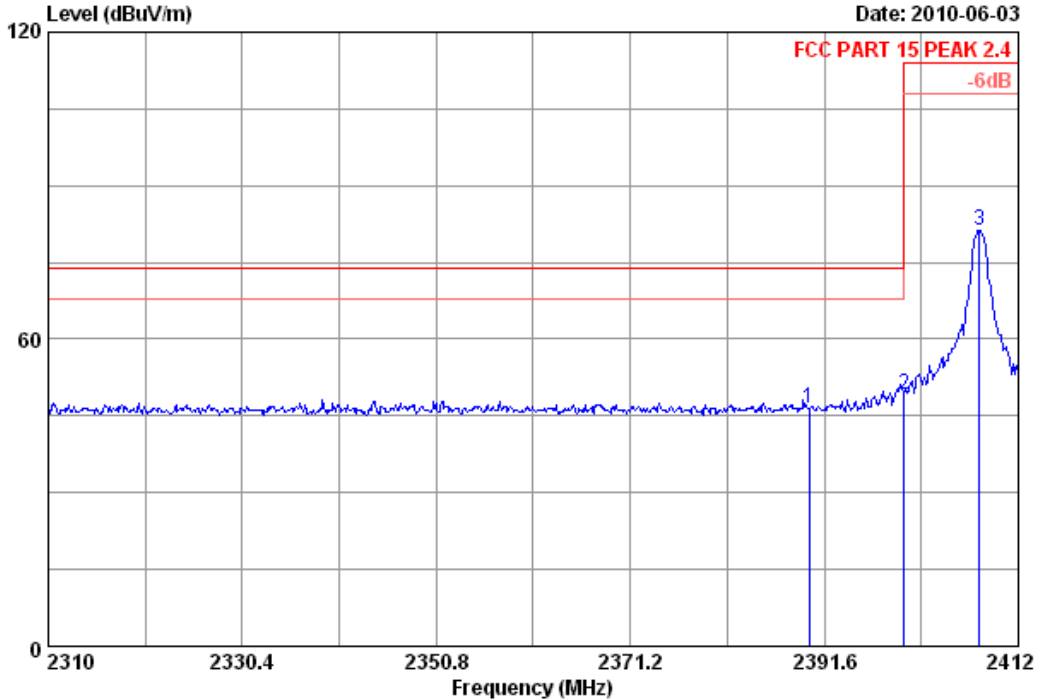
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
2409.72	89.47	19.49	69.98	94	PASS
2400	56.99	19.49	37.50	54	PASS
2390	51.34	19.49	31.85	54	PASS



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Data: 34 File: E:\2010 report data\MMadcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 34  
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL  
 Limit : FCC PART 15 PEAK 2.4  
 Env. / Ins. : 23°C/54% Engineer : Paul Tian  
 EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power : DC 5V  
 Test mode : Tx 2408MHz  
 M/N : 96161-R(RB3)  
 Memo :

	Ant. 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	2390.000	29.44	8.67	36.09	44.50	46.52	74.00	27.48	Peak
2	2400.000	29.44	8.72	36.09	47.09	49.16	74.00	24.84	Peak
3	2407.920	29.45	8.72	35.95	79.14	81.36	114.00	32.64	Peak

Remarks:

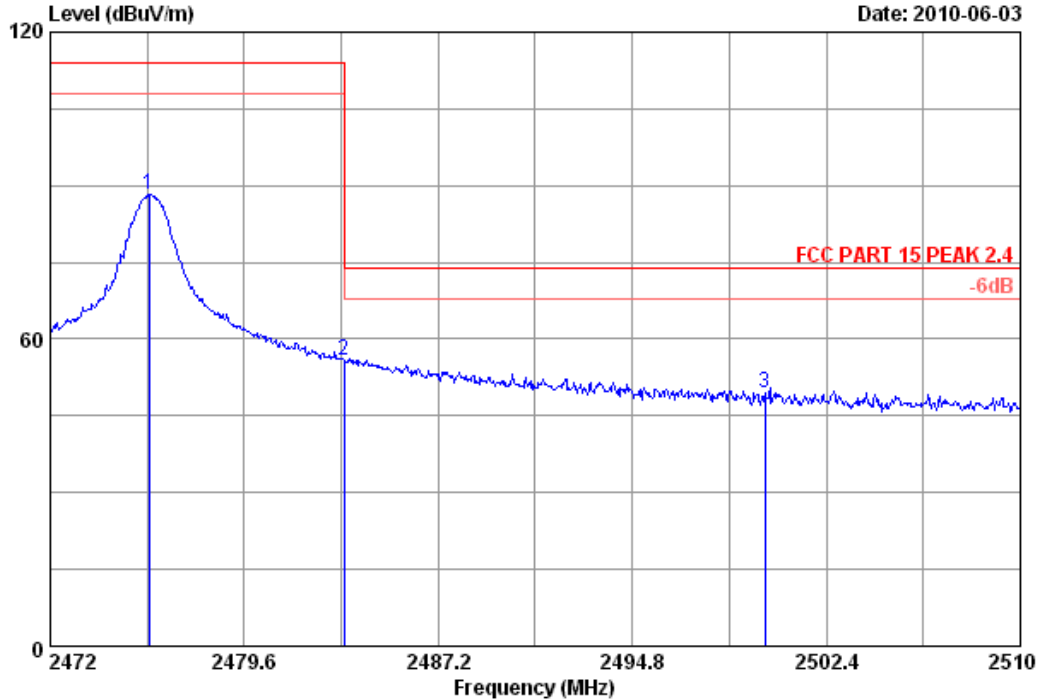
- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.

Frequency (MHz)	PK measured level (dBUV/m)	Duty cycle factor (dB)	Average level (dBUV/m)	Average Limit (dBUV/m)	Result
2407.92	81.36	19.49	61.87	94	PASS
2400	49.16	19.49	29.67	54	PASS
2390	46.52	19.49	27.03	54	PASS



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Data: 47 File: E:\2010 report data\MMadcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 47  
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 PEAK 2.4  
 Env. / Ins. : 23°C/54% Engineer : Paul Tian  
 EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power : DC 5V  
 Test mode : Tx 2476MHz  
 M/N : 96161-R(RB3)  
 Memo :

	Ant. 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	2475.876	29.49	8.87	35.97	85.94	88.33	114.00	25.67	Peak
2	2483.500	29.49	8.87	35.97	53.50	55.89	74.00	18.11	Peak
3	2500.000	29.50	8.92	36.00	47.03	49.45	74.00	24.55	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.

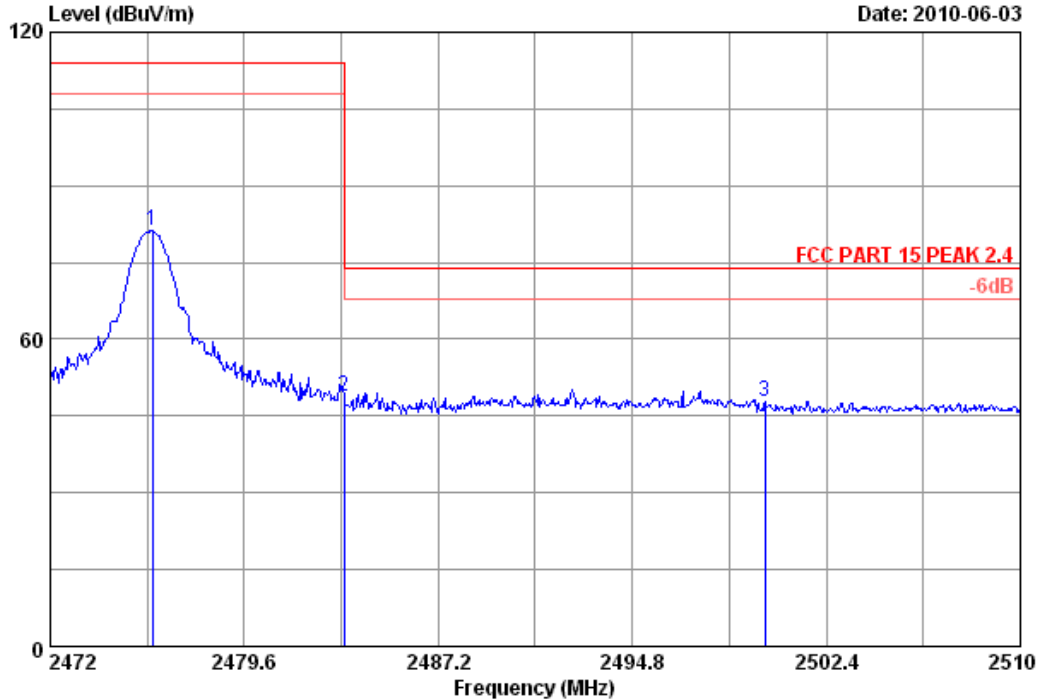
Frequency (MHz)	PK measured level (dBuV/m)	Duty cycle factor (dB)	Average level (dBuV/m)	Average Limit (dBuV/m)	Result
2475.87	88.33	19.49	68.84	94	PASS
2483.5	55.89	19.49	36.40	54	PASS
2500	49.03	19.49	29.54	54	PASS





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Data: 48 File: E:\2010 report data\MM\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 48  
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL  
 Limit : FCC PART 15 PEAK 2.4  
 Env. / Ins. : 23°C/54% Engineer : Paul Tian  
 EUT : Rock Band Wireless Pro Keyboard for Wii (Dongle)  
 Power : DC 5V  
 Test mode : Tx 2476MHz  
 M/N : 96161-R(RB3)  
 Memo :

	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 2475.990	29.49	8.87	35.97	78.71	81.10	114.00	32.90	Peak	
2 2483.500	29.49	8.87	35.97	46.25	48.64	74.00	25.36	Peak	
3 2500.000	29.50	8.92	36.00	45.52	47.94	74.00	26.06	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
2475.99	81.10	19.49	61.61	94	PASS
2483.5	48.64	19.49	29.15	54	PASS
2500	47.94	19.49	28.45	54	PASS

## 6. BANDWIDTH 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.	Attenuator	Agilent	8491B	MY39262165	May.08,10	1 Year
3.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,10	1Year

### 6.2. Limit

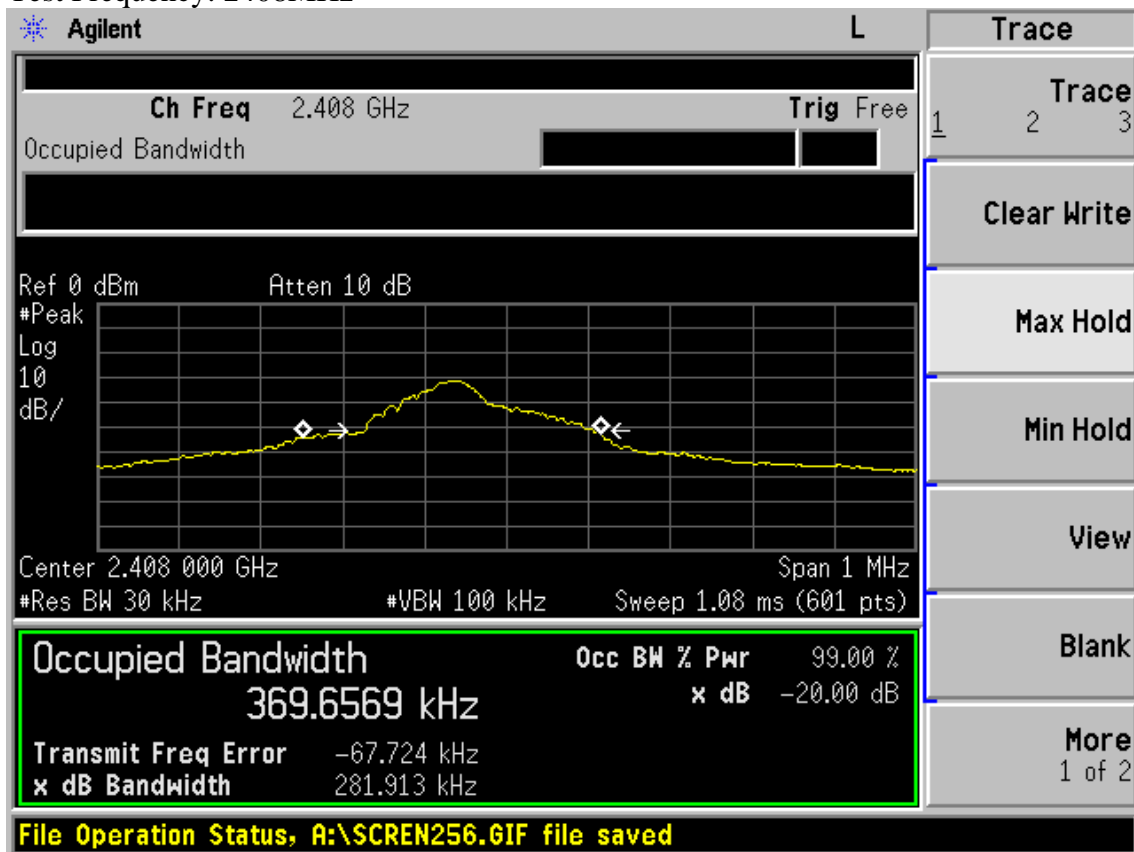
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific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

### 6.3. Test Results

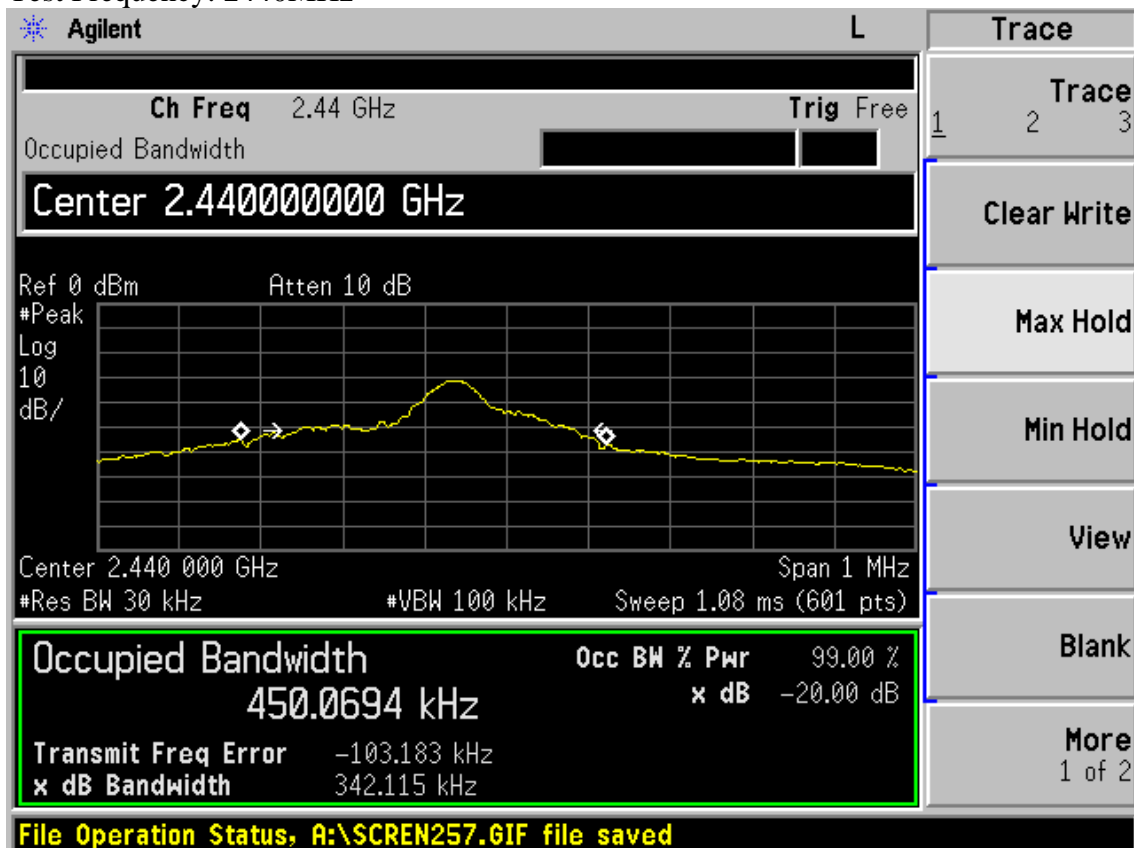
EUT: Rock Band Wireless Pro Keyboard for Wii (Dongle)		
M/N: 96161-R (RB3)		
Test date:2010-05-30	Pressure:100.2 kpa	Humidity:53 %
Tested by: Paul Tian	Test site: RF site	Temperature : 24 °C

Frequency	20dB bandwidth ( KHz )	Limit (KHz)
2408	281.913	N/A
2440	342.115	N/A
2476	317.670	N/A
Conclusion : PASS		

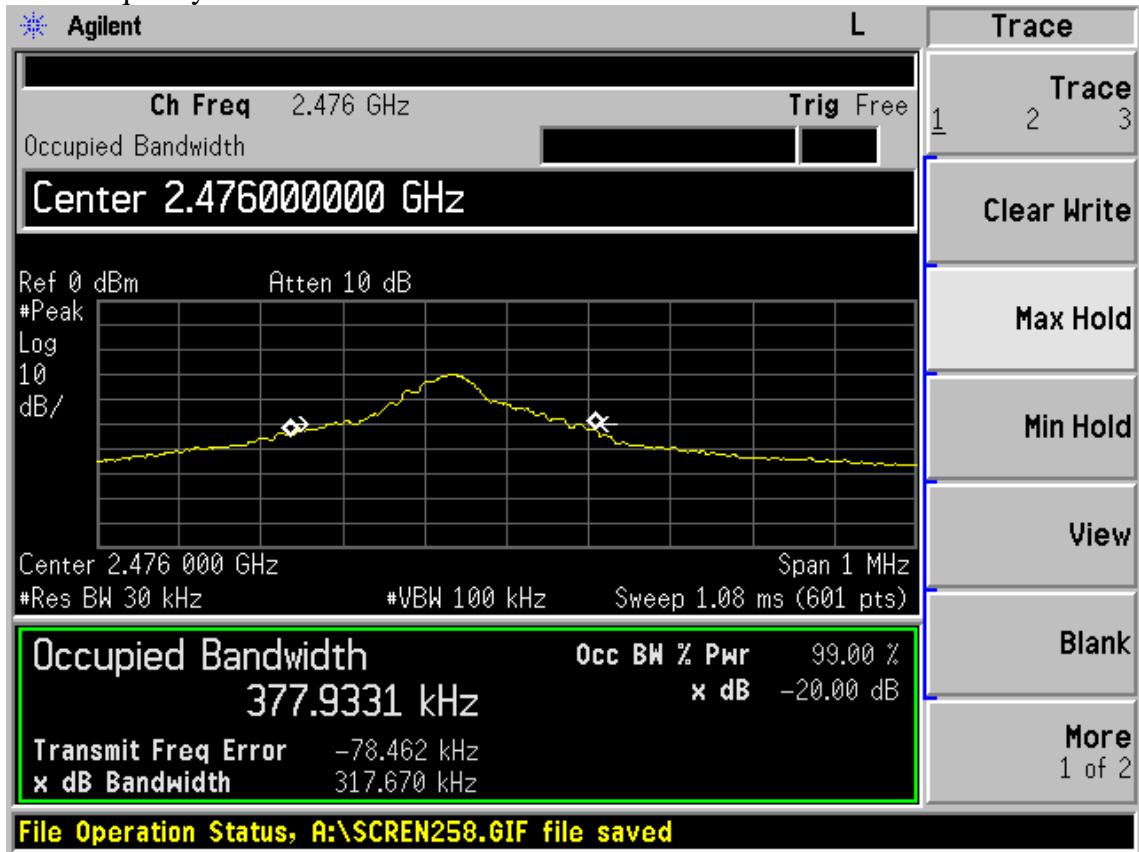
Test Frequency: 2408MHz



Test Frequency: 2440MHz



Test Frequency: 2476MHz



## **7. DEVIATION TO TEST SPECIFICATIONS**

[ NONE ]