

APPLICATION FOR CERTIFICATION  
On Behalf of

Mad Catz, Inc.

Rock Band Wireless Pro Keyboard for Wii

Model Number: 96161-C (RB3)

FCC ID: P25M796161Y2310C

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

Prepared By : Audix Technology (Shenzhen) Co., Ltd.  
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Report Number : ACS-F10123  
Date of Test : May.30~Jun.08, 2010  
Date of Report : Jun.10, 2010

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## TEST REPORT CERTIFICATION

Applicant : Mad Catz, Inc.  
 EUT Description : Rock Band Wireless Pro Keyboard for Wii  
 MODEL NO. : 96161-C (RB3)  
 FCC ID : P25M796161Y2310C  
 POWER SUPPLY : DC 4.5V  
 TEST VOLTAGE : DC 4.5V

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 : May.30~Jun.08, 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<br>ANSI C63.10-2009                         | N/A     |
| Radiated Emission Test                     | FCC Part 15C: 15.209<br>FCC Part 15C: 15.249<br>ANSI C63.10-2009 | PASS    |
| Band Edge Compliance Test                  | FCC Part 15: 15.249  | PASS    |
| 20dB Bandwidth Test                        | FCC Part 15: 15.215  | PASS    |
| N/A is an abbreviation for Not Applicable. |  |         |

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

Product name : Rock Band Wireless Pro Keyboard for Wii

Model Number : 96161-C (RB3)

FCC ID : P25M796161Y2310C

Operation frequency : 2408MHz~2476MHz

Modulation : GFSK

Power Supply : DC 4.5V  
(Note: Batteries were full charged for all the test.)

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

Date of Test : May.30~Jun.08, 2010

Date of Receipt : May.20, 2010

Sample Type : Prototype production

## 2.2. Test Facility

### Site Description

- Name of Firm : Audix Technology (Shenzhen) Co., Ltd.  
No. 6, Ke Feng Rd., 52 Block, Shenzhen  
Science & Industrial Park, Nantou,  
Shenzhen, Guangdong, China
- 3m Anechoic Chamber : 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

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

| Test Item  | Uncertainty                              |
|--|--|
| Uncertainty for Radiation Emission test<br>in 3m chamber         | 3.82 dB (Polarize: V)                    |
|  | 4.32 dB (Polarize: H)                    |
| Uncertainty for Radiated Spurious<br>Emission test in RF chamber | 2.70 dB<br>(Bilog antenna 30M~1000MHz)   |
|  | 2.27 dB<br>(Horn antenna 1000M~25000MHz) |
| Uncertainty for Temperature and humidity<br>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<br>humidity            | 0.6°C                                    |
|  | 3%                                       |

### **3. POWER LINE CONDUCTED EMISSION TEST**

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

## 4. RADIATED EMISSION TEST

### 4.1. Test Equipment

Frequency rang: 30~1000MHz

| Item | Equipment      | Manufacturer    | Model No. | Serial No.      | Last Cal.  | Cal. Interval |
|------|----------------|-----------------|-----------|-----------------|------------|---------------|
| 1    | 3#Chamber      | AUDIX           | N/A       | N/A             | 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

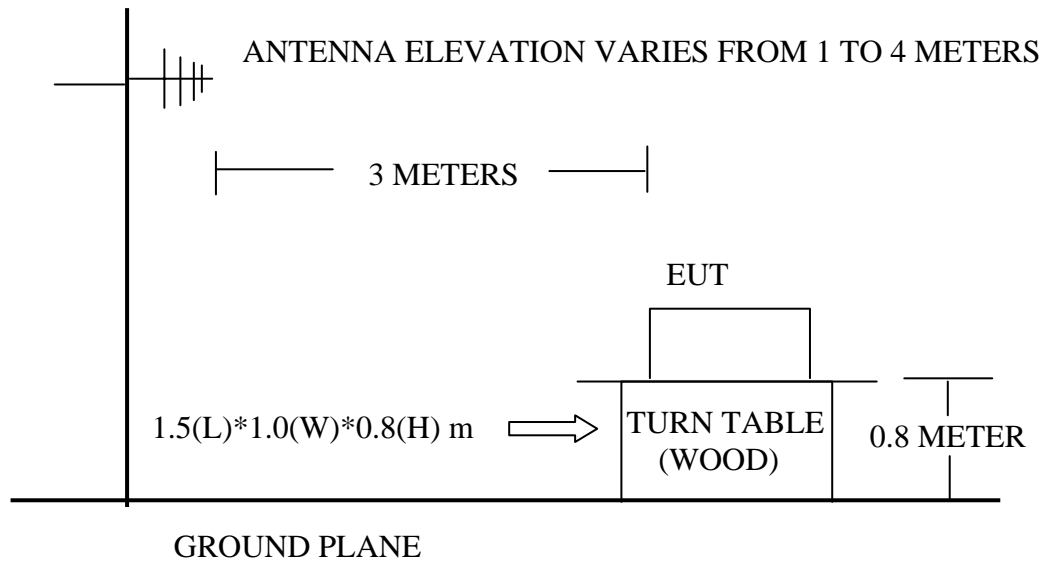


*(EUT: Rock Band Wireless Pro Keyboard for Wii)*



4.2.2. Anechoic Chamber Setup Diagram

ANTENNA TOWER



4.3. Radiated Emission Limit Standard: FCC 15.209 and 15.249

| FREQUENCY<br>MHz  | DISTANCE<br>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)<br>54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)  |                                   |
| Field Strength of<br>Fundamental emission for<br>2.4GHz-2.4835GHz | 3                  | 94.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)<br>114.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) |                                   |
| Field Strength of<br>Harmonics                                    | 3                  | 74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak)<br>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(EUT)

Model Number : 96161-C (RB3)

Serial Number : N/A

#### 4.5. Operating Condition of EUT

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

4.5.2. 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.

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

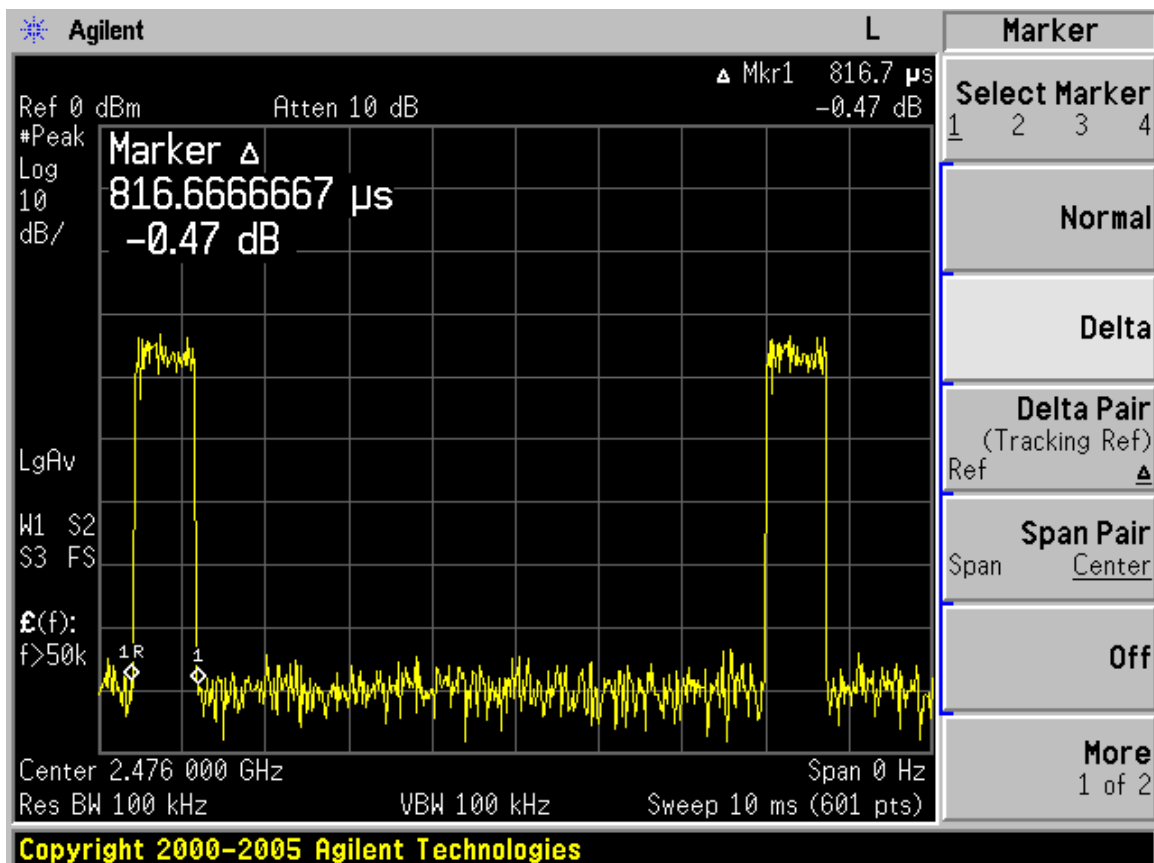
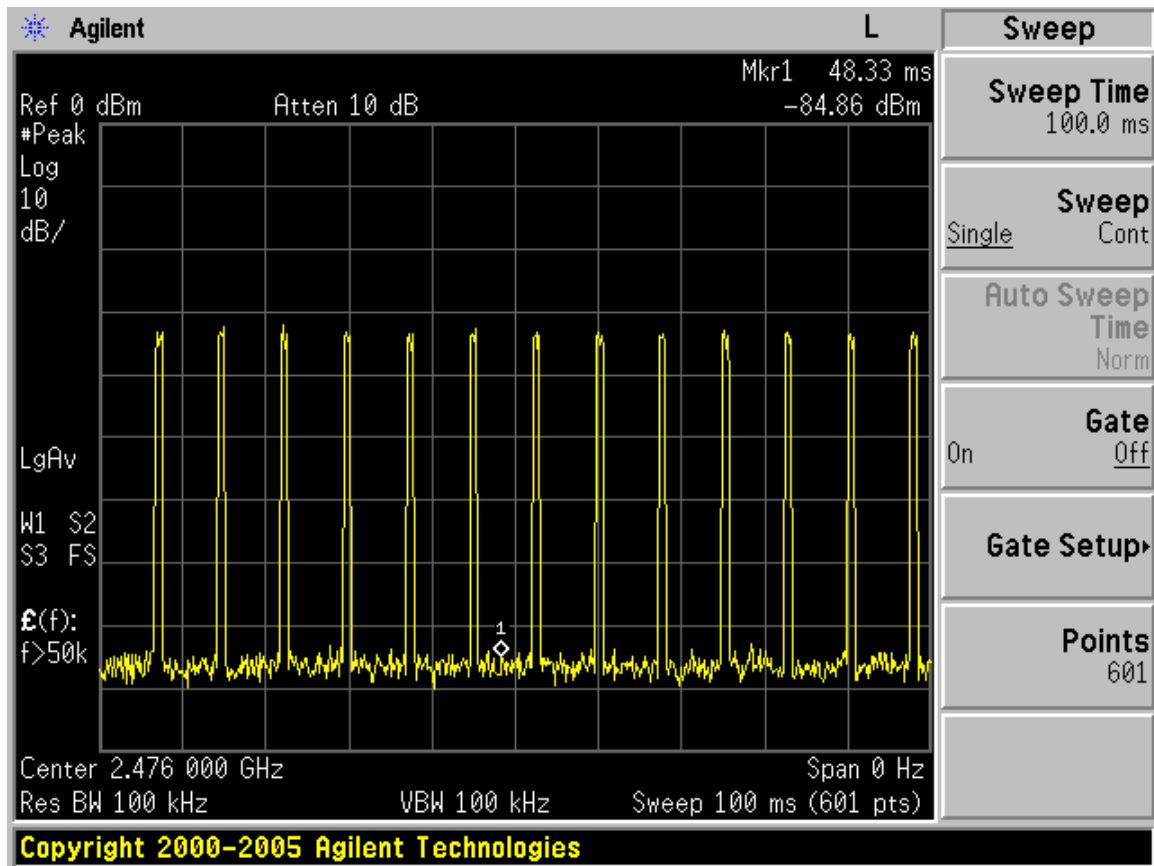
The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

#### 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 =  $20\log(1/\text{duty cycle}) = 19.49\text{dB}$

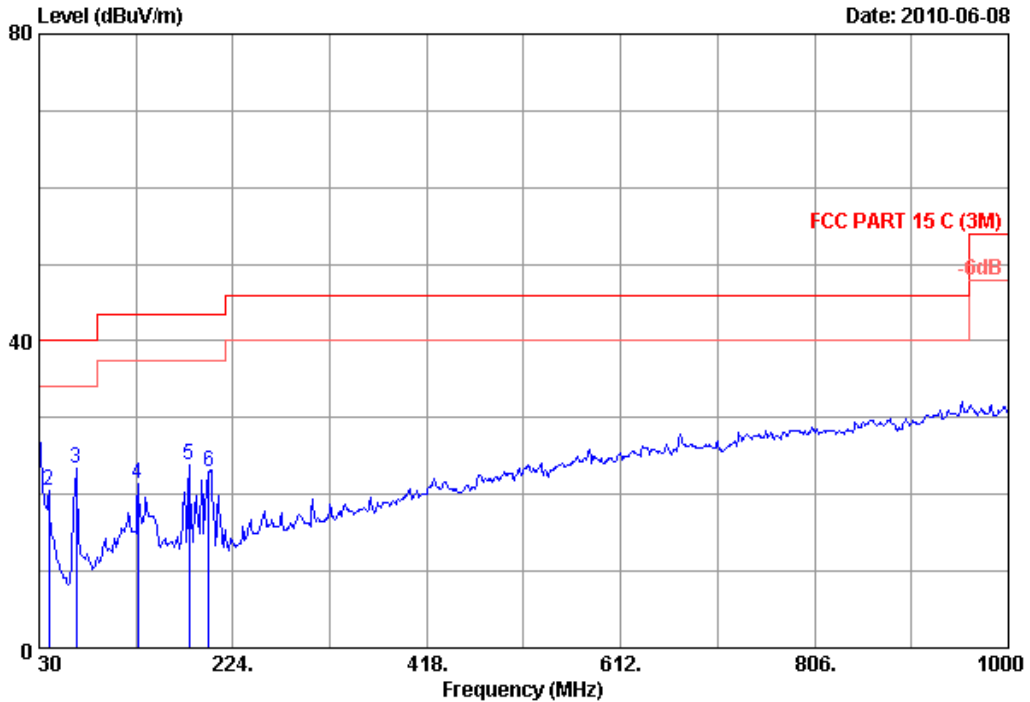


Radiated spurious emissions from 30MHz to 1GHz test result



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Data: 1 File: D:\2010 Report Data\M\Mad Catz\ACS10QH139.EM6 (6)



Site no. : 3m Chamber Data no. : 1  
 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  
 Power Rating : DC 4.5 V  
 Test Mode : Tx Mode  
 M/N:96161-C(RB3)

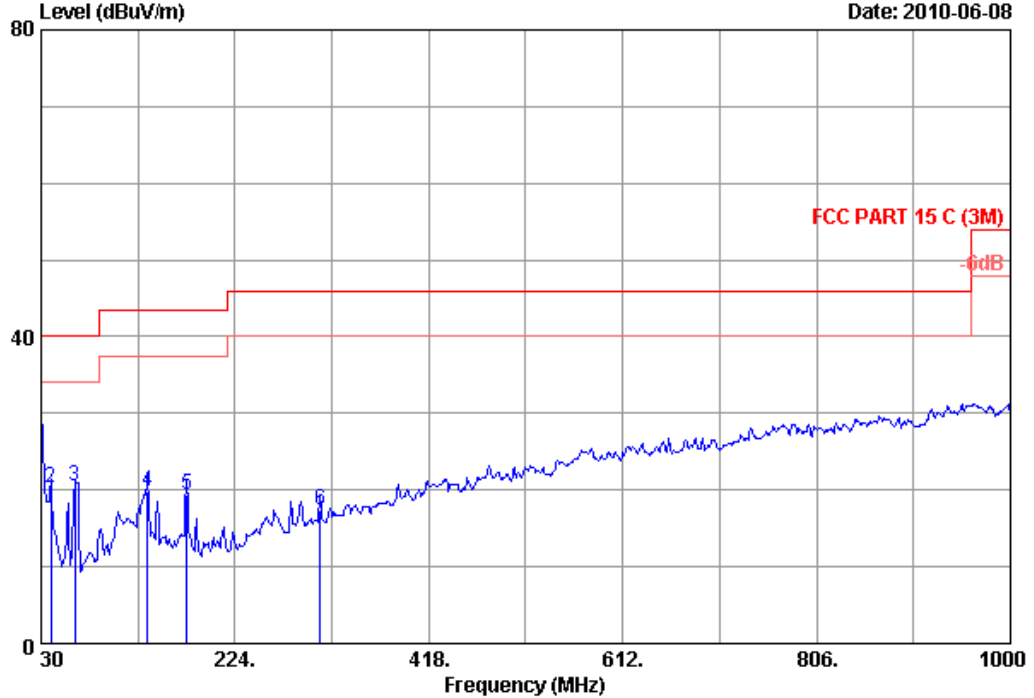
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-------------------------|-----------------|-------------|--------|
| 1   | 30.000      | 20.00              | 0.61            | 7.26           | 27.87                   | 40.00           | 12.13       | QP     |
| 2   | 39.700      | 14.50              | 0.69            | 5.37           | 20.56                   | 40.00           | 19.44       | QP     |
| 3   | 66.860      | 6.24               | 0.90            | 16.36          | 23.50                   | 40.00           | 16.50       | QP     |
| 4   | 128.940     | 12.18              | 1.13            | 8.18           | 21.49                   | 43.50           | 22.01       | QP     |
| 5   | 180.350     | 9.40               | 1.49            | 12.93          | 23.82                   | 43.50           | 19.68       | QP     |
| 6   | 199.750     | 10.00              | 1.72            | 11.28          | 23.00                   | 43.50           | 20.50       | 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: 2 File: D:\2010 Report Data\M\Mad Catz\ACS10QH139.EM6 (6)



Site no. : 3m Chamber Data no. : 2  
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  
Power Rating : DC 4.5 V  
Test Mode : Tx Mode  
M/N:96161-C(RB3)

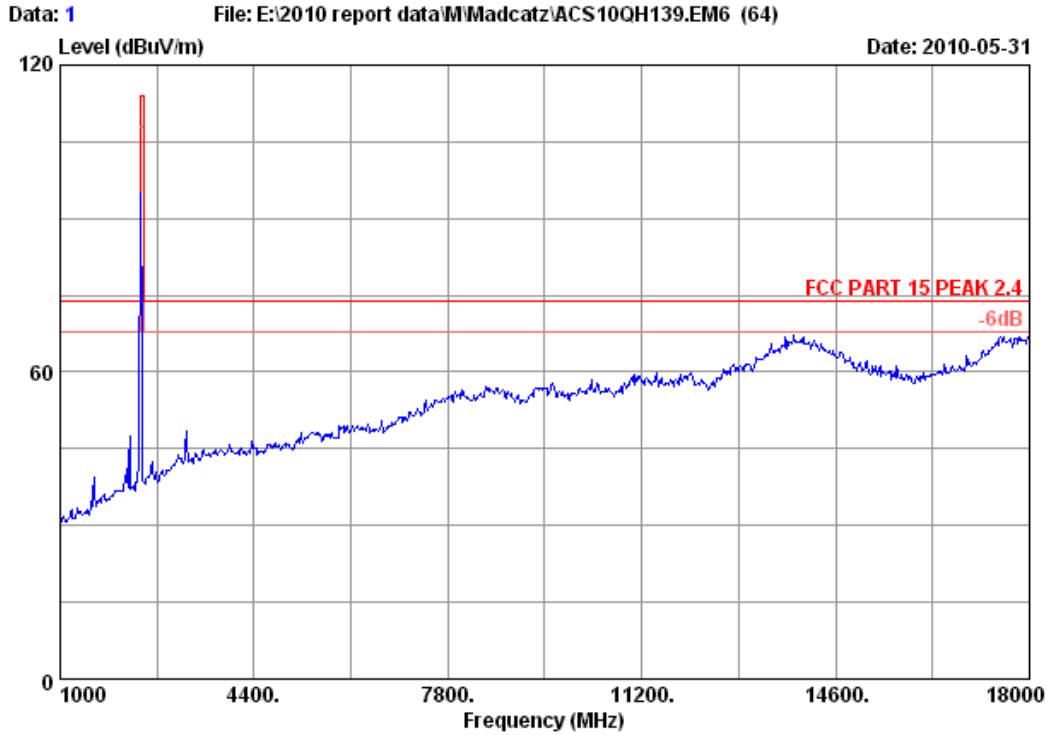
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|-------------|--------------------|-----------------|----------------|-------------------------|-----------------|-------------|--------|
| 1   | 30.000      | 20.00              | 0.61            | 8.53           | 29.14                   | 40.00           | 10.86       | QP     |
| 2   | 39.700      | 14.50              | 0.69            | 5.15           | 20.34                   | 40.00           | 19.66       | QP     |
| 3   | 63.950      | 6.00               | 0.88            | 13.57          | 20.45                   | 40.00           | 19.55       | QP     |
| 4   | 136.700     | 12.06              | 1.13            | 6.63           | 19.82                   | 43.50           | 23.68       | QP     |
| 5   | 175.500     | 9.65               | 1.44            | 8.24           | 19.33                   | 43.50           | 24.17       | QP     |
| 6   | 309.360     | 13.97              | 2.52            | 1.00           | 17.49                   | 46.00           | 28.51       | 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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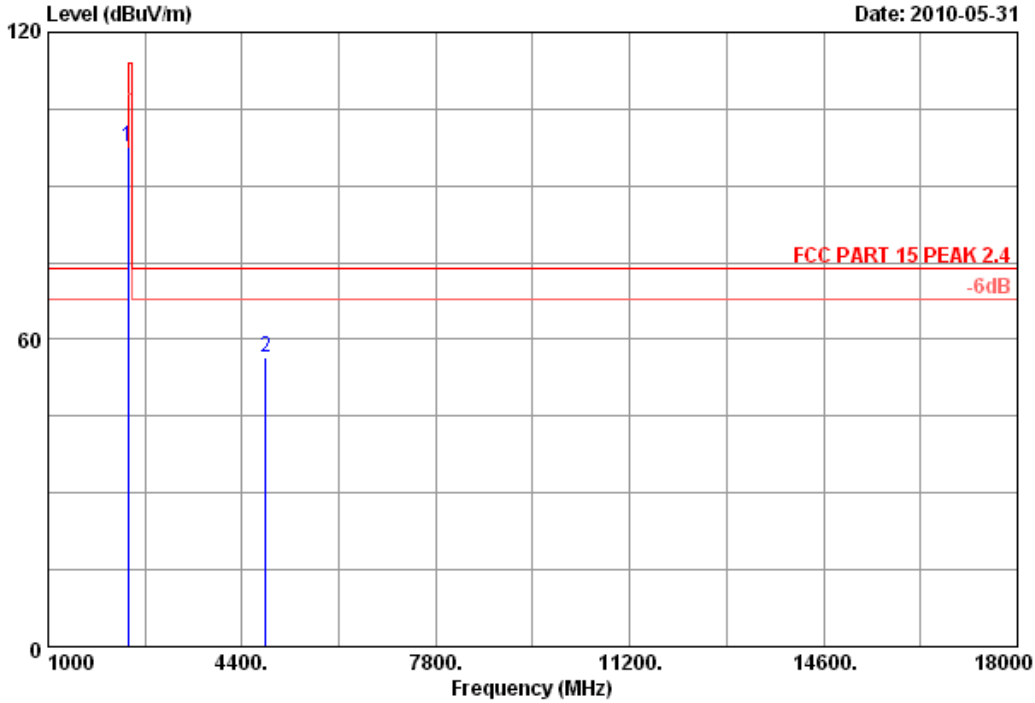


Site no. : 3m Chamber Data no. : 1  
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL  
Limit : FCC PART 15 PEAK 2.4  
Env. / Ins. : 23\*C/54% Engineer : Paul Tian  
EUT : Rock Band Wireless Pro Keyboard for Wii  
Power : DC 4.5V  
Test mode : Tx 2408MHz  
M/N : 96161-C(RB3)



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Data: 2 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 2  
 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  
 Power : DC 4.5V  
 Test mode : Tx 2408MHz  
 M/N : 96161-C(RB3)

|   | 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            | 95.26          | 97.48                   | 114.00          | 16.52       | Peak   |
| 2 | 4816.000         | 34.30         | 12.35           | 35.37            | 45.19          | 56.47                   | 74.00           | 17.53       | Peak   |

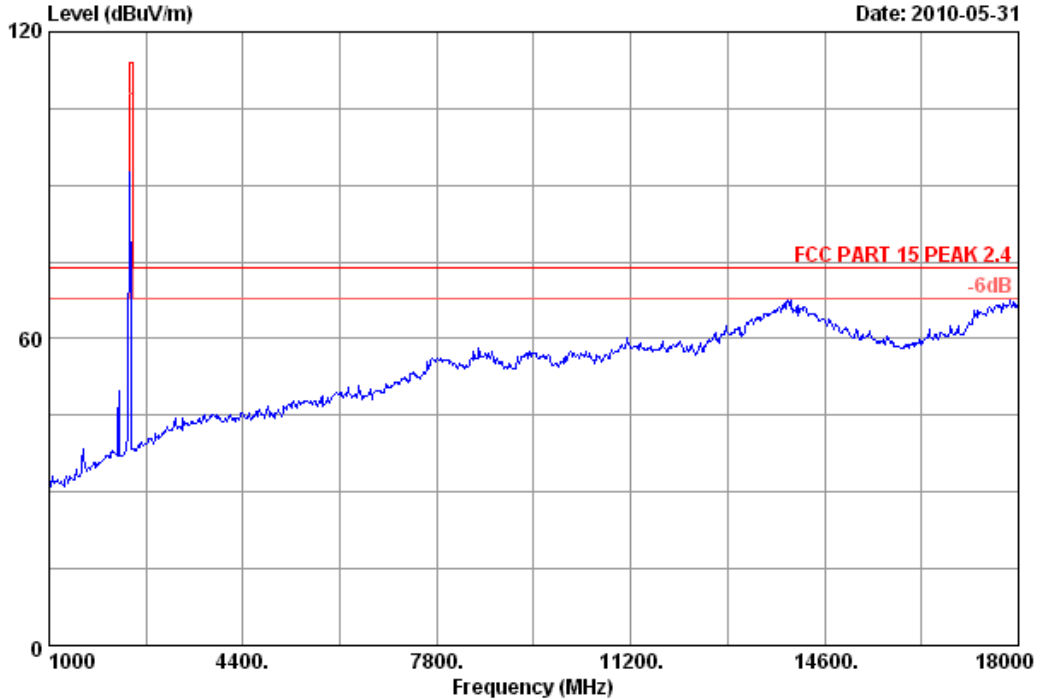
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

| Frequency (MHz) | PK measured level (dBuV/m) | Duty cycle factor (dB) | Average level (dBuV/m) | Average Limit (dBuV/m) | Result |
|-----------------|----------------------------|------------------------|------------------------|------------------------|--------|
| 2408            | 97.48                      | 19.49                  | 77.99                  | 94                     | PASS   |
| 4816            | 56.47                      | 19.49                  | 36.98                  | 54                     | PASS   |



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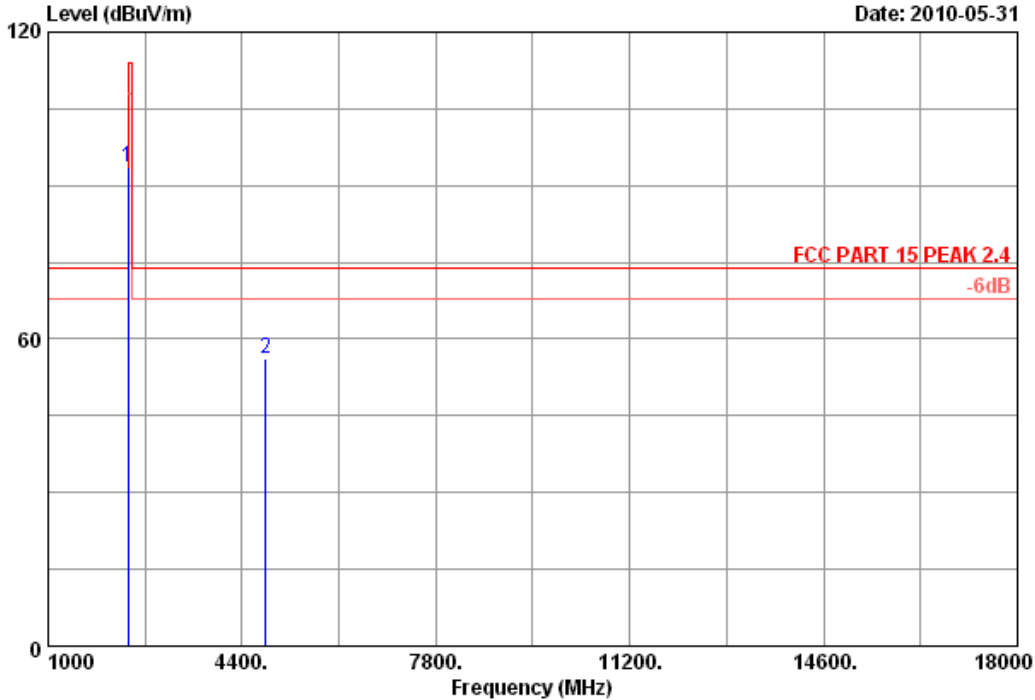
Site no. : 3m Chamber Data no. : 3  
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL  
Limit : FCC PART 15 PEAK 2.4  
Env. / Ins. : 23°C/54% Engineer : Paul Tian  
EUT : Rock Band Wireless Pro Keyboard for Wii  
Power : DC 4.5V  
Test mode : Tx 2408MHz  
M/N : 96161-C(RB3)





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Data: 4 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 4  
 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  
 Power : DC 4.5V  
 Test mode : Tx 2408MHz  
 M/N : 96161-C(RB3)

|   | 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            | 91.51          | 93.73                   | 114.00          | 20.27       | Peak   |
| 2 | 4816.000         | 34.30         | 12.35           | 35.37            | 44.86          | 56.14                   | 74.00           | 17.86       | Peak   |

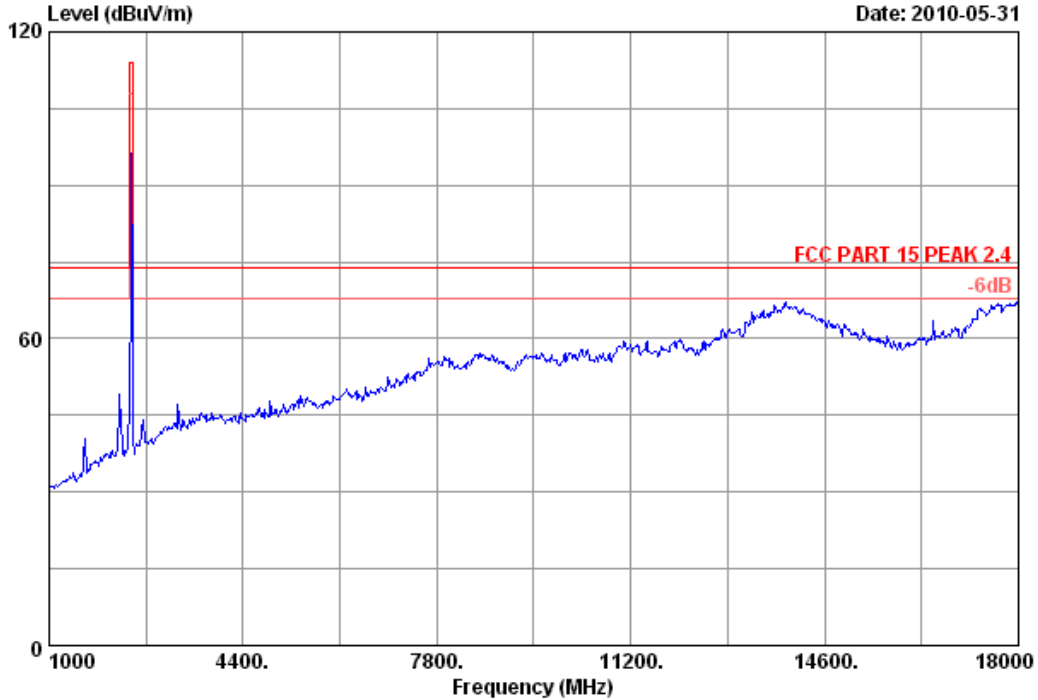
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

| Frequency (MHz) | PK measured level (dBuV/m) | Duty cycle factor (dB) | Average level (dBuV/m) | Average Limit (dBuV/m) | Result |
|-----------------|----------------------------|------------------------|------------------------|------------------------|--------|
| 2408            | 93.73                      | 19.49                  | 74.24                  | 94                     | PASS   |
| 4816            | 56.14                      | 19.49                  | 36.65                  | 54                     | PASS   |



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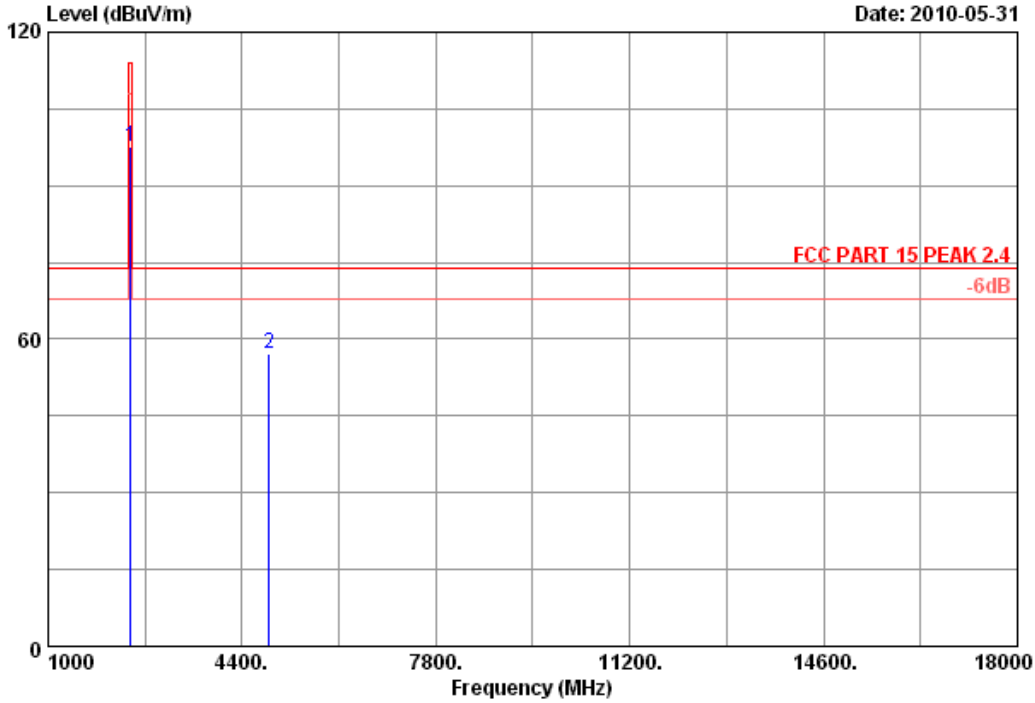


Site no. : 3m Chamber Data no. : 7  
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL  
Limit : FCC PART 15 PEAK 2.4  
Env. / Ins. : 23°C/54% Engineer : Paul Tian  
EUT : Rock Band Wireless Pro Keyboard for Wii  
Power : DC 4.5V  
Test mode : Tx 2440MHz  
M/N : 96161-C(RB3)



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Postcode:518057

Data: 8 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 8  
 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  
 Power : DC 4.5V  
 Test mode : Tx 2440MHz  
 M/N : 96161-C(RB3)

|   | 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            | 95.49          | 97.67                   | 114.00          | 16.33       | Peak   |
| 2 | 4880.000         | 34.41         | 12.44           | 35.36            | 45.62          | 57.11                   | 74.00           | 16.89       | Peak   |

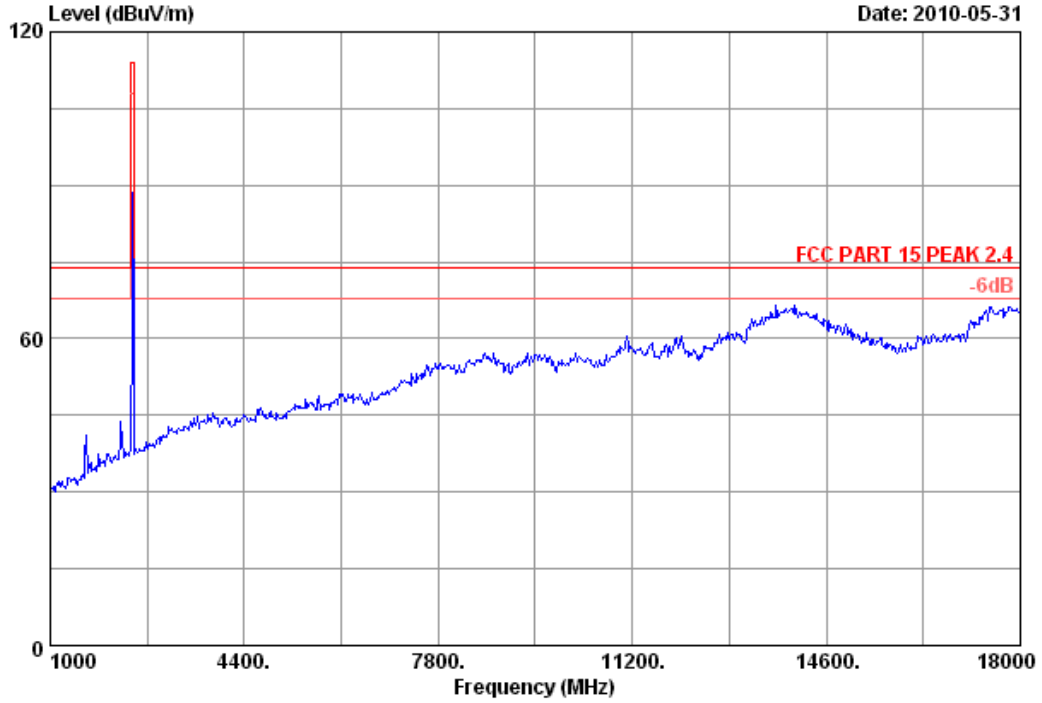
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

| Frequency (MHz) | PK measured level (dBuV/m) | Duty cycle factor (dB) | Average level (dBuV/m) | Average Limit (dBuV/m) | Result |
|-----------------|----------------------------|------------------------|------------------------|------------------------|--------|
| 2440            | 97.67                      | 19.49                  | 78.18                  | 94                     | PASS   |
| 4880            | 57.11                      | 19.49                  | 37.62                  | 54                     | PASS   |



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Data: 9 File: E:\2010 report data\MMadcatz\ACS10QH139.EM6 (64)

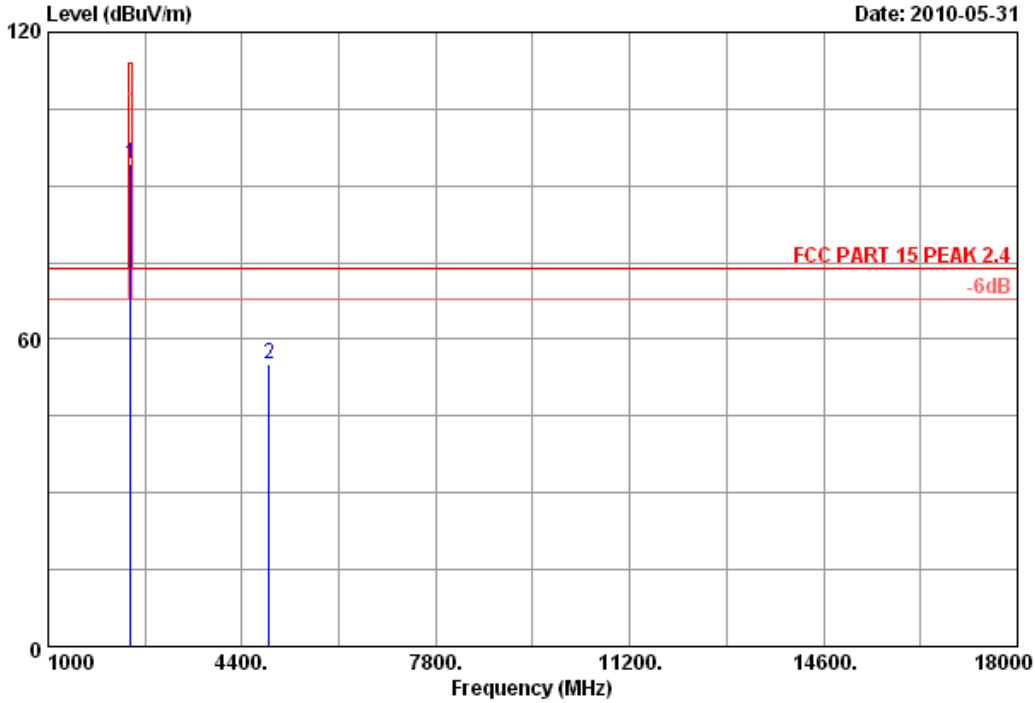


Site no. : 3m Chamber Data no. : 9  
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL  
Limit : FCC PART 15 PEAK 2.4  
Env. / Ins. : 23°C/54% Engineer : Paul Tian  
EUT : Rock Band Wireless Pro Keyboard for Wii  
Power : DC 4.5V  
Test mode : Tx 2440MHz  
M/N : 96161-C(RB3)



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Data: 10 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 10  
 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  
 Power : DC 4.5V  
 Test mode : Tx 2440MHz  
 M/N : 96161-C(RB3)

|   | 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            | 92.20          | 94.38                   | 114.00          | 19.62       | Peak   |
| 2 | 4880.000         | 34.41         | 12.44           | 35.36            | 43.67          | 55.16                   | 74.00           | 18.84       | Peak   |

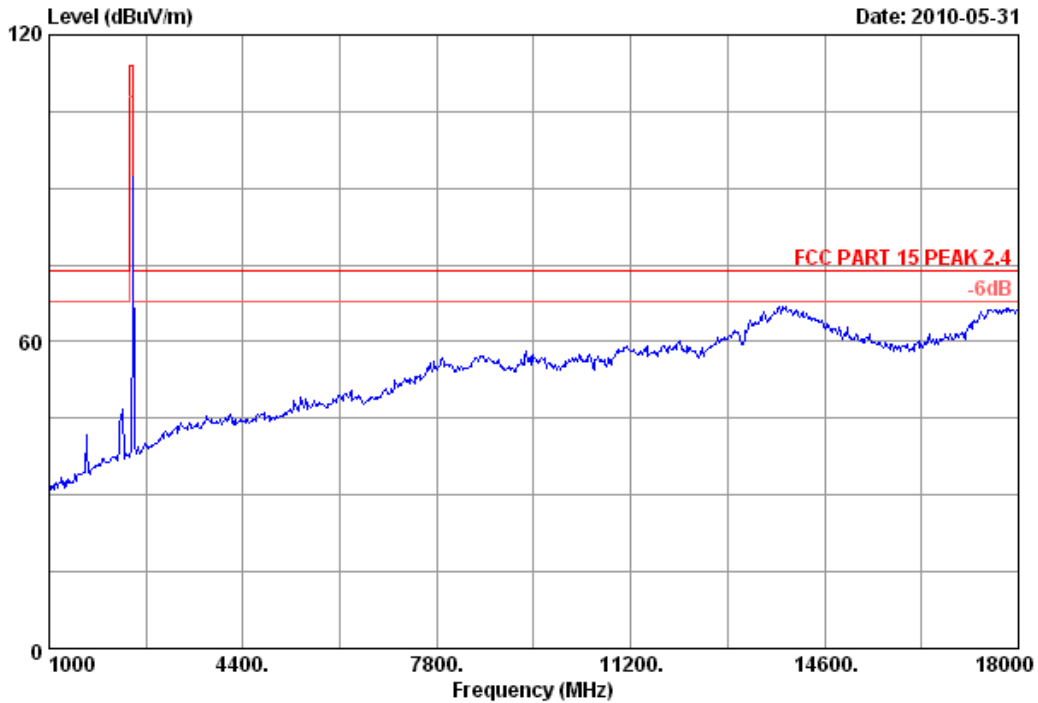
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

| Frequency (MHz) | PK measured level (dBuV/m) | Duty cycle factor (dB) | Average level (dBuV/m) | Average Limit (dBuV/m) | Result |
|-----------------|----------------------------|------------------------|------------------------|------------------------|--------|
| 2440            | 94.38                      | 19.49                  | 74.89                  | 94                     | PASS   |
| 4880            | 55.16                      | 19.49                  | 35.67                  | 54                     | PASS   |



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Data: 11 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)

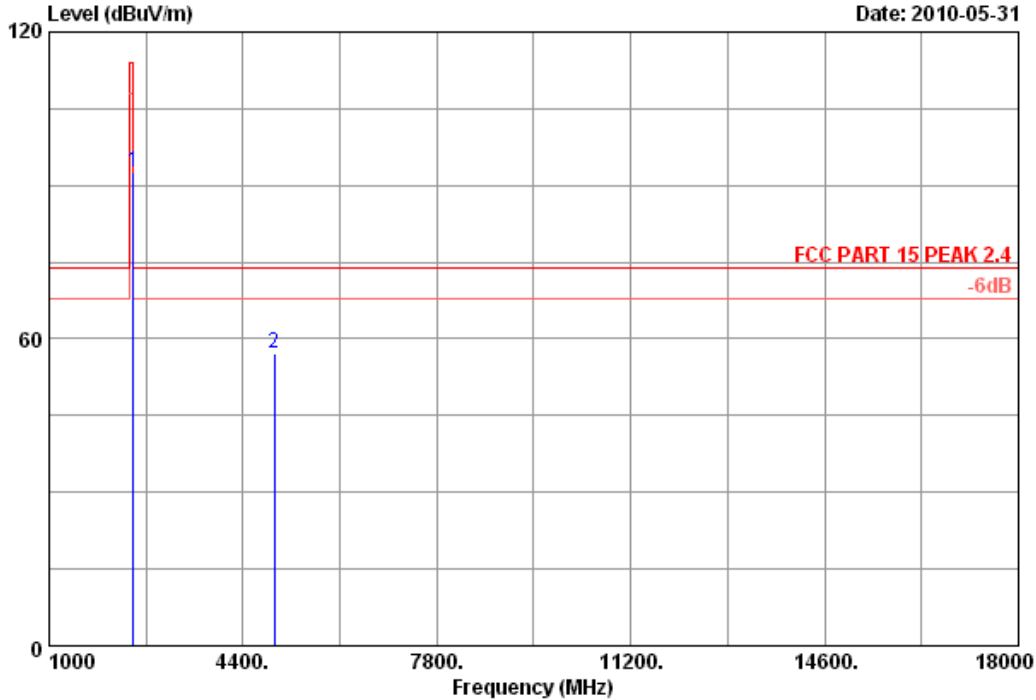


|             |   |           |              |
|-------------|---|-----------|--------------|
| Site no.    | : 3m Chamber                              | Data no.  | : 11         |
| Dis. / Ant. | : 3m 3115(0911)                           | Ant. pol. | : HORIZONTAL |
| Limit       | : FCC PART 15 PEAK 2.4                    |           |              |
| Env. / Ins. | : 23°C/54%                                | Engineer  | : Paul Tian  |
| EUT         | : Rock Band Wireless Pro Keyboard for Wii |           |              |
| Power       | : DC 4.5V                                 |           |              |
| Test mode   | : Tx 2476MHz                              |           |              |
| M/N         | : 96161-C(RB3)                            |           |              |



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Data: 12 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 12  
 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  
 Power : DC 4.5V  
 Test mode : Tx 2476MHz  
 M/N : 96161-C(RB3)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>loss<br>(dB) | Amp.<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|------------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2476.000       | 29.49                    | 8.87                  | 35.97                  | 90.29             | 92.68                         | 114.00             | 21.32          | Peak   |
| 2 | 4952.000       | 34.52                    | 12.53                 | 35.40                  | 45.52             | 57.17                         | 74.00              | 16.83          | Peak   |

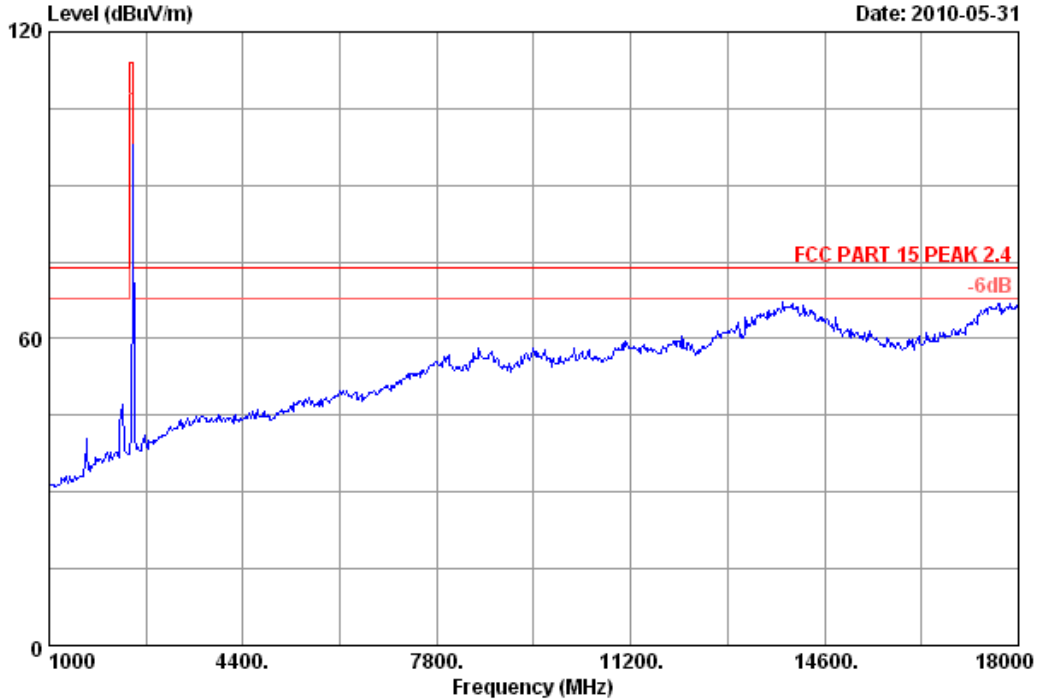
Remarks:  
 1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

| Frequency<br>(MHz) | PK measured<br>level (dBuV/m) | Duty cycle<br>factor (dB) | Average level<br>(dBuV/m) | Average Limit<br>(dBuV/m) | Result |
|--------------------|-------------------------------|---------------------------|---------------------------|---------------------------|--------|
| 2476               | 92.68                         | 19.49                     | 73.19                     | 94                        | PASS   |
| 4952               | 57.17                         | 19.49                     | 37.68                     | 54                        | PASS   |



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Postcode:518057

Data: 13 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



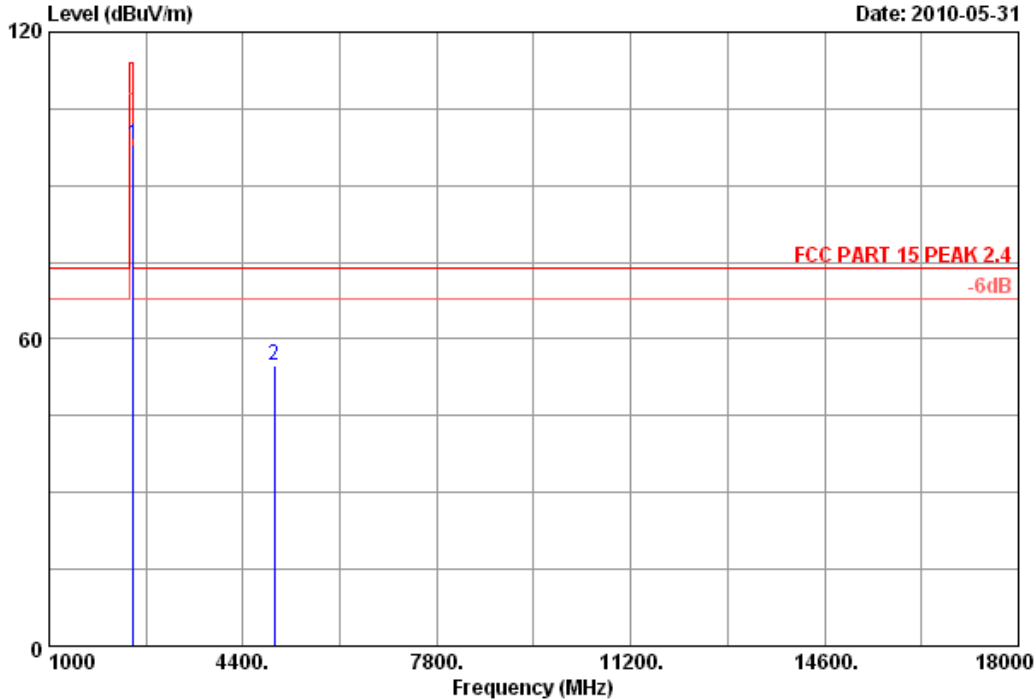
|             |   |           |             |
|-------------|---|-----------|-------------|
| Site no.    | : 3m Chamber                              | Data no.  | : 13        |
| Dis. / Ant. | : 3m 3115(0911)                           | Ant. pol. | : VERTICAL  |
| Limit       | : FCC PART 15 PEAK 2.4                    |           |             |
| Env. / Ins. | : 23°C/54%                                | Engineer  | : Paul Tian |
| EUT         | : Rock Band Wireless Pro Keyboard for Wii |           |             |
| Power       | : DC 4.5V                                 |           |             |
| Test mode   | : Tx 2476MHz                              |           |             |
| M/N         | : 96161-C(RB3)                            |           |             |





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Data: 14 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 14  
 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  
 Power : DC 4.5V  
 Test mode : Tx 2476MHz  
 M/N : 96161-C(RB3)

|   | 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            | 95.50          | 97.89                   | 114.00          | 16.11       | Peak   |
| 2 | 4952.000         | 34.52         | 12.53           | 35.40            | 43.13          | 54.78                   | 74.00           | 19.22       | 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            | 97.89                      | 19.49                  | 78.40                  | 94                     | PASS   |
| 4952            | 54.78                      | 19.49                  | 35.29                  | 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.

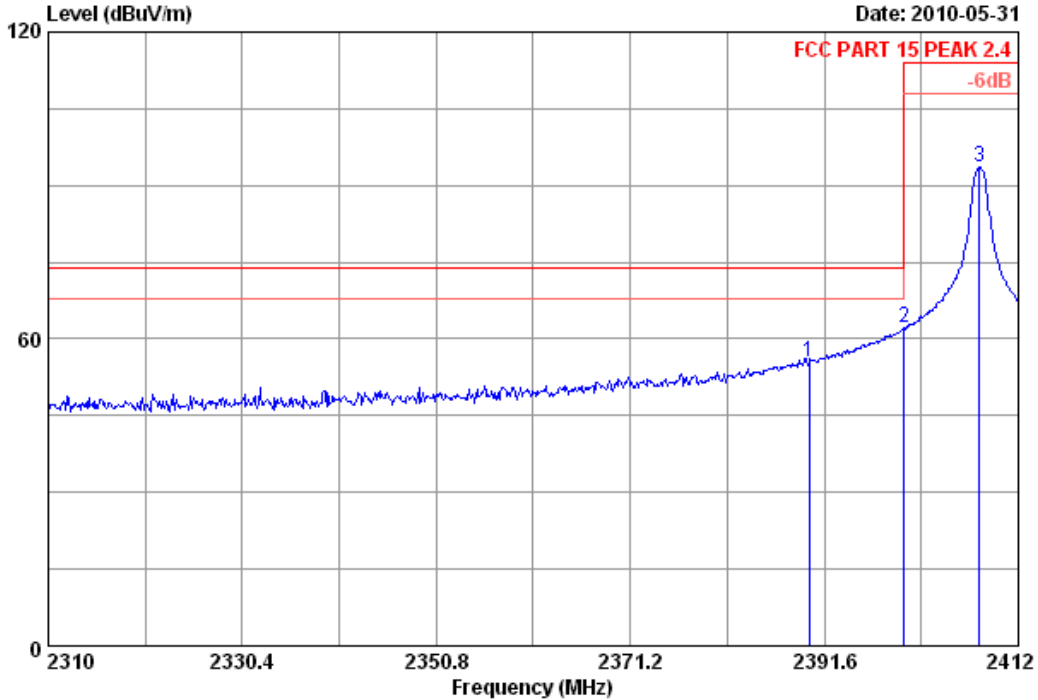
### 5.4. Test Results

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



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Data: 5 File: E:\2010 report data\MMadcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 5  
 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  
 Power : DC 4.5V  
 Test mode : Tx 2408MHz  
 M/N : 96161-C(RB3)

|   | 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 | 2390.000         | 29.44         | 8.67            | 36.09            | 53.46          | 55.48                   | 74.00           | 18.52       | Peak   |
| 2 | 2400.000         | 29.44         | 8.72            | 36.09            | 59.94          | 62.01                   | 74.00           | 11.99       | Peak   |
| 3 | 2407.920         | 29.45         | 8.72            | 35.95            | 91.43          | 93.65                   | 114.00          | 20.35       | Peak   |

Remarks:

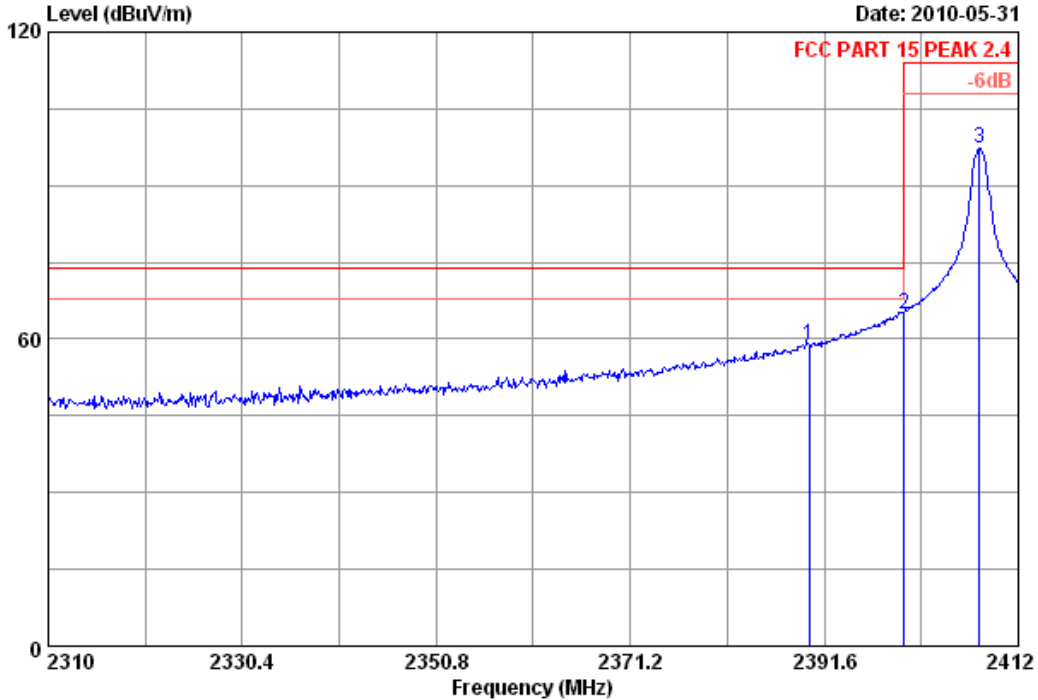
- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.

| Frequency (MHz) | PK measured level (dBuV/m) | Duty cycle factor (dB) | Average level (dBuV/m) | Average Limit (dBuV/m) | Result |
|-----------------|----------------------------|------------------------|------------------------|------------------------|--------|
| 2409.72         | 93.65                      | 19.49                  | 74.16                  | 94                     | PASS   |
| 2400            | 62.01                      | 19.49                  | 42.52                  | 54                     | PASS   |
| 2390            | 55.48                      | 19.49                  | 35.99                  | 54                     | PASS   |



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Data: 6 File: E:\2010 report data\MMadcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 6  
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  
Power : DC 4.5V  
Test mode : Tx 2408MHz  
M/N : 96161-C(RB3)

|   | 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            | 56.88          | 58.90                   | 74.00           | 15.10       | Peak   |
| 2 | 2400.000         | 29.44              | 8.72            | 36.09            | 62.91          | 64.98                   | 74.00           | 9.02        | Peak   |
| 3 | 2407.920         | 29.45              | 8.72            | 35.95            | 95.12          | 97.34                   | 114.00          | 16.66       | Peak   |

Remarks:

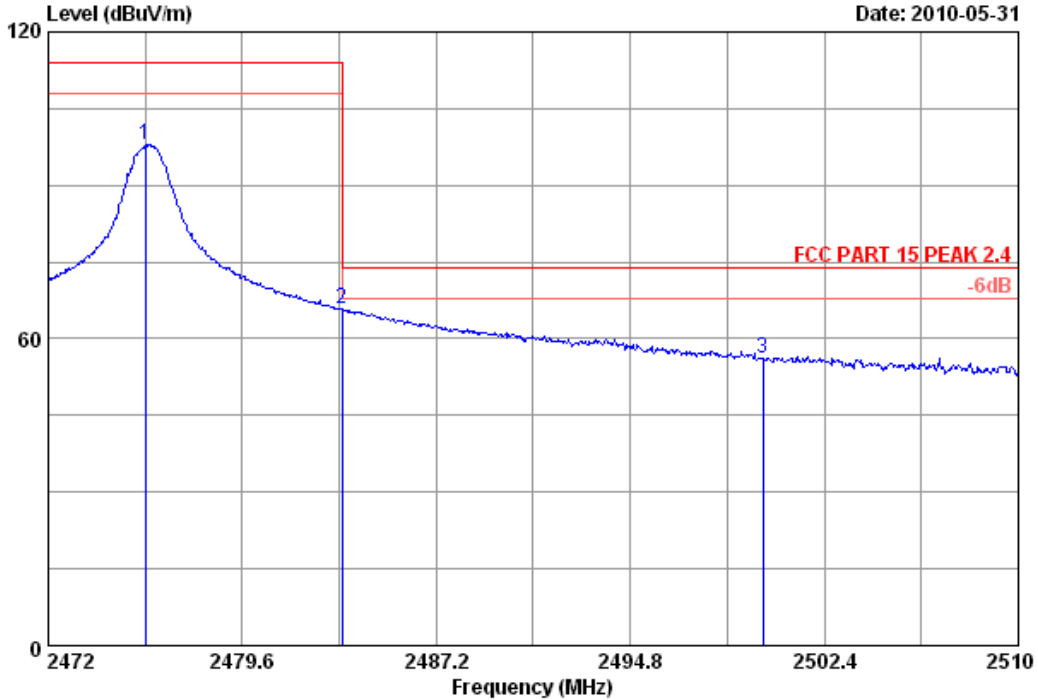
- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.

| Frequency (MHz) | PK measured level (dBuV/m) | Duty cycle factor (dB) | Average level (dBuV/m) | Average Limit (dBuV/m) | Result |
|-----------------|----------------------------|------------------------|------------------------|------------------------|--------|
| 2407.92         | 97.34                      | 19.49                  | 77.85                  | 94                     | PASS   |
| 2400            | 64.98                      | 19.49                  | 45.49                  | 54                     | PASS   |
| 2390            | 58.90                      | 19.49                  | 39.41                  | 54                     | PASS   |



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Data: 15 File: E:\2010 report data\M\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 15  
 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  
 Power : DC 4.5V  
 Test mode : Tx 2476MHz  
 M/N : 96161-C(RB3)

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>loss<br>(dB) | Amp.<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|---|----------------|--------------------------|-----------------------|------------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2475.800       | 29.49                    | 8.87                  | 35.97                  | 95.49             | 97.88                         | 114.00             | 16.12          | Peak   |
| 2 | 2483.500       | 29.49                    | 8.87                  | 35.97                  | 63.52             | 65.91                         | 74.00              | 8.09           | Peak   |
| 3 | 2500.000       | 29.50                    | 8.92                  | 36.00                  | 53.87             | 56.29                         | 74.00              | 17.71          | Peak   |

Remarks:

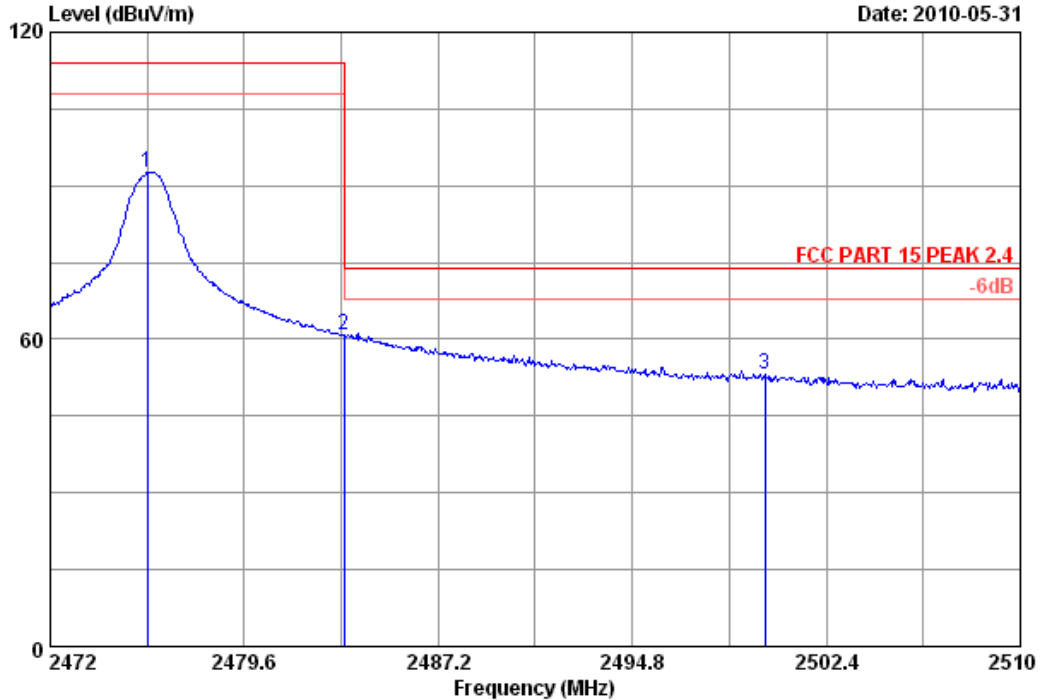
- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.

| Frequency<br>(MHz) | PK measured<br>level (dBuV/m) | Duty cycle<br>factor (dB) | Average level<br>(dBuV/m) | Average Limit<br>(dBuV/m) | Result |
|--------------------|-------------------------------|---------------------------|---------------------------|---------------------------|--------|
| 2475.8             | 97.88                         | 19.49                     | 78.39                     | 94                        | PASS   |
| 2483.5             | 65.91                         | 19.49                     | 46.42                     | 54                        | PASS   |
| 2500               | 56.29                         | 19.49                     | 36.80                     | 54                        | PASS   |



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Data: 16 File: E:\2010 report data\MM\Madcatz\ACS10QH139.EM6 (64)



Site no. : 3m Chamber Data no. : 16  
 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  
 Power : DC 4.5V  
 Test mode : Tx 2476MHz  
 M/N : 96161-C(RB3)

|            | 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 2475.800 | 29.49  | 8.87  | 35.97  | 90.31    | 92.70    | 114.00   | 21.30  | Peak   |  |
| 2 2483.500 | 29.49  | 8.87  | 35.97  | 58.57    | 60.96    | 74.00    | 13.04  | Peak   |  |
| 3 2500.000 | 29.50  | 8.92  | 36.00  | 50.64    | 53.06    | 74.00    | 20.94  | 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 |
|-----------------|----------------------------|------------------------|------------------------|------------------------|--------|
| 2475.8          | 92.70                      | 19.49                  | 73.21                  | 94                     | PASS   |
| 2483.5          | 60.96                      | 19.49                  | 41.47                  | 54                     | PASS   |
| 2500            | 53.06                      | 19.49                  | 33.57                  | 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

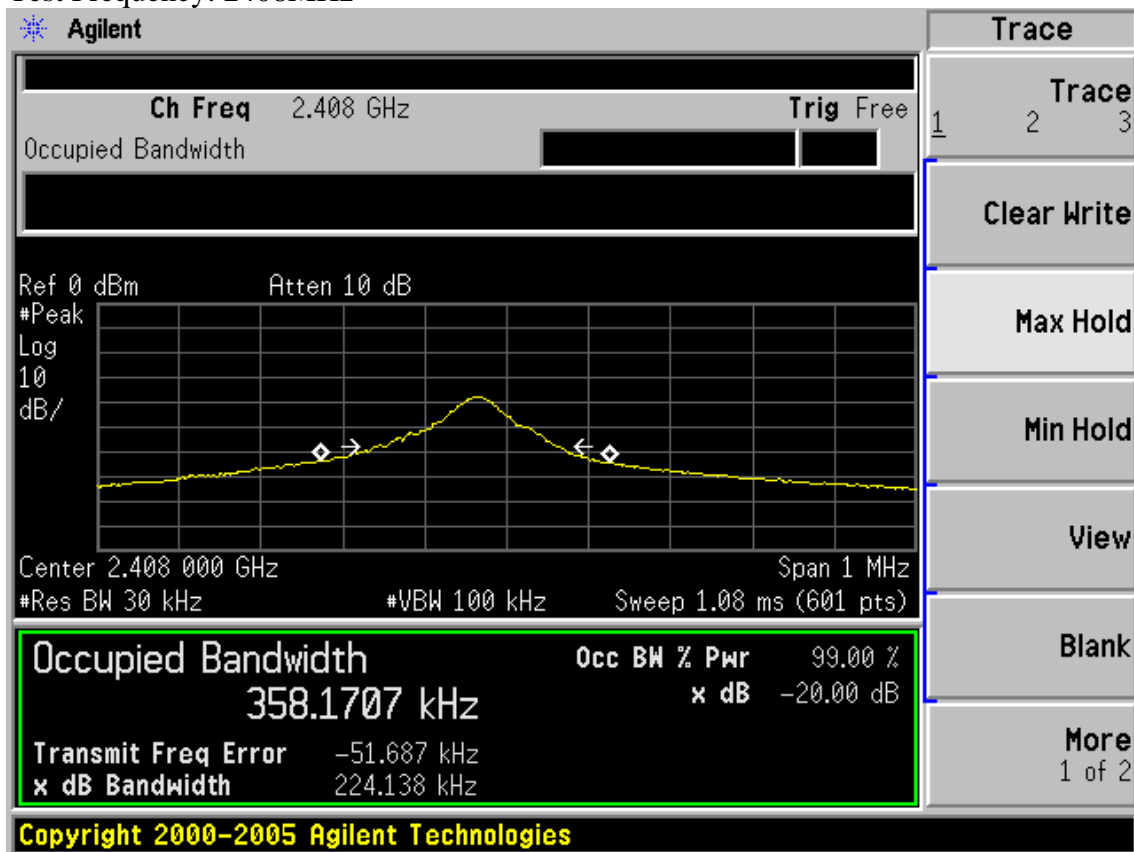
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific 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

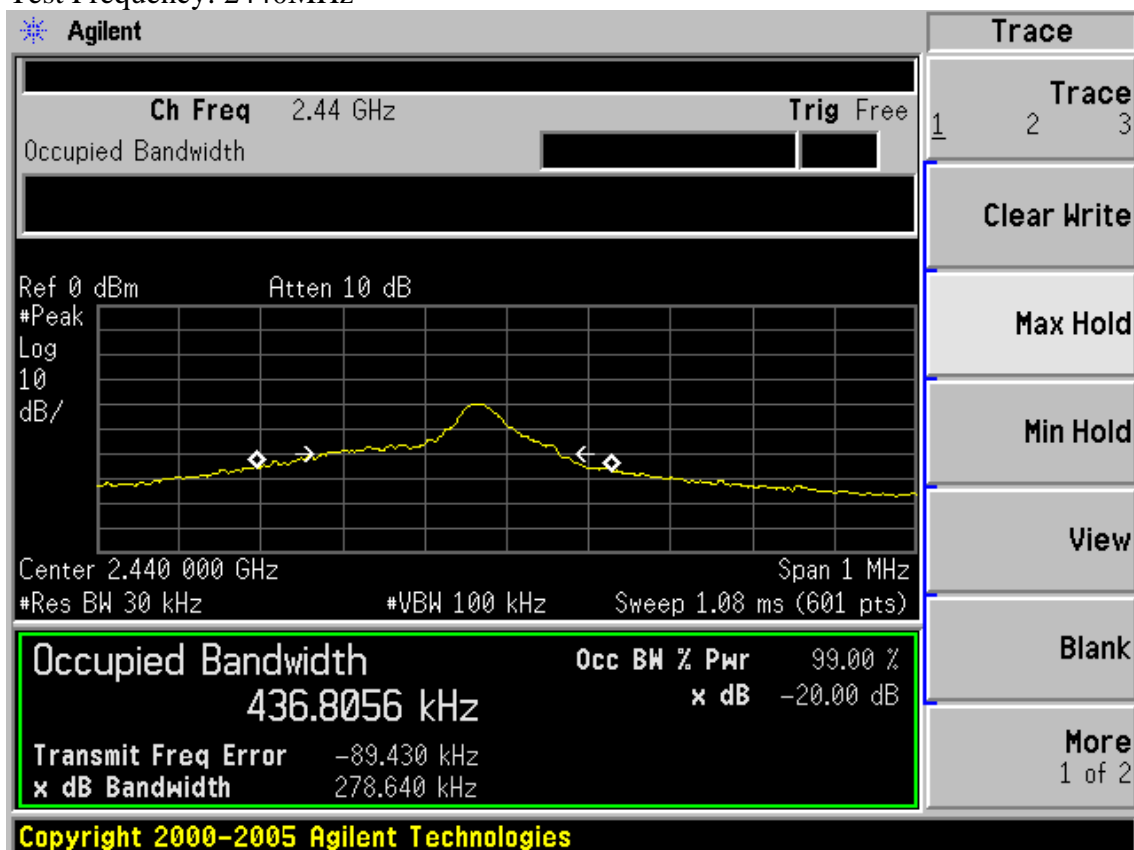
|  |                    |                     |
|--|--------------------|---------------------|
| EUT: Rock Band Wireless Pro Keyboard for Wii |                    |                     |
| M/N:96161-C (RB3)                            |                    |                     |
| Test date:2010-05-30                         | Pressure:100.4 kpa | Humidity:56 %       |
| Tested by:Paul Tian                          | Test site: RF site | Temperature : 26 °C |

| Frequency         | 20dB bandwidth<br>( KHz ) | Limit<br>(KHz) |
|-------------------|---------------------------|----------------|
| 2408              | 224.138                   | N/A            |
| 2440              | 278.640                   | N/A            |
| 2476              | 217.902                   | N/A            |
| Conclusion : PASS |                           |                |

Test Frequency: 2408MHz

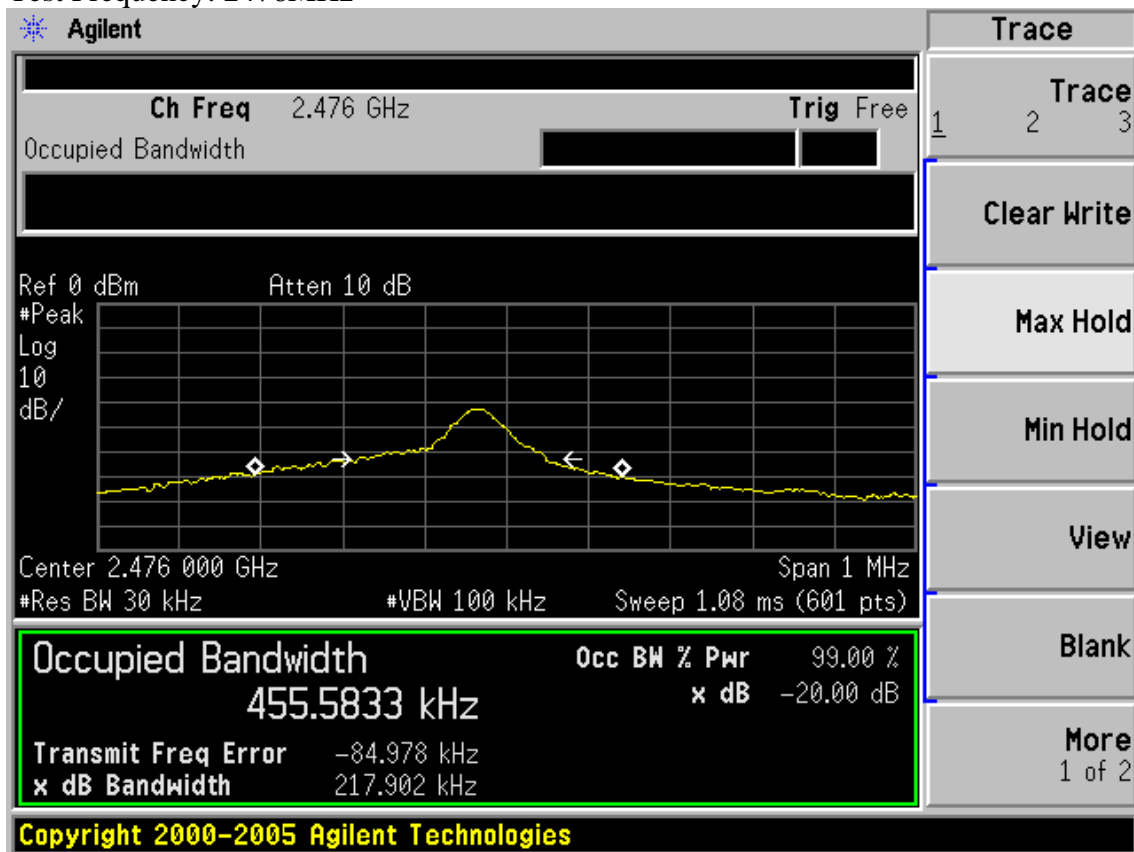


Test Frequency: 2440MHz





Test Frequency: 2476MHz



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

[ NONE ]