

# **FCC TEST REPORT**

## **for**

### **PCWEE (HOLIBANG PC MOTION CONSOLE)**

FCC ID : XG6PCWEE

Operating Frequency : 2400-2483.5 MHz

Applicant : Shanghai Yue Wei Tang Network Technology Co., Ltd.  
1F/12, NO. 470 GUIPING ROAD, SHANGHAI, CHINA

Regulation : ***FCC Part 15.247 Subpart C***

Prepared by : AOV Testing Technology Co., Ltd  
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(Tanglang Village, Xili Town, Nanshan District), China

Test Date : June 1-13, 2009

Date of Report : June 15, 2009

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## TEST REPORT DECLARATION

Applicant : Shanghai Yue Wei Tang Network Technology Co., Ltd.  
Manufacturer : Shanghai Yue Wei Tang Network Technology Co., Ltd.  
EUT Description : PCWEE (HOLIBANG PC MOTION CONSOLE)

**Test Procedure Used:**  
**FCC Part 15.247 Subpart C**

The E. U. T. listed below has been completed RFI testing by Shenzhen AOV Testing Technology Co., Ltd at the test site of Waltek Services (Shenzhen) Co., Ltd. And the Interference emissions can pass **FCC CLASS B** limitations.

The test configurations and the facility comply with the radiated and AC line conducted test site criteria in **ANSI C63.4-2003**.

Date of Test:

June 1-13, 2009

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Prepared by:



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Project Engineer

Reviewer :



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Project Manager

## 1. GENERAL INFORMATION

### 1.1 General Information

Applicant : Shanghai Yue Wei Tang Network Technology Co., Ltd.  
1F/12, NO. 470 GUIPING ROAD, SHANGHAI, CHINA

Manufacturer : Shanghai Yue Wei Tang Network Technology Co., Ltd.  
1F/12, NO. 470 GUIPING ROAD, SHANGHAI, CHINA

### 1.2 Test Facility

Test Firm : Waltek Services (Shenzhen) Co., Ltd.  
Certificated by FCC, Registration No.: 880581  
Address : 1/F, Fukangtai building, Baima Road, Songgang, Bao'an  
District, Shenzhen, Guangdong, China  
Tel : 86-755- 27553488  
Fax : 86-755- 27553868

## 1.3 Test Instrument Used

Equipment Name	Manufacturer Model	Equipment No	Internal No	Cal. Date	Due Date	Cert. No
EMC Analyzer	Agilent/ E7405A	MY45114943	W2008001	8-Aug	9-Aug	Wws200 81596
Trilog Broadband Antenne 30-3000 MHz	SCHWARZBECK MESS-ELEKTROM / VULB9163	336	W2008002	8-Aug	9-Aug	
Broad-band Horn Antenna 1-18 GHz	SCHWARZBECK MESS-ELEKTROM / VULB9163	667	W2008003	8-Aug	9-Aug	
Broadband Preamplifier 0.5-18 GHz	SCHWARZBECK MESS-ELEKTROM / BBV 9718	9718-148	W2008004	8-Aug	9-Aug	
10m Coaxial Cable with N-male Connectors usable up to 18GHz,	SCHWARZBECK MESS-ELEKTROM / AK 9515 H	-	-	8-Aug	9-Aug	
10m 50 Ohm Coaxial Cable with N-plug, individual length, usable up to 3(5)GHz, Connector	SCHWARZBECK MESS-ELEKTROM / AK 9513			8-Aug	9-Aug	
Positioning Controller	C&C LAB/ CC-C-IF			N/A	N/A	
Test Receiver	ROHDE&SCHWAR Z/ ESPI	101155	W2005001	8-Jul	9-Jul	Wws200 80942
EMI Receiver	Beijingkehuan	KH3931		8-Aug	9-Aug	
Two-Line V-Network	ROHDE&SCHWAR Z/ ENV216	100115	W2005002	8-Jul	9-Jul	Wws200 80941
10m 50 Ohm Coaxial Cable with N-plug, individual length, usable up to 3(5)GHz, Connectors	SCHWARZBECK MESS-ELEKTROM / AK 9514			8-Aug	9-Aug	
Digital Power Analyzer	Em Test AG/Switzerland/ DPA 500	V07451 3095	W2008012	8-Aug	9-Aug	Wwd20 081185
Power Source	Em Test AG/Switzerland/ ACS 500	V07451 3096	W2008013			
RF Generator	TESEQ GmbH/ NSG4070	25781	W2008008	8-Aug	9-Aug	Wws200 81890
Attenuator 6dB	TESEQ GmbH/ ATN6050	25365		8-Aug	9-Aug	Wws200 81597
AC Power Supply	TONGYUN/ DTDGC-4			8-Aug	9-Aug	Wws200 80944

## 2. MAXIMUM PEAK OUTPUT POWER

### 2.1.Rules Part No.

15.247(b)

### 2.2.Limits

The maximum peak output power measurement is 1w (30dBm).

### 2.3.Test Procedure

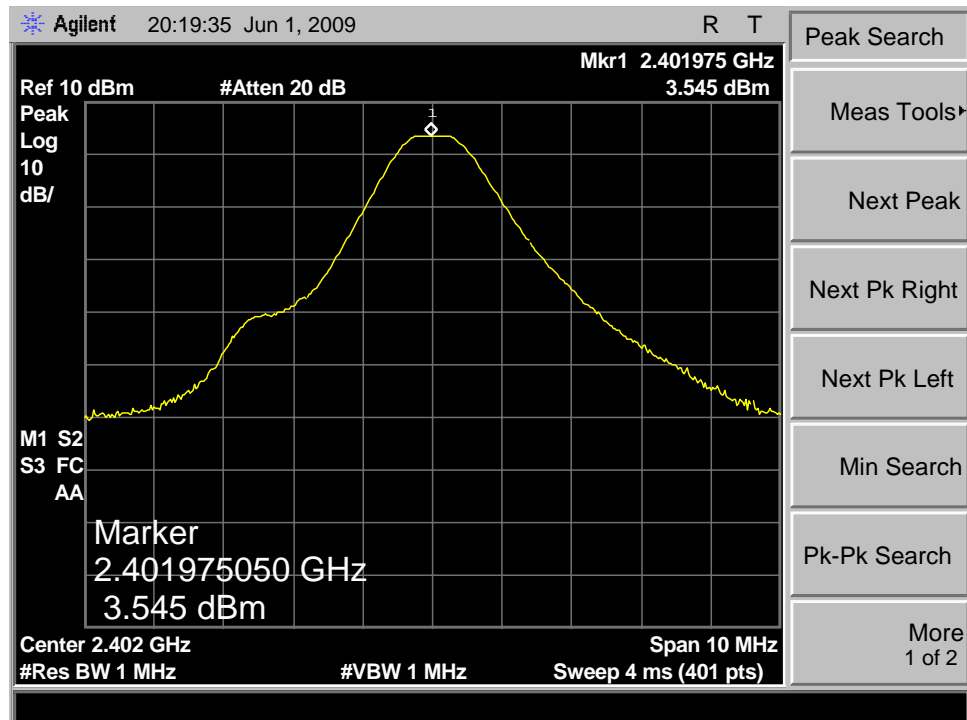
The antenna of the EUT was connected to the RF input cord of power meter with a coaxial cable, power was read directly from the meter and cable loss was added to the reading to obtain power at the EUT antenna terminal. The EUT output power was set to maximum to produce the worse case test result.

### 2.4.Test Result

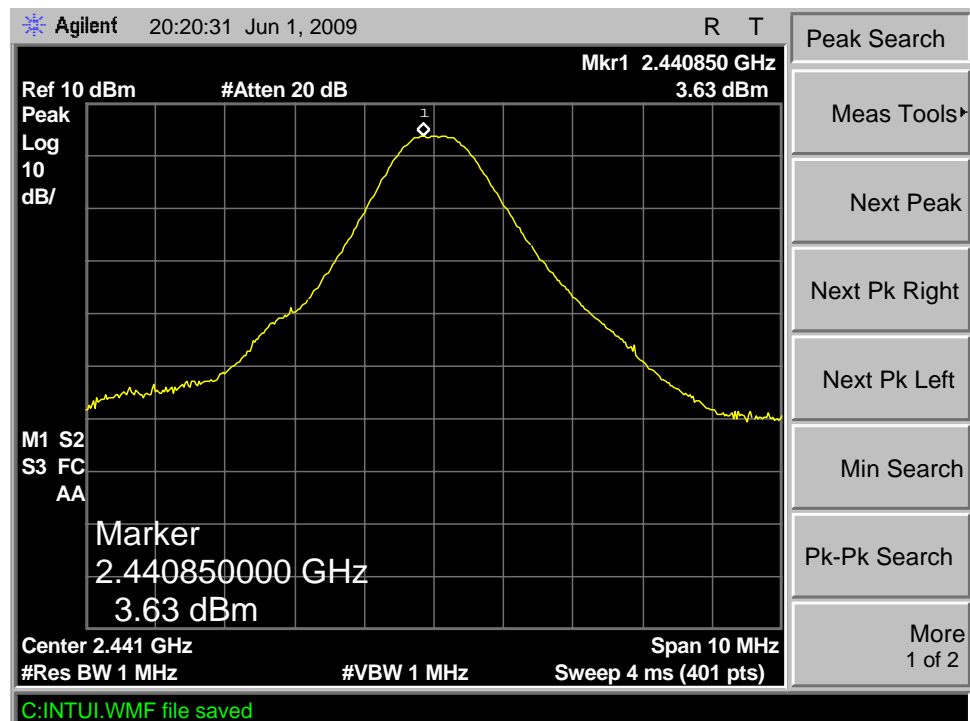
**PASS**

Channel	Frequency (MHz)	Peak output power (dBm)	Limit (dBm)
Low	2402	3.545	30
Middle	2441	3.830	30
High	2480	3.034	30

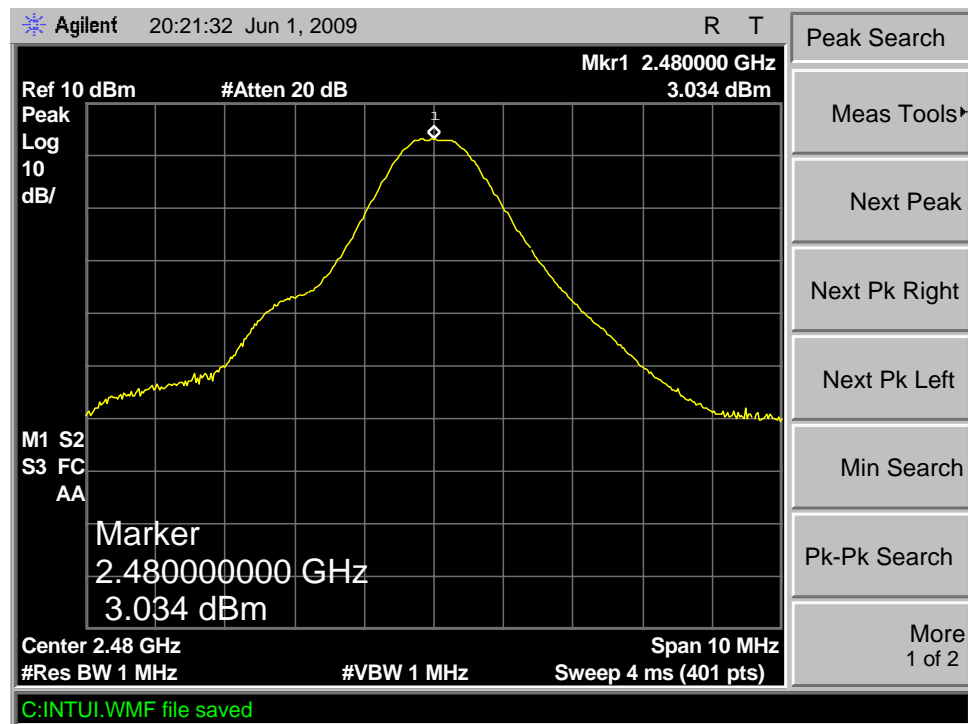
Low Channel: 2402MHz



Middle Channel: 2441MHz



High Channel: 2480MHz





### 3. HOPPING CHANNEL SEPARATION AND BANDWIDTH

#### 3.1. Test Standard

15.247(a)

#### 3.2. Limits

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater,

#### 3.3. Test Procedure

Record the response of frequency waveform when the EUT was working by a spectrum analyzer or EMI Receiver.

#### 3.4. Test Result

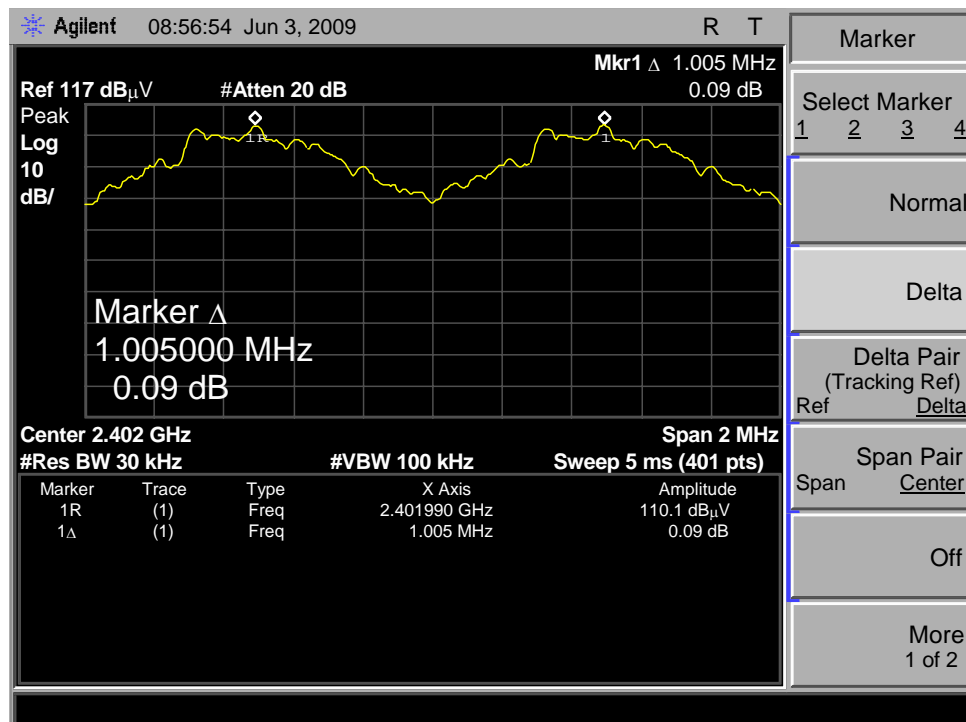
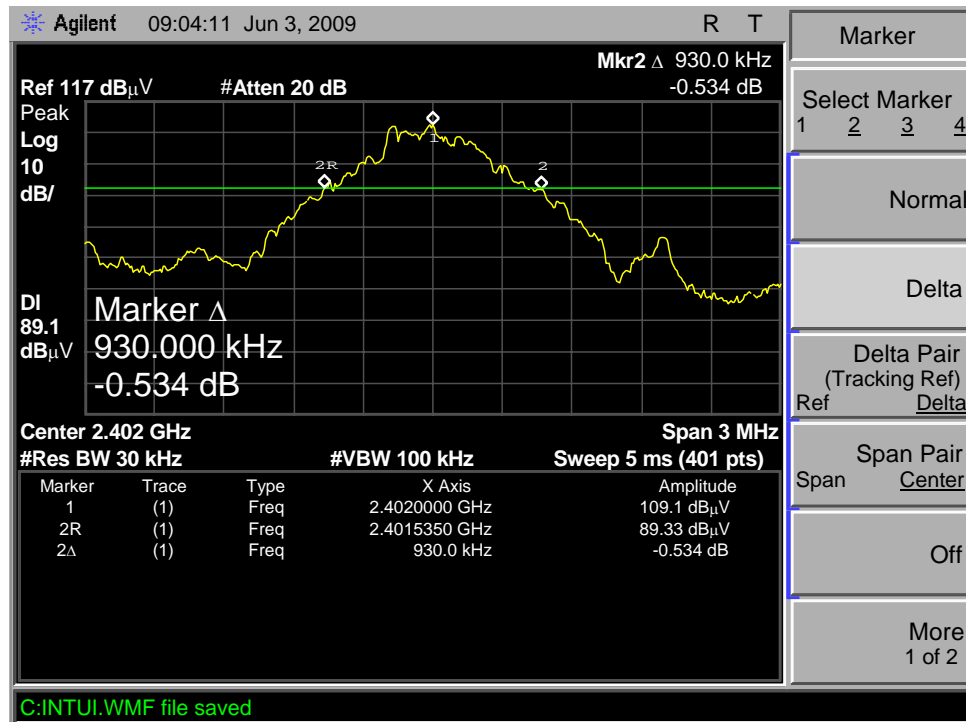
**PASS**

Channel	Frequency (MHz)	Channel Separation (MHz)
Low	2402	1.005
Middle	2441	1.000
High	2480	1.000

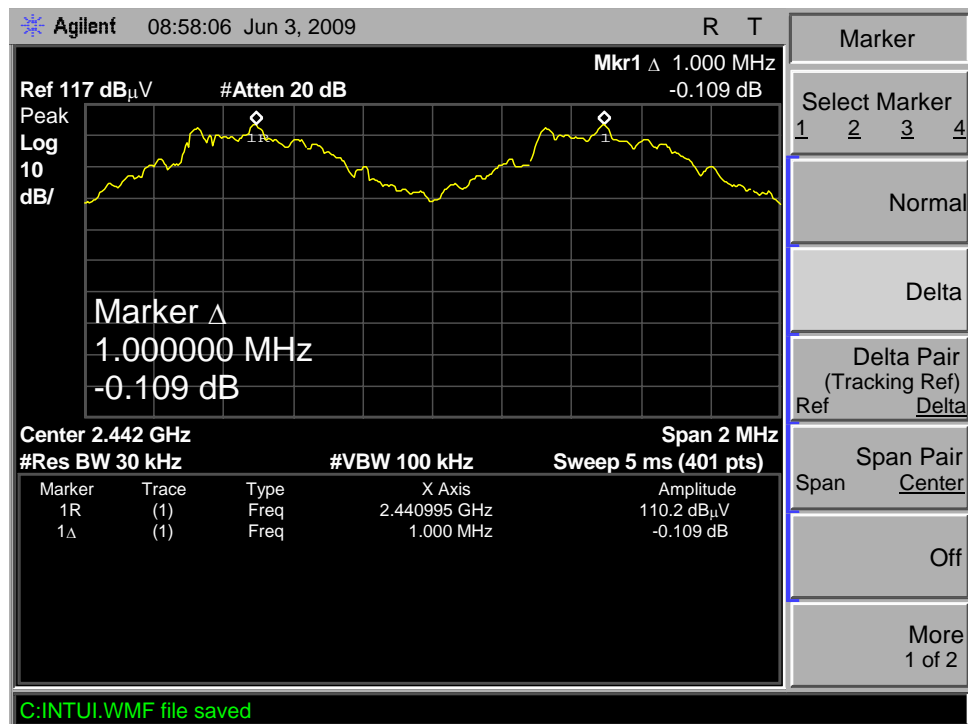
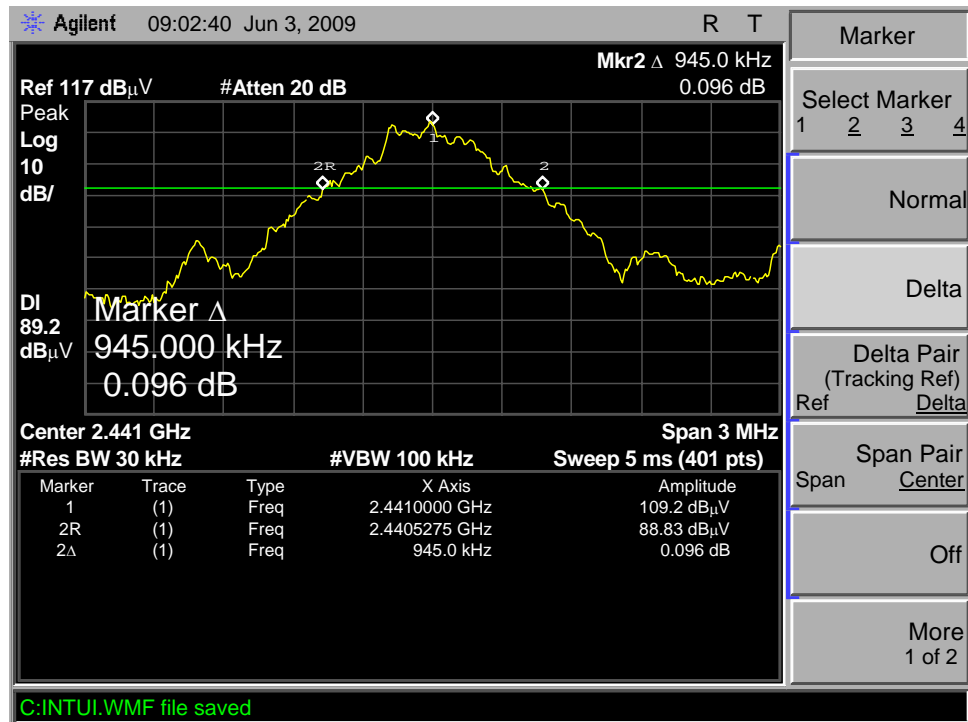
Channel Separation > 2/3 of 20dB Bandwidth

Detailed information, Please refer to the following page.

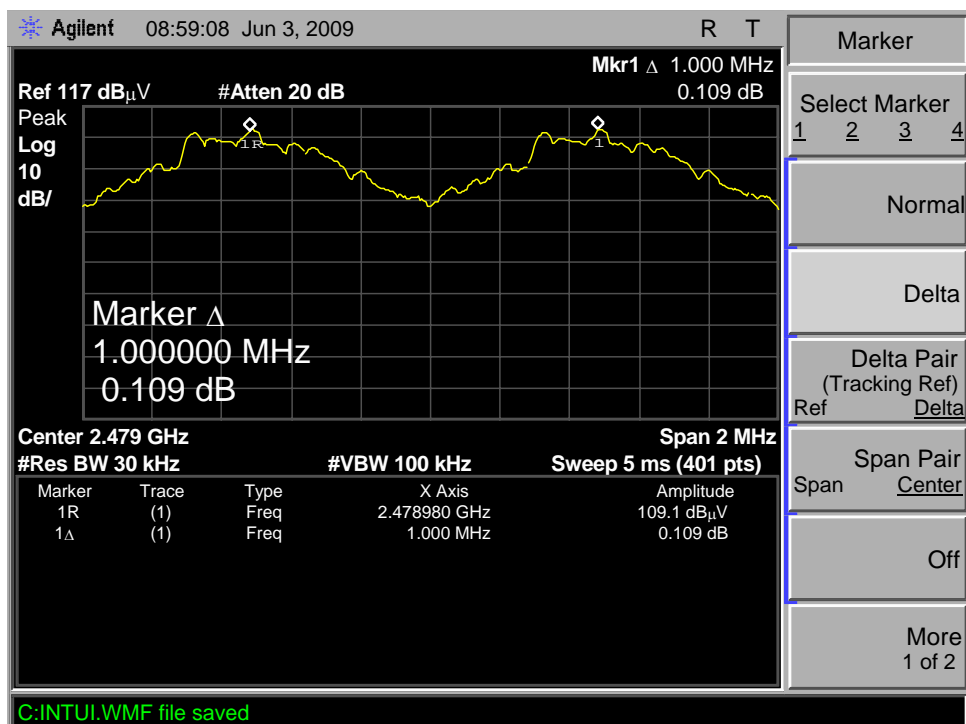
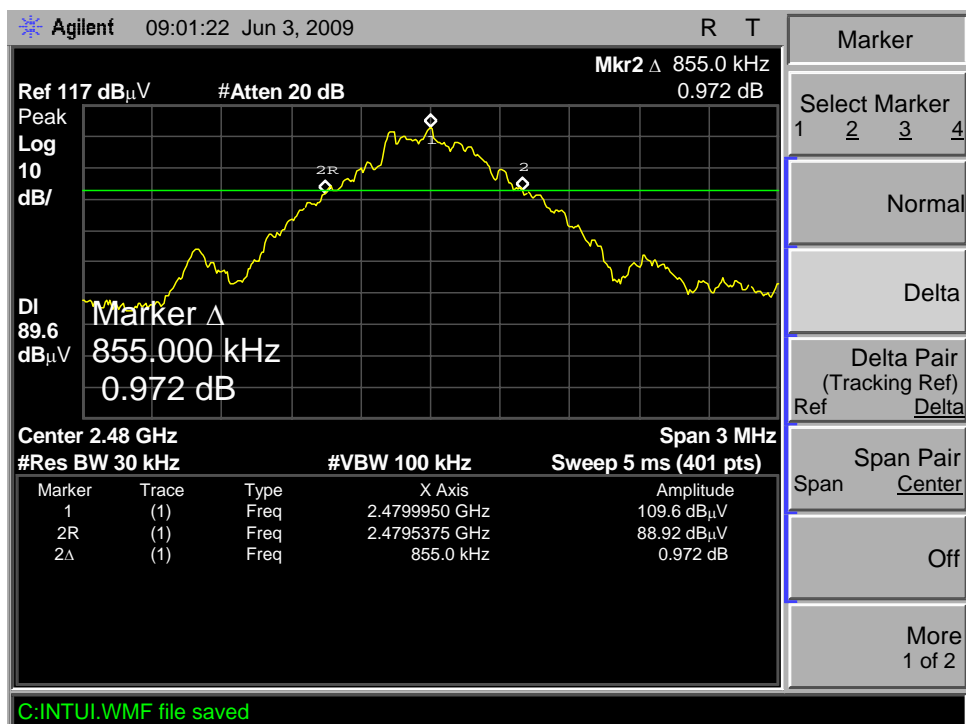
Low channel: 2402MHz



Middle Channel: 2441MHz



High channel: 2480MHz



## 4. NUMBER OF HOPPING FREQUENCY

### 4.1. Test Standard

15.247(b)

### 4.2. Limits

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels.

### 4.3. Test Procedure

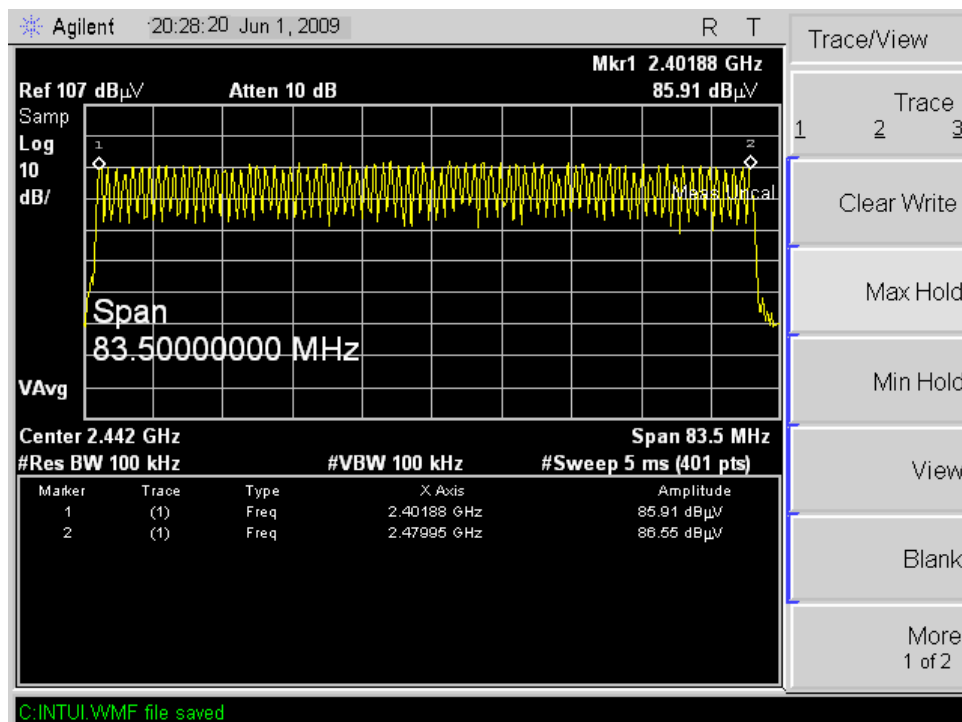
Record the respond of frequency waveform when the EUT was working by a spectrum analyzer or EMI Receiver.

### 4.4. Test Result

**PASS**

Hopping Channel is 79.

Detailed information, Please refer to the following page.



## **5. BAND EDGE**

### **5.1.Rules Part No.**

15.247(c)

### **5.2.Limits**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

### **5.3.Test Procedure**

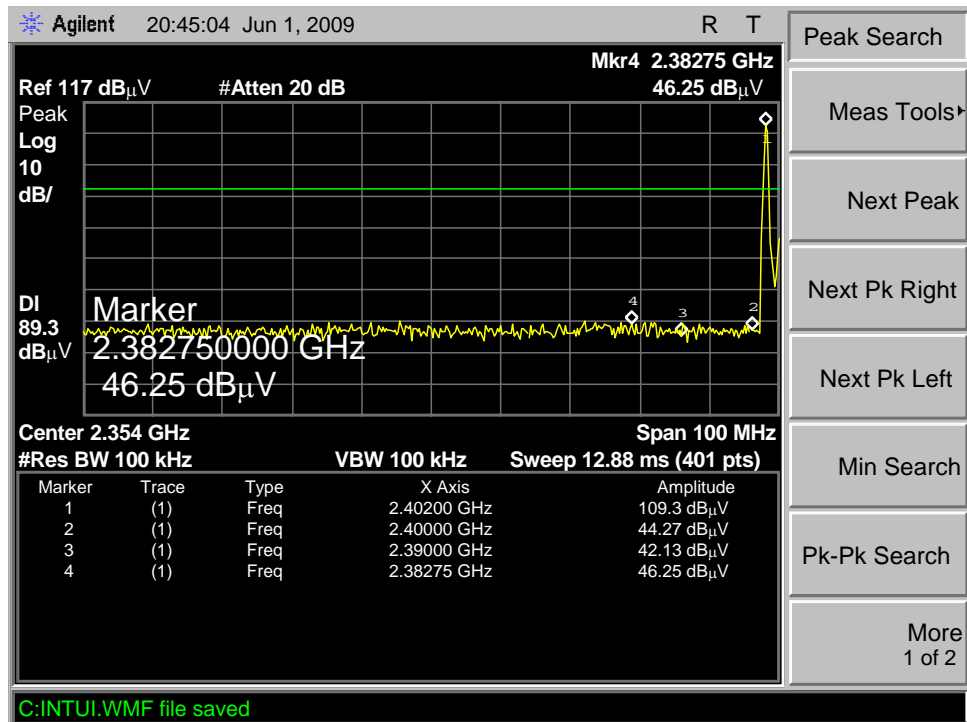
The transmitter output was connected to EMI receiver with a low lose cable, the band edge was measured and recorded.

### **5.4.Test Result**

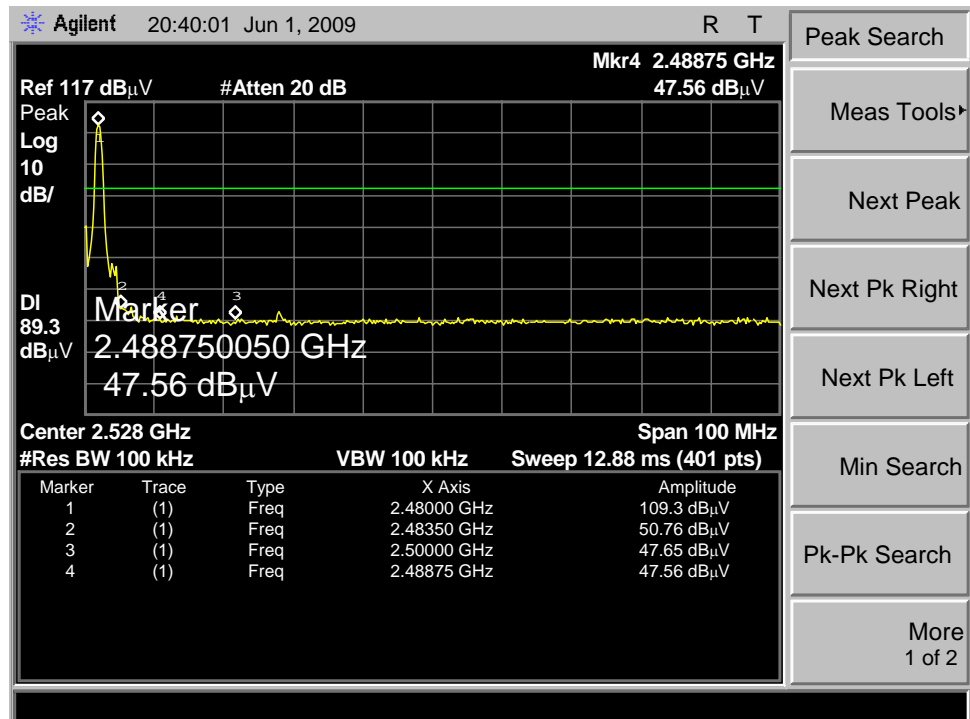
**PASS**

Detailed information, Please refer to the following page.

Low channel: 2402MHz



High channel: 2480MHz



## 6. DWELL TIME

### 6.1. Rules Part No.

15.247(a)

### 6.2. Limits

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.

### 6.3. Test Procedure

- 1, The transmitter output was connected to EMI receiver with a low loss cable, the band edge was measured and recorded;
- 2, Set EUT for 3DH1, 3DH3, 3DH5 packet transmitting mode;
- 3, 3DH5 Packet permit maximum  $1600 / 79 / 6 = 3.37$  hops per second in each channel (5 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times  $3.37 \times 31.6 = 106.6$  within 31.6 seconds
- 4, 3DH3 Packet permit maximum  $1600 / 79 / 4 = 5.06$  hops per second in each channel (3 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times  $5.06 \times 31.6 = 160$  within 31.6 seconds.
- 5, 3DH1 Packet permit maximum  $1600 / 79 / 2 = 10.12$  hops per second in each channel (1 time slot RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times  $10.12 \times 31.6 = 320$  within 31.6 seconds.
- 6, 3DH5 Dwell time= $3.37 \times 31.6 \times \text{Pulse time}$   
3DH3 Dwell time= $5.06 \times 31.6 \times \text{Pulse time}$   
3DH1 Dwell time= $10.12 \times 31.6 \times \text{Pulse time}$



## 6.4. Test Result

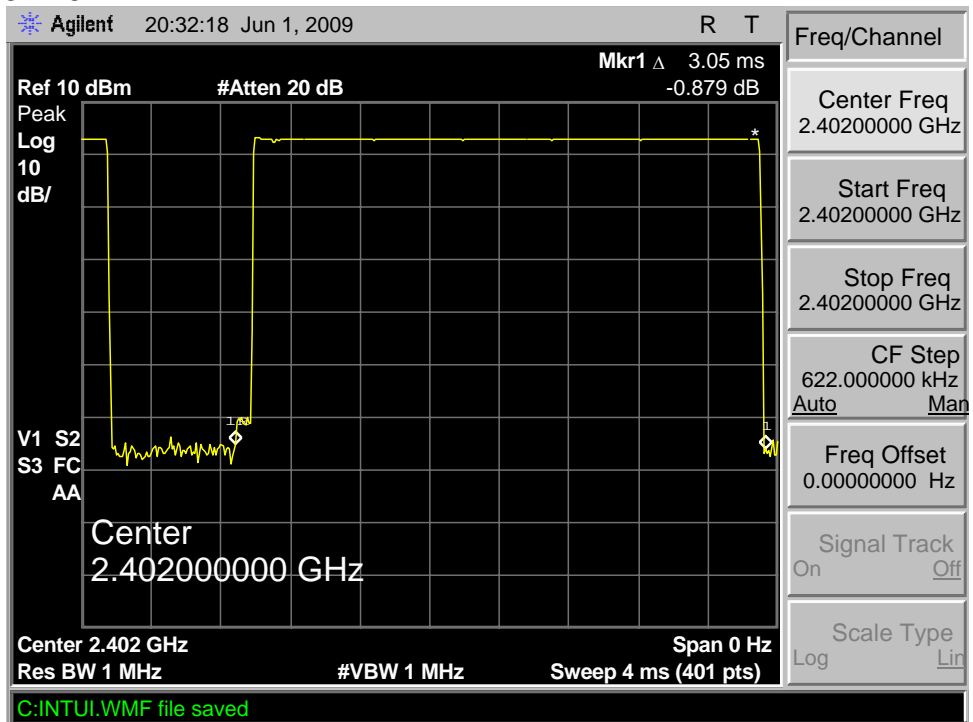
### PASS

Channel	Mode	Dwell Time (ms)	Limit (sec)
Low 2402 MHz	3DH5	324.8	0.4
	3DH3	286.5	0.4
	3DH1	171.5	0.4
Middle 2441 MHz	3DH5	325.9	0.4
	3DH3	286.5	0.4
	3DH1	172.7	0.4
High 2480 MHz	3DH5	326.1	0.4
	3DH3	287.8	0.4
	3DH1	166.7	0.4

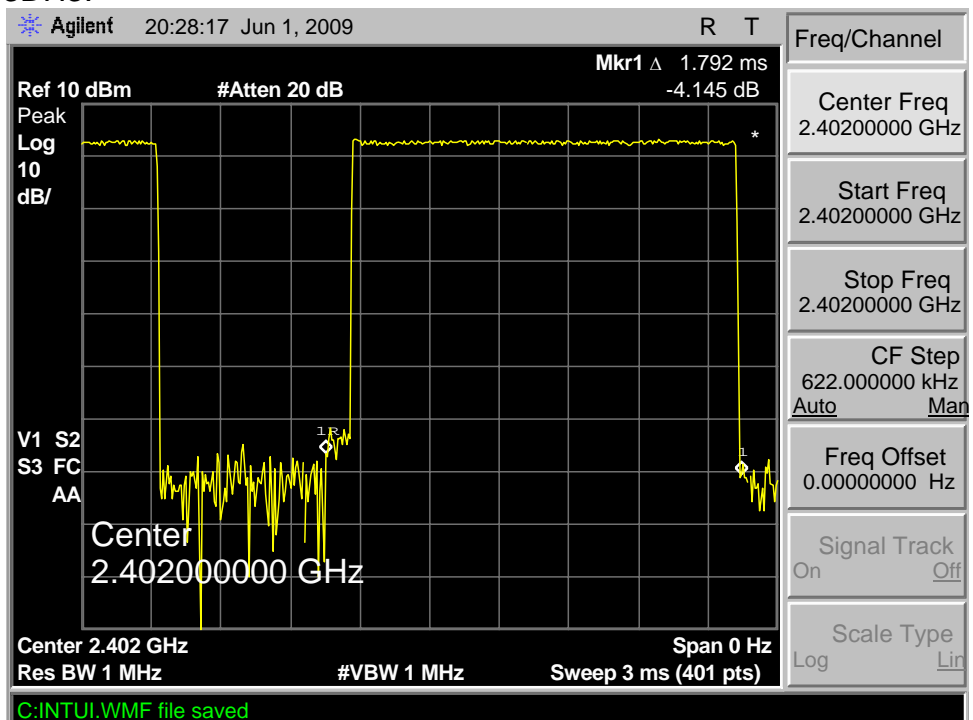
Detailed information, Please refer to the following page.

Low channel: 2402MHz

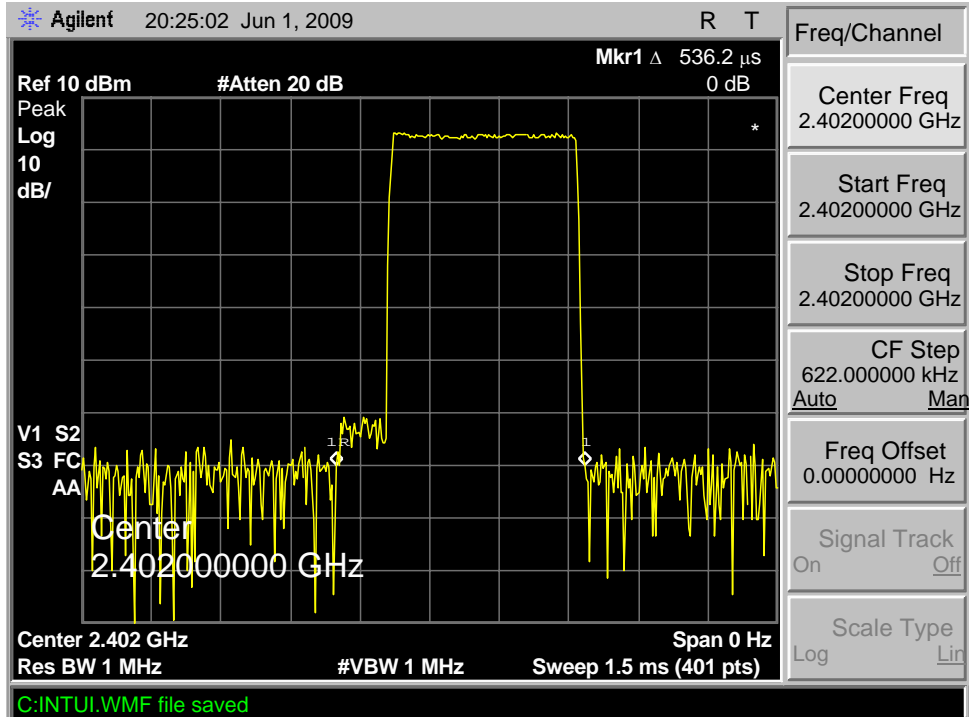
3DH5:



3DH3:

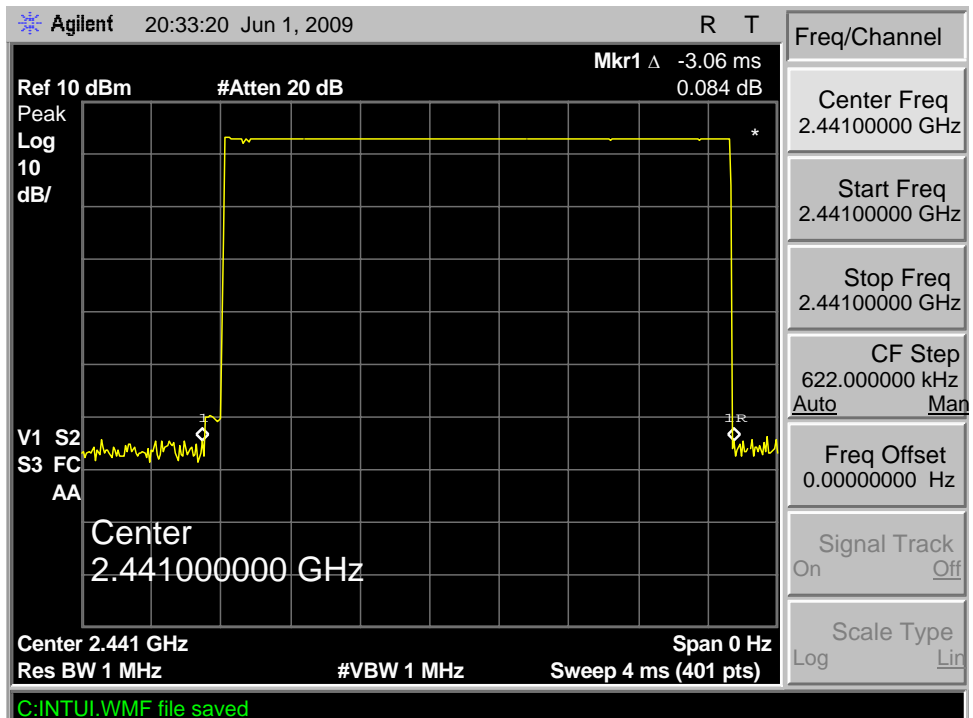


3DH1:

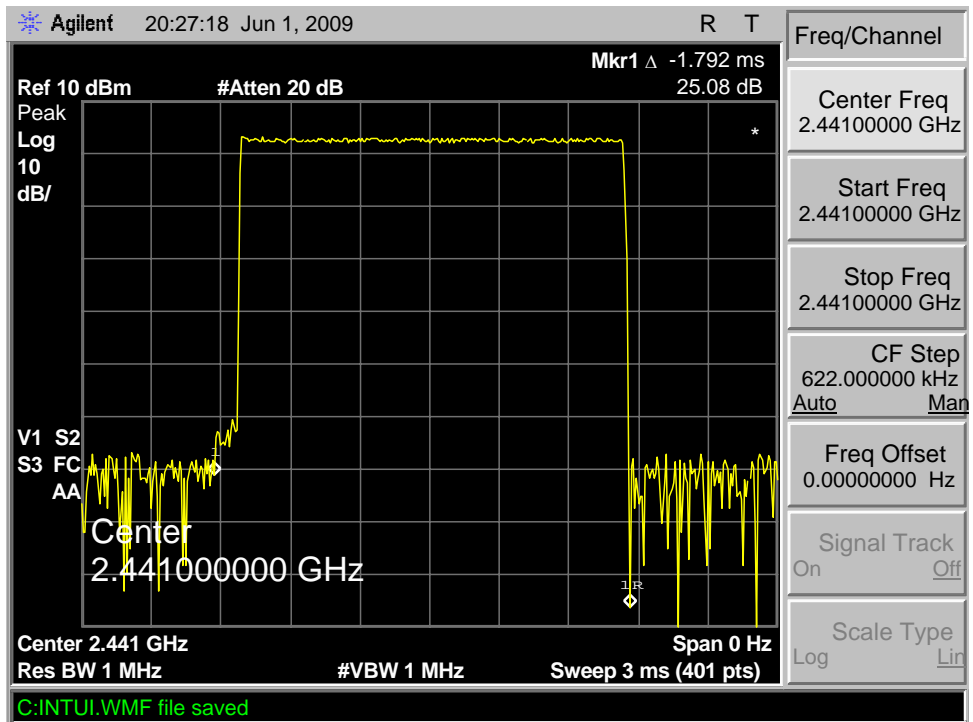


Middle channel: 2441MHz

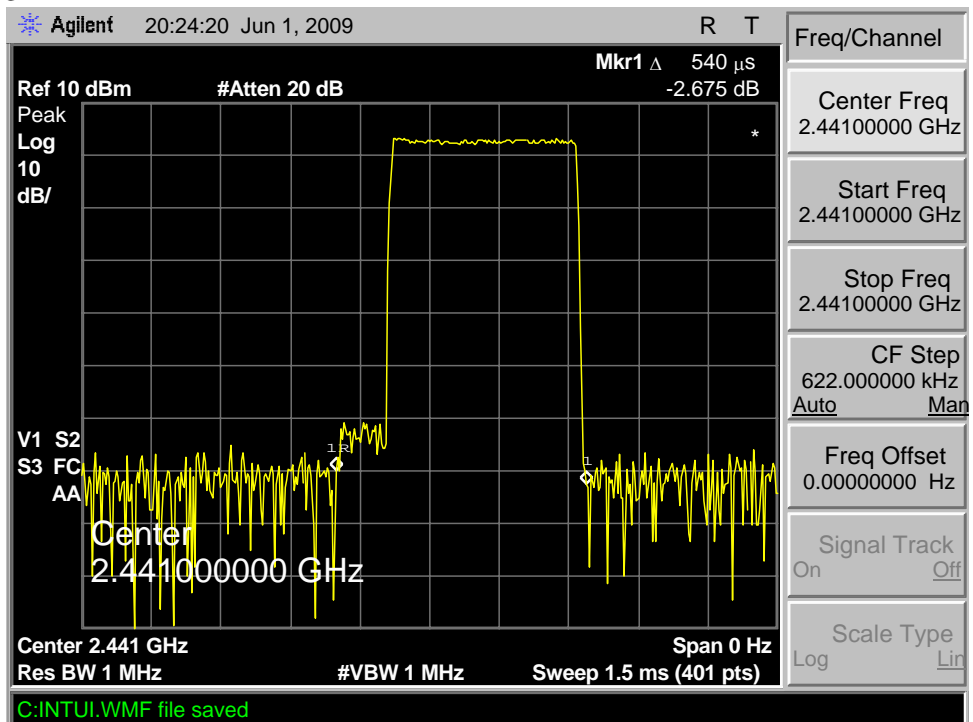
3DH5:



## 3DH3:

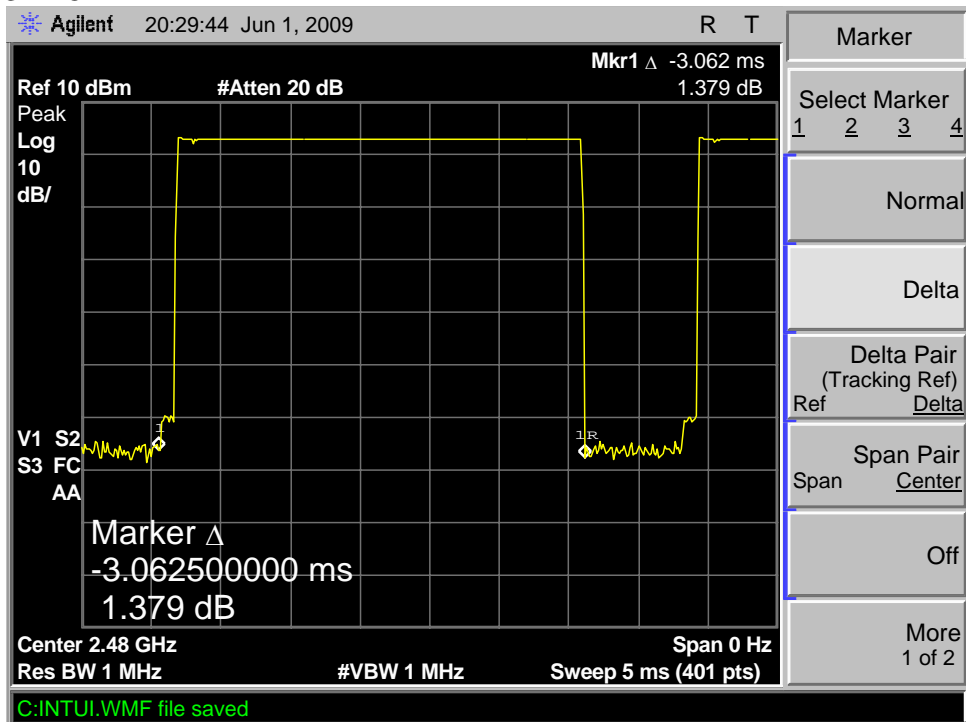


## 3DH1:

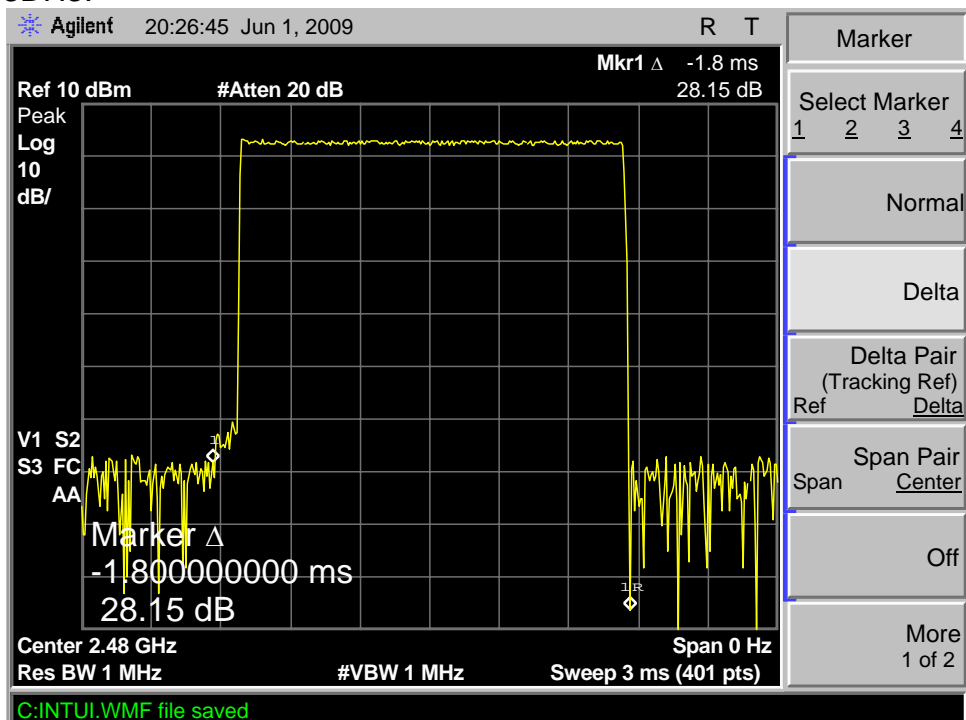


High channel: 2480MHz

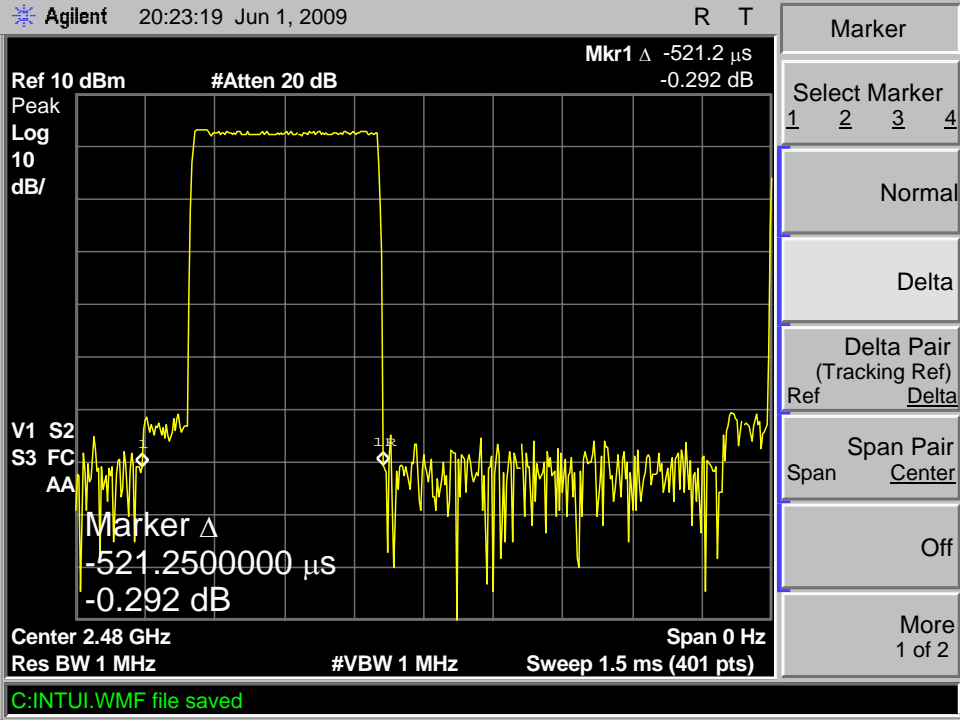
3DH5:



3DH3:



## 3DH1



## 7. RADIATION INTERFERENCE

### 7.1.Rules Part No.

15.209

### 7.2.Limits

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency of (MHz)	Emission Field Strength (microvolts/meter)
30 - 88	100 (40)
88 - 216	150 (43.5)
216 - 960	200 (46.0)
Above 960	500 (54.0)

### 7.3.Test Procedure

#### **ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES:**

The EUT is placed on a turned table that is 0.8 meter above the ground. The turned 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 that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (log periodical antenna and horn antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz.

The spectrum was scanned from 30 MHz to 10th harmonic of the fundamental.

### 7.4.Test Result

#### **PASS**

The frequency range from 30MHz to 25GHz is investigated.

Detailed information, Please refer to the following page.

**Low Channel: 2402MHz**

Horizontal:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
35.2625	30.82	---	40.00	9.18
70.9535	30.30	---	40.00	9.70
332.9536	34.52	---	46.00	11.48
377.8480	33.88	---	46.00	12.12
899.9576	32.58	---	46.00	13.42
1304.6230	41.89	37.11 (AV)	54.00	16.89

Vertical:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
35.3866	30.88	---	40.00	9.12
59.1052	30.42	---	40.00	9.58
95.6485	31.56	---	43.50	11.94
236.7927	32.32	---	46.00	13.68
757.6200	35.30	---	46.00	10.70
1494.4550	39.91	35.90 (AV)	54.00	18.10

**Middle Channel: 2441MHz**

Horizontal:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
35.2625	28.73	---	40.00	11.27
82.5257	29.81	---	40.00	10.19
189.1074	34.87	---	43.50	8.63
332.9534	33.97	---	46.00	12.03
757.6200	33.83	---	46.00	12.17
1300.8580	41.89	36.09 (AV)	54.00	17.91

Vertical:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
47.3686	29.51	---	40.00	10.49
143.7759	28.11	---	43.50	15.39
189.1074	32.69	---	43.50	10.81
377.8480	34.22	---	46.00	11.78
615.7743	33.44	---	46.00	12.56
1494.4550	39.76	34.88 (AV)	54.00	19.12



**High Channel: 2480MHz**

Horizontal:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
35.2625	29.02	---	40.00	10.98
55.3825	28.37	---	40.00	11.63
189.1074	33.28	---	43.50	10.22
902.2027	34.04	---	46.00	11.96
332.9534	32.92	---	46.00	13.08
1772.3270	46.85	42.08 (AV)	54.00	11.92

Vertical:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
35.3866	29.87	---	40.00	10.13
77.5685	30.32	---	40.00	9.68
143.7750	29.16	---	43.50	14.34
757.6200	34.70	---	46.00	11.30
860.3217	35.40	---	46.00	10.60
1304.6230	38.91	31.87 (AV)	54.00	22.13

## 8. RESTRICTED BANDS OF OPERATION

Section 15.205:

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
<sup>1</sup> 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
2. 17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
2. 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 –	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.52525	2655 – 2900	22.01 – 23.12
8.41425 – 8.41475	156.7 – 156.9	3260 – 3267	23.6 – 24.0
12.29 – 12.293	162.0125 – 167.17	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	167.72 – 173.2	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	240 – 285	3600 – 4400	( <sup>2</sup> )
13.36 – 13.41	322 – 335.4		

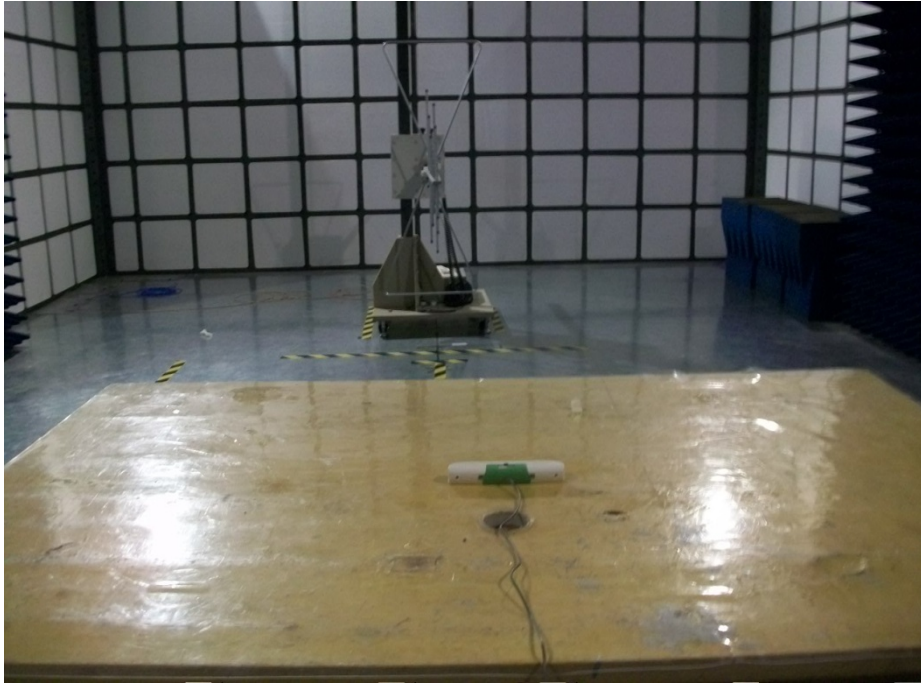
<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

## 9. PHOTOGRAPH OF TEST

### Radiated Emission

Below 1GHz



Above 1GHz

