

## FCC Test Report

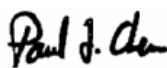
On Model Name: Back Mirror Wireless Player  
Model Numbers: VM-5602&VM-5602B  
Trade Marks: Original  
FCC ID: UBOVM5602B

Prepared for  
Global Elite Electronic Company Limited

According to FCC Section 15.247  
*Hopping Frequency Spread Spectrum Device*

Test Report #: GLO-0605-5435-FCC\_247  
Prepared by: Ravin Su  
Reviewed by: Harry Zhao  
QC Manager: Paul Chen

Test Report Released by:



Paul Chen

2006, June 9

Date

### **List of Attached Files**

<b>Exhibit Type</b>	<b>File Description</b>	<b>File Name</b>
<i>Test Report</i>	<i>Test Report</i>	<i>UBOVM5602B _15.247 Test report.pdf_Rev4</i>
<i>Operation Description</i>	<i>Technical Description</i>	<i>UBOVM5602B _operation description.pdf</i>
<i>BT Modual Specification</i>	<i>BT Modual Specification</i>	<i>UBOVM5602B _BT Modual Spec.pdf</i>
<i>External Photos</i>	<i>External Photos</i>	<i>UBOVM5602B External Photos_Rev1</i>
<i>Internal Photos</i>	<i>Internal Photos</i>	<i>UBOVM5602B _Internal Photos_Rev2</i>
<i>Block Diagram</i>	<i>Block Diagram</i>	<i>UBOVM5602B _Block_Rev1 Diagram.pdf</i>
<i>Schematics</i>	<i>Circuit Diagram</i>	<i>UBOVM5602B _Schematics.pdf</i>
<i>ID Label/Location</i>	<i>Label Artwork and Location</i>	<i>UBOVM5602B _Label &amp; Location.pdf_Rev1</i>
<i>User Manual</i>	<i>User Manual</i>	<i>UBOVM5602B _User Manual.pdf_Rev3</i>
<i>Test setup photos</i>	<i>Test setup photos</i>	<i>EBOVM5602B_Test Setup Photos_Rev1.pdf</i>

### **Test Location**

*Tests performed at ShenZhen Electronic Product Quality Testing Center in a Certified ANSI Semi-Anechoic Chamber and Shielded Room.*

*Test Site Location: Electronic Testing Building Shahe Road, Xili,  
Nanshan District Shenzhen 518055, P.R.China.*

*Tel: 86-755-26703698*

*Fax: 86-755-26627238*

*Registration Number: 261032*

### **Accreditation Bodies**

*EMC Compliance Management Group is a fully accredited Test Laboratory for ITE, ISM and Telecommunications Products.*



*In compliance with the site registration requirements of Section 2.948 of the FCC Rules to perform EMI measurements for the general public.*



*Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code # 200068-0.*

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## **ADMINISTRATIVE DATA**

*Test Sample* : *Back Mirror Wireless Player*

*Model Name* : *VM-5602B / VM-5602*

*FCC ID* : *UBOVM5602B*

*Model Tested* : *VM-5602B*

*Serial Number* : *Engineering Sample*

*Date Tested* : *2006, June 5<sup>th</sup> to 6<sup>th</sup>*

*Applicant* : *Global Elite Electronic Company Limited*  
*5F South m,Building No.1 Jinxiang*  
*Buildings ,South Xinzhou Road,Futian District*  
*Shenzhen*

*Telephone* : *86 755-83306746*

*Fax* : *86 755-83306747*

*Manufacturer* : *Global Elite Electronic Company Limited*  
*5F South m,Building No.1 Jinxiang*  
*Buildings ,South Xinzhou Road,Futian District*  
*Shenzhen*

## **EUT Description**

*Global Elite Electronic Company Limited, model tested VM-5602B (referred to as the EUT in this report) is a Back Mirror Wireless Player.*

*The EUT including two modules that are FM transmitter and Bluetooth, which equipped with AUX/USB/SD card input jack. The FM module selects frequency(from 88M-108M) to transmit, then searches the car FM radio to receive concern frequency. The other is bluetooth cell phone handsfree double amplifying. Details on electrical reference is listed as below:*

*FM Transmitter Module:*

- a. frequency range : 88.1M-107.9M*
- b. frequency response: 125Hz-15KHz*
- c. transmission power:0.5uW*
- d. effective distance:>1m*
- e. signal/noise ratio:>-46db*

*Bluetooth Module:*

- a. frequency range:2.4G automatic frequency-hopping*
- b. 1.2 Transmission standard*

*Voltage: car power source 12V-24V*

***EUT Model Differences***

*The difference between models of VM-5602B and VM-5602 is that VM-5602B with Bluetooth function and VM-5602 without Bluetooth function.*

## Test Summary

The Electromagnetic Compatibility requirements on tested model tested VM-5602B for this test is stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment Under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.

VM-5602B has been found to conform to the following parts of the 47 CFR FCC as detailed below:

Part 15	Requirement	Result Pass/Fail	Comments
15.15(b)	General technical requirements	Pass	The product contains no user accessible controls that increase transmission power above allowable levels.
15.19	Labeling requirement	Pass	The label is shown in the label exhibit.
15.21	Information to user	Pass	Information to the user is shown in the instruction manual exhibit.
15.27	Special accessories	Pass	No special accessories are required for compliance.
15.203	Antenna requirement	Pass	The antenna is soldered to the transmitter board, which is not used accessible, and there is no external antenna connection
15.205(a)	Radiated Emissions in Restricted Bands	Pass	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
15.209(a)	Radiated Emissions limits, general requirements	Pass	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
15.247 (c)	Out of band & Band Edge measurements	Pass	The unit complies with the band edge emissions limits of 15.247.

Continue on to next page...



15.247(a)(1)(iii)	20 dB Bandwidth	Pass	The unit complies with the 20dB bandwidth limits
15.247(b)(1)	Maximum peak Output Power	Pass	The unit complies with the peak power limits of 15.247.
15.247(a)(1)	Hopping Channel Carrier Frequency Separation (>25 KHz)	Pass	The unit complies with Hopping Frequency Separation the limits of 15.247.
15.247(a)(1)(iii)	Number of the Hopping Frequency (channels)	Pass	The unit complies with the Number of the Hopping Frequency limits of 15.247.
15.247(a)(1)(iii)	Average Channel Occupancy Time (<0.4s)	Pass	The unit complies with Average Channel Occupancy Time (<0.4s) limits of 15.247.
15.247(e)	RF exposure	Pass	The unit complies with the limits of 1.1307.

*This report an application for Certification of Transmitter operation pursuant to FCC part 15.247, code of federal regulations 47. The product covered by this report is the VM-5602B. This report is designed to demonstrate the compliance of this device with the requirements outlined in 47 CFR Part 15 using the methods in CFR 47 Part 2.*

### **Test Mode Justification**

*This device complies with Part 15 of the FCC rules. Operations is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.*

.

### **Equipment Modification**

*Any modifications installed previous to testing by Global Elite Electronic Company Limited will be incorporated in each production model sold or leased in United States.*

*There were no modifications for this EUT intended for grant.*

### ***Test System Details***

EUT				
Model Name:	VM-5602B / VM-5602			
Tested Model Name:	VM-5602B			
Serial Number:	Engineering Sample			
Description:	Back Mirror Wireless Player			
Manufacturer:	Global Elite Electronic Company Limited			
Car Power Cable Description				
From	To	Length (Meters)	Shielded (Y/N)	Ferrite Loaded (Y/N)
EUT	CAR	1.5	N	N

## **Test Methodology**

*Testing was performed according to the measurement guidelines specified in FCC Public Notice DA00-705.*

*Radiated emissions testing are performed according to the procedures specified in ANSI C63.4-2003.*

**Frequency Range investigated:** 30 MHz to 24 GHz

**Measurement Distance:** 3 meter at 30 MHz to 2 GHz  
3 Meter at 2 GHz to 25 GHz

**EUT Power Source:** Car Powr source DC 12-24V

**Emission Maximization:** Antenna (1m to 4m) height and  
Horizontal/Vertical polarization  
360-degree turntable rotated and EUT  
rotated three orthogonal axes.

**Temperature:** 25°C

**Humidity:** 45%

**Air Pressure:** 1010 hpa

## 1. FCC 15.247 (b) (1) Maximum Peak Output Power

### Peak Out put Power Limit:

Frequency MHz	Channels	Types of Devices	Power
2400-2483.5	>= 75	Hopping	1 Watt

### Test Procedure:

Remove the antenna from the EUT and then connect the transmitter output to the power meter via a suitable attenuator. Set the EUT transmitting continuously to each of low, middle, and high frequency.

### Test Data:

Channel	Frequency (MHz)	Reading (dBm)	Attenuation Factor (dB)	Corrected Reading (dBm)	Limit	Result
Low	2402	-28.9	30	1.1	1W (30dBm)	Pass
Middle	2441	-28.7	30	1.3	1W (30dBm)	Pass
High	2480	-29.1	30	0.9	1W (30dBm)	Pass

### Test Equipment List:

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Power Meter	HP	436A	2347A17569	12/01/05	12/01/06
Power Sensor	HP	8484A	1635A01630	12/01/05	12/01/06
Attenuator	MFR	M3933/10-5	N/A	N/A	N/A

**Test Result:** EUT Pass, Meets Requirement.

## 2. FCC 15.247 (a) (1) Hopping Channel 20 dB Bandwidth

### Test Procedure:

- The center frequency of the analyzer was set to the hopping channel under investigation.
- The antenna port of the EUT was connected to the input of a spectrum analyzer.
- Analyzer RBW > 1% of the 20dB bandwidth.  
VBW > RBW or VBW = RBW
- Span > 3 times the 20dB bandwidth.
- Max hold, peak detection.

### Test Results:

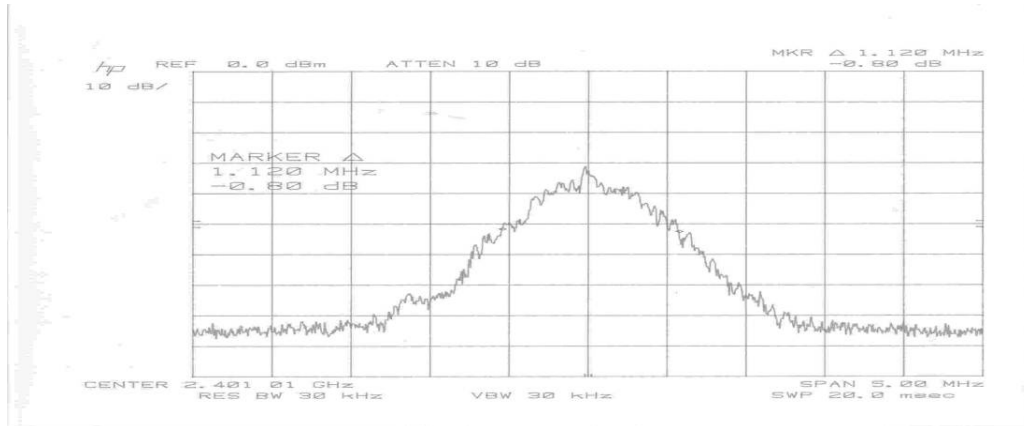
Channel	Frequency (MHz)	20 dB Bandwidth
Low	2402	1.12 MHz
Mid	2441	1.28 MHz
High	2480	1.26 MHz

### Test Equipment List:

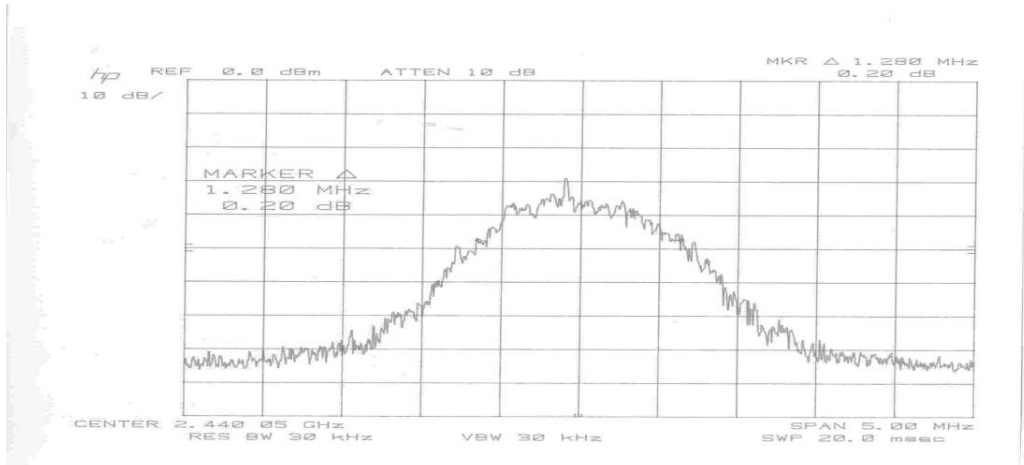
Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Spectrum Analyzer	HP	8566B	2410A00224	12/01/05	12/01/06
Quasi Peak Adapter	HP	85650A	3145A01658	12/01/05	12/01/06
Plotter	HP	7470A	2308A27405	No Cal required	No Cal required

## Plots of 20dB Bandwidth

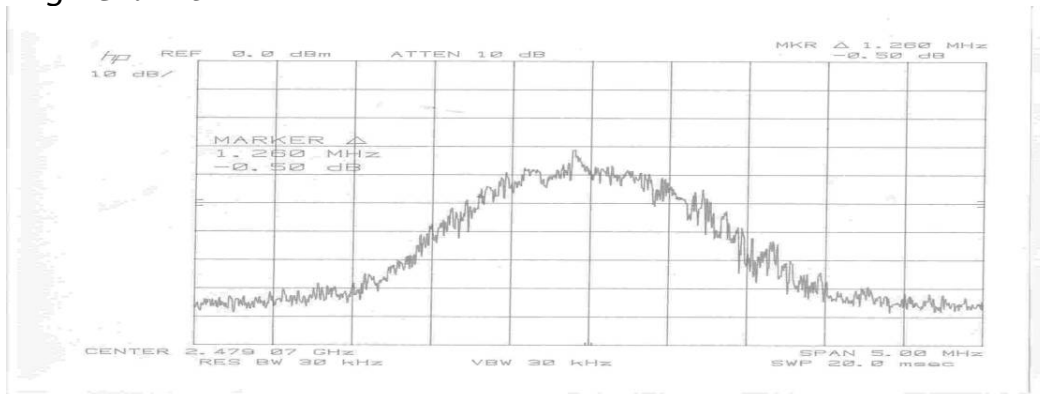
### Low Channel:



### Mid Channel:



### High Channel:



### 3. FCC 15.247 (a) (1) (iii) Hopping Channel Carrier Frequency Separation

#### **Carrier Frequency Separation Limit:**

According to 15.247(a)(1), frequency hopping systems operating in the 2400 – 2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 KHz or 2/3 of the 20dB bandwidth, whichever is greater, provided the systems operate with an output power no greater than 125mW (21 dBm).

#### **Test Procedures:**

- Enable the hopping function for the EUT.
- Set analyzer's span wide enough to capture the peaks of two adjacent channels.
- Set RBW > 1% of the span, VBW = RBW, Max peak hold.
- Using the Delta Marker function to determine the separation between the peaks of the adjacent channels.

#### **Test Results:**

Channel	Hopping Frequency Separation (MHz)	2/3 20 dB Bandwidth (MHz)	Result
Low	1.00	0.85	Pass
Mid.	1.00	0.85	Pass
High	0.99	0.85	Pass

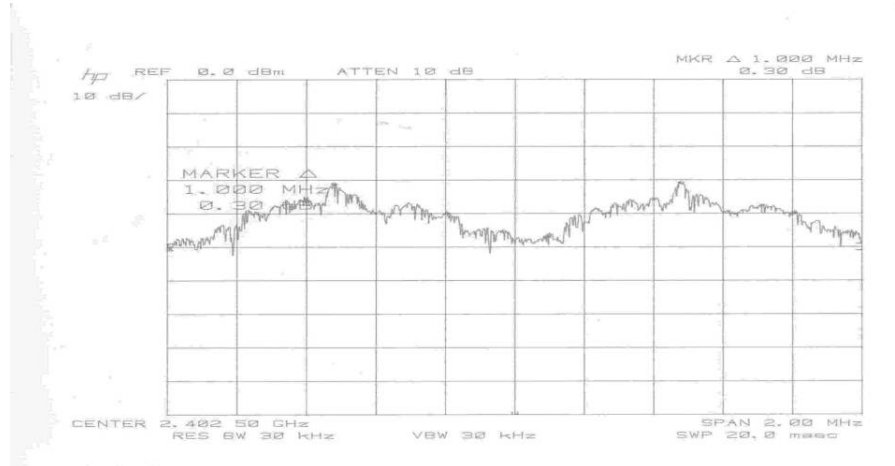
**Note:** The EUT's output power is 1.3 dBm.

#### **Test Equipment List:**

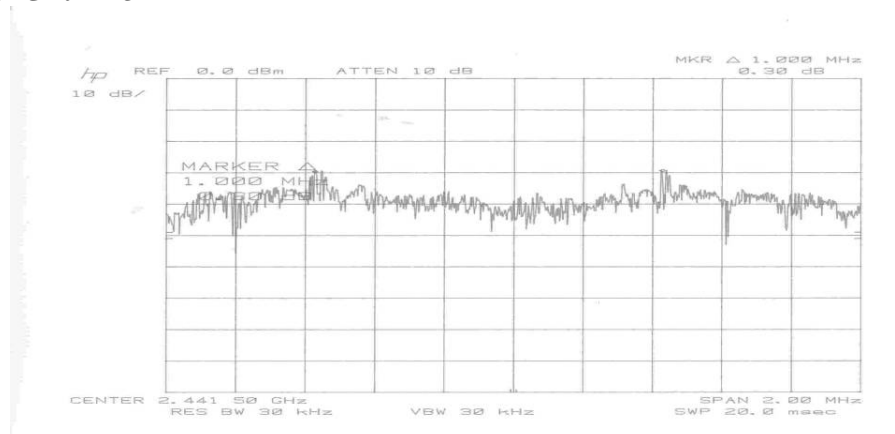
Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Spectrum Analyzer	HP	8566B	2410A00224	12/01/05	12/01/06
Quasi Peak Adapter	HP	85650A	3145A01658	12/01/05	12/01/06
Plotter	HP	7470A	2308A27405	No Cal required	No Cal required

## Plots of Channel Separation:

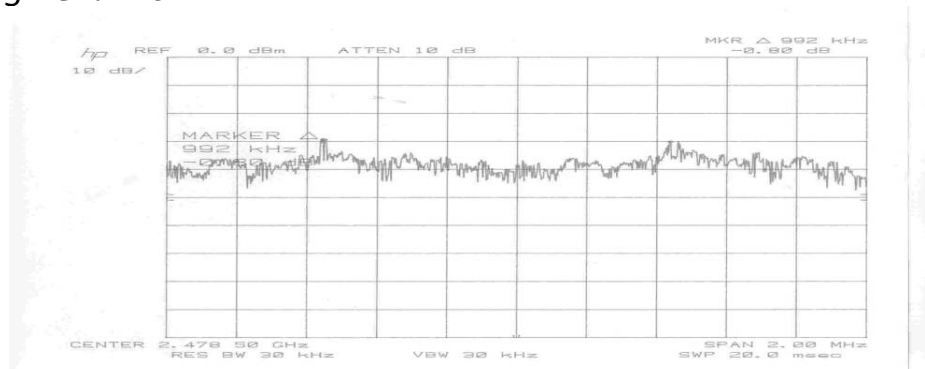
### Low Channel:



### Mid Channel:



### High Channel:





#### 4. FCC 15.247 (a) (1) (iii) Number of Hopping Frequencies

##### **Limit for Number of Hopping Frequencies:**

According 15.247(a)(1)(iii), frequency hopping systems in 2400 – 2483.5 MHz shall use at least 15 channels.

##### **Test Procedures:**

- d. Enable hopping function for the EUT.
- e. Set the analyzer's span = the half band of operation (2400 – 2441 MHz)
- f. Set RBW > 1% of the span, VBW = RBW, Max. peak hold.
- g. Repeat the above for the 2nd half band (2441 – 2483.5 MHz)

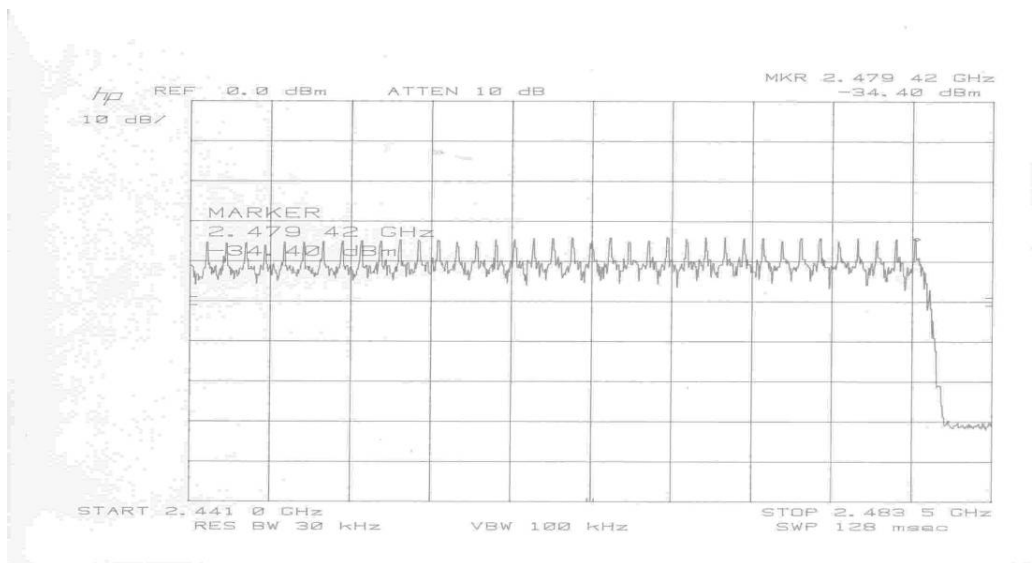
##### **Test Data:**

Frequency (MHz)	Number of hopping channels	Result
2402 -2480	79	pass

##### **Test Equipment List:**

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Spectrum Analyzer	HP	8566B	2410A00224	12/01/05	12/01/06
Quasi Peak Adapter	HP	85650A	3145A01658	12/01/05	12/01/06
Plotter	HP	7470A	2308A27405	No Cal required	No Cal required

**Plots of Number of Hopping Frequencies:**



## **5. FCC 15.247 (a) (1) (iii) Average Channel Occupancy Time**

### **Limit of Average Channel Occupancy Time:**

*According to 15.247(a)(1)(iii), for frequency hopping systems in the 2400 – 2483.5 MHz band, the average time of occupancy on any channel shall not be greater than 0.4 S within a period of 0.4 S multiplied by the number of hopping channels employed.*

### **Test Procedures:**

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.*
- 2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. The EUT must have its hopping function enabled.*
- 3. Use the following spectrum analyzer settings:  
Span = zero span, centered on a hopping channel  
RBW = 1 MHz  
VBW  $\geq$  RBW  
Sweep = as necessary to capture the entire dwell time per hopping channel  
Detector function = peak  
Trace = max hold*
- 4. Use the marker-delta function to determine the dwell time. Plot the result on the screen of spectrum analyzer.*
- 5. Repeat above procedures until all frequencies measured were complete.*

**Test Result : PASS**

**Test Data:**

*Period = 0.4 sec x 79 channel = 31.6 sec*

**DH1 Mode:**

*The Bluetooth system hops at a rate of 1600 times per second. This means there are 1600 timeslots in one second. The DH1 data rate operates on a one-slot transmission and one-slot receiving basis. Thus there are  $1600/(1+1) = 800$  transmissions per second. In one period for each particular channel there are  $800 \times 31.6 / 79 = 320$  times of transmissions.*

*CH Mid(2441MHz) : the dwell time is  $0.405\text{ms} \times 320 = 129.6\text{ms}$*

*The maximum time of occupancy for a particular channel is 129.6.2ms in any 31.6 second period, which is less than the 400ms allowed by the rules; therefore, it meets the requirements of this section.*

**DH3 Mode:**

*The Bluetooth system hops at a rate of 1600 times per second. This means there are 1600 timeslots in one second. The DH3 data rate operates on a three-slot transmission and one-slot receiving basis. Thus there are  $1600/(3+1) = 400$  transmissions per second. In one period for each particular channel there are  $400 \times 31.6 / 79 = 160$  times of transmissions.*

*CH Mid(2441MHz) : the dwell time is  $1.675\text{ms} \times 160 = 268\text{ms}$*

*The maximum time of occupancy for a particular channel is 268 ms in any 31.6 second period, which is less than the 400 ms allowed by the rules; therefore, it meets the requirements of this section.*

**DH5 Mode:**

*The Bluetooth system hops at a rate of 1600 times per second. This means there are 1600 timeslots in one second. The DH5 data rate operates on a five-slot transmission and one-slot receiving basis. Thus there are  $1600/(5+1) = 266.7$  transmissions per second. In one period for each particular channel there are  $266.7 \times 31.6 / 79 = 106.7$  times of transmissions.*

*CH Mid(2441MHz) : the dwell time is  $2.906\text{ms} \times 106.7 = 310.0\text{ms}$*

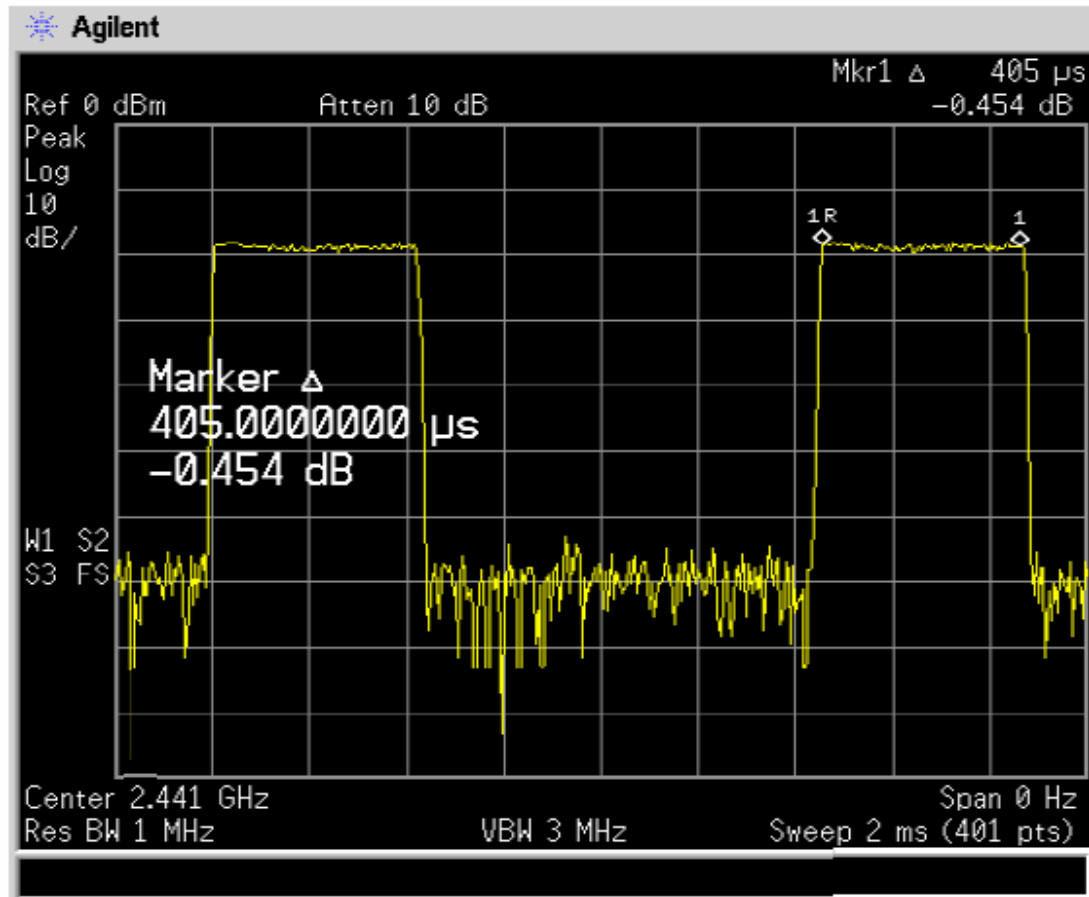
*The maximum time of occupancy for a particular channel is 310.0 ms in any 31.6 second period, which is less than the 400 ms allowed by the rules; therefore, it meets the requirements of this section.*

**Note:** 1. Please see the Plotted Data as follows  
2. The expanded uncertainty of dwell time on each channel tests is 2dB.

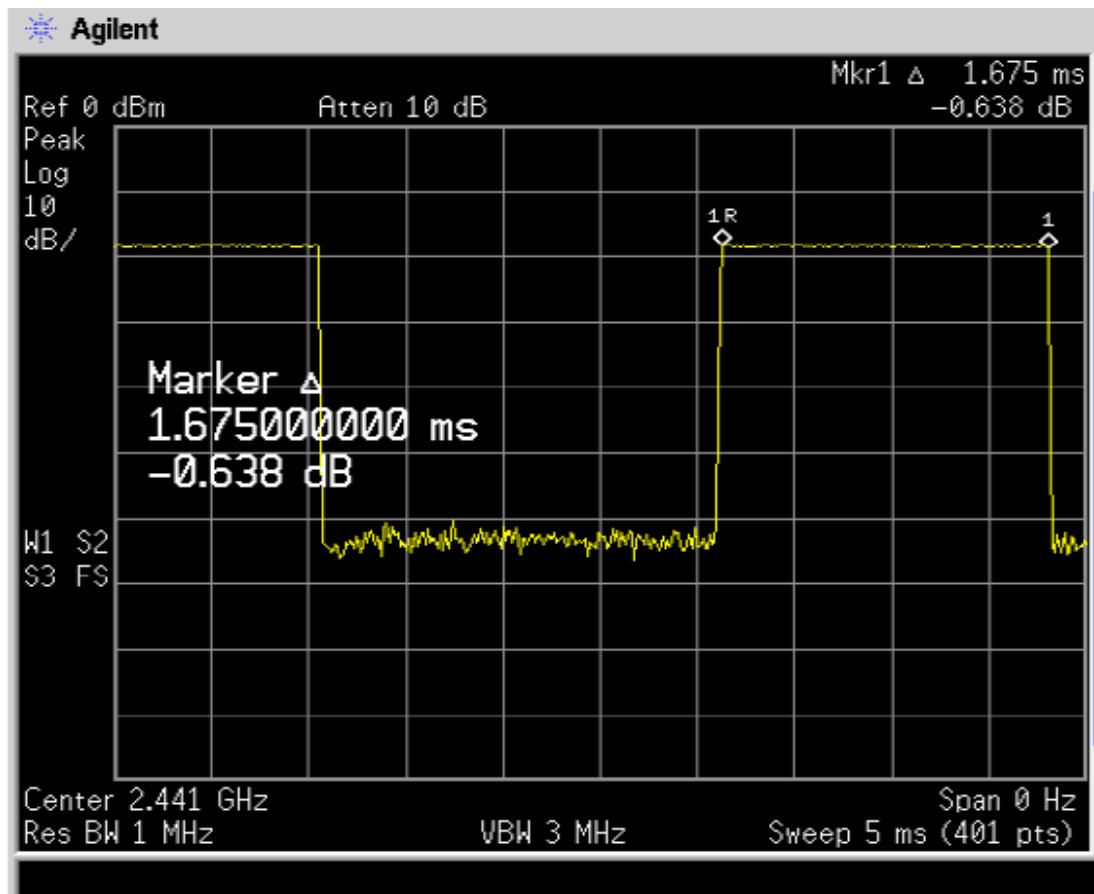
**Test Equipment List:**

<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Last Cal.</b>	<b>Cal. Due</b>
<i>Spectrum Analyzer</i>	<i>Aglient</i>	<i>E4440A</i>	<i>MY42510126</i>	<i>Aug 31, 2005</i>	<i>Aug. 30, 2006</i>
<i>Attenuator</i>	<i>Weinschel Engineering</i>	<i>1</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

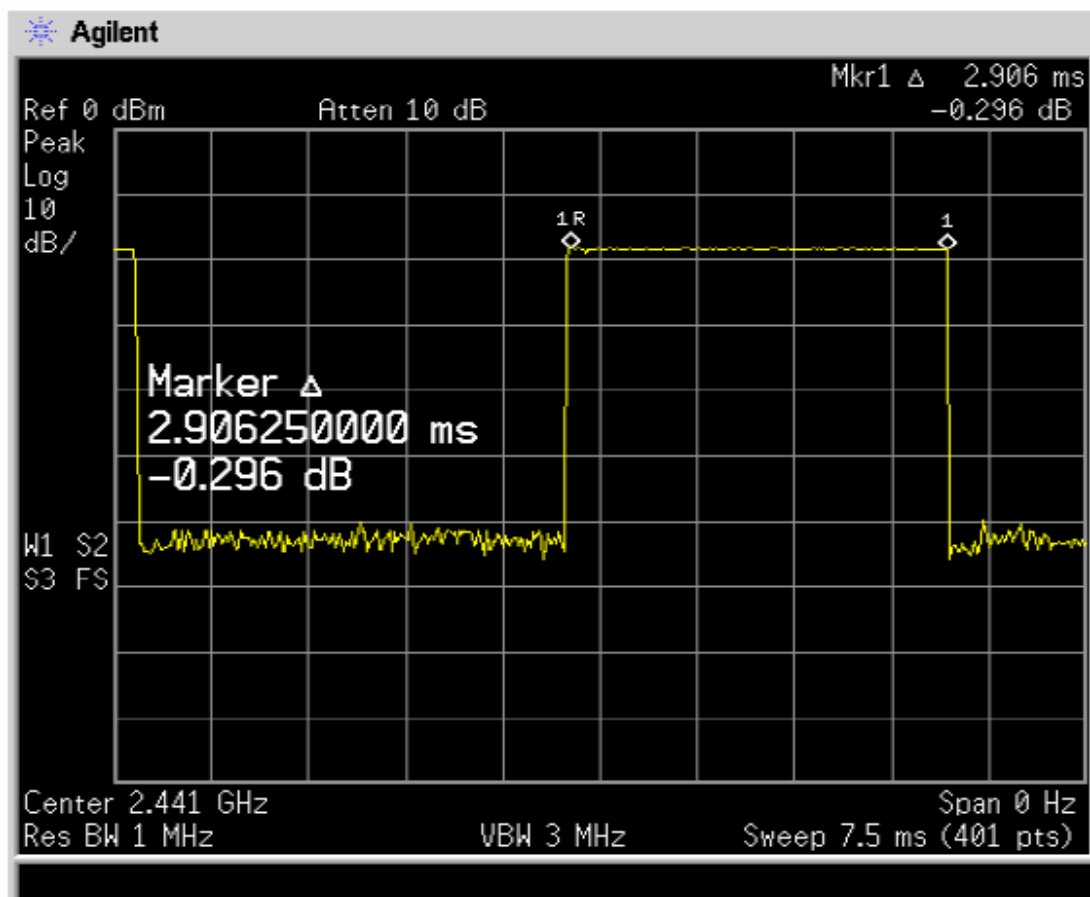
**Plotted Data for Channel Dwell Time:**  
**DH1, CH Middle**



DH3, CH Middle



DH5, CH middle





## **6. 100 kHz bandwidth of the band edges**

### **Limit:**

According to 15.247(c), 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, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.

### **Test Procedures:**

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Use the following spectrum analyzer settings:  
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.  
RBW = 100 kHz  
VBW <sup>3</sup> RBW  
Sweep = Auto  
Detector function = peak  
Trace = max hold.
4. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. Plot the result on the screen of spectrum analyzer.
5. Repeat above procedures until all measured frequencies were complete.

**Test Result : PASS**

**Test Equipment List:**

<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Last Cal.</b>	<b>Cal. Due</b>
<i>Spectrum Analyzer</i>	<i>Rohde&amp;Schwarz</i>	<i>FSP</i>	<i>100034</i>	<i>05/31/06</i>	<i>05/31/07</i>
<i>Attenuator</i>	<i>Weinschel Engineering</i>	<i>1</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

**Measurement Data:**

*Mode : Low Channel*

- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.*
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.*

*Mode : Middle Channel*

- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.*
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.*

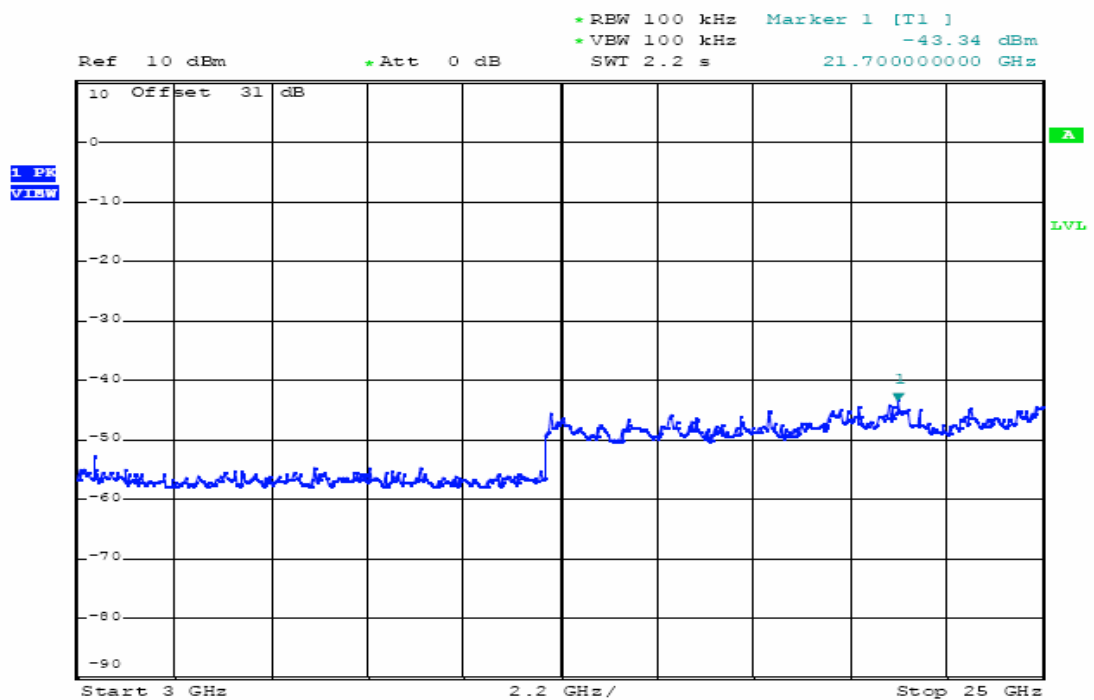
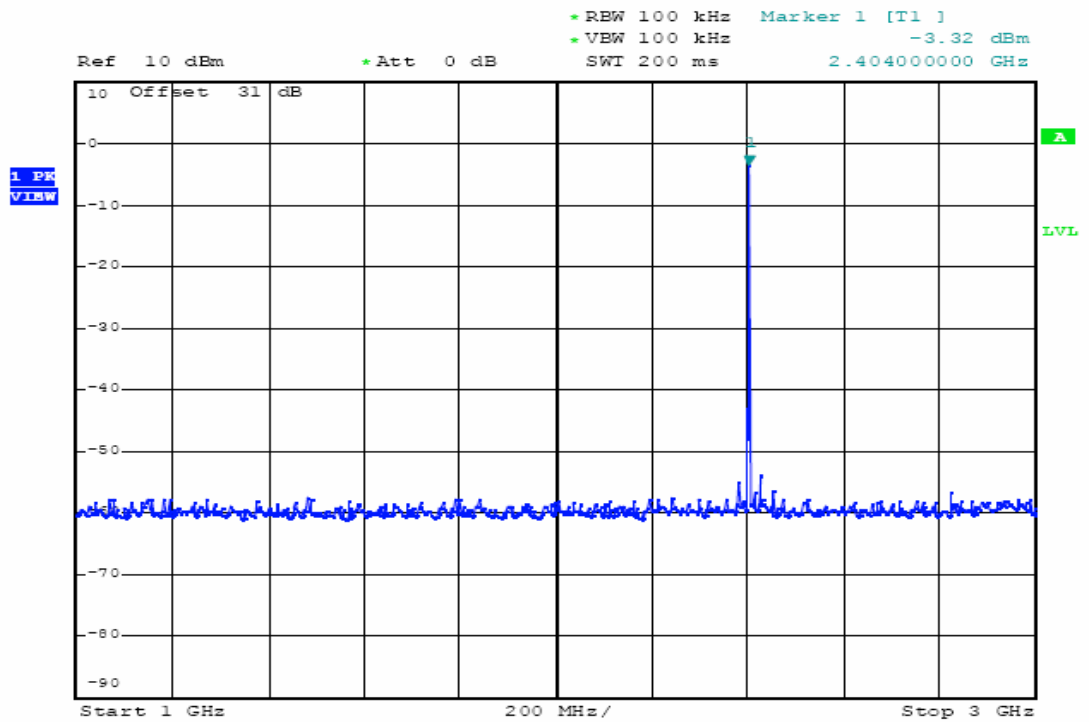
*Mode : High Channel*

- a) 1 GHz to 3 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.*
- b) 3 GHz to 25 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.*

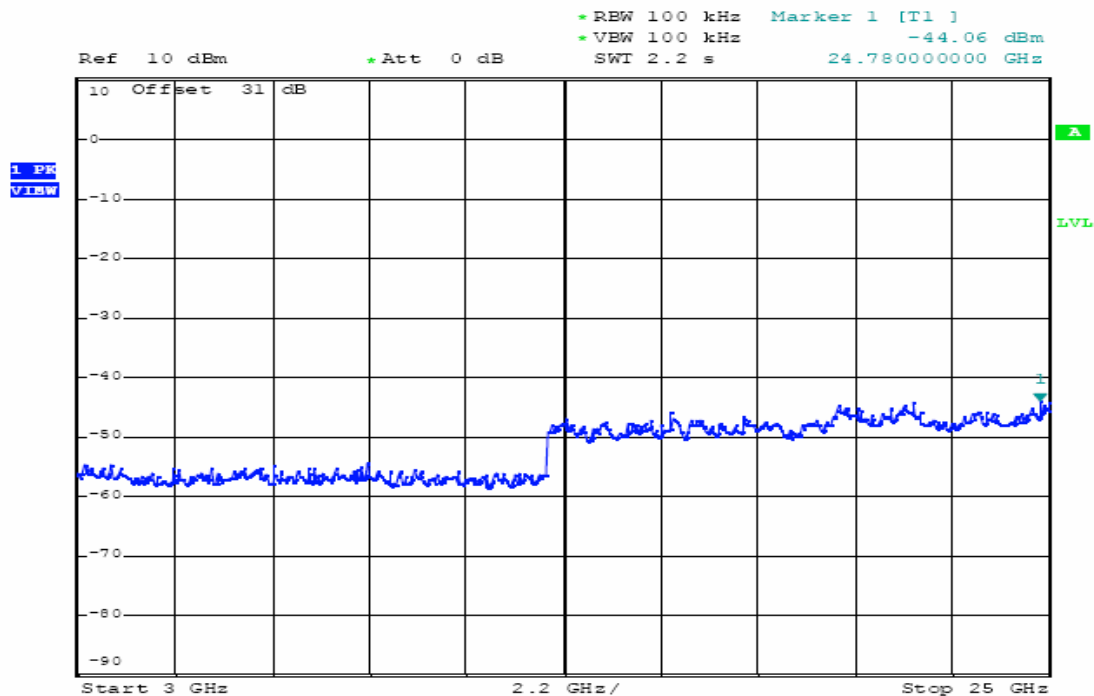
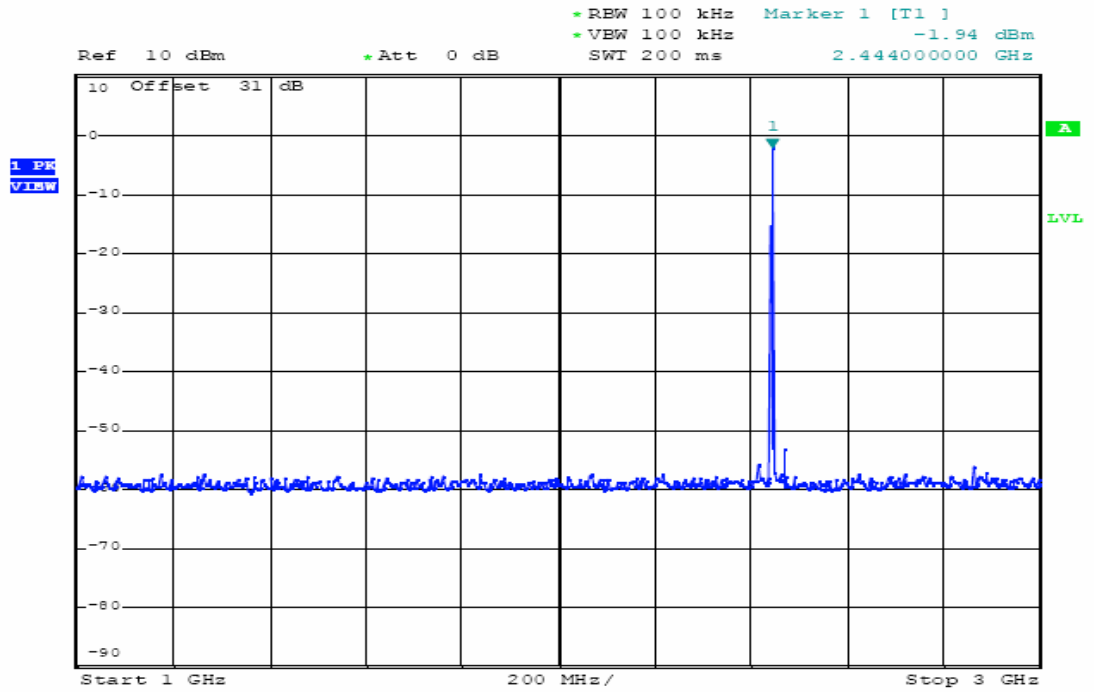
*Note : 1. Please see the Plotted Data as follows.*  
*2. The expanded uncertainty of the out-of-band conducted emission tests is 2dB.*

## Plot of Out-of-band Conducted Emission

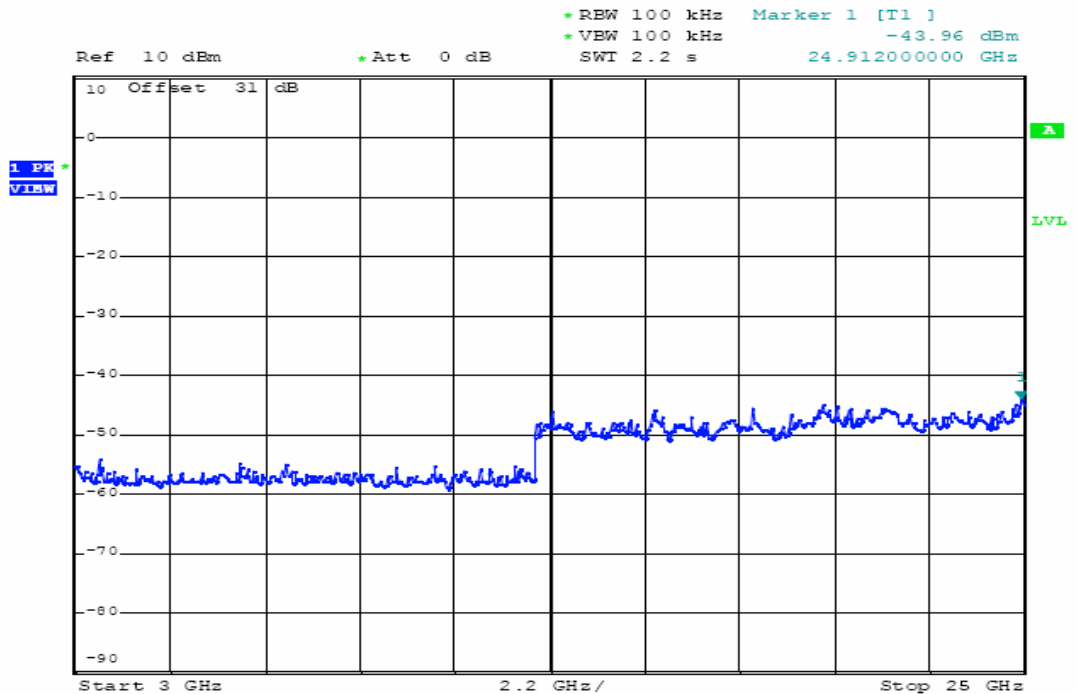
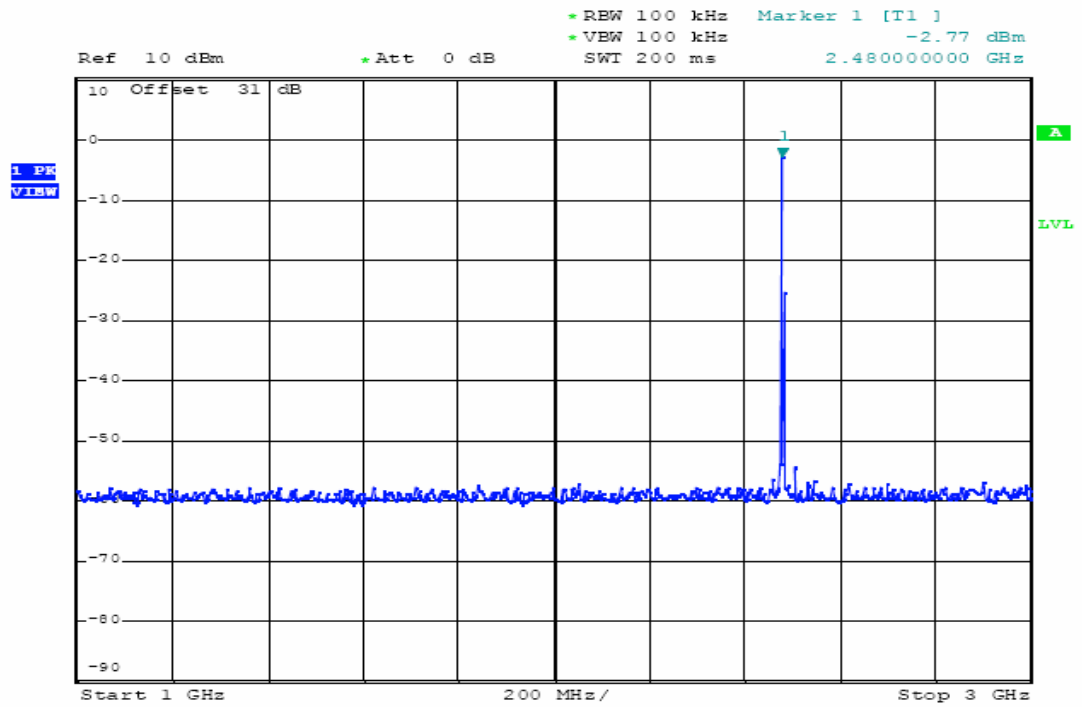
Low Channel:



## Mid Channel



## High Channel



## 7. Radiated Emission Measurement

### **Limit:**

*According to §15.247 (a), operation under this provision is limited to frequency hopping and direct sequence spread spectrum, and the out band emission shall be comply with §15.247 (c)*

*.And according to 15.33(a)(1),for an intentional radiator operates below 10GHz,the frequency range of measurements:to the tenth harmonic of the highest fundamental frequency or to 40GHz,whichever is lower.*

*Radiated emissions, which fall in the restricted band, as defined in Section 15.205(a), must comply with the radiated emission limits specified in §15.209(a)*

<i>Frequency (MHz)</i>	<i>Field strength (micro volts/meter)</i>	<i>Measure distance (meters)</i>
<i>0.009-0.490</i>	<i>2400 /F (KHz)</i>	<i>300</i>
<i>0.490-1.705</i>	<i>24000 /F (KHz)</i>	<i>30</i>
<i>1.705-30.0</i>	<i>30</i>	<i>30</i>
<i>30-88</i>	<i>100</i>	<i>3</i>
<i>88-216</i>	<i>150</i>	<i>3</i>
<i>216-960</i>	<i>200</i>	<i>3</i>
<i>Above 960</i>	<i>500</i>	<i>3</i>

### **Test Procedures:**

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 3 meter measuring distance before final test.
3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 degree to 360 degree With a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.
5. Repeat step 4 until all frequencies need to be measured were complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.
7. Check the three frequencies of highest emission with varying the placement of cables associated with EUT to obtain the worse case and record the result.

**Test Result : PASS**

### ***Set-up/Configuration:***

Figure 1 : Frequencies measured below 1 GHz configuration

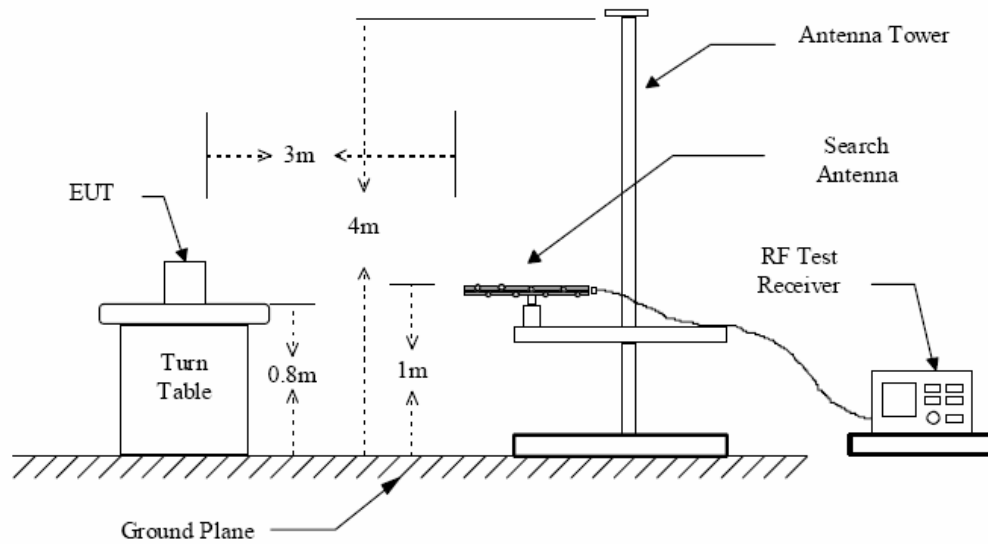
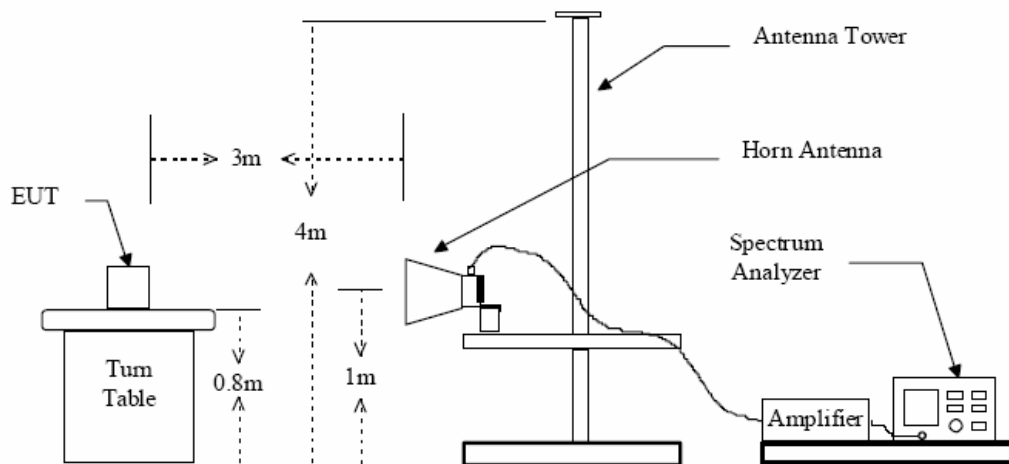


Figure 2 : Frequencies measured above 1 GHz configuration





**Test Equipment List:**

<i>Test Equipment</i>	<i>Manufacturer</i>	<i>Model</i>	<i>Serial No.</i>	<i>Last Cal.</i>	<i>Cal. Due</i>
EMI Test Receiver	Rohde & Schwarz	ES126	SB3436	Jan 26, 2006	Jan 25, 2007
Horn Antenna	Rohde & Schwarz	HF906	SB3435	Jan 26, 2006	Jan 25, 2007
Bilog Antenna	Chase	CBL6112A	SB3440	Jan 26, 2006	Jan 25, 2007
Horn Antenna	Rohde & Schwarz	AT4560	SB3435/03	May.06, 2006	May.05, 2007
Preamplifier	Rohde & Schwarz	--	SB3435/01	Jan 26, 2006	Jan 25, 2007
Preamplifier	Rohde & Schwarz	---	SB3435/02	Jan 26, 2006	Jan 25, 2007

**Instrument Setup:**

<i>Frequency</i>	<i>Resolution bandwidth</i>	<i>Video bandwidth</i>	<i>Function</i>
< 1 GHz	120 KHz	300 KHz	QP
> 1 GHz	1 MHz	3 MHz	Peak
> 1 GHz	1 MHz	3M Hz	Ave.

## ***Radiated Emission Data :***

### ***Low Channel (2402MHz)***

Ambient temperature: 24 °C									
Relative humidity: 53 %									
Frequency GHz	Emission (dBuV/m)		Read Value (dBuV)		Correction Factor (dB/m)	Polarization	Limits (dBuV/m)		Note
	AV	PK	AV	PK			AV	PK	
2.402	42.31	--	38.31	--	-4.0	Horizontal	54.0	74.0	Fundamental
2.402	41.08	--	37.08	--	-4.0	Vertical	54.0	74.0	Fundamental
4.804	37.54	--	36.54	--	-2.0	Horizontal	54.0	74.0	Harmonic
4.804	37.13	--	36.13	--	-2.0	Vertical	54.0	74.0	Harmonic
7.206	32.52	--	31.52	--	-1.0	Horizontal	54.0	74.0	Harmonic
7.206	32.43	--	31.43	--	-1.0	Vertical	54.0	74.0	Harmonic

#### ***Note :***

- 1. Emission level(dBuV/m)=Read Value(dBuV) + Correction Factor(dB/m)*
- 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)+Amplifier Factor(dB)*
- 3. The other emission levels were very low against the limit(>20dB to limit).*
- 4. Remark "--" means that the emissions level is too low to be measured.*

### Mid Channel (2441MHz)

Ambient temperature: 24° C									
Relative humidity: 53 %									
Frequency GHz	Emission (dBuV/m)		Read Value (dBuV)		Correction Factor (dB/m)	Polarization	Limits (dBuV/m)		Note
	AV	PK	AV	PK			AV	PK	
2.441	42.66	--	38.66	--	-4.0	Horizontal	54.0	74.0	Fundamental
2.441	41.41	--	37.41	--	-4.0	Vertical	54.0	74.0	Fundamental
4.882	37.65	--	35.65	--	-2.0	Horizontal	54.0	74.0	Harmonic
4.882	37.40	--	35.40	--	-2.0	Vertical	54.0	74.0	Harmonic
7.323	32.61	--	31.61	--	-1.0	Horizontal	54.0	74.0	Harmonic
7.323	32.48	--	31.48	--	-1.0	Vertical	54.0	74.0	Harmonic

Note :

1. Emission level(dBuV/m)=Read Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)+Amplifier Factor(dB)
3. The other emission levels were very low against the limit(>20dB to limit).
4. Remark "--" means that the emissions level is too low to be measured.

### High Channel (2480M)

Ambient temperature: 24° C									
Relative humidity: 53 %									
Frequency GHz	Emission (dBuV/m)		Read Value (dBuV)		Correction Factor (dB/m)	Polarization	Limits (dBuV/m)		Note
	AV	PK	AV	PK			AV	PK	
2.480	41.20	--	37.20	--	-4.0	Horizontal	54.0	74.0	Fundamental
2.480	40.97	--	36.97	--	-4.0	Vertical	54.0	74.0	Fundamental
4.960	37.42	--	35.42	--	-2.0	Horizontal	54.0	74.0	Harmonic
4.960	37.10	--	35.10	--	-2.0	Vertical	54.0	74.0	Harmonic
7.440	32.40	--	31.40	--	-1.0	Horizontal	54.0	74.0	Harmonic
7.440	32.32	--	31.32	--	-1.0	Vertical	54.0	74.0	Harmonic

Note :

1. Emission level(dBuV/m)=Read Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)+Amplifier Factor(dB)
3. The other emission levels were very low against the limit(>20dB to limit).
4. Remark "--" means that the emissions level is too low to be measured.

### ***Radiated Emissions in Restricted Bands:***

#### ***Restricted Frequency band : 2310MHz-2390MHz***

Frequency  (MHz)	Reading (dBUV)				Factor (dB)  Corr.	Result @3m (dBUV/m)		Limit @3m (dBUV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave.			
	Peak	Ave	Peak	Ave								
2321.320	70.2	---	66.2	---	-31.4	38.8	---	74.0	54.0	-28.2	98	1.5
2377.410	68.1	---	67.1	---	-31.1	37.0	---	74.0	54.0	-28.3	125	1.5

#### ***Restricted Frequency band : 2483.5MHz-2500MHz***

Frequency  (MHz)	Reading (dBUV)				Factor (dB) Corr.	Result @3m (dBUV/m)		Limit @3m (dBUV/m)		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
	H		V			Peak	Ave	Peak	Ave.			
	Peak	Ave	Peak	Ave								
2488.320	69.2	---	68.1	---	-30.6	38.6	---	74.0	54.0	-30.2	178	1.4
2493.170	71.1	---	68.0	---	-30.6	40.5	---	74.0	54.0	-29.6	88	1.4

### ***Other Emissions frequency below 1G(worst case):***

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBUV)	Corrected Factor (dB)	Result @3m (dBUV/m)	Limit @3m (dBUV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
145.560	V	33.0	-10.4	22.6	43.5	-20.9	96	1.2
216.570	V	33.6	-6.0	27.6	46.0	-18.4	55	1.1
264.090	V	32.0	-3.8	28.2	46.0	-17.8	73	1.0
431.600	H	31.5	-5.5	26.0	46.0	-20.0	92	1.5
521.900	H	29.7	-4.9	24.8	46.0	-21.2	145	1.5
566.700	H	31.7	-5.3	26.4	46.0	-19.6	206	1.2

**Note :**

1. Emission level(dBUV/m)=Read Value(dBUV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit(>20dB to limit).

***EUT Model: VM-5602B :***



***Front View***

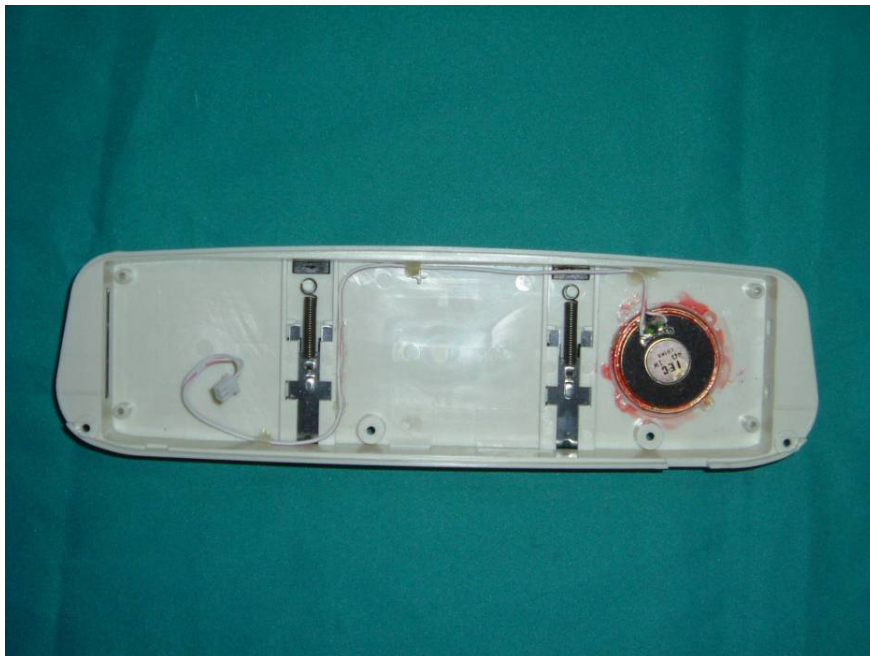


***Bottom View***

***EUT Model: VM-5602B***



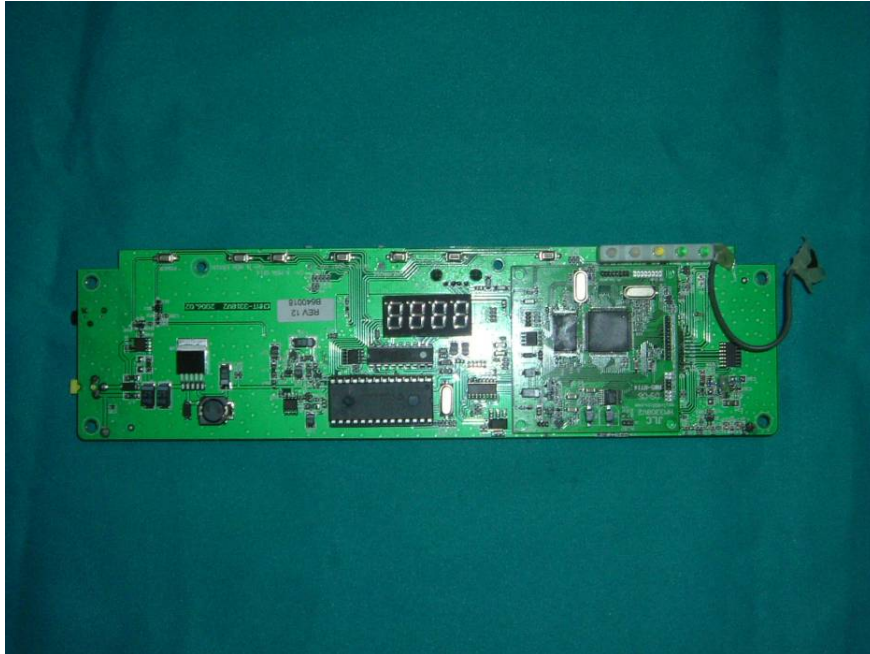
***Inside View #1***



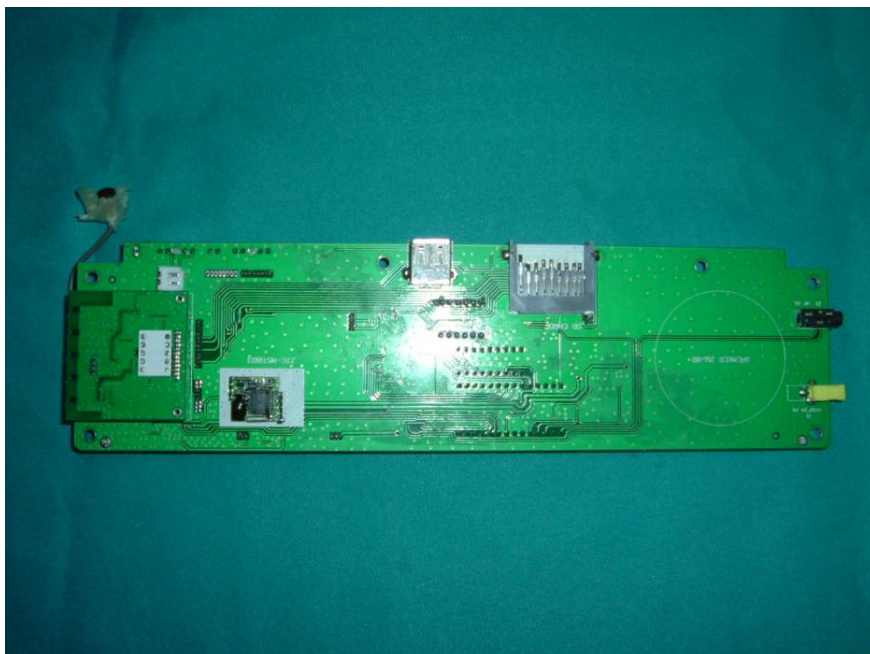
***Inside View #2***



***EUT Model: VM-5602B***



***PCB #1***



***PCB #2***