
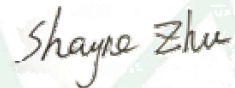




# TEST REPORT

**Report Reference No.**..... : **TRE1511017101** R/C.....:85049  
**FCC ID**..... : **2AG6B-9250**  
**Applicant's name**..... : **GOLDEN TECHNOLOGY GROUP LTD**  
**Address**..... : 51 Guangtian Rd, Luotian, Songgang Town, Baoan, Shenzhen, China  
**Manufacturer**..... : GOLDEN TECHNOLOGY GROUP LTD  
**Address**..... : 51 Guangtian Rd, Luotian, Songgang Town, Baoan, Shenzhen, China  
**Test item description** ..... : **Wireless Mouse**  
**Trade Mark** ..... :   
**Model/Type reference**..... : 9250  
**Listed Model(s)** ..... : -  
**Standard** ..... : **FCC CFR Title 47 Part 15 Subpart C Section 15.247**  
**Date of receipt of test sample**..... : Nov 27, 2015  
**Date of testing**..... : Nov 30, 2015- Jan 20, 2016  
**Date of issue**..... : Jan 20, 2016  
**Result**..... : **PASS**

**Compiled by**  
( position+printedname+signature).... : File administrators Shayne Zhu



**Supervised by**  
(position+printedname+signature).... : Project Engineer Jeff Sun



**Approved by**  
(position+printedname+signature).... : RF Manager Hans Hu



**Testing Laboratory Name** ..... : **Shenzhen Huatongwei International Inspection Co., Ltd.**

**Address**..... : 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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## Contents

<b><u>1.</u></b>	<b><u>APPLICABLE STANDARDS AND TEST DESCRIPTION</u></b>	<b><u>3</u></b>
1.1.	Applicable Standards	3
1.2.	Test Description	3
<b><u>2.</u></b>	<b><u>SUMMARY</u></b>	<b><u>4</u></b>
2.1.	Client Information	4
2.2.	Product Description	4
2.3.	Operation state	5
2.4.	EUT configuration	5
2.5.	Modifications	5
<b><u>3.</u></b>	<b><u>TEST ENVIRONMENT</u></b>	<b><u>6</u></b>
3.1.	Address of the test laboratory	6
3.2.	Test Facility	6
3.3.	Equipments Used during the Test	7
3.4.	Environmental conditions	8
3.5.	Statement of the measurement uncertainty	8
<b><u>4.</u></b>	<b><u>TEST CONDITIONS AND RESULTS</u></b>	<b><u>9</u></b>
4.1.	Antenna requirement	9
4.2.	Conducted Emission (AC Main)	10
4.3.	Conducted Peak Output Power	11
4.4.	Power Spectral Density	12
4.5.	6dB bandwidth	14
4.6.	Restricted band	16
4.7.	Band edge and Spurious Emission (conducted)	19
4.8.	Spurious Emission (radiated)	23
<b><u>5.</u></b>	<b><u>TEST SETUP PHOTOS OF THE EUT</u></b>	<b><u>34</u></b>
<b><u>6.</u></b>	<b><u>EXTERNAL AND INTERNAL PHOTOS OF THE EUT</u></b>	<b><u>35</u></b>

## 1. APPLICABLE STANDARDS AND TEST DESCRIPTION

### 1.1. Applicable Standards

The tests were performed according to following standards:

[FCC Rules Part 15.247](#): Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

[ANSI C63.10-2013](#): American National Standard for Testing Unlicensed Wireless Devices

[KDB 558074 D01 DTS Meas Guidance v03r04](#): Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating under § 15.247

### 1.2. Test Description

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
Line Conducted Emission (AC Main)	15.207	N/A
Conducted Peak Output Power	15.247 (b)(3)	Pass
Power Spectral Density	15.247 (e)	Pass
6dB Bandwidth	15.247 (a)(2)	Pass
Restricted band	15.247(d)/15.205	Pass
Spurious Emission	15.247(d)/15.209	Pass


Remark: The measurement uncertainty is not included in the test result.

## 2. SUMMARY

### 2.1. Client Information

Applicant:	GOLDEN TECHNOLOGY GROUP LTD
Address:	51 Guangtian Rd,Luotian,Songgang Town,Baoan,Shenzhen,China
Manufacturer:	GOLDEN TECHNOLOGY GROUP LTD
Address:	51 Guangtian Rd,Luotian,Songgang Town,Baoan,Shenzhen,China

### 2.2. Product Description

Name of EUT	Wireless Mouse
Trade Mark:	 Advanced Input Systems
Model No.:	9250
Listed Model(s):	-
Power supply:	DC 1.5V(1*AA)
Adapter information:	-
Hardware version:	TL-SOP16
Software version:	V1.1
2.4G ISM	
Modulation:	GFSK
Operation frequency:	2405MHz - 2470MHz
Channel number:	8
Channel separation:	8 MHz
Antenna type:	Internal Antenna
Antenna gain:	0dBi

## 2.3. Operation state

### ◆ Test frequency list

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

Channel	Frequency (MHz)
00	2405
01	2413
02	2422
03	2430
04	2440
05	2450
06	2460
07	2470

### ◆ Test mode

For RF test items:

the engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions:

the EUT was set to connect with the WLAN AP under large package sizes transmission.

## 2.4. EUT configuration

**The following peripheral devices and interface cables were connected during the measurement:**

● - supplied by the manufacturer

○ - supplied by the lab

<input type="radio"/>	PowerCable	Length (m) :	/
<input type="radio"/>		Shield :	/
<input type="radio"/>		Detachable :	/
<input type="radio"/>	Multimeter	Manufacturer :	/
<input type="radio"/>		Model No. :	/

## 2.5. Modifications

No modifications were implemented to meet testing criteria.

### **3. TEST ENVIRONMENT**

#### **3.1. Address of the test laboratory**

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.

Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Phone: 86-755-26748019 Fax: 86-755-26748089

#### **3.2. Test Facility**

The test facility is recognized, certified, or accredited by the following organizations:

##### **CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

##### **A2LA-Lab Cert. No. 3902.01**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until December 31, 2016.

##### **FCC-Registration No.: 317478**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 317478, Renewal date Jul. 18, 2014, valid time is until Jul. 18, 2017.

##### **IC-Registration No.: 5377A&5377B**

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Dec. 31, 2013, valid time is until Dec. 31, 2016.

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B on Dec.03, 2014, valid time is until Dec.03, 2017.

##### **ACA**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

##### **VCCI**

Radiated disturbance above 1GHz measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2013. Valid time is until Dec. 23, 2016.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2013. Valid time is until May 06, 2016.

##### **DNV**

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2016.

### 3.3. Equipments Used during the Test

Maximum Peak Output Power / Power Spectral Density / 6dB Bandwidth / Band Edge Compliance of RF Emission / Spurious RF Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal
1	Spectrum Analyzer	Rohde&Schwarz	FSP	1164.4391.40	2015/11/02
2	Climate Chamber	ESPEC	EL-10KA	05107008	2015/11/02
3	Test cable	Junkosha Inc.	J12J102248	JUL-06-14-016	2015/12/05
4	Temporary antenna connector	/	/	/	/

NOTE: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	Rohde&Schwarz	ESI 26	100009	2015/11/02
2	RF TEST PANEL	Rohde&Schwarz	TS / RSP	335015/ 0017	N/A
3	EMI TEST SOFTWARE	Rohde&Schwarz	ESK1	N/A	N/A
4	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2015/11/08
5	HORN ANTENNA	ShwarzBeck	9120D	1011	2015/11/08
6	Loop Antenna	Rohde&Schwarz	HZ-9	838622\013	2015/11/08
7	Pre-amplifier	SCHWARZBECK	BBV 9743	9743-0022	2015/11/02
8	TURNTABLE	MATURO	TT2.0	----	N/A
9	ANTENNA MAST	MATURO	TAM-4.0-P	----	N/A
10	EMI TEST SOFTWARE	Audix	E3	N/A	N/A
11	Test cable	Siva Cables Italy	RG 58A/U	W14.02	2015/12/05

The Cal.Interval was one year

### 3.4. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

### 3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system according to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	1.60 dB	(1)
Radiated spurious emission 9KHz-40 GHz	2.20 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.24 dB	(1)
Radiated Emission 1~18GHz	5.16 dB	(1)
Radiated Emission 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	-----	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=1.96$ .



## 4. TEST CONDITIONS AND RESULTS

### 4.1. Antenna requirement

#### Requirement

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.203:**

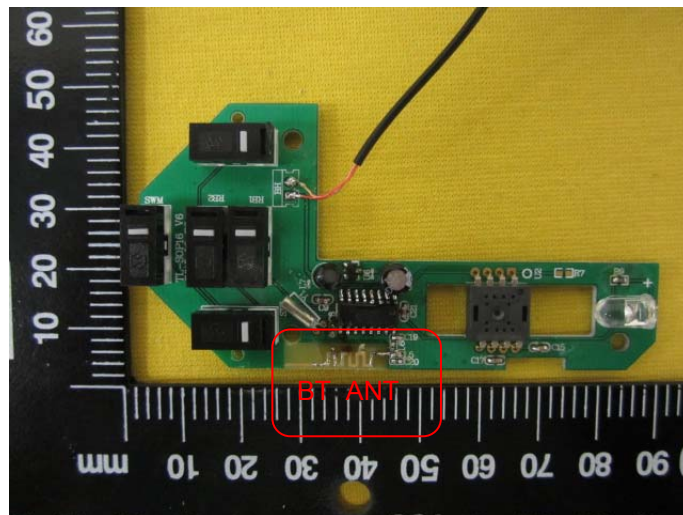
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):**

- (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

#### Test Result:

The antenna is integral antenna, the best case gain of the antenna is 0dBi

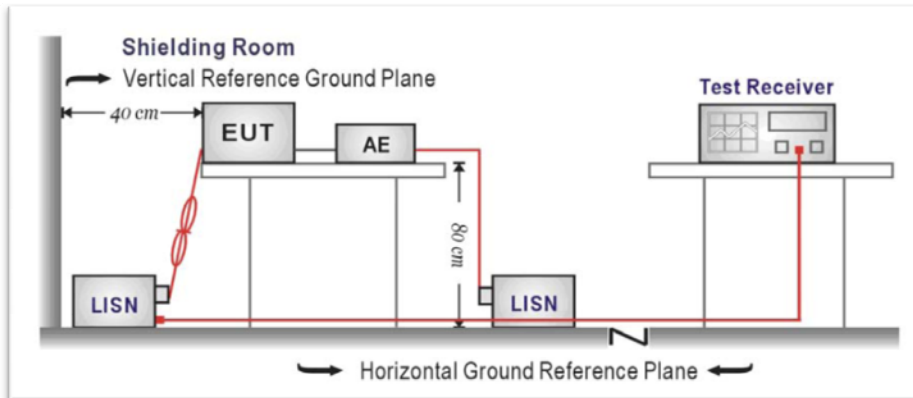


**4.2. Conducted Emission (AC Main)****LIMIT**

FCC CFR Title 47 Part 15 Subpart C Section 15.207:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

**TEST CONFIGURATION****TEST PROCEDURE**

1. The EUT was setup according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

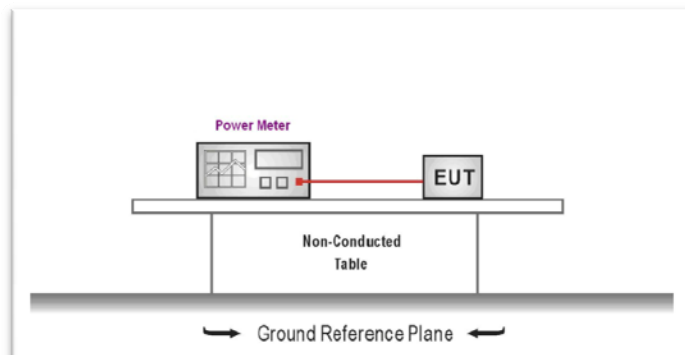
**TEST RESULTS***Test item is not applicable for EUT.*

### 4.3. Conducted Peak Output Power

#### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(3): **30dBm**:

#### TEST CONFIGURATION



#### TEST PROCEDURE

1. The EUT was tested according to ANSI C63.10: 2013 and KDB 558074 D01 V03R04 for compliance to FCC 47CFR 15.247 requirements.
2. The maximum peak conducted output power may be measured using a broadband peak RF power meter.
3. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector
4. Record the measurement data.

#### TEST RESULTS

Type	Channel	Output power (dBm)	Limit (dBm)	Result
2.4G ISM	00	1.28	30.00	Pass
	03	1.55		
	07	1.86		

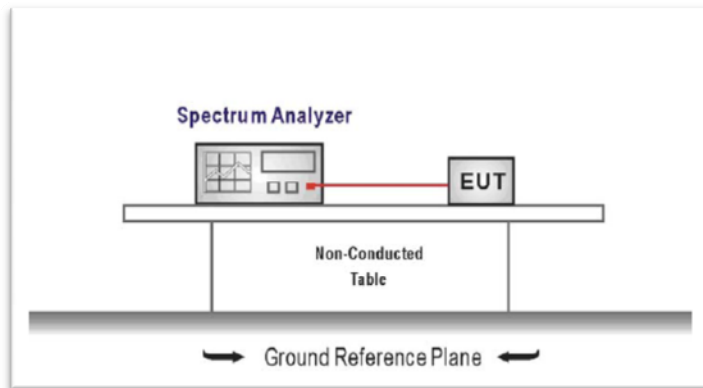
#### 4.4. Power Spectral Density

##### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (e):

*For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.*

##### TEST CONFIGURATION



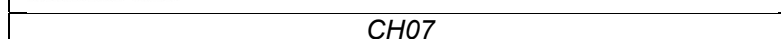
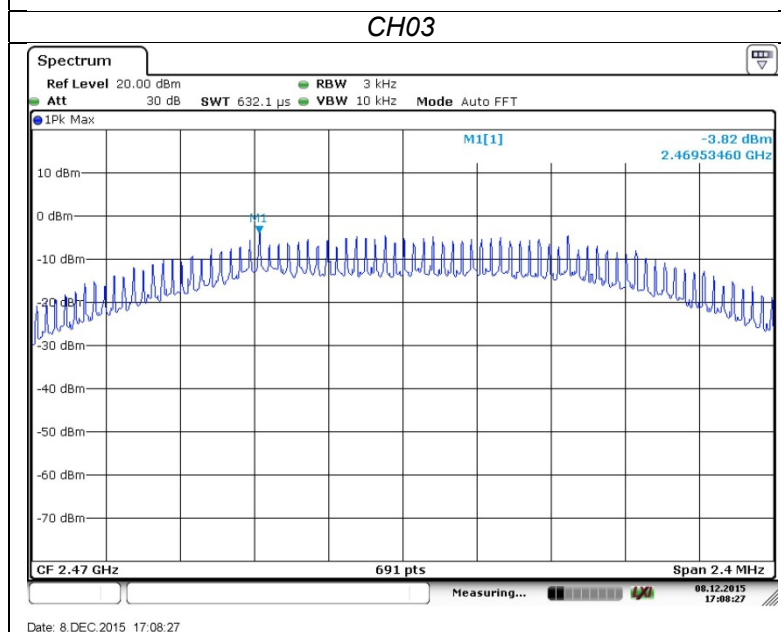
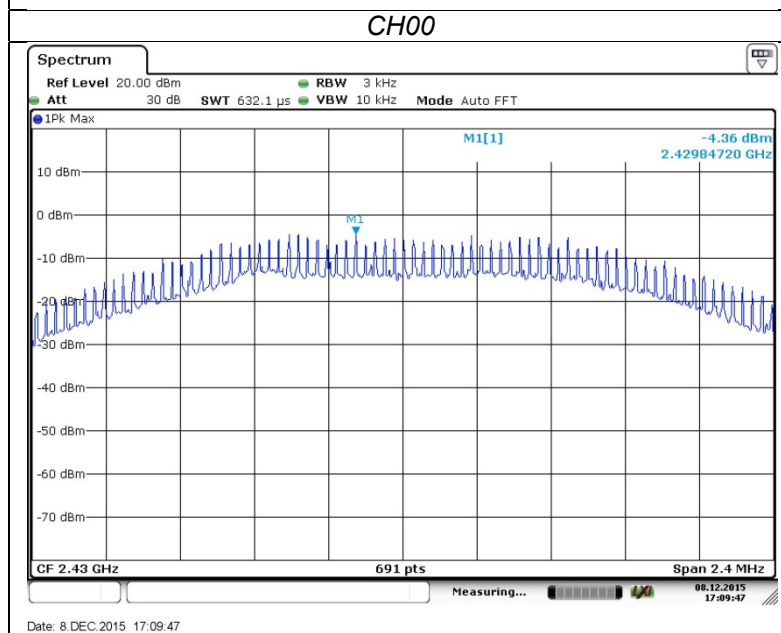
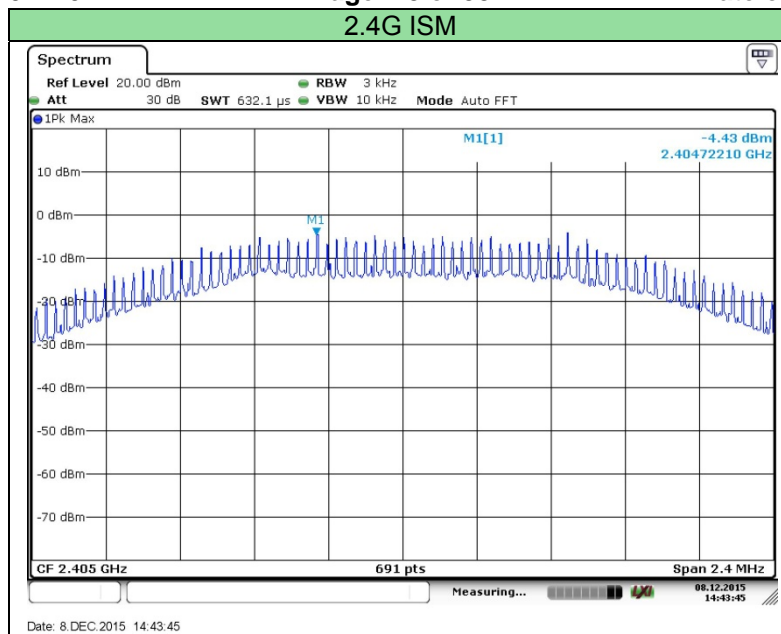
##### TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input,
2. Configure the spectrum analyzer as shown below:  
*Center frequency=DTS channel center frequency*  
*Span =1.5 times the DTS bandwidth*  
*RBW = 3 kHz ≤ RBW ≤ 100 kHz, VBW ≥ 3 × RBW*  
*Sweep time = auto couple*  
*Detector = peak*  
*Trace mode = max hold*
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
4. Use the peak marker function to determine the maximum amplitude level within the RBW.
5. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

##### TEST RESULTS

Type	Channel	Power Spectral Density(dBm/3KHz)	Limit (dBm/3KHz)	Result
2.4G ISM	00	-4.43	8.00	Pass
	03	-4.36		
	07	-3.82		

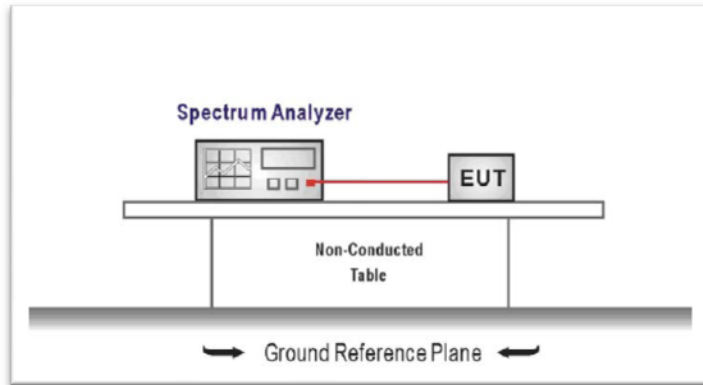
Test plot as follows:



**4.5. 6dB bandwidth****LIMIT**

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(2):

*For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.*

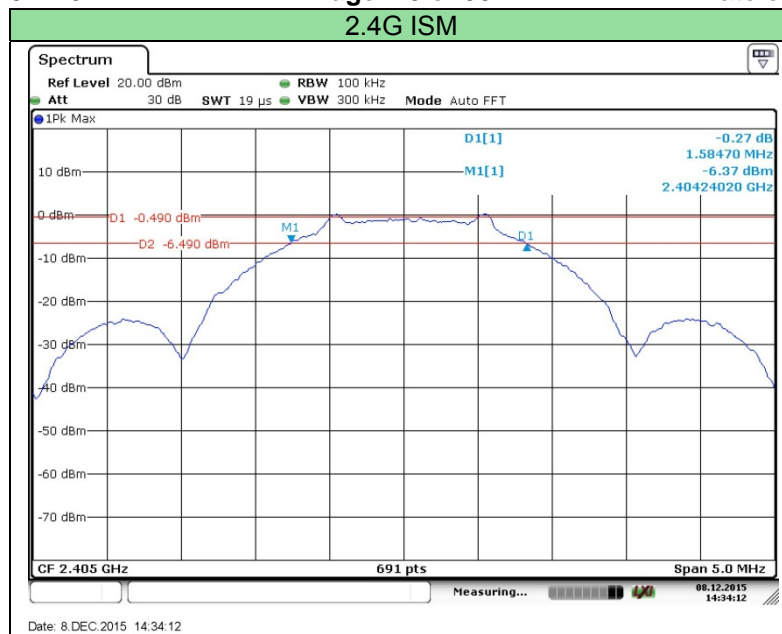
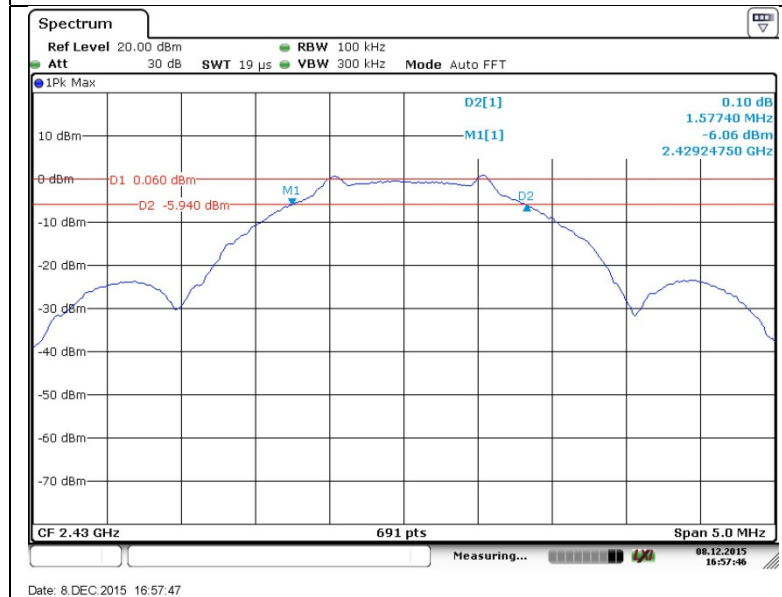
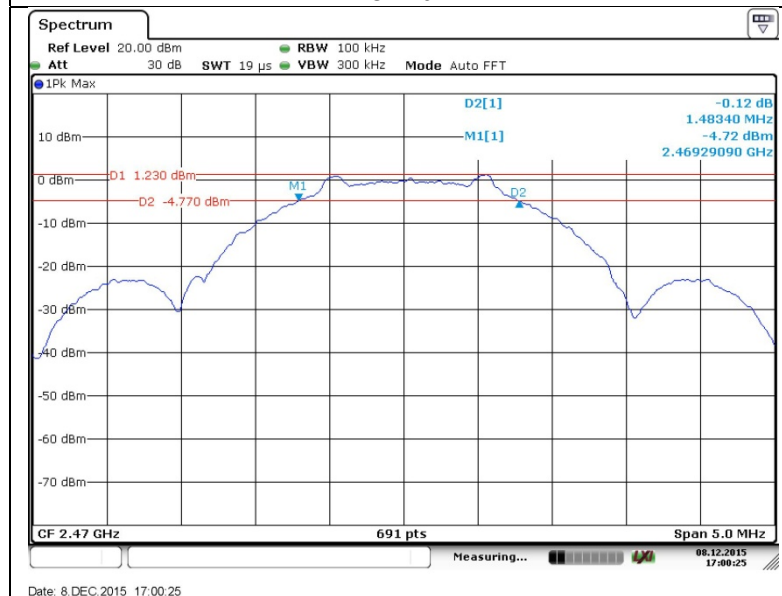
**TEST CONFIGURATION****TEST PROCEDURE**

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).  
 $Center\ Frequency = DTS\ channel\ center\ frequency$   
 $Span = 2 \times DTS\ bandwidth$   
 $RBW = 100\ kHz, VBW \geq 3 \times RBW$   
 $Sweep\ time = auto\ couple$   
 $Detector = Peak$   
 $Trace\ mode = max\ hold$
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission, and record the pertinent measurements.

**TEST RESULTS**

Type	Channel	6dB Bandwidth (KHz)	Limit (KHz)	Result
2.4G ISM	00	1584.70	$\geq 500$	Pass
	03	1577.40		
	07	1483.40		

Test plot as follows:

**CH00****CH19****CH39**

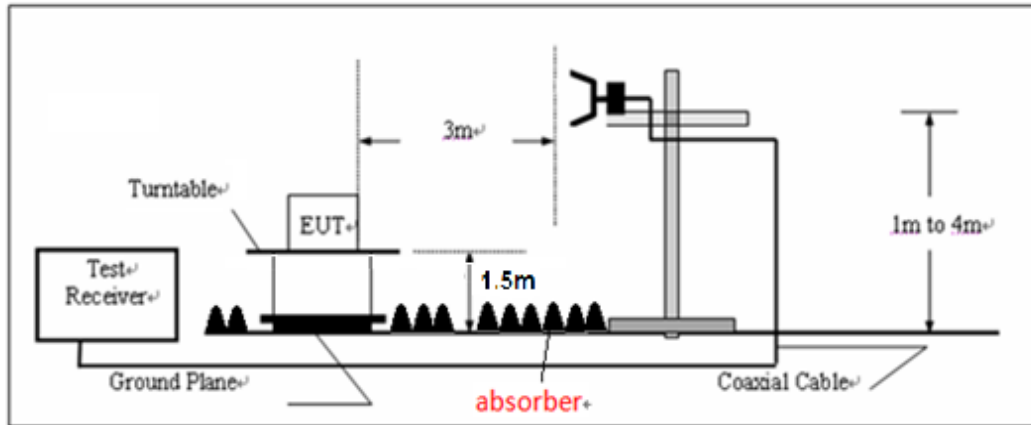
## 4.6. Restricted band

### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d)::

*In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).*

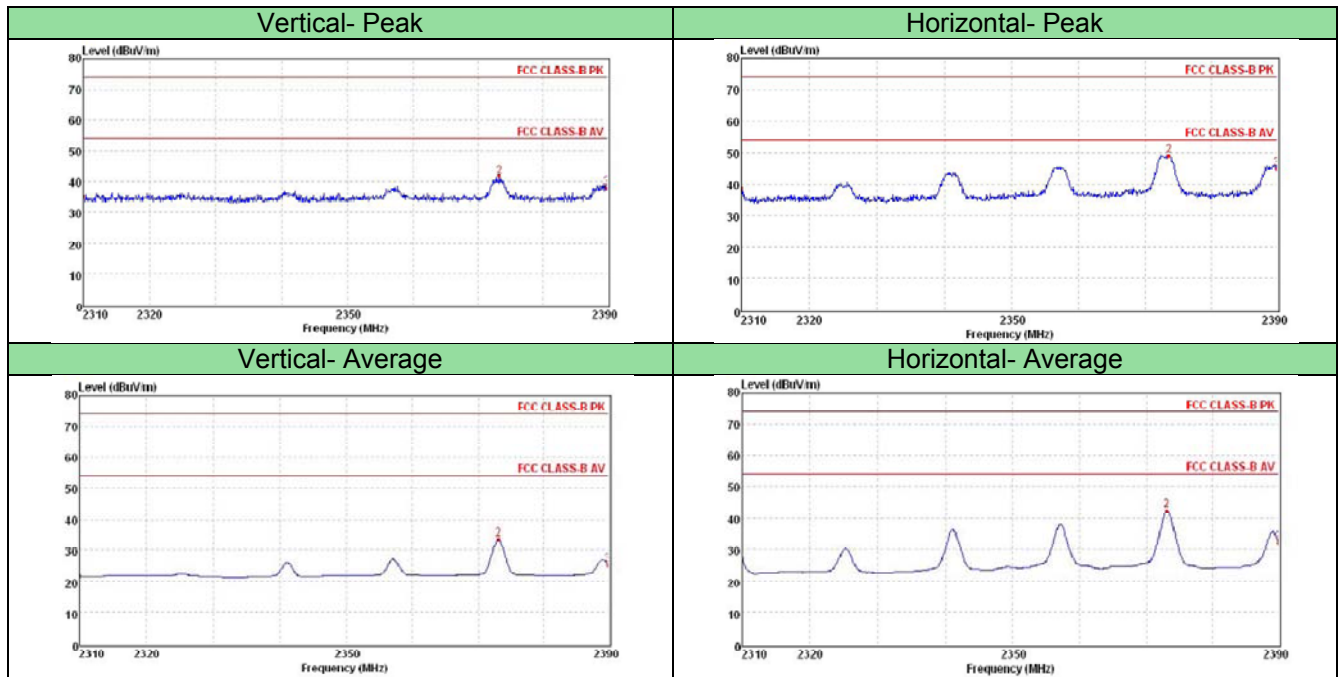
### TEST CONFIGURATION



### TEST PROCEDURE

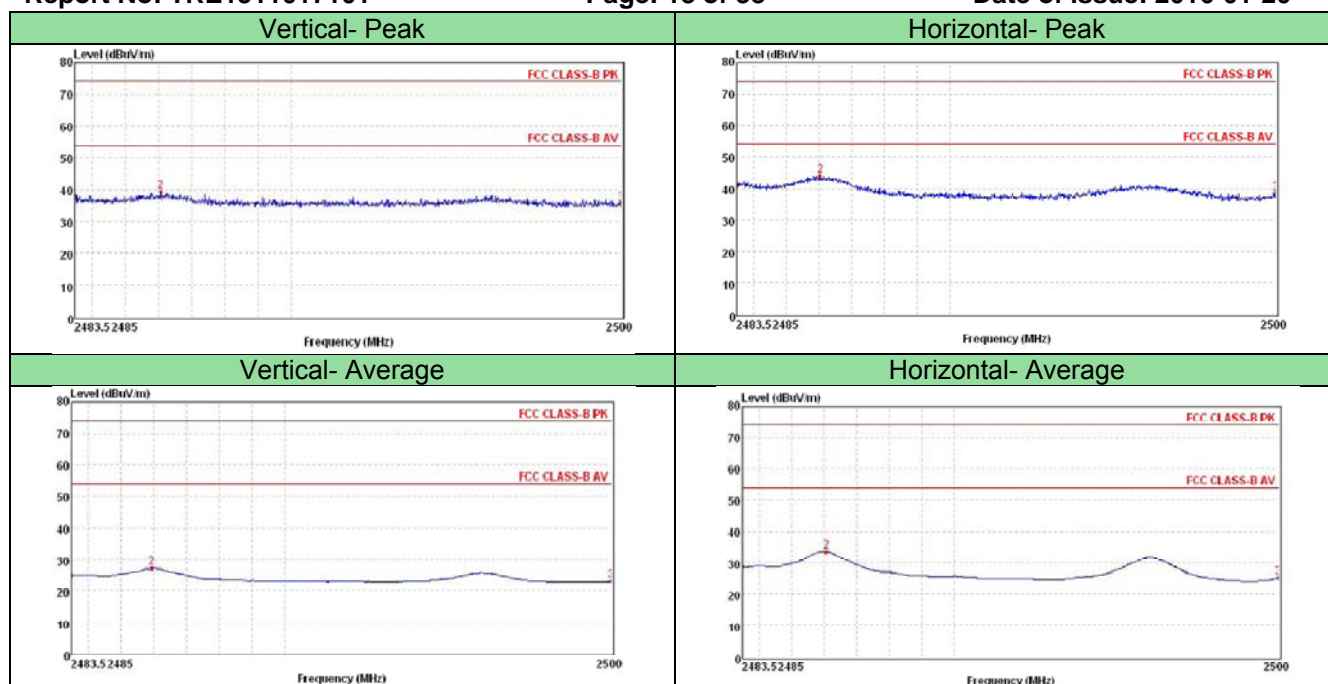
1. The EUT was setup and tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. The receiver set as follow:  
RBW=1MHz, VBW=3MHz for Peak value  
RBW=1MHz, VBW=3MHz for Average value.



**TEST RESULTS**

CH00									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
2373.297	44.86	27.48	6.79	37.56	41.57	74	-32.43	Vertical	Peak
2373.620	52.29	27.48	6.79	37.56	49.00	74	-25.00	Horizontal	
2373.135	36.88	27.48	6.78	37.56	33.58	54	-20.42	Vertical	Average
2373.135	45.85	27.48	6.78	37.56	42.55	54	-11.45	Horizontal	

Note: Level = Read + Antenna Factor + Cable Loss - Preamp Factor



CH07									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
2486.083	41.96	27.85	6.96	37.65	39.12	74	-34.88	Vertical	Peak
2486.050	46.75	27.85	6.96	37.65	43.91	74	-30.09	Horizontal	
2485.952	30.15	27.85	6.96	37.65	27.31	54	-26.69	Vertical	Average
2486.067	36.52	27.85	6.96	37.65	33.68	54	-20.32	Horizontal	

Note: Level = Read + Antenna Factor + Cable Loss - Preamp Factor

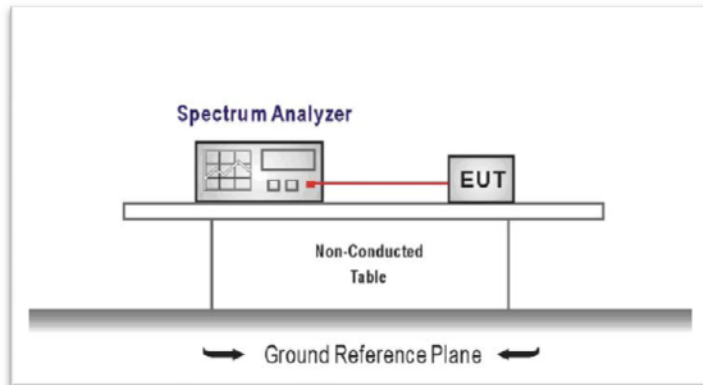
#### 4.7. Band edge and Spurious Emission (conducted)

##### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):

*In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.*

##### TEST CONFIGURATION



##### TEST PROCEDURE

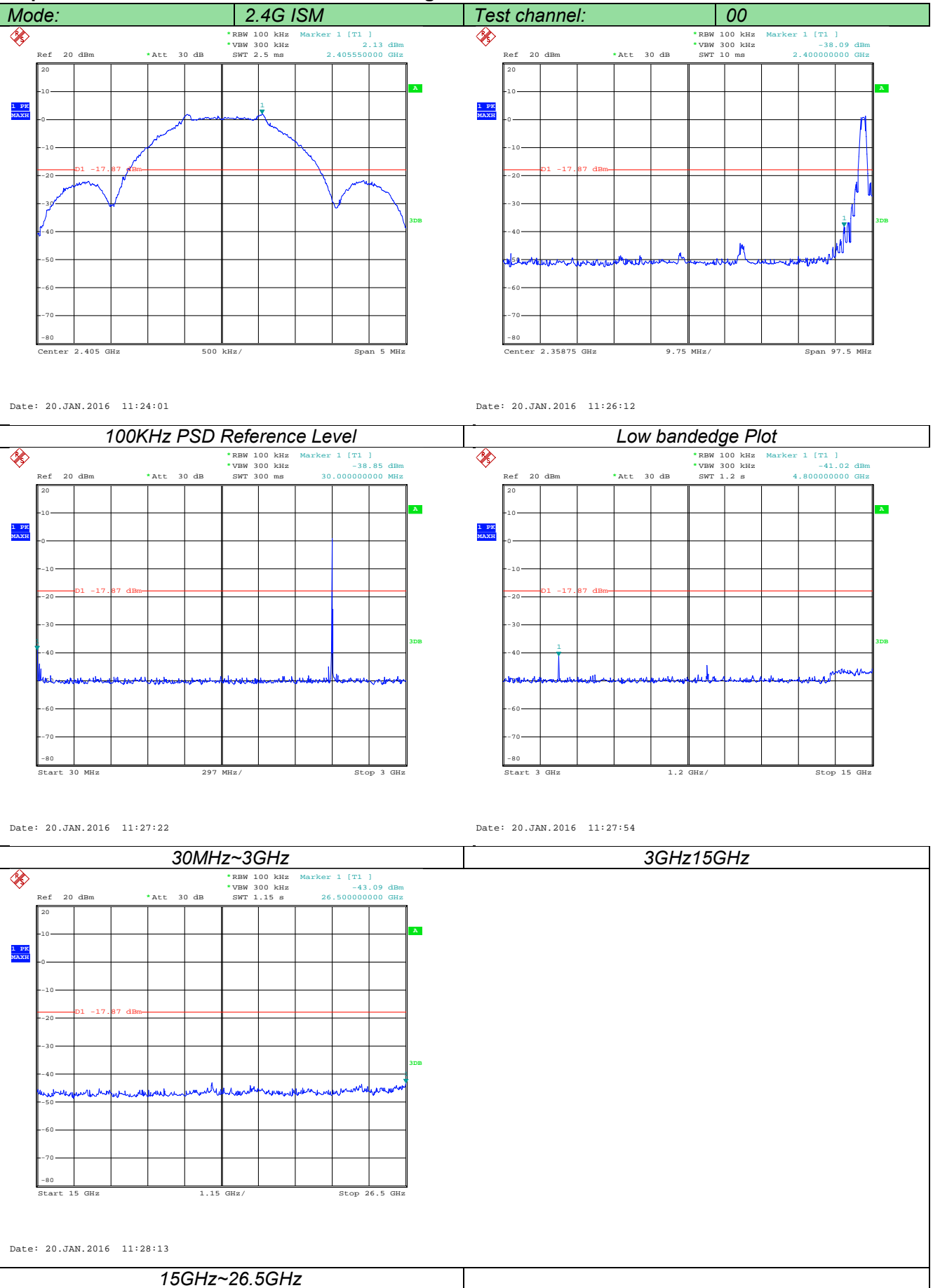
1. Connect the antenna port(s) to the spectrum analyzer input.
2. **Establish a reference level by using the following procedure**  
*Center frequency=DTS channel center frequency*  
*The span = 1.5 times the DTS bandwidth.*  
*RBW = 100 kHz, VBW ≥ 3 x RBW*  
*Detector = peak, Sweep time = auto couple, Trace mode = max hold*  
*Allow trace to fully stabilize*  
*Use the peak marker function to determine the maximum PSD level*

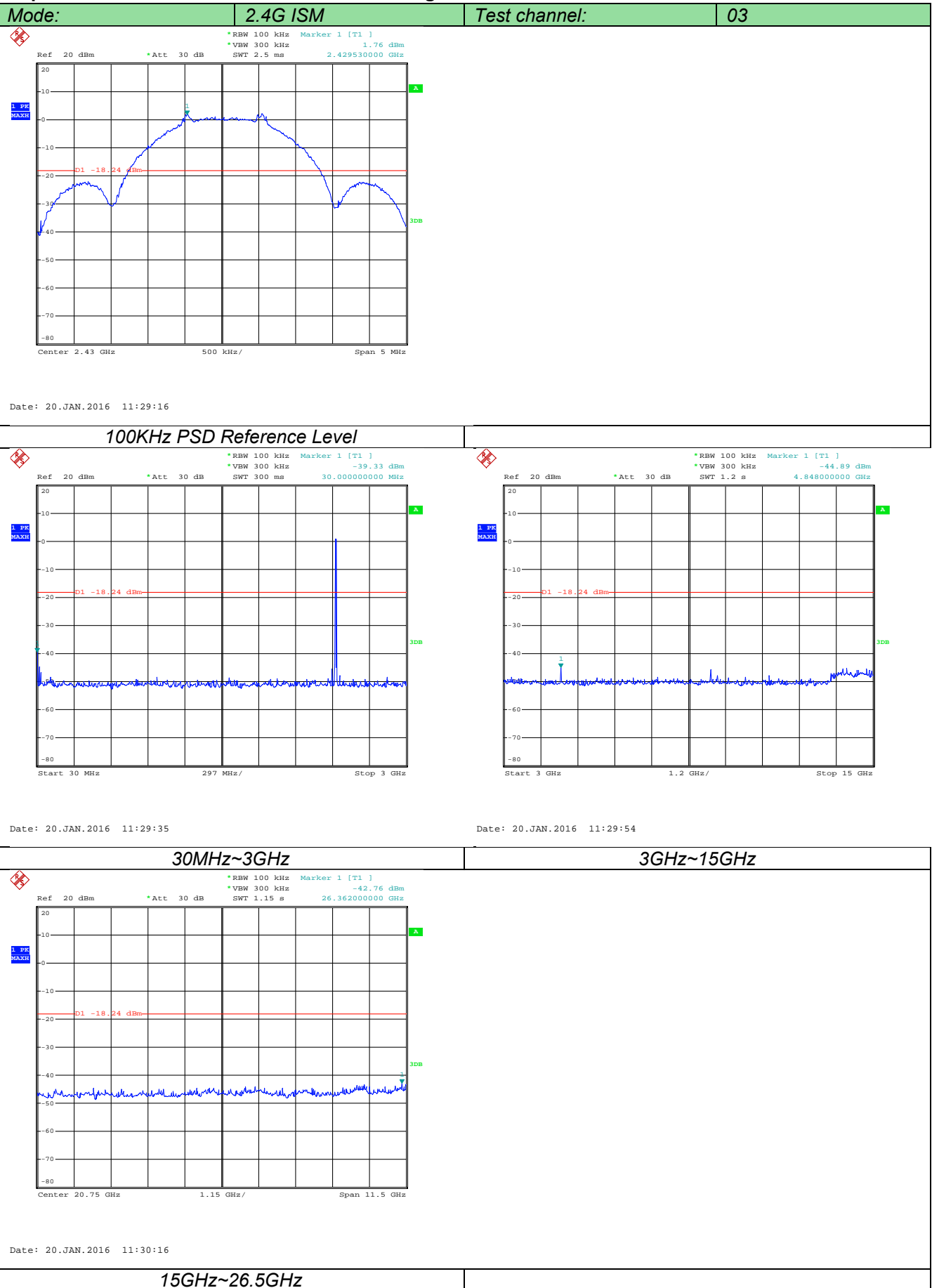
Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

3. **Emission level measurement**  
Set the center frequency and span to encompass frequency range to be measured  
RBW = 100 kHz, VBW ≥ 3 x RBW  
Detector = peak, Sweep time = auto couple, Trace mode = max hold  
Allow trace to fully stabilize  
Use the peak marker function to determine the maximum amplitude level.
4. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
5. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band excluding restricted frequency bands) are attenuated by at least the minimum requirements specified (at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz). Report the three highest emissions relative to the limit.

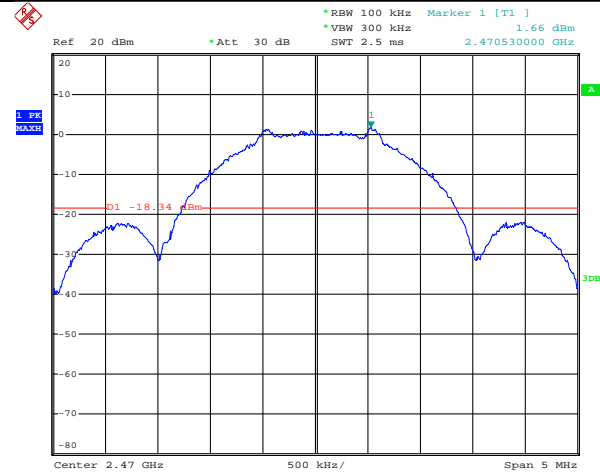
##### TEST RESULTS

Test plot as follows:

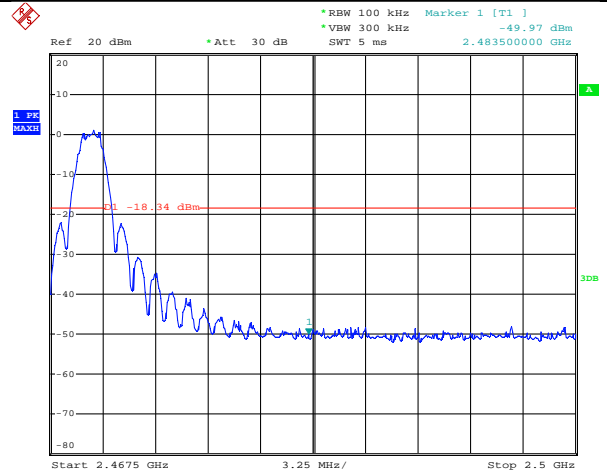




Mode:	2.4G ISM	Test channel:	07
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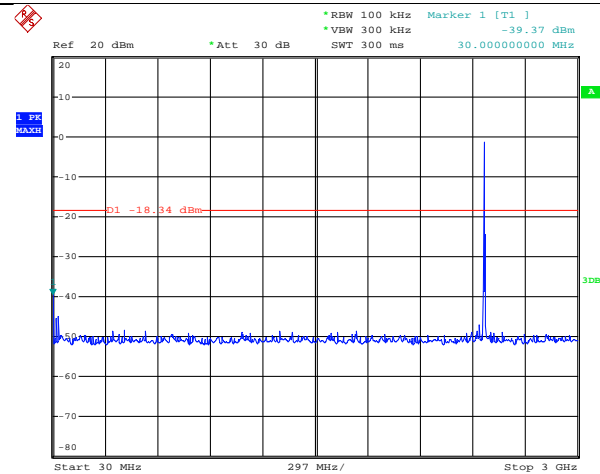


Date: 20.JAN.2016 11:31:14



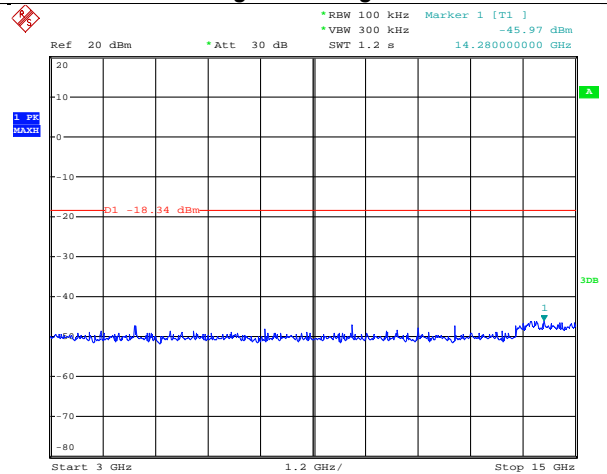
Date: 20.JAN.2016 11:31:43

## 100KHz PSD Reference Level



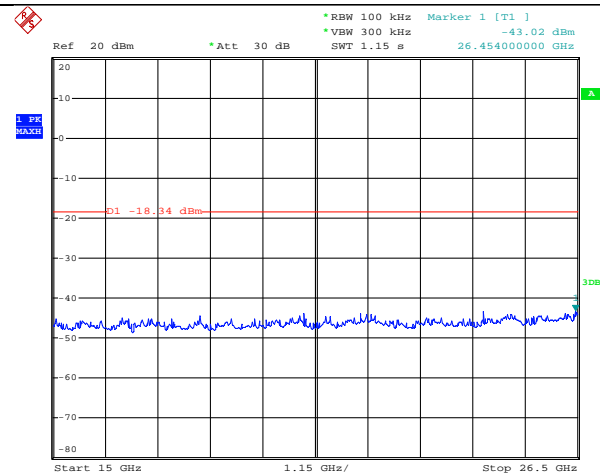
Date: 20.JAN.2016 11:32:01

## High bandedge Plot



Date: 20.JAN.2016 11:32:39

## 30MHz~3GHz



Date: 20.JAN.2016 11:33:01

## 3GHz~15GHz

## 15GHz~26.5GHz

## 4.8. Spurious Emission (radiated)

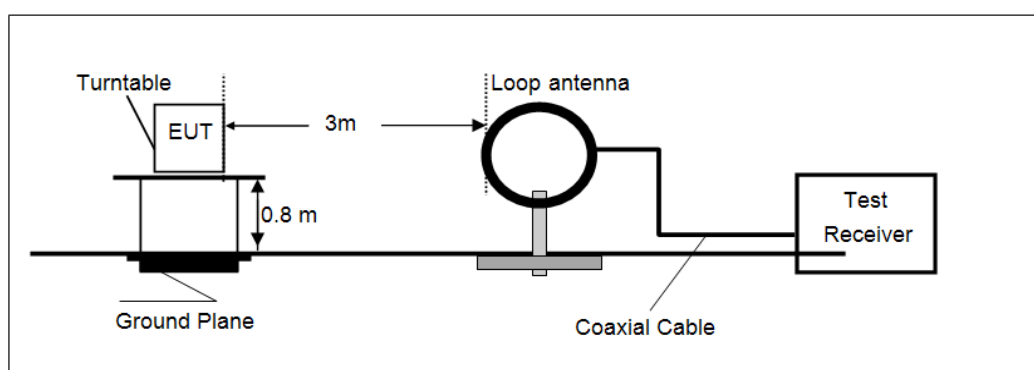
### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

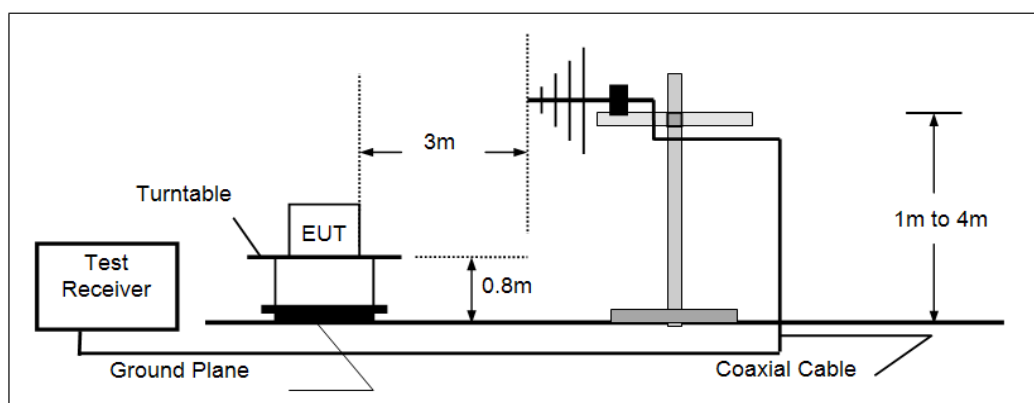
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

### TEST CONFIGURATION

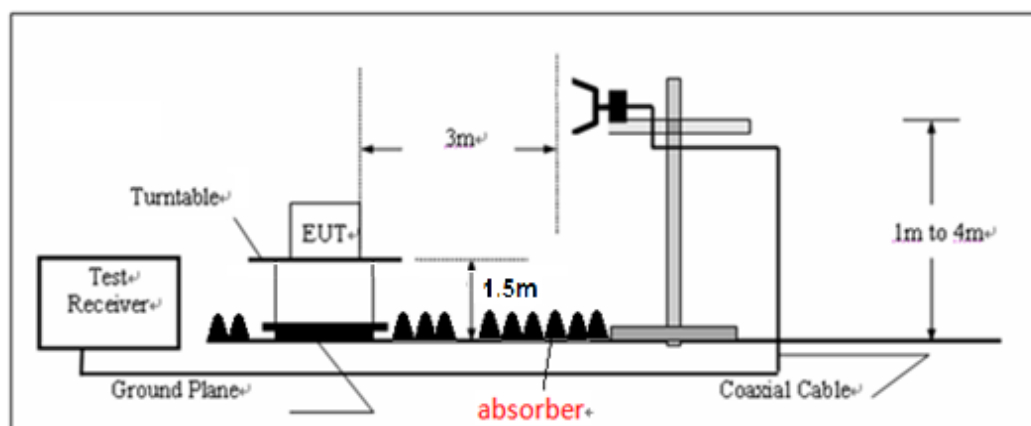
- 9KHz ~30MHz



- 30MHz ~ 1GHz



- Above 1GHz



**TEST PROCEDURE**

1. The EUT was tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna.
5. Use the following spectrum analyzer settings
  - (1) Span shall be wide enough to fully capture the emission being measured;
  - (2) Below 1GHz, RBW=120KHz, VBW=300KHz, Sweep=auto, Detector function=peak, Trace=max hold;  
*If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.*
  - (3) Above 1GHz, RBW=1MHz, VBW=3MHz for Peak value  
RBW=1MHz, VBW=3MHz for Average value.

**TEST RESULTS****Measurement data:**

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"\*", means this data is too weak; instrument of signal is unable to test.*
3. *The emission levels of other frequencies are very lower than the limit and not shown in test report.*

**■ 9kHz ~ 30MHz**

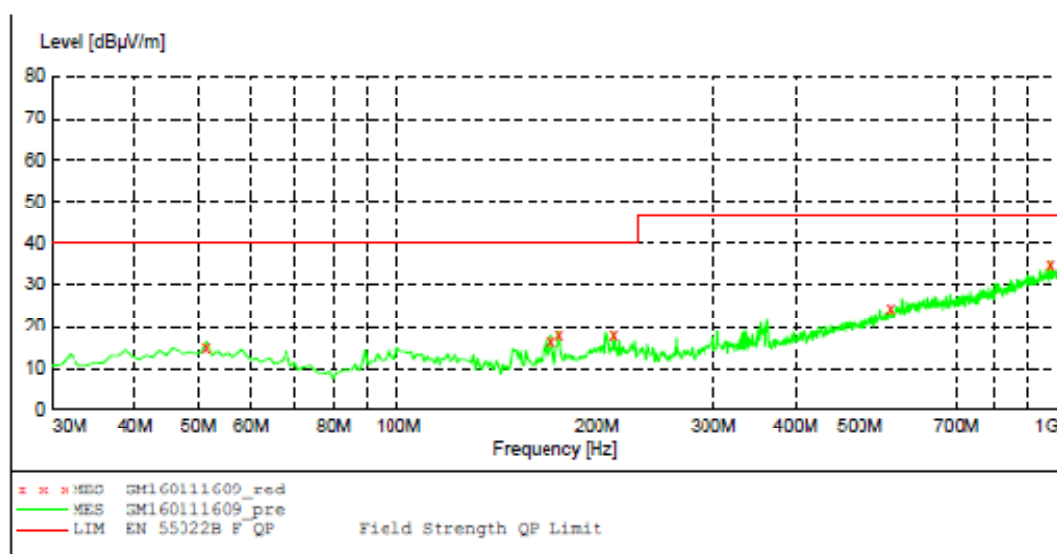
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



## ■ 30MHz ~ 1GHz

Worst case mode

Vertical

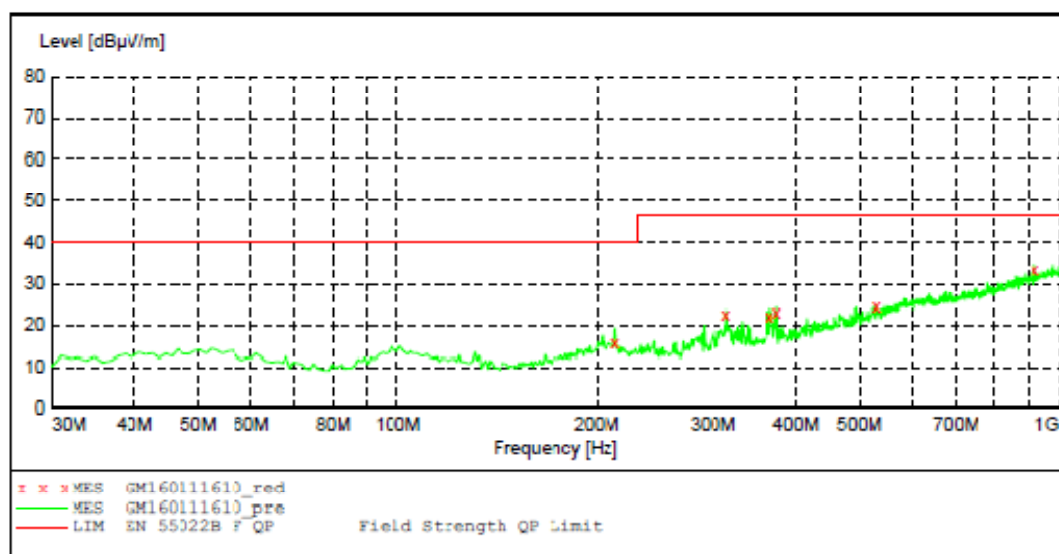
**MEASUREMENT RESULT: "GM160111609\_red"**

1/11/2016 10:28AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarisation
51.340000	16.10	-14.4	40.0	23.9	QP	100.0	242.00	VERTICAL
170.650000	17.60	-16.5	40.0	22.4	QP	100.0	52.00	VERTICAL
175.500000	18.80	-16.1	40.0	21.2	QP	100.0	52.00	VERTICAL
212.360000	10.90	14.1	40.0	21.1	QP	100.0	167.00	VERTICAL
555.740000	24.40	-4.6	47.0	22.6	QP	100.0	301.00	VERTICAL
970.900000	35.70	4.0	47.0	11.3	QP	100.0	195.00	VERTICAL

Worst case mode

Horizontal

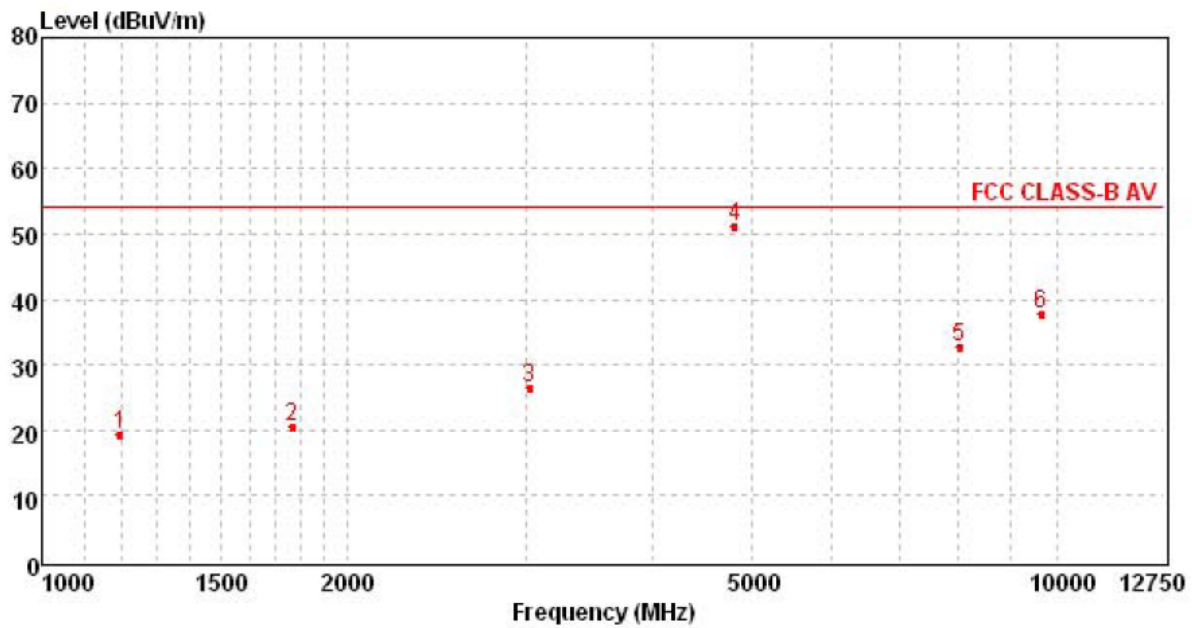
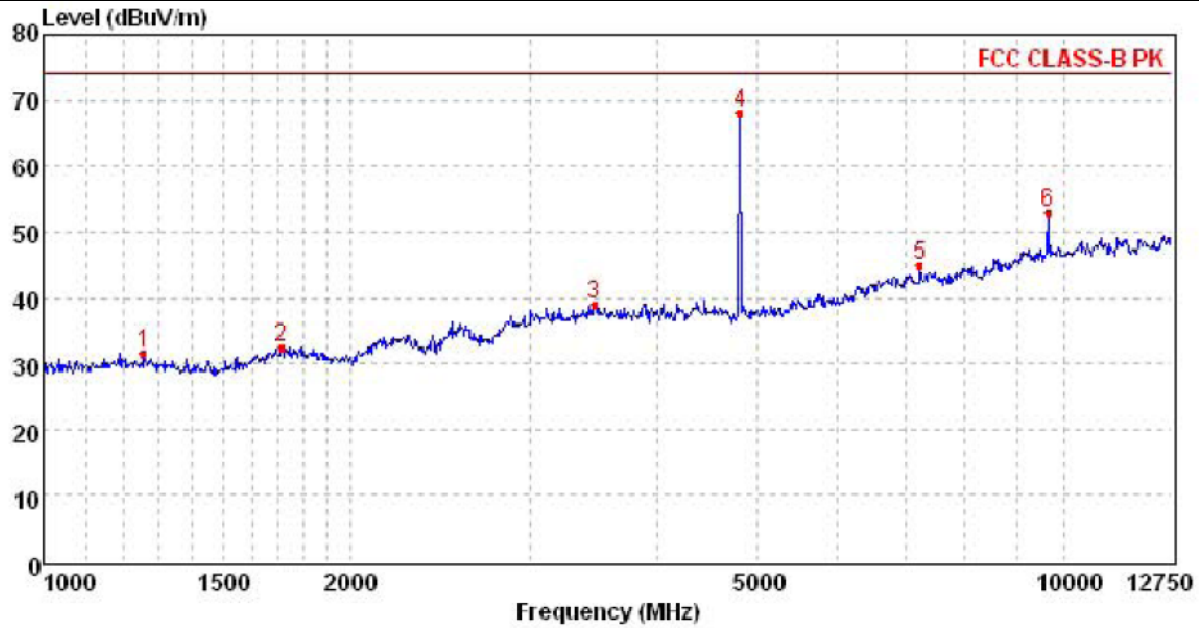
**MEASUREMENT RESULT: "GM160111610\_red"**

1/11/2016 10:31AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
213.330000	19.30	-14.1	40.0	20.7	QP	300.0	320.00	HORIZONTAL
314.210000	23.40	-13.3	47.0	23.6	QP	100.0	253.00	HORIZONTAL
365.620000	23.80	-11.7	47.0	23.2	QP	100.0	116.00	HORIZONTAL
374.350000	24.20	-11.5	47.0	22.8	QP	100.0	116.00	HORIZONTAL
530.520000	24.50	-5.8	47.0	22.5	QP	100.0	292.00	HORIZONTAL
916.520000	34.70	3.0	47.0	12.3	QP	300.0	24.00	HORIZONTAL

■ Above 1 GHz ~12.75GHz

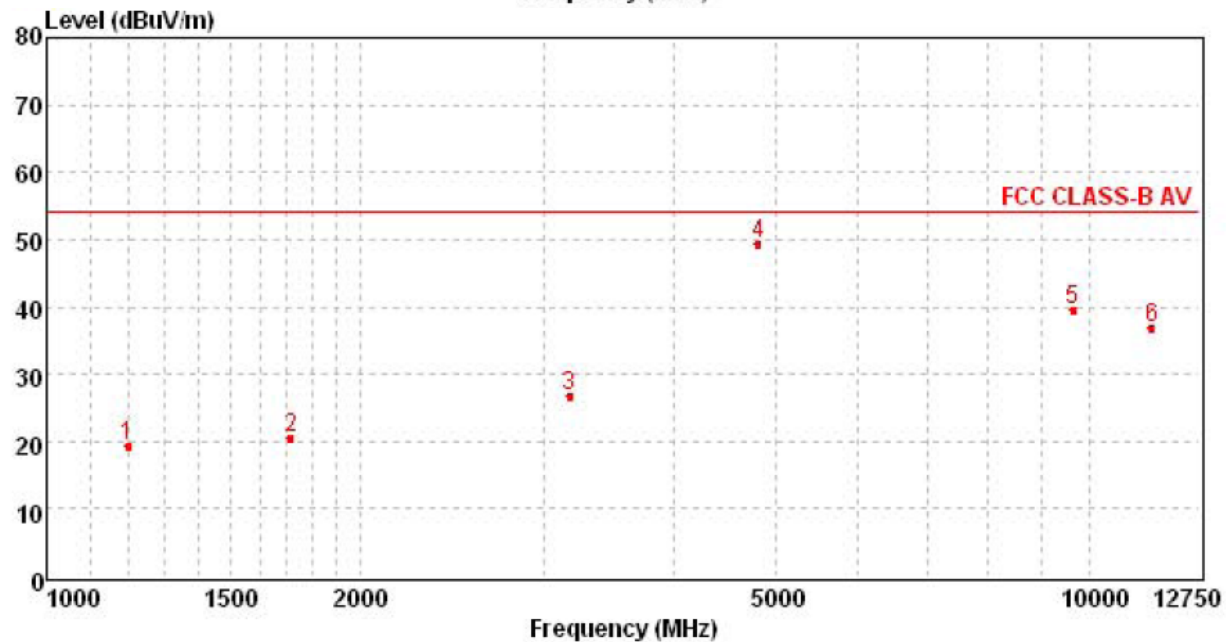
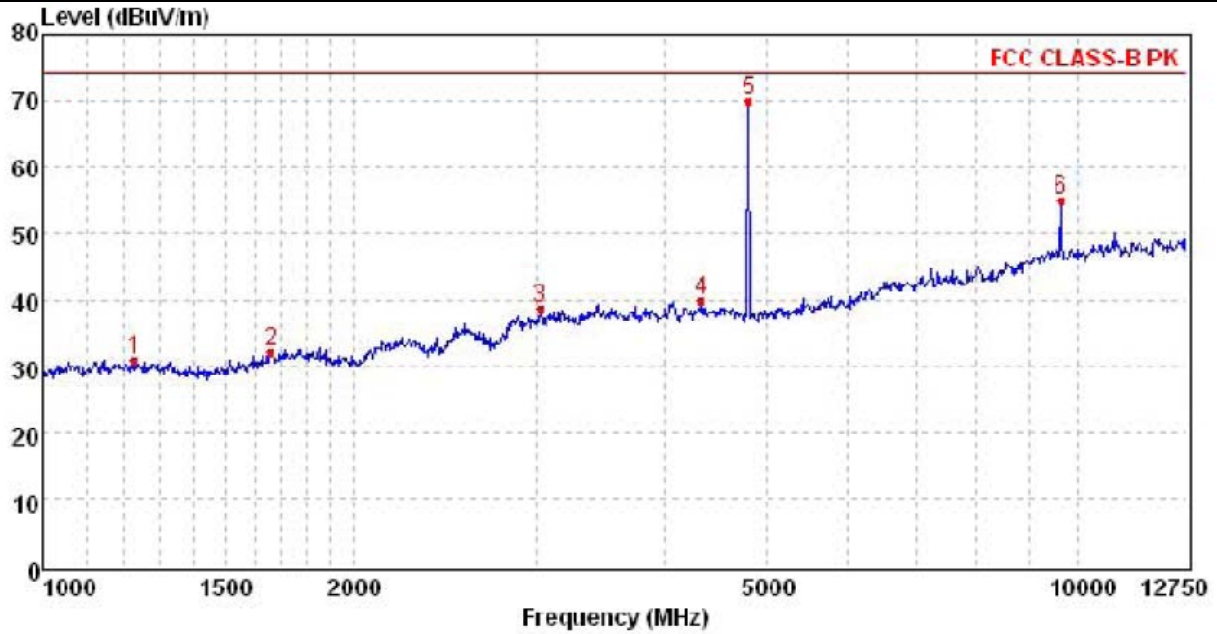
CH00 for 2.4G ISM	Vertical
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1156.15	38.64	24.38	4.42	36.46	30.98	74	-43.02	Vertical	Peak
1750.702	39.46	25.46	5.7	37.06	33.56	74	-40.44	Vertical	Peak
3419.491	39.61	28.67	8.71	37.99	39	74	-35	Vertical	Peak
4858.719	66.02	31.12	9.24	38.56	67.82	74	-6.18	Vertical	Peak
7301.355	36.48	36.05	10.89	38.12	45.3	74	-28.7	Vertical	Peak
9734.779	41.74	38.23	12.23	38.09	54.11	74	-19.89	Vertical	Peak
1159.096	26.66	24.38	4.43	36.46	19.01	54	-34.99	Vertical	Average
1755.164	26.61	25.47	5.71	37.06	20.73	54	-33.27	Vertical	Average
3419.491	27.42	28.67	8.71	37.99	26.81	54	-27.19	Vertical	Average
4858.719	48.92	31.12	9.24	38.56	50.72	54	-3.28	Vertical	Average
7301.355	23.56	36.05	10.89	38.12	32.38	54	-21.62	Vertical	Average
9734.779	25.38	38.23	12.23	38.09	37.75	54	-16.25	Vertical	Average

CH00 for 2.4G ISM

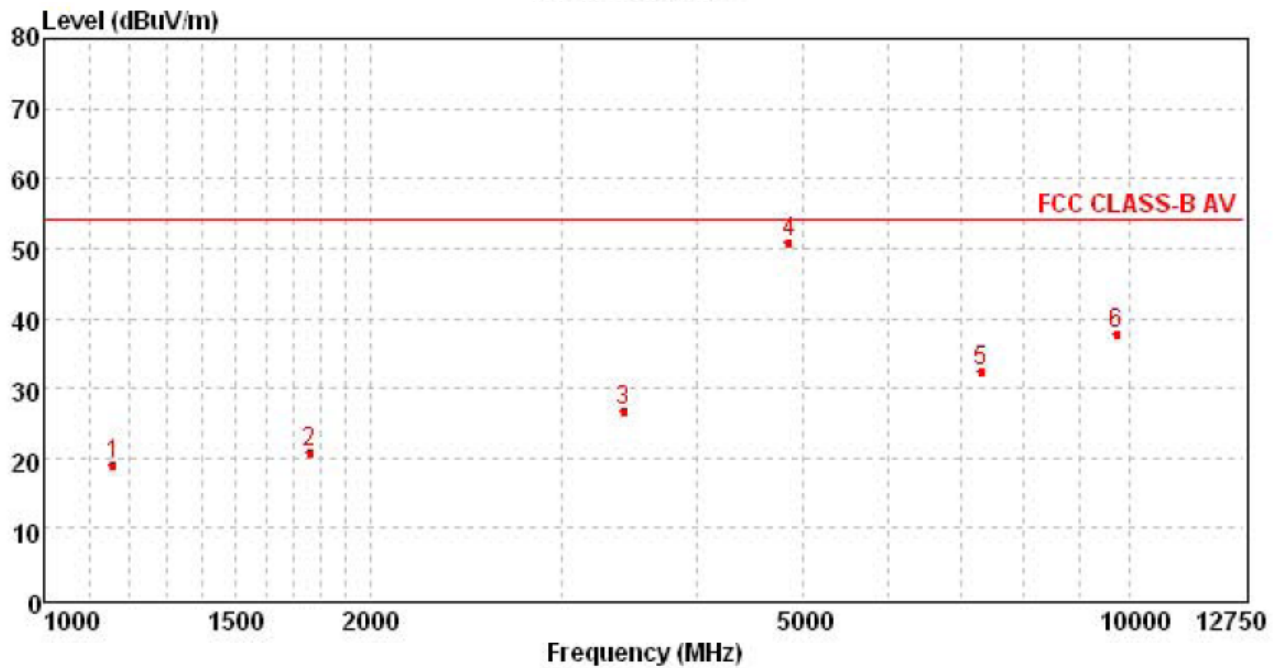
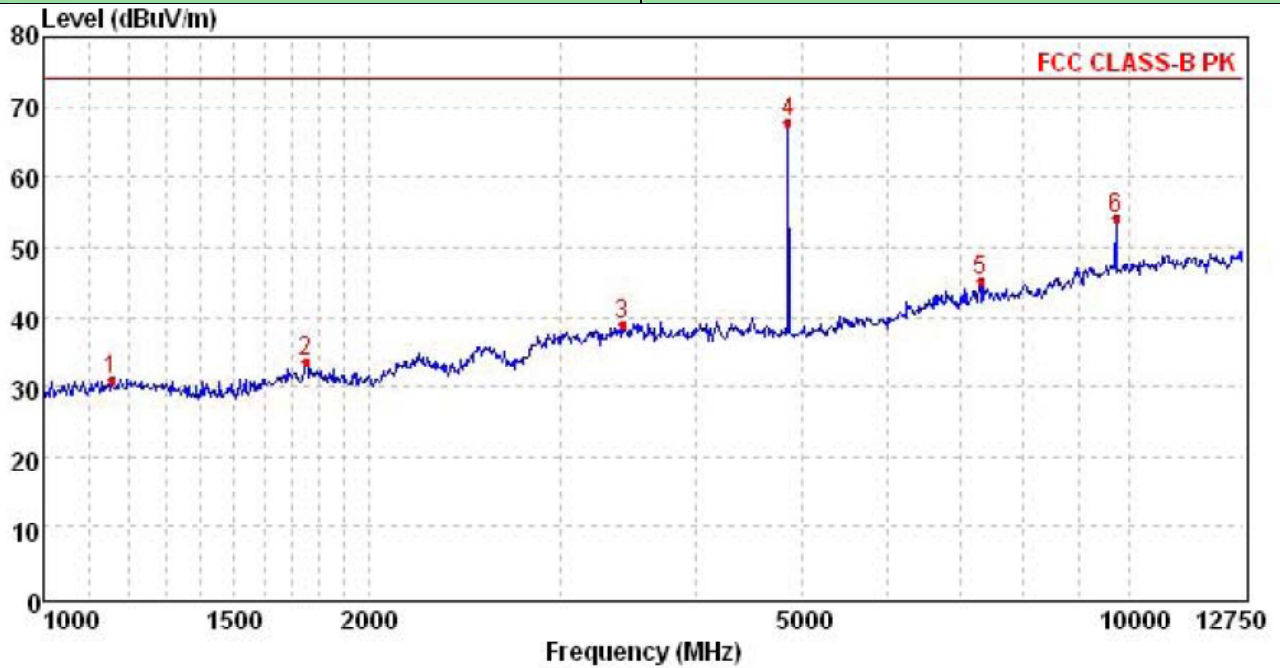
Horizontal



Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1225.86	38.48	24.45	4.59	36.54	30.98	74	-43.02	Horizontal	Peak
1663.803	38.33	25.2	5.53	36.98	32.08	74	-41.92	Horizontal	Peak
3026.195	40.03	28.51	8.21	37.99	38.76	74	-35.24	Horizontal	Peak
4332.852	38.86	30.44	8.87	38.22	39.95	74	-34.05	Horizontal	Peak
4809.499	67.99	31.09	9.21	38.53	69.76	74	-4.24	Horizontal	Peak
9636.161	42.84	38.18	12.14	38.07	55.09	74	-18.91	Horizontal	Peak
1198.095	26.94	24.43	4.52	36.51	19.38	54	-34.62	Horizontal	Average
1715.411	26.58	25.36	5.64	37.03	20.55	54	-33.45	Horizontal	Average
3176.155	27.69	28.58	8.41	37.99	26.69	54	-27.31	Horizontal	Average
4809.499	47.55	31.09	9.21	38.53	49.32	54	-4.68	Horizontal	Average
9636.161	27.42	38.18	12.14	38.07	39.67	54	-14.33	Horizontal	Average
11486.41	22.19	39.1	13.48	37.88	36.89	54	-17.11	Horizontal	Average

CH03 for 2.4G ISM

Vertical

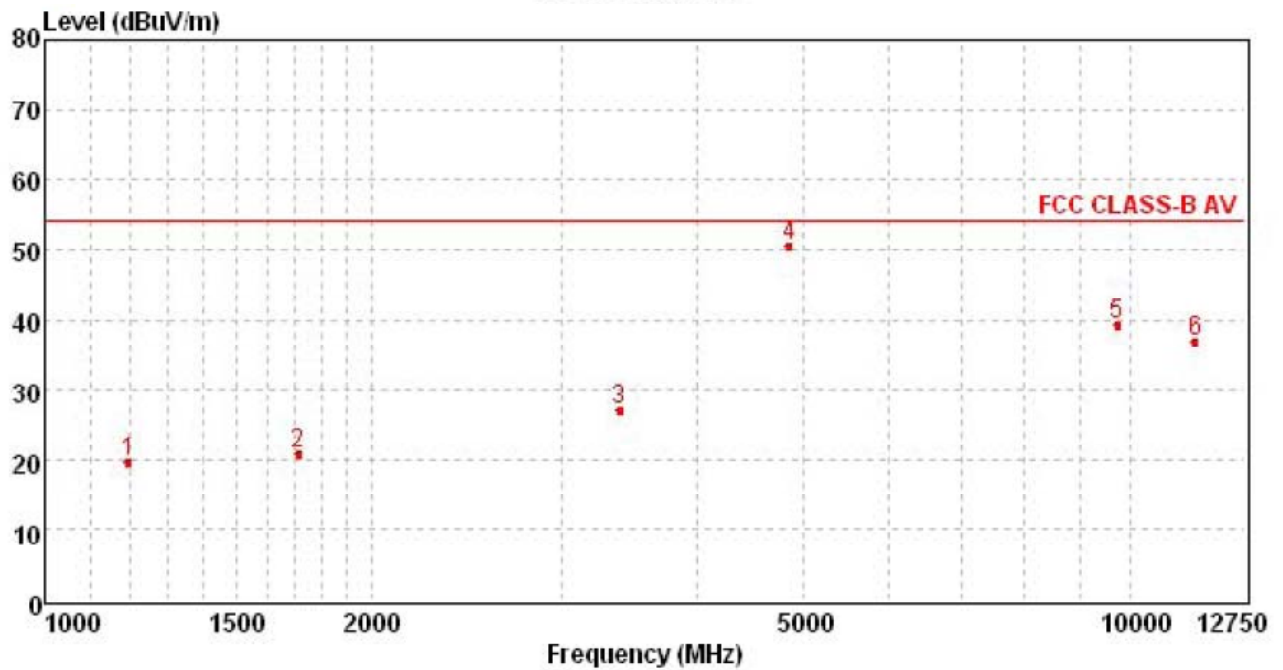
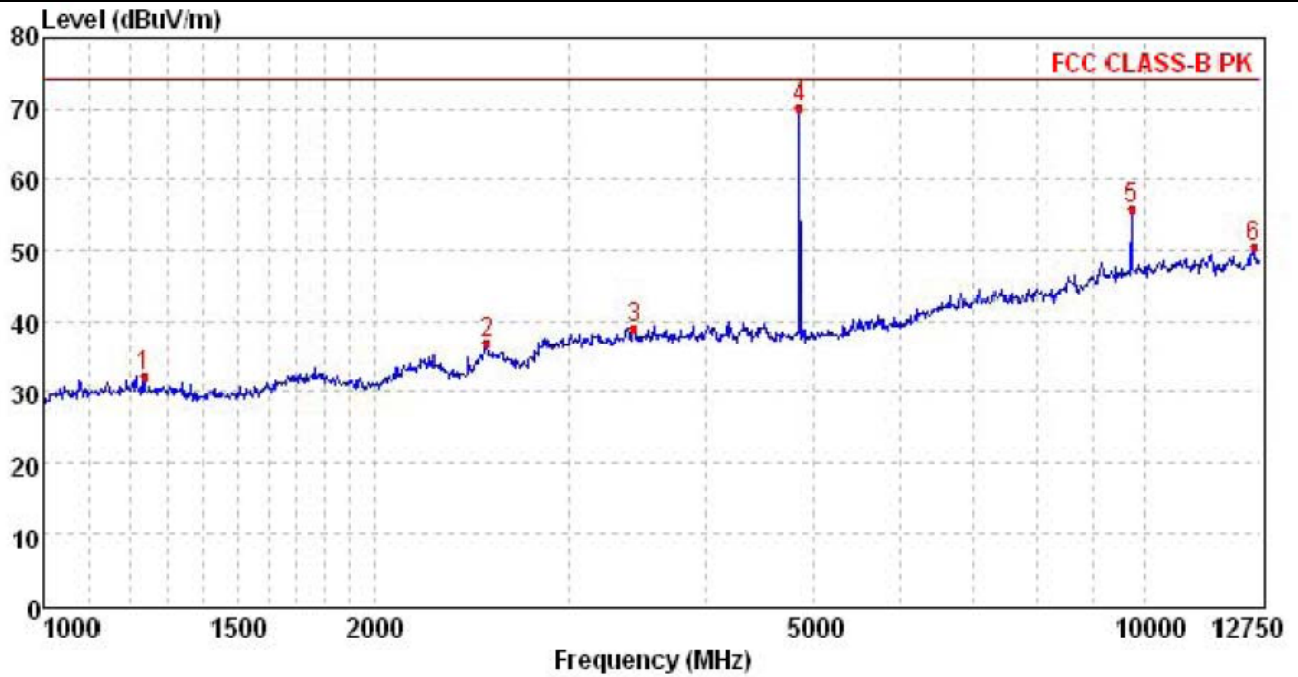


Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1156.15	38.64	24.38	4.42	36.46	30.98	74	-43.02	Vertical	Peak
1750.702	39.46	25.46	5.7	37.06	33.56	74	-40.44	Vertical	Peak
3419.491	39.61	28.67	8.71	37.99	39	74	-35	Vertical	Peak
4858.719	66.02	31.12	9.24	38.56	67.82	74	-6.18	Vertical	Peak
7301.355	36.48	36.05	10.89	38.12	45.3	74	-28.7	Vertical	Peak
9734.779	41.74	38.23	12.23	38.09	54.11	74	-19.89	Vertical	Peak
1159.096	26.66	24.38	4.43	36.46	19.01	54	-34.99	Vertical	Average
1755.164	26.61	25.47	5.71	37.06	20.73	54	-33.27	Vertical	Average
3419.491	27.42	28.67	8.71	37.99	26.81	54	-27.19	Vertical	Average
4858.719	48.92	31.12	9.24	38.56	50.72	54	-3.28	Vertical	Average
7301.355	23.56	36.05	10.89	38.12	32.38	54	-21.62	Vertical	Average
9734.779	25.38	38.23	12.23	38.09	37.75	54	-16.25	Vertical	Average



CH03 for 2.4G ISM

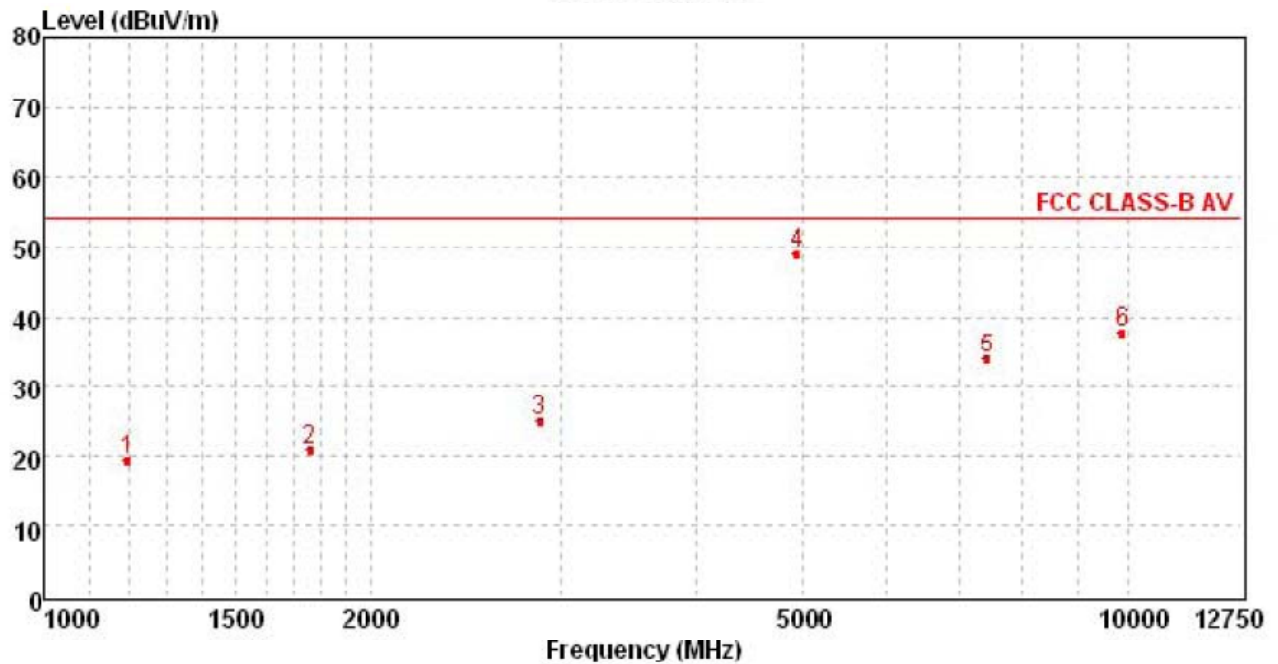
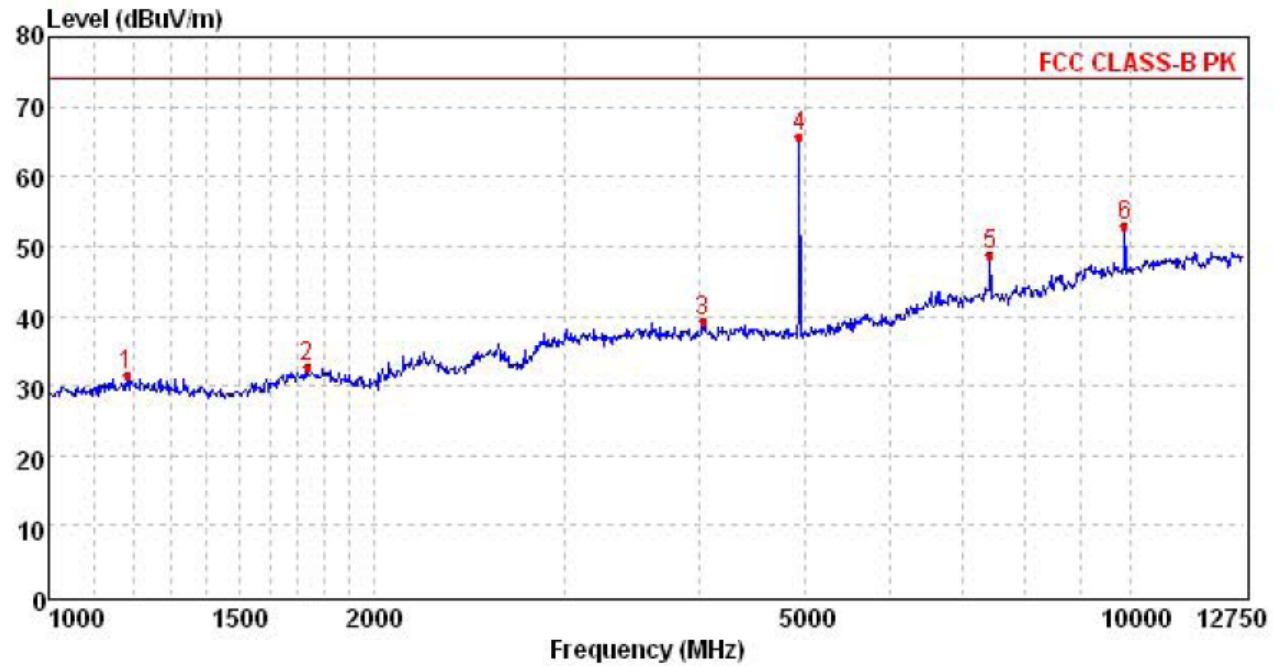
Horizontal



Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1235.257	39.61	24.46	4.62	36.55	32.14	74	-41.86	Horizontal	Peak
2525.839	39.45	27.94	7.04	37.68	36.75	74	-37.25	Horizontal	Peak
3445.704	39.67	28.68	8.73	37.99	39.09	74	-34.91	Horizontal	Peak
4858.719	68.3	31.12	9.24	38.56	70.1	74	-3.9	Horizontal	Peak
9734.779	43.67	38.23	12.23	38.09	56.04	74	-17.96	Horizontal	Peak
12556.75	35.28	39.22	13.92	37.93	50.49	74	-23.51	Horizontal	Peak
1195.049	27.13	24.42	4.52	36.51	19.56	54	-34.44	Horizontal	Average
1711.05	26.89	25.34	5.63	37.03	20.83	54	-33.17	Horizontal	Average
3393.477	27.81	28.66	8.68	37.99	27.16	54	-26.84	Horizontal	Average
4858.719	48.79	31.12	9.24	38.56	50.59	54	-3.41	Horizontal	Average
9734.779	26.96	38.23	12.23	38.09	39.33	54	-14.67	Horizontal	Average
11486.41	22.28	39.1	13.48	37.88	36.98	54	-17.02	Horizontal	Average

CH07 for 2.4G ISM

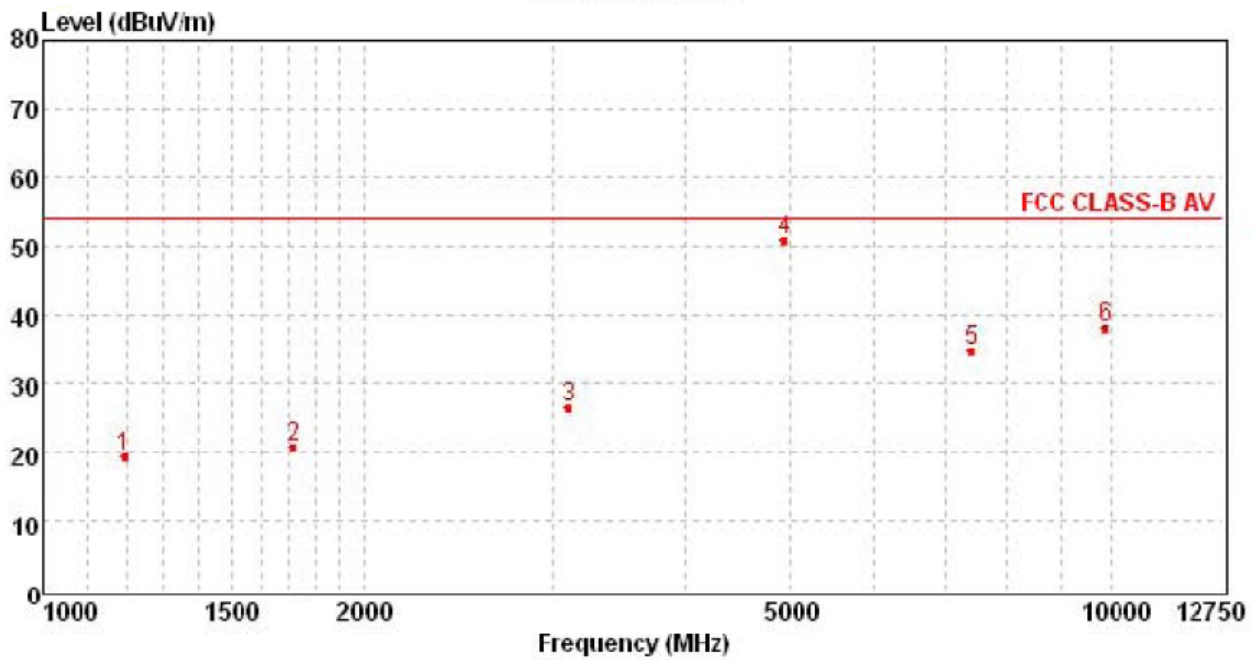
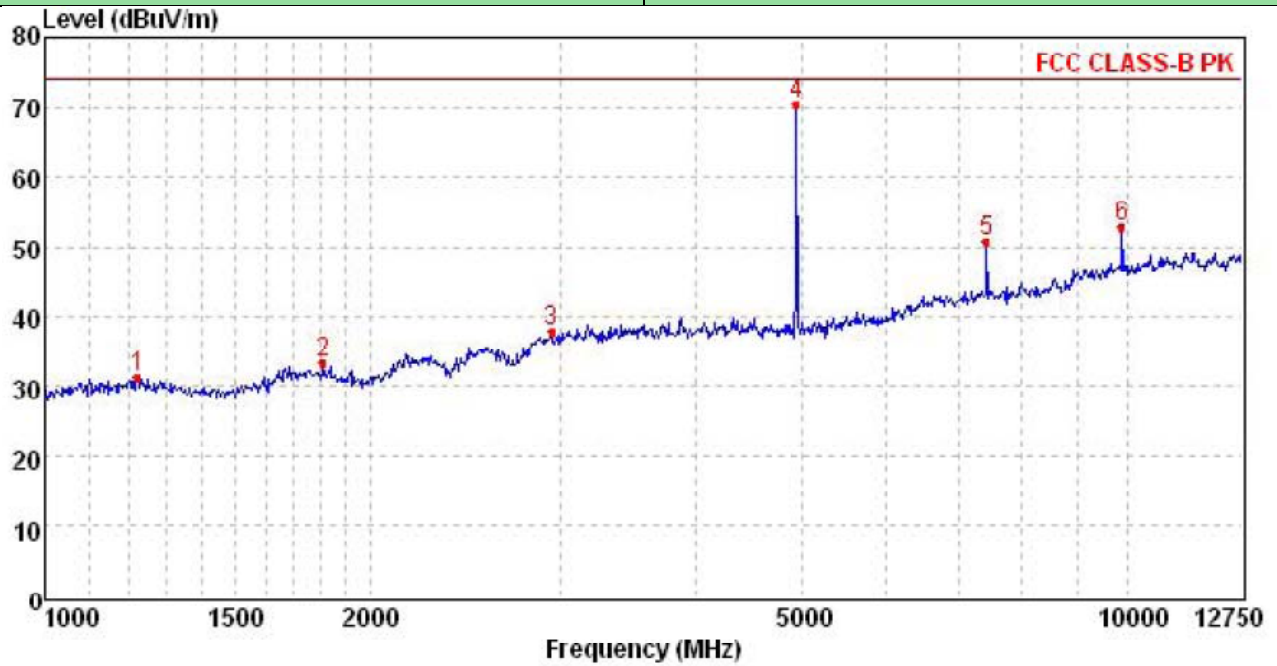
Vertical



Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1179.935	39	24.4	4.48	36.49	31.39	74	-42.61	Vertical	Peak
1732.967	38.69	25.4	5.67	37.04	32.72	74	-41.28	Vertical	Peak
4024.52	39.13	29.57	8.63	38.01	39.32	74	-34.68	Vertical	Peak
4946.072	63.89	31.17	9.31	38.62	65.75	74	-8.25	Vertical	Peak
7413.726	39.86	36.13	10.93	38.14	48.78	74	-25.22	Vertical	Peak
9884.602	40.38	38.33	12.39	38.12	52.98	74	-21.02	Vertical	Peak
1195.049	26.81	24.42	4.52	36.51	19.24	54	-34.76	Vertical	Average
1755.164	26.58	25.47	5.71	37.06	20.7	54	-33.3	Vertical	Average
2868.674	26.58	28.36	7.87	37.91	24.9	54	-29.1	Vertical	Average
4946.072	47.33	31.17	9.31	38.62	49.19	54	-4.81	Vertical	Average
7413.726	25.06	36.13	10.93	38.14	33.98	54	-20.02	Vertical	Average
9884.602	25.14	38.33	12.39	38.12	37.74	54	-16.26	Vertical	Average

CH07 for 2.4G ISM

Horizontal



Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1219.635	38.66	24.45	4.58	36.54	31.15	74	-42.85	Horizontal	Peak
1809.605	38.9	25.61	5.81	37.1	33.22	74	-40.78	Horizontal	Peak
2942.635	39.34	28.43	8.04	37.95	37.86	74	-36.14	Horizontal	Peak
4946.072	68.69	31.17	9.31	38.62	70.55	74	-3.45	Horizontal	Peak
7413.726	42.06	36.13	10.93	38.14	50.98	74	-23.02	Horizontal	Peak
9884.602	40.23	38.33	12.39	38.12	52.83	74	-21.17	Horizontal	Peak
1192.011	26.99	24.42	4.52	36.5	19.43	54	-34.57	Horizontal	Average
1715.411	26.81	25.36	5.64	37.03	20.78	54	-33.22	Horizontal	Average
3112.129	27.58	28.55	8.33	37.99	26.47	54	-27.53	Horizontal	Average
4946.072	48.96	31.17	9.31	38.62	50.82	54	-3.18	Horizontal	Average
7413.726	25.88	36.13	10.93	38.14	34.8	54	-19.2	Horizontal	Average
9884.602	25.34	38.33	12.39	38.12	37.94	54	-16.06	Horizontal	Average



## ■ Above 12.75GHz ~26.5GHz

Radiated Spurious Plot above 12.75G

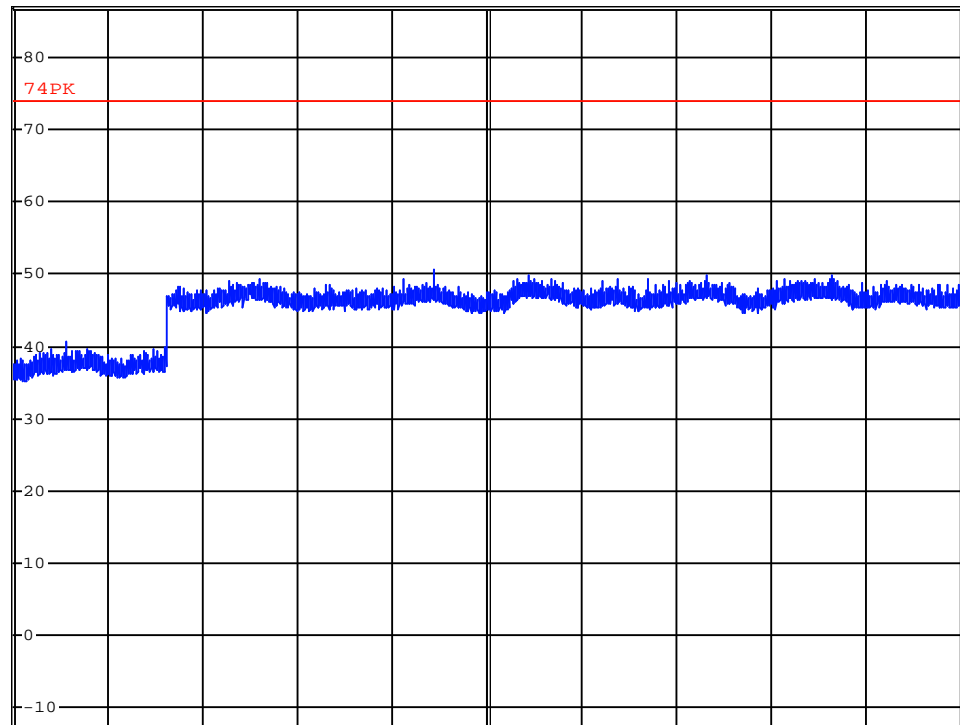
Worst case mode



\* RBW 1 MHz  
\* VBW 3 MHz

Ref 87 dBμV Att 10 dB SWT 105 ms

1 PK  
MAXH



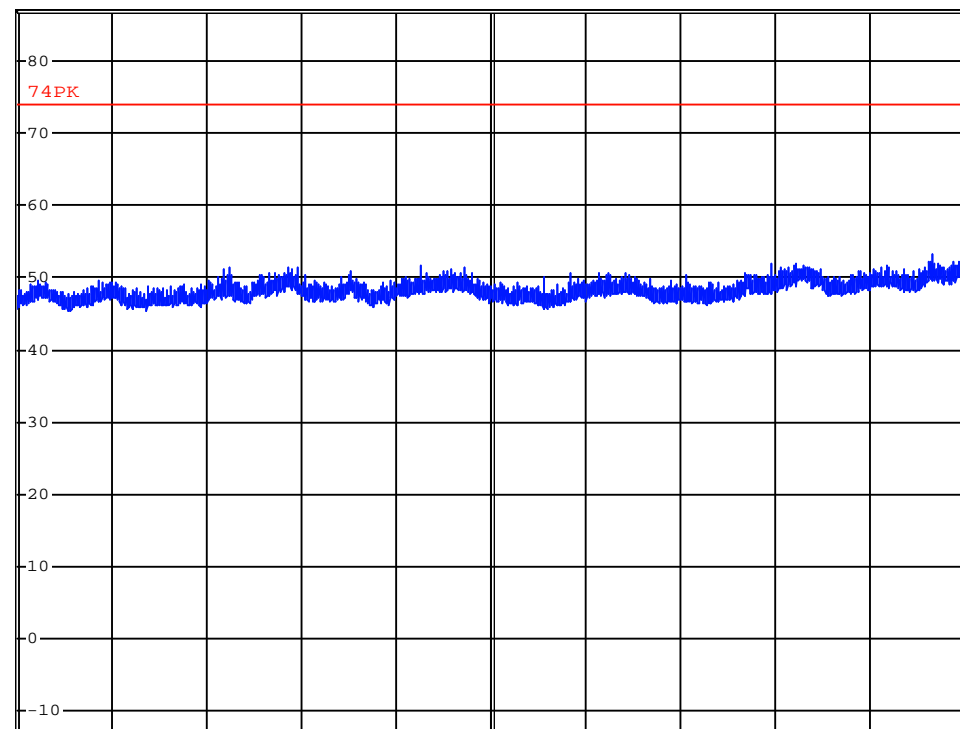
Start 12.75 GHz 525 MHz/ Stop 18 GHz



\* RBW 1 MHz  
\* VBW 3 MHz

Ref 87 dBμV Att 10 dB SWT 170 ms

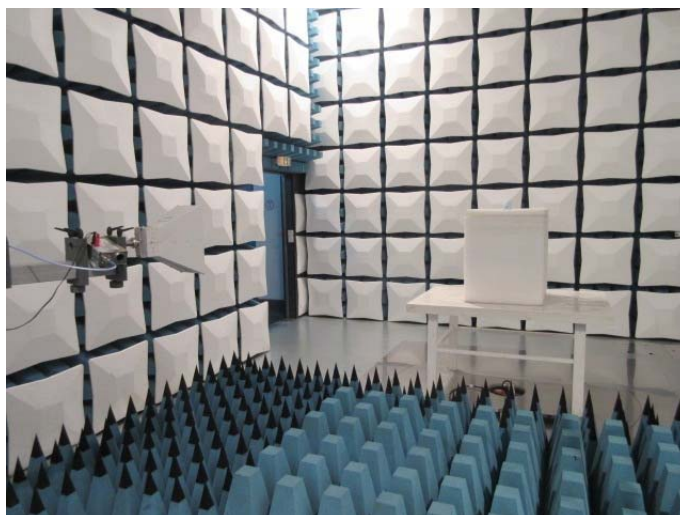
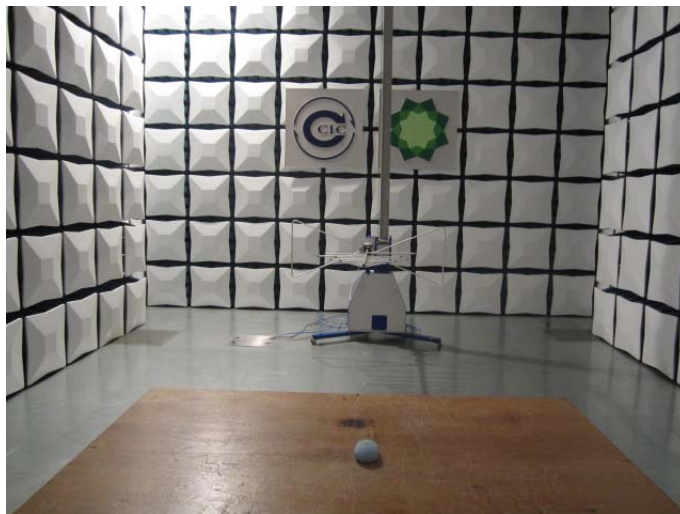
1 PK  
MAXH



Start 18 GHz 850 MHz/ Stop 26.5 GHz

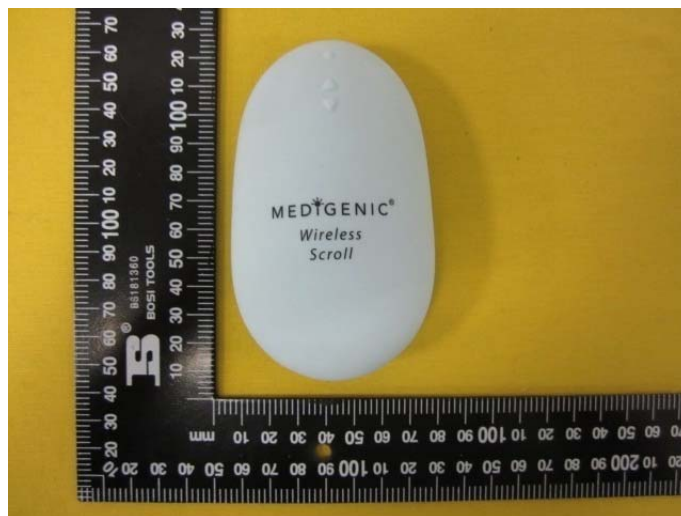
## 5. Test Setup Photos of the EUT

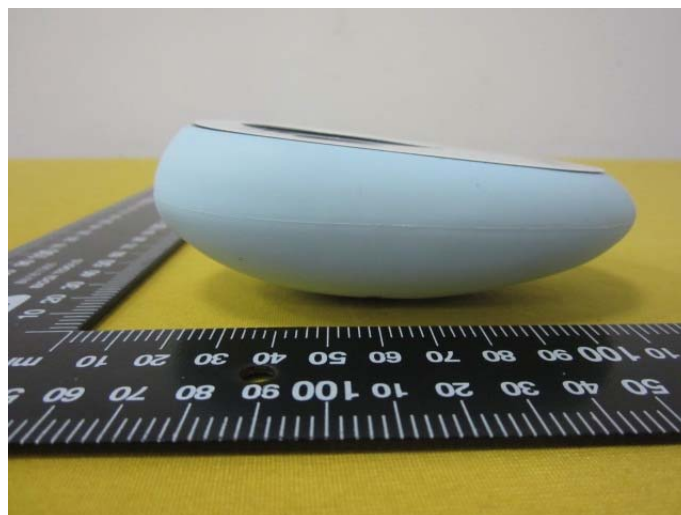
Radiated Emission



## 6. External and Internal Photos of the EUT

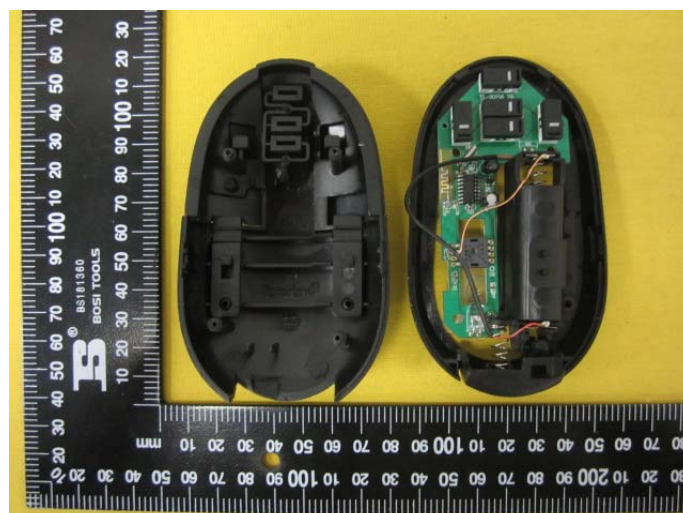
### External photos

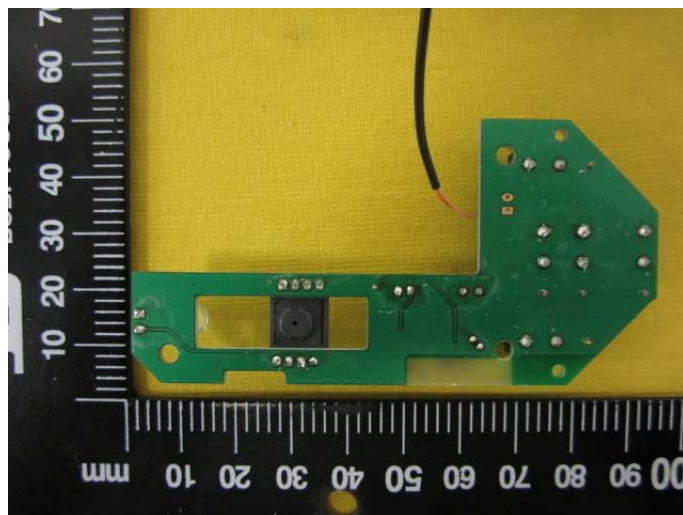
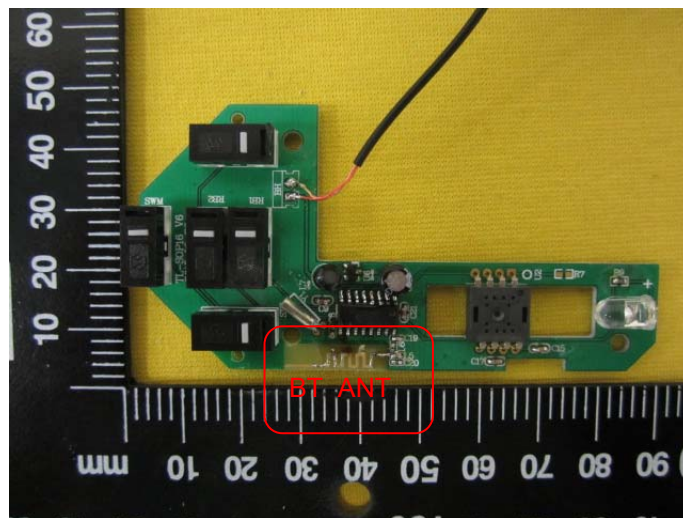
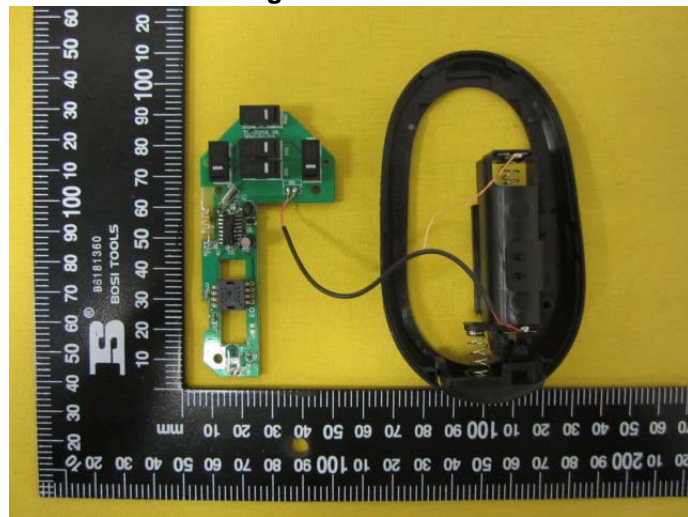






Internal photos





.....End of Report.....