ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C & RS-210 REQUIREMENT

OF

Bluetooth Car Kit

FCC ID: I38-BC1000

IC: 2343A-BC1000

MODEL No.: BC1000

BRAND NAME: Aztech

REPORT NO: SZE060625107105R

ISSUE DATE: August 15, 2006

Prepared for

AZTECH SYSTEMS LTD
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Prepared by

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VERIFICATION OF COMPLIANCE

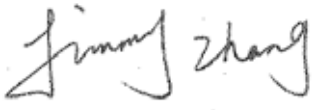
Applicant:	Aztech Systems Ltd 31 Ubi Road 1, Aztech Building, Singapore 408694
Manufacturer	Aztech Communication Device (DG) Ltd Shang Keng Village, Chang Ping, Dong Guan Shi, China
Product Description:	Bluetooth Car Kit
Brand Name:	Aztech
Model Number:	BC1000
Serial Number:	N/A
File Number:	SZE060625107105R
Date of Test:	June 25, 2006 ~ August 15, 2006

We hereby certify that:

The above equipment was tested by Centre Testing International CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247 and RS-210.

The test results of this report relate only to the tested sample identified in this report.

Reviewed By



Jimmy Zhang / Technical Manager
CENTRE TESTING INTERNATIONAL CO., LTD.

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1 GENERAL INFORMATION

1.1 Product Description

The EUT is an short range, lower power, wireless controlled designed as an " Input and output Device". It is designed by way of utilizing the FHSS technology to achieve the system operation.

A major technical descriptions of EUT is described as following:

A). Operation Frequency: From 2402 MHz – 2480 MHz
total 79 channels with 1 MHz channel separation
B). Modulation: FHSS
C). Antenna Designation: Non-User Replaceable (Integrated in the PCB)
D). Power Supply: 12 V DC by battery.

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: I38-BC1000 and IC: 2343A-BC1000 filing to comply with Section 15.247 of the FCC Part 15, Subpart C and RS-210 rules

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

The fully anechoic chamber test site and conducted measurement facility used to collect the radiated data is located on the address of Accurate Technology Co. Ltd. F1, Bldg, A, Changyuan New Meterial Port, Keyuan Rd. Science & Industry Park, Nanshan District, 518057, Shenzhen P.R. China.The fully anechoic chamber Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003 and CISPR 22/EN 55022 requirements.

1.5 Special Accessories

Not available for this EUT intended for grant.

1.6 Equipment Modifications

Not available for this EUT intended for grant.

2 System Test Configuration

2.1 Configuration of Tested System

Fig. 2-1 Configuration of Tested System For Gamepad

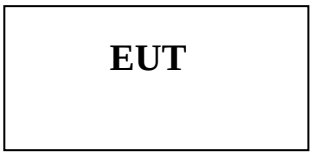


Fig. 2-3 Configuration of Tested System For Normal Operation

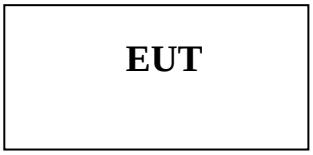


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	Bluetooth Car Kit	N/A	BC1000	FCC ID: I38-BC1000 IC: 2343A-BC1000	N/A	***EUT***
	Mobile Phone	Daxian	CU928	N/A	N/A	

3 Summary Of Test Results

FCC Rules	Description Of Test	EUT	Result
§ 15.247	Conduction Emission	Bluetooth Car Kit	Compliant
§ 15.247	Hopping Channels	Bluetooth Car Kit	Compliant
§ 15.247	Channel Separation	Bluetooth Car Kit	Compliant
§ 15.247	20 dB Bandwidth	Bluetooth Car Kit	Compliant
§ 15.247	Operation Frequency	Bluetooth Car Kit	Compliant
§ 15.247	Peak Output Power	Bluetooth Car Kit	Compliant
§ 15.247	Spurious Emission	Bluetooth Car Kit	Compliant
§ 15.247	Band Edge	Bluetooth Car Kit	Compliant
§ 15.247	Dwell Time	Bluetooth Car Kit	Compliant
§ 15.247	Maximum Permissible Explosure	Bluetooth Car Kit	Compliant

4 Description of test modes

4.1 Continuous Operation

4.1.1 Continuous Transmitting Mode

1. The EUT (Bluetooth Car Kit) has been set to operate continuously on the lowest, the middle and the highest operation frequency individually.
2. The EUT stays in continuous transmitting mode on the operation frequency being set.

4.1.2 Continuous Receiving Mode

1. The EUT (Bluetooth Car Kit) has been set to operate continuously on the lowest, the middle and the highest operation frequency individually.
2. The EUT stays in continuous receiving mode on the operation frequency being set.

4.2 Normal Operation

4.2.1 Normal Operation

1. The EUT (Bluetooth Car Kit) has been set to normal operating condition by using a mobile phone.
2. The EUT stays in normal operation mode using the FHSS method.

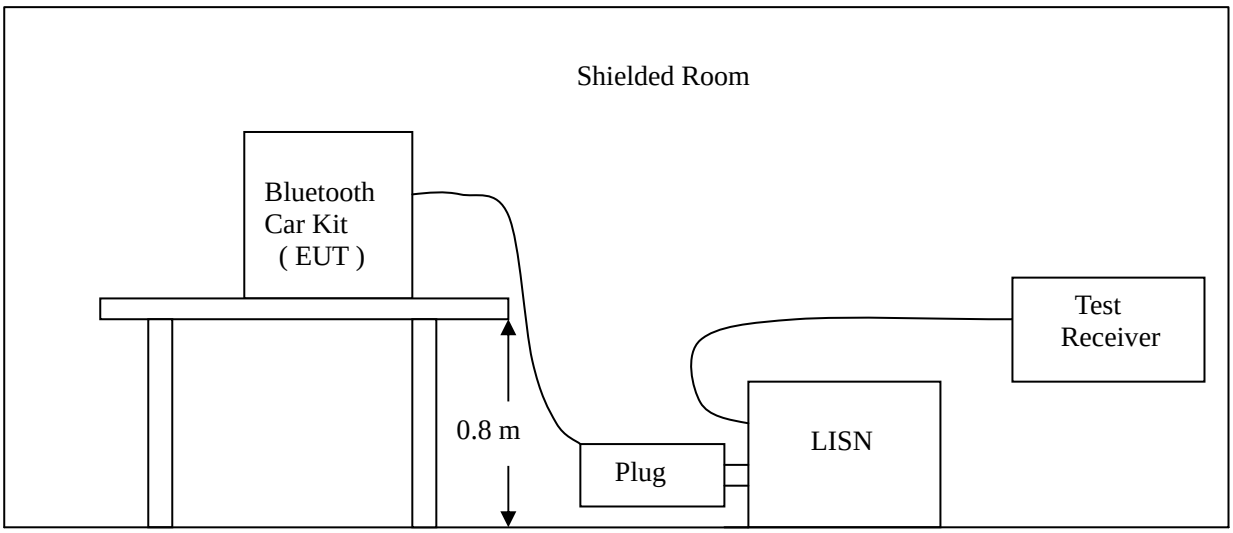
5 Parameters For Bluetooth Car Kit

5.1 Conduction Emissions

5.1.1 Measurement Procedure:

1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4.
2 Support equipment, if needed, was placed as per ANSI C63.4.
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4 The EUT received DC12V power through a Line Impedance Stabilization Network (LISN) which supplied DC power source and was grounded to the ground plane.
5 All support equipments received power from a second LISN, if any.
6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8 During the above scans, the emissions were maximized by cable manipulation.

5.1.2 Test SET-UP (Block Diagram of Configuration)



5.1.3 Measurement Equipment Used:

Conducted Emission Test Site # 3					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESCS30	100038	2005/11	2006/11
ARTIFICIAL MAINS	ROHDE & SCHWARZ	ESH2-Z5	100028	2005/11	2006/11
PULSE LIMITER	ROHDE & SCHWARZ	ESHSZ2	100044	2005/11	2006/11
EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	N/A	N/A	N/A

5.1.4 Limits And Measurement Result:

Limits and Measurement Result Of Hopping Channel		
Applicable Limits	**Measurement Result**	
	Test Data	Criteria
Per 15.207 Conducted Emission Limit	See as the chart below	PASS

(The chart below shows the highest readings taken from the final data)

FREQ MHz	PEAK RAW dBuV	Q.P. RAW dBuV	AVG RAW dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.405	41.38	---	---	58.76	48.76	---	-7.38	L1
0.457	41.26	---	---	57.12	47.12	---	-5.86	L1
0.586	40.45	---	---	56.00	46.00	---	-5.55	L1
0.710	44.21	---	---	56.00	46.00	---	-1.79	L1
0.950	41.76	---	---	56.00	46.00	---	-4.24	L1
1.116	40.45	---	---	56.00	46.00	---	-5.55	L1
0.619	42.30	---	---	56.00	46.00	---	-3.70	L2
0.695	41.54	---	---	56.00	46.00	---	-4.46	L2
0.978	40.96	---	---	56.00	46.00	---	-5.04	L2
1.426	38.13	---	---	56.00	46.00	---	-7.87	L2
2.017	37.42	---	---	56.00	46.00	---	-8.58	L2
2.811	36.35	---	---	56.00	46.00	---	-9.65	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE:** "---" denotes the peak emission level was or more than 2dB below the Average limit, so no re-check anymore.

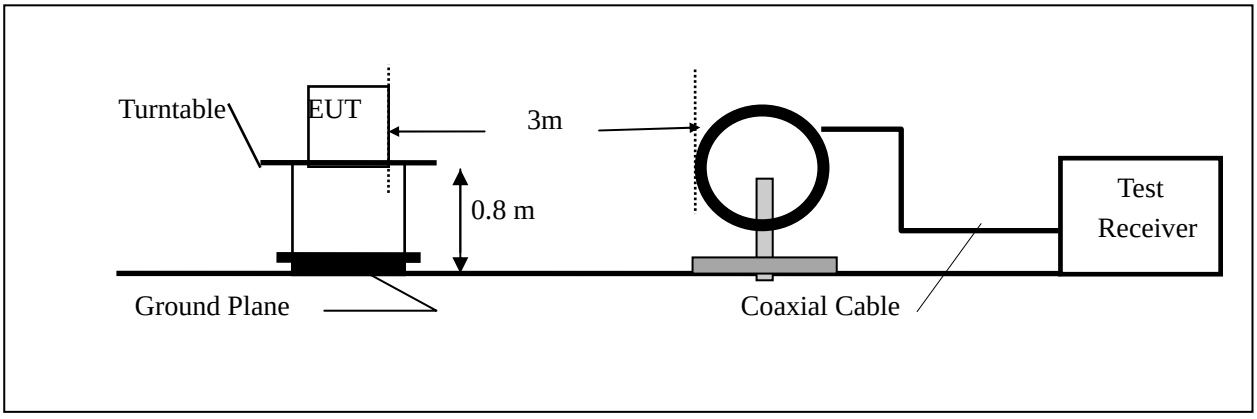
5.2 Hopping Channels

5.2.1 Measurement Procedure:

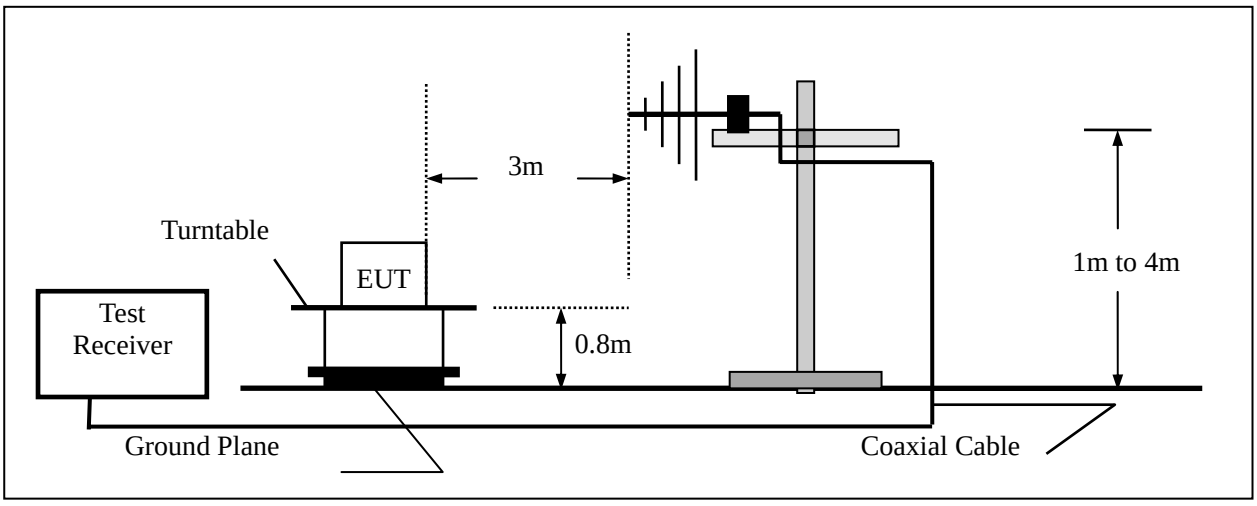
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as Normal Operation mode
3. Set SPA Start Frequency = 2.4 GHz, Stop Frequency= 2.44150 GHz, RBW= 510 KHz, VBW= 510 KHz.
4. Set SPA Trace 1 Max hold, then View. Recording the Nubmer of the Channels N1
5, Then set SPA Start Frequency = 2.44150 GHz, Stop Frequency= 2.48350 GHz, RBW= 510 KHz, VBW=510 KHz.
6, Set SPA Trace 1 Max hold, then View. Recording the Nubmer of the Channels N2
7, The total channel number shall be calculated as N1+N2

5.2.2 Test SET-UP (Block Diagram of Configuration)

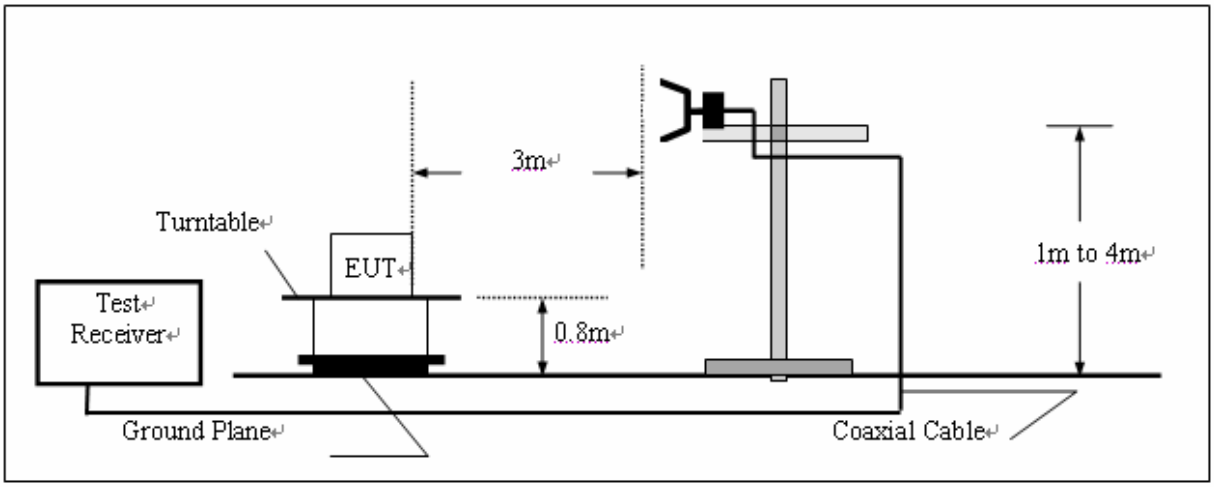
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency Above 1000MHz



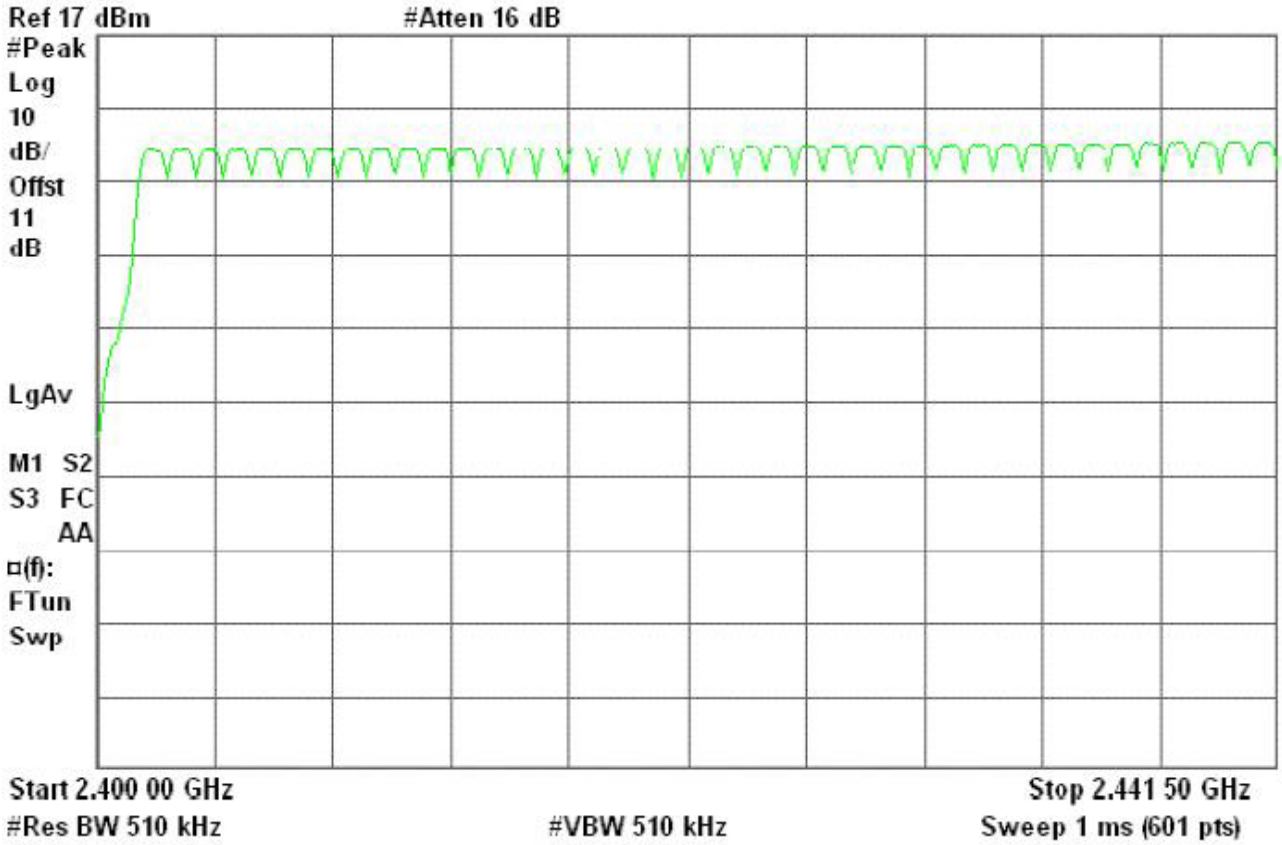
5.2.3 Measurement Equipment Used:

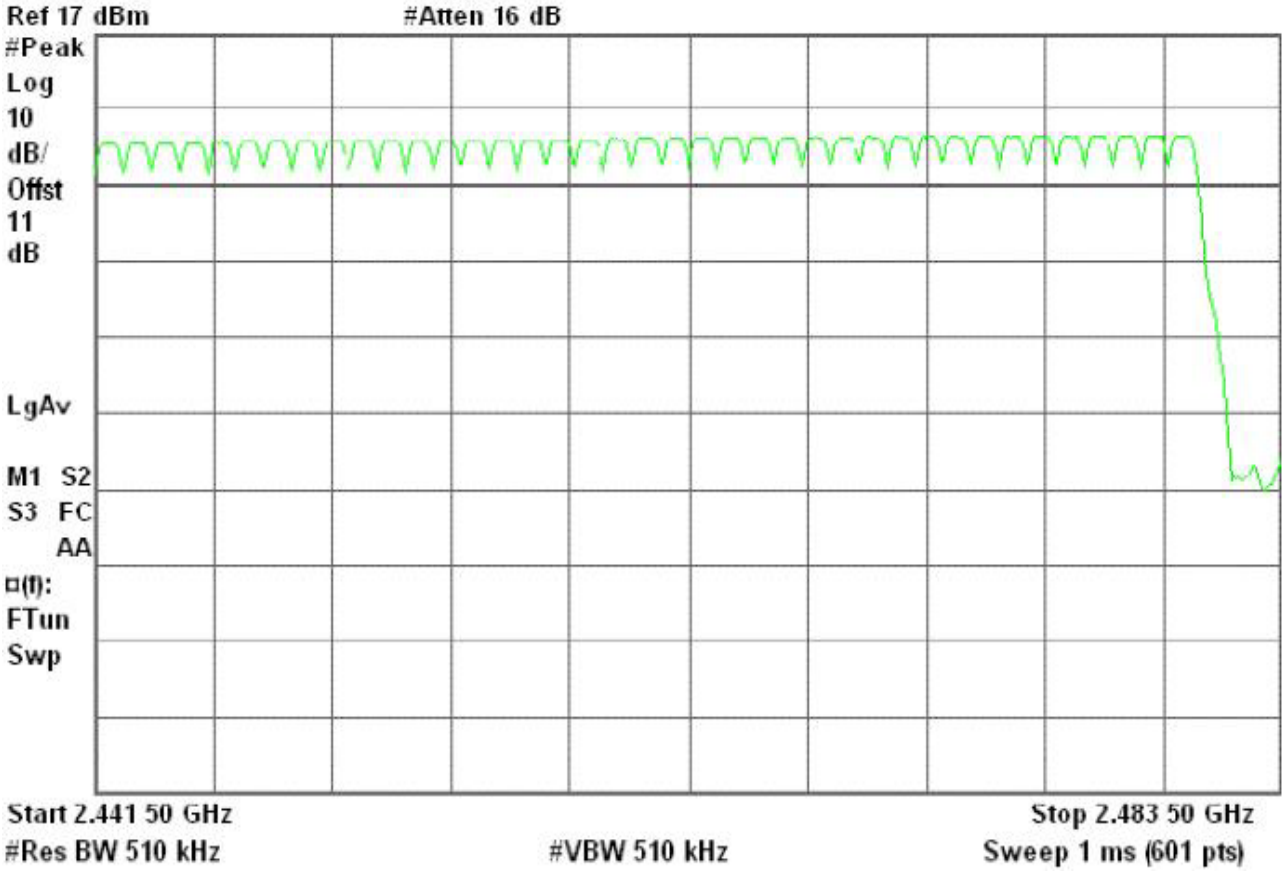
3/5 Anechoic Chamber Radiation Test Site # 4					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2005/11	2006/11
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2005/11	2006/11
RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	N/A	N/A
TURNTABLE	ETS	2088	2149	N/A	N/A
ANTENNA MAST	ETS	2075	2346	N/A	N/A
EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	NA	N/A	N/A

5.2.4 Limits And Measurement Result:

Limits and Measurement Result Of Hopping Channel		
Applicable Limits	**Measurement Result**	
	Test Data	Criteria
Per 15.247 (a)(1)(ii) At least 75 hopping Frequencies	Total 79 Channels Fb= 2402 MHz; Ft=2480 MHz Channel Separation= 1MHz	PASS
Remarks: "Fb" means the Bottom Operation Frequency; "Ft" means the Top Operation Frequency		

The test plots has been attahced as following


Ref 17 dBm
#Atten 16 dB
#Peak
Log
10
dB/
Offst
11
dB
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Start 2.400 00 GHz
Stop 2.441 50 GHz
#Res BW 510 kHz
#VBW 510 kHz
Sweep 1 ms (601 pts)


Ref 17 dBm
#Atten 16 dB
#Peak
Log
10
dB/
Offst
11
dB
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Start 2.441 50 GHz
Stop 2.483 50 GHz
#Res BW 510 kHz
#VBW 510 kHz
Sweep 1 ms (601 pts)

5.3 Channel Separation

5.3.1 Measurement Procedure:

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as Normal Operation mode
3. Set SPA Centre Frequency= 2.4410 GHz, Span= 3 MHz, RBW= 30 KHz, VBW= 100 KHz
4. Set SPA Trace 1 Max hold, then View. Use Mark1, 2, 3 to mark the peak of the three adjacent channels accordingly

5.3.2 Test SET-UP (Block Diagram of Configuration)

The same as described in Section 5.2.2

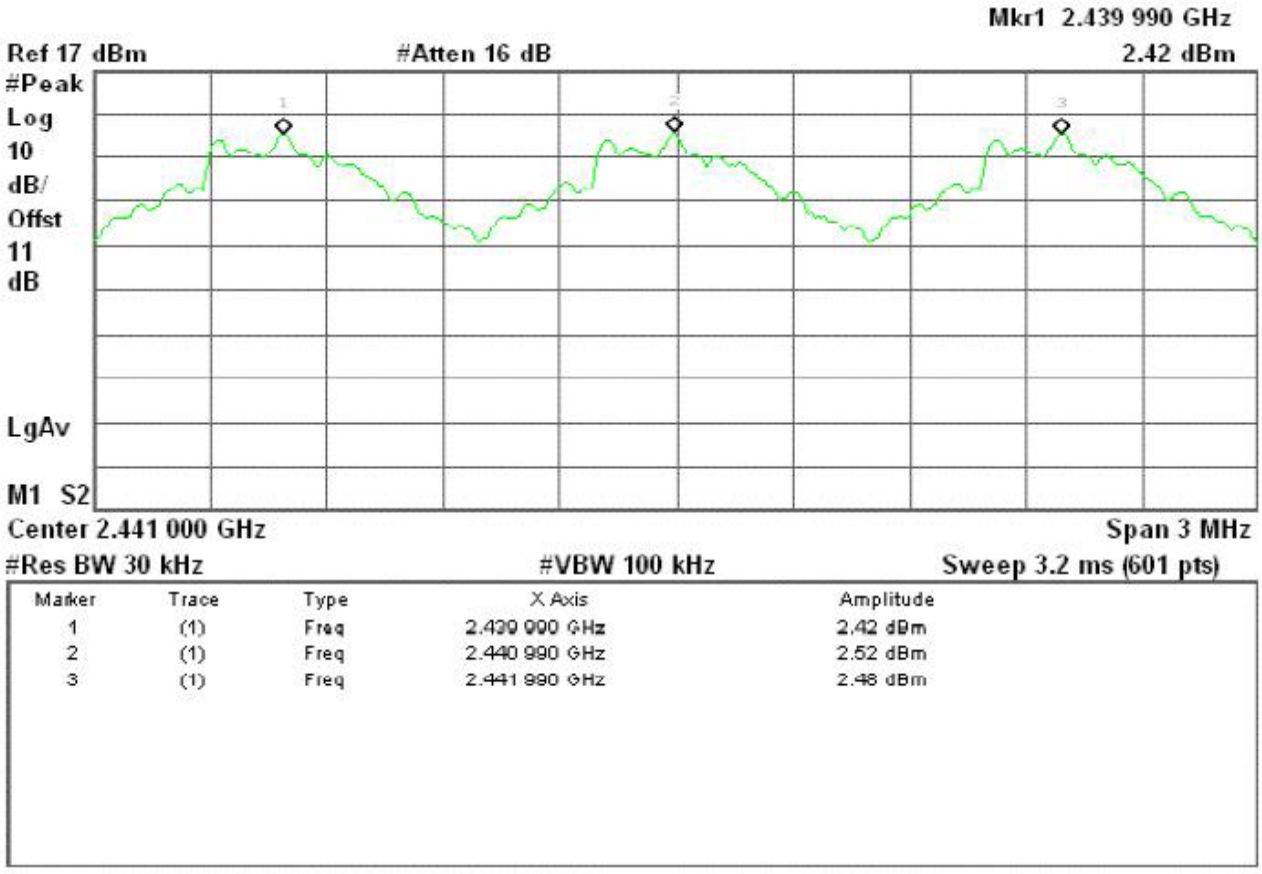
5.3.3 Measurement Equipment Used:

The same as described in Section 5.2.3

5.3.4 Limits And Measurement Result:

Limits and Measurement Result Of Channel Separation		
Applicable Limits	**Measurement Result**	
	Test Data	Criteria
Per 15.247 (a)(1) At least 25 KHz or 20 dB bandwidth of the hopping Channel, whichever is greater.	1 MHz	PASS
*** Remarks: 20 dB Bandwidth is 835 KHz as measured in section 5.4		

The test plots has been attached as following



5.4 20 dB Bandwidth

5.4.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as continuous transmitting mode
3. Set SPA Center Frequency = Operation Frequency, RBW, VBW= 10 KHz, Span =5 MHz.
4. Set SPA Trace 1 Max hold, then View.

5.4.2 Test SET-UP (Block Diagram of Configuration)

The Same as described in Section 5.2.2

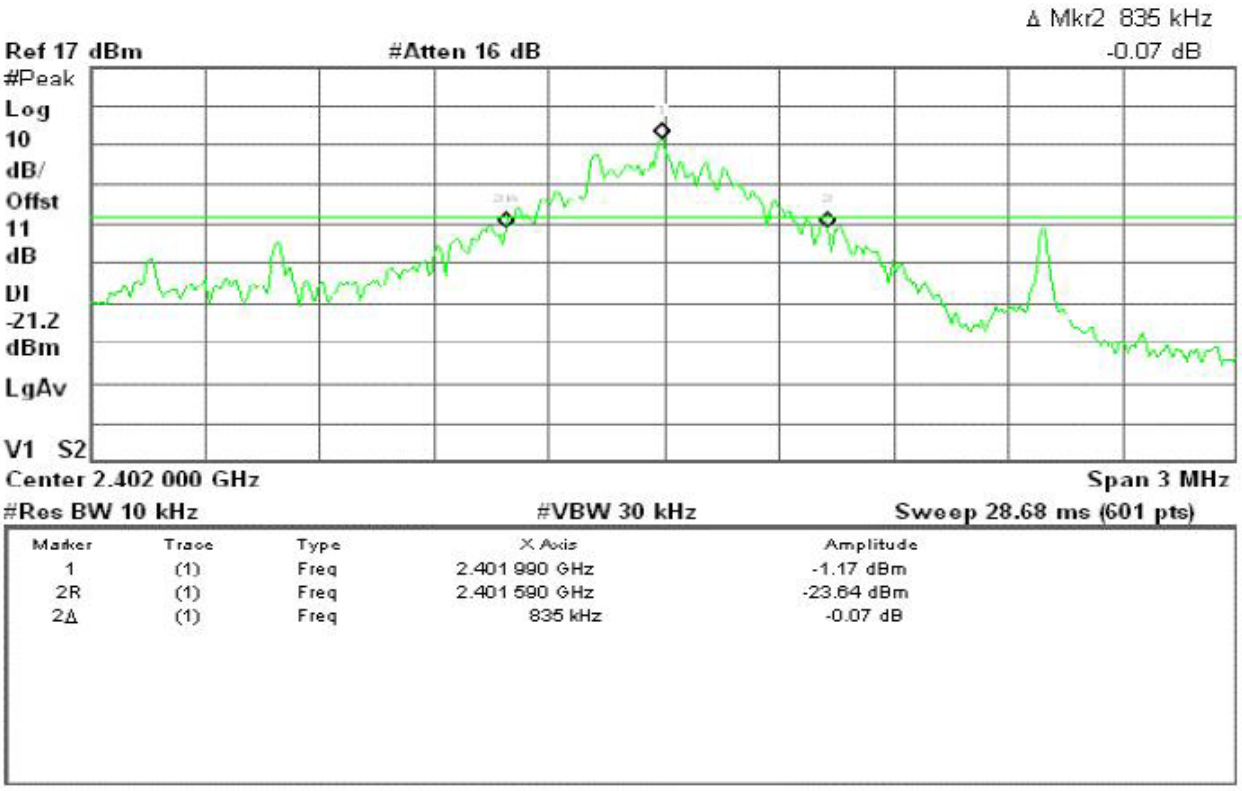
5.4.3 Measurement Equipment Used:

The same as described in Section 5.2.3

5.4.4 Limits And Measurement Results:

Limits and Measurement Result Of 20 dB Bandwidth For The Bottom Channel		
Applicable Limits	**Measurement Result**	
	Test Data	Criteria
Per 15.247 (a)(1)(ii) The maximum 20 dB bandwidth of the hopping channel is 1 MHz	835 KHz	PASS
99% Bandwidth	958 KHz	PASS

The test plot has been attached as following



5.5 Operation Frequency

5.5.1 Measurement Procedure:

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as Continuous Transmitting Mode.
3. Set SPA Start Frequency = 2.310 GHz, Stop Frequency = 2.405 GHz, RBW= 1 MHz, VBW= 1 MHz, for lowest frequency band edge, then set Start frequency=2.475 GHz, Stop Frequency = 2.500 GHz, RBW= 1 MHz, VBW= 1 MHz, for the highest frequency band edge measurement.
4. Set SPA Trace 1 Max hold, then View. Set Line 1, 20dB down than the limit.

5.5.2 Test SET-UP (Block Diagram of Configuration)

The same as described in Section 5.2.2

5.5.3 Measurement Equipment Used:

The same as described in Section 5.2.3

5.5.4 Limits And Measurement Result:

Limits and Measurement Result Of Operation Frequency		
Applicable Limits	**Measurement Result**	
	Test Data	Criteria
Per 15.247 The operation frequencies shall lie wholly within 2.4 GHz to 2.4835 GHz	Fl=2402.003 MHz Ft=2480.002 MHz	PASS

Notes:

Fl means the lowest band edge frequency of the bottom channel; Ft means the highest band edge frequency of the top channel

5.6 Peak Output Power

5.6.1 Measurement Procedure:

1 Connect the RF output port of the EUT to the Spectrum Analyzer through an RF Cable

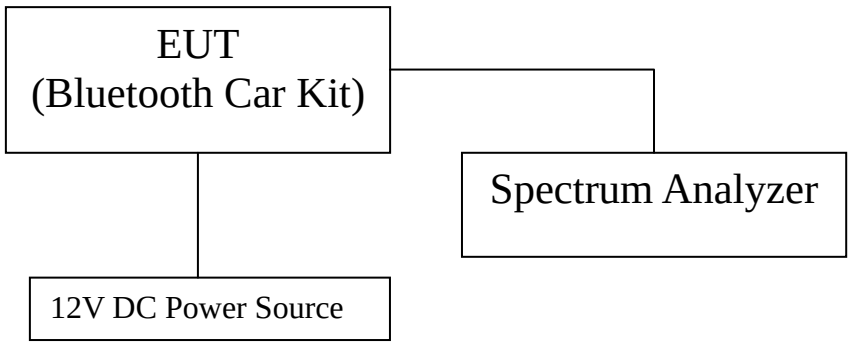
2 Power the EUT with DC 12V Power Source

3 Set the EUT to transmit continuouly on the top channel (2480 MHz)

4 Configuring the measuring insturments as Centre Frequency = Top Channel, Span = 10 MHz, RBW=1 MHz, VBW= 1 MHz. Set the reference level to appropriate level, then record the maximum levels of emission

5 Repeat the Steps from 4 to 5 until the centre frequeny and bottom frequency has been assessed individually.

5.6.2 Test SET-UP (Block Diagram of Configuration)



5.6.3 Measurement Equipment Used:

3/5 Anechoic Chamber Radiation Test Site # 4					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2005/11	2006/11

5.6.4 Limits And Measurement Result:

Limits and Measurement Result Of Peak Conducted Output Power		
Applicable Limits	**Measurement Result**	
	Test Data	Criteria
Per 15.247 (b)(1) The maximum peak output power is 1 W (30 dBm)	Pt= 1.42 dBm	PASS
	Pm= 2.38 dBm	PASS
	Pl= 3.11 dBm	PASS

5.7 Spurious Emission At Transmitting mode

5.7.1 Measurement Procedure:

1. On a test site, the EUT shall be placed on a turntable

2. The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.

3. The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.

4. The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.

5. The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.

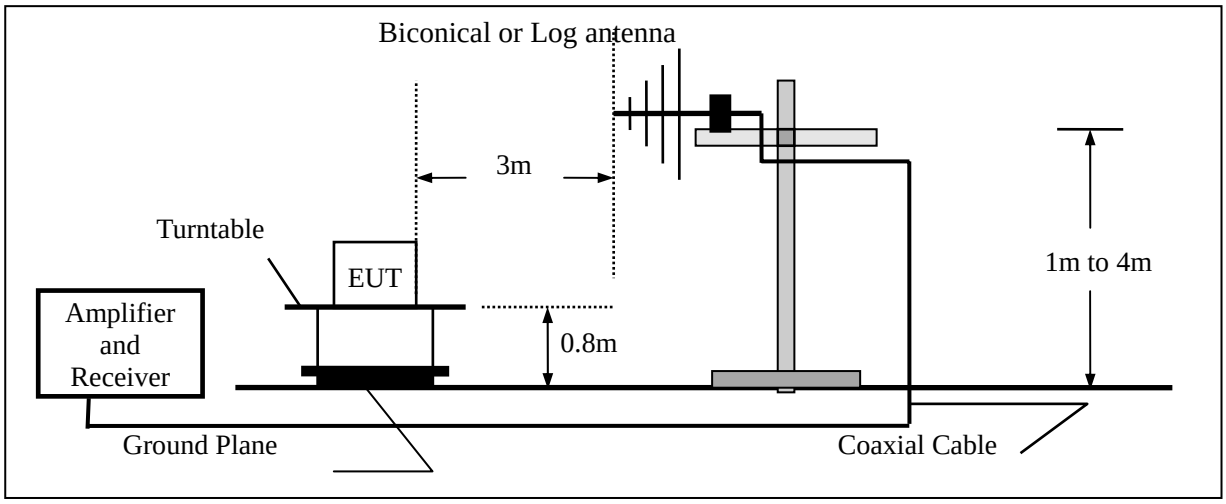
6. The transmitter shall than be rotated through 360 ° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

7. The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.

8. The maximum signal level detected by the measuring receiver shall be noted.

9. The measurement shall be repeated with the test antenna oriented for horizontal polarization. The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna .

5.7.2 Test SET-UP (Block Diagram of Configuration)



5.7.3 Measurement Equipment Used:

3/5 Anechoic Chamber Radiation Test Site # 4					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2005/11	2006/11
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2005/11	2006/11
RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	N/A	N/A
TURNTABLE	ETS	2088	2149	N/A	N/A
ANTENNA MAST	ETS	2075	2346	N/A	N/A
EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	NA	N/A	N/A

5.7.4 Limits And Measurement Result:

Limits and Measurement Result Of Spurious Emission		
Applicable Limits	**Measurement Result**	
	Test Data	Criteria
Per 15.247 (c) In any 100 KHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiation 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 as the chart Below	PASS

Operation Mode:	TX Mode @ Bottom Frequency	Test Date :	June 10, 2006
Temperature :	25 ℃	Test By:	Jimmy Zhang
Humidity :	59 %	Pol:	Vertical & Horizontal

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
4808.000	H	Peak	53.49	-4.75	48.74	54.00	-5.26
4808.000	V	AV	41.45	-4.75	36.70	54.00	-17.30
7200.000	H	AV	41.36	0.57	41.93	54.00	-12.07
7200.000	V	AV	39.35	0.57	39.92	54.00	-14.08
Others	H/V	AV	---	At least 20 dB down than the limits			

Remark：

(1) Measuring frequencies from 25 MHz to the 25 GHz。

(2) Datum of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) The IF bandwidth of EMI Test Receiver between 25MHz to 1GHz was 120KHz and 1 MHz for above 1 GHz

Operation Mode:	TX Mode @ Middle Frequency	Test Date :	June 10, 2006
Temperature :	25 ℃	Test By:	Jimmy Zhang
Humidity :	59 %	Pol:	Vertical & Horizontal

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
4878.000	H	Peak	52.91	-4.66	48.25	54.00	-5.75
4878.000	V	Peak	52.58	-4.66	47.92	54.00	-6.08
7328.000	H	AV	39.77	0.85	40.62	54.00	-13.38
7328.000	V	AV	39.51	0.85	40.36	54.00	-13.64
Others	H/V	AV	---	At least 20 dB down than the limits			

Remark：

(1) Measuring frequencies from 25 MHz to the 25 GHz。

(2) Datum of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) The IF bandwidth of EMI Test Receiver between 25MHz to 1GHz was 120KHz and 1 MHz for above 1 GHz

Operation Mode:	TX Mode @ Top Frequency	Test Date :	June 10, 2006
Temperature :	25 ℃	Test By:	Jimmy Zhang
Humidity :	59 %	Pol:	Vertical & Horizontal

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
4960.000	H	Peak	48.19	-4.54	43.65	54.00	-10.35
4960.000	V	Peak	46.86	-4.54	42.32	54.00	-11.68
Others	H/V	AV	---	At least 20 dB down than the limits			

Remark：

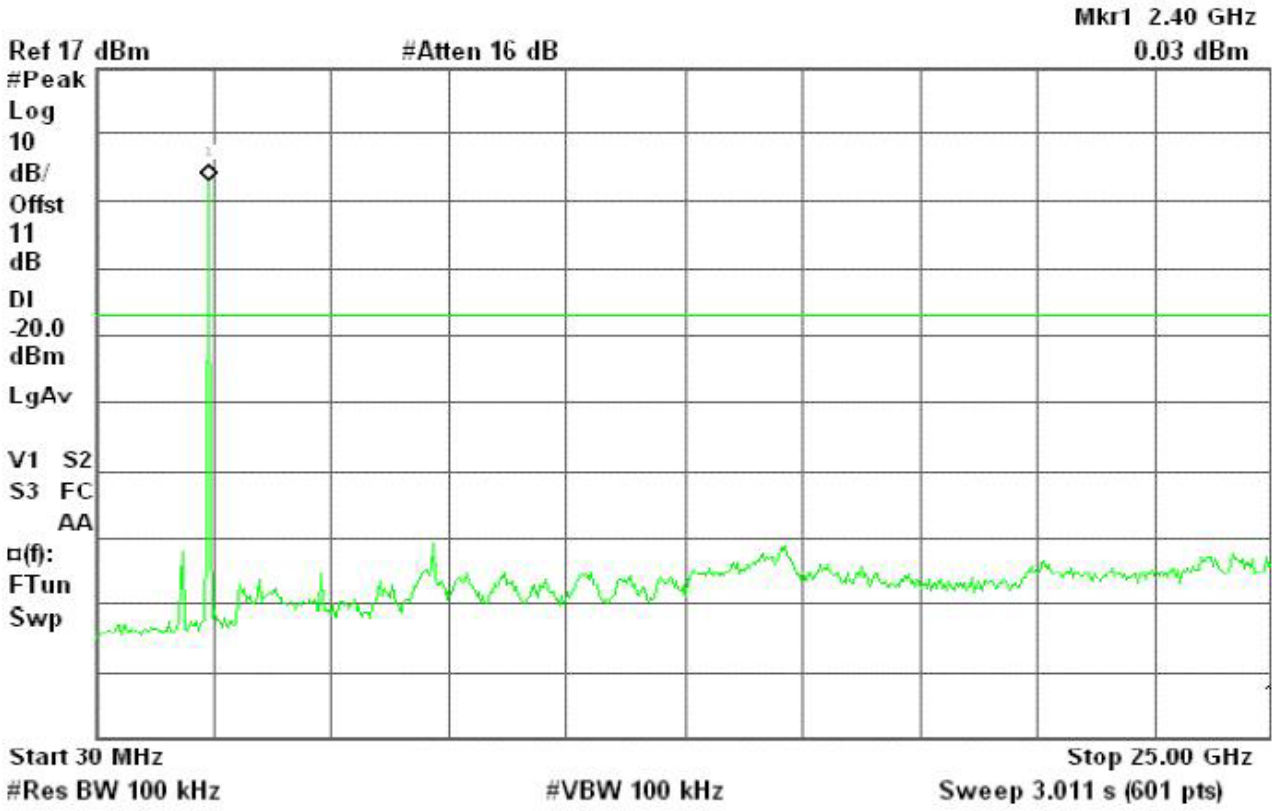
(1) Measuring frequencies from 25 MHz to the 25 GHz。

(2) Datum of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

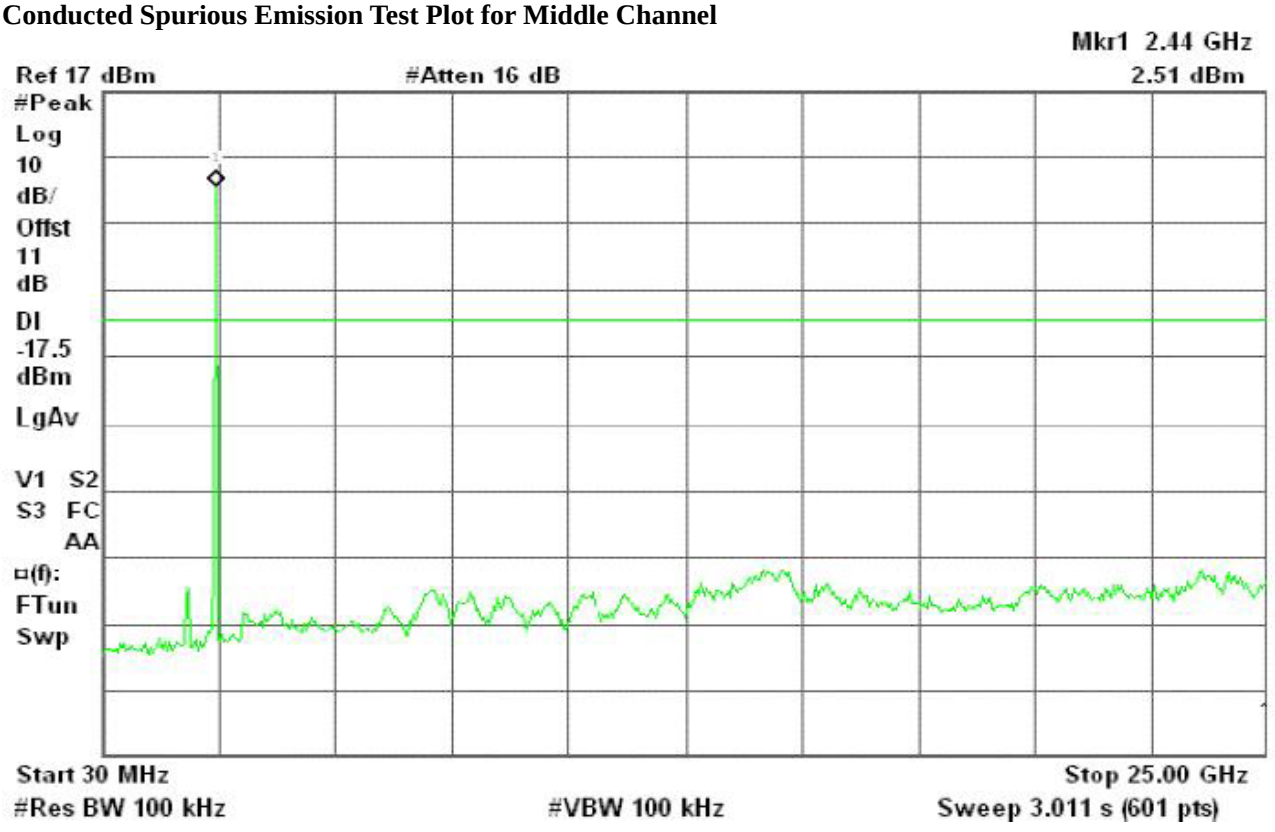
(3) The IF bandwidth of EMI Test Receiver between 25MHz to 1GHz was 120KHz and 1 MHz for above 1 GHz

Conducted Spurious Emission Measurement Result

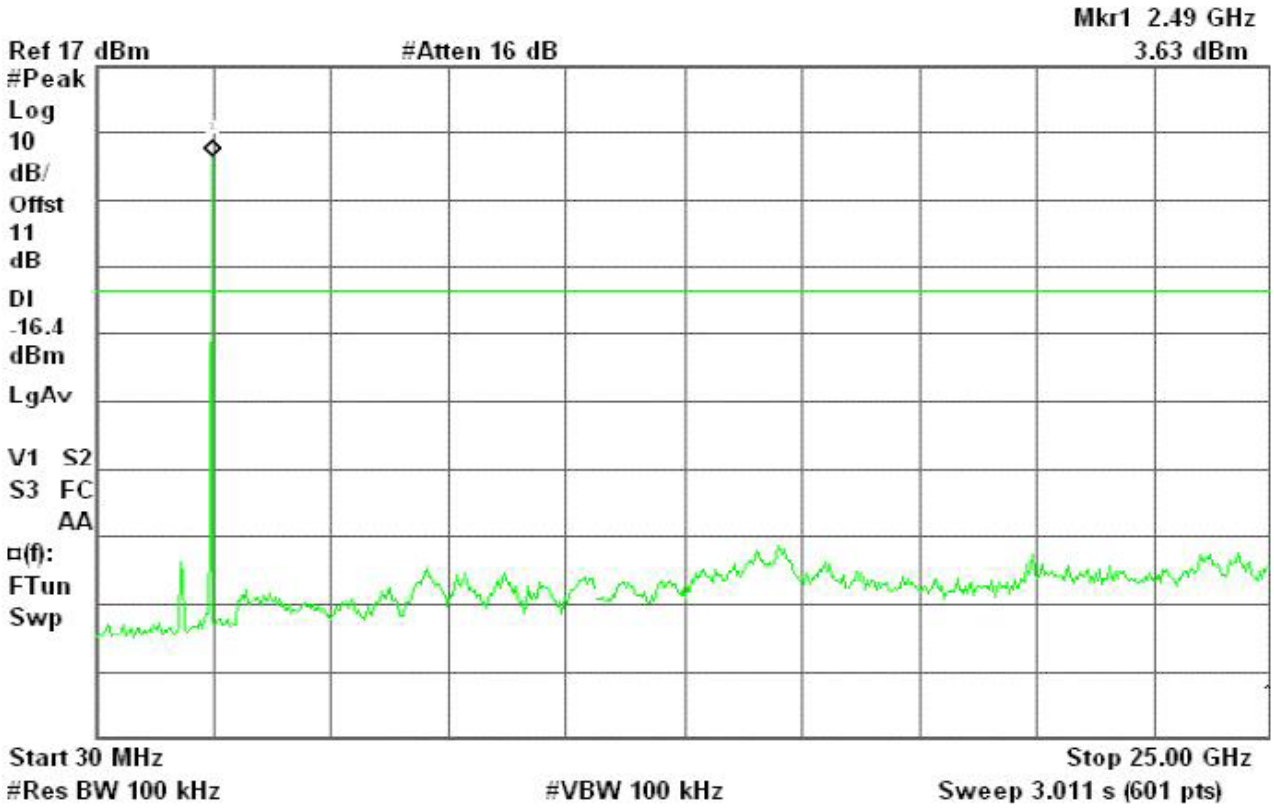
Conducted Spurious Emission Test Plot for Bottom Channel



Conducted Spurious Emission Test Plot for Middle Channel



Conducted Spurious Emission Test Plot for Top Channel



5.8 BAND EDGE

5.8.1 Measurement Procedure:

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as Continuous Transmitting Mode.
3. Set SPA Start Frequency = 2.310 GHz, Stop Frequency = 2.405 GHz, RBW= 1 MHz, VBW= 1 MHz, for lowest frequency band edge, then set Start frequency=2.475 GHz, Stop Frequency = 2.500 GHz, RBW= 1 MHz, VBW= 1 MHz, for the highest frequency band edge measurement.
4. Set SPA Trace 1 Max hold, then View. Set Line 1, 20dB down than the limit.

5.8.2 Test SET-UP (Block Diagram of Configuration)

The same as described in section 5.2.2

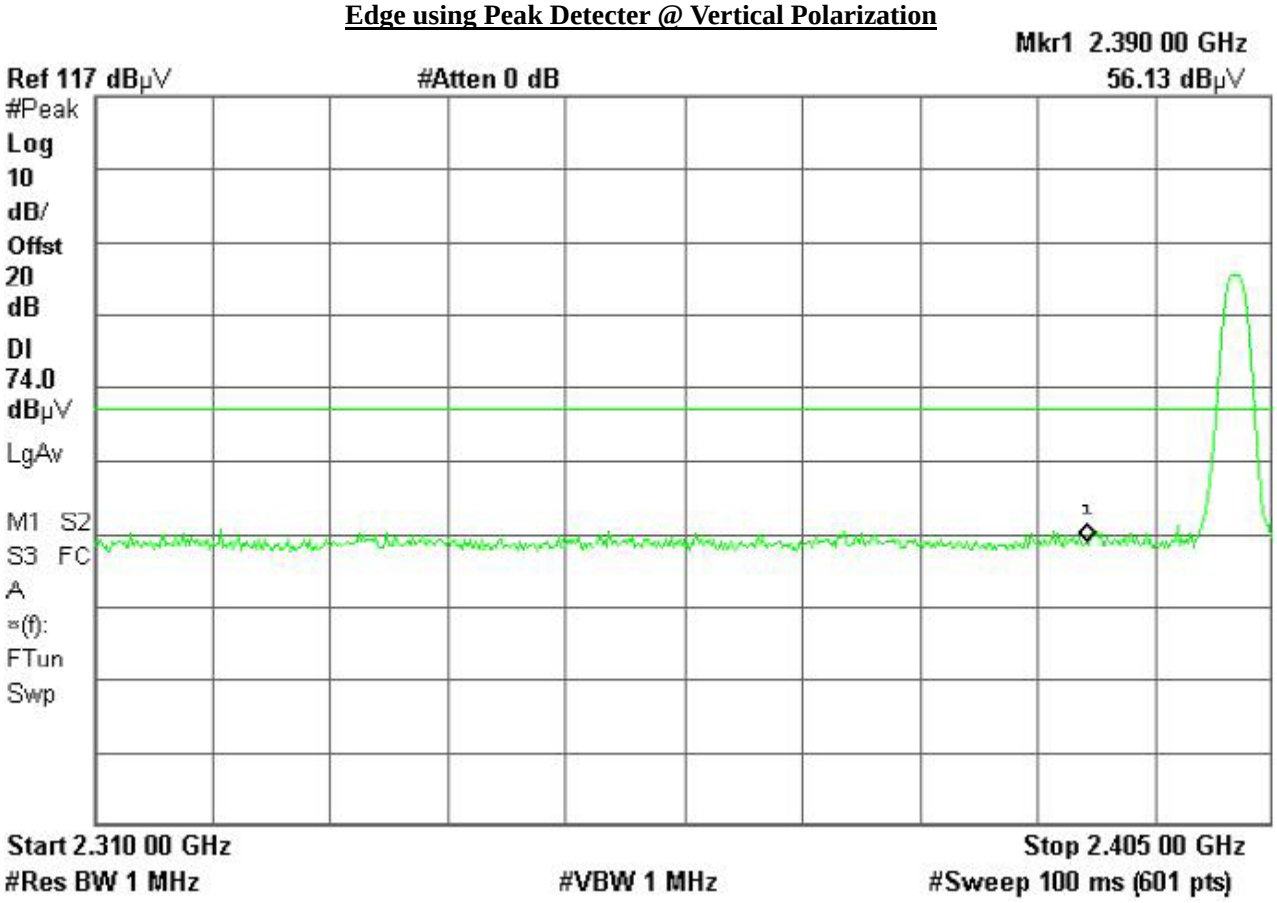
5.8.3 Measurement Equipment Used:

The same as described in section 5.2.3

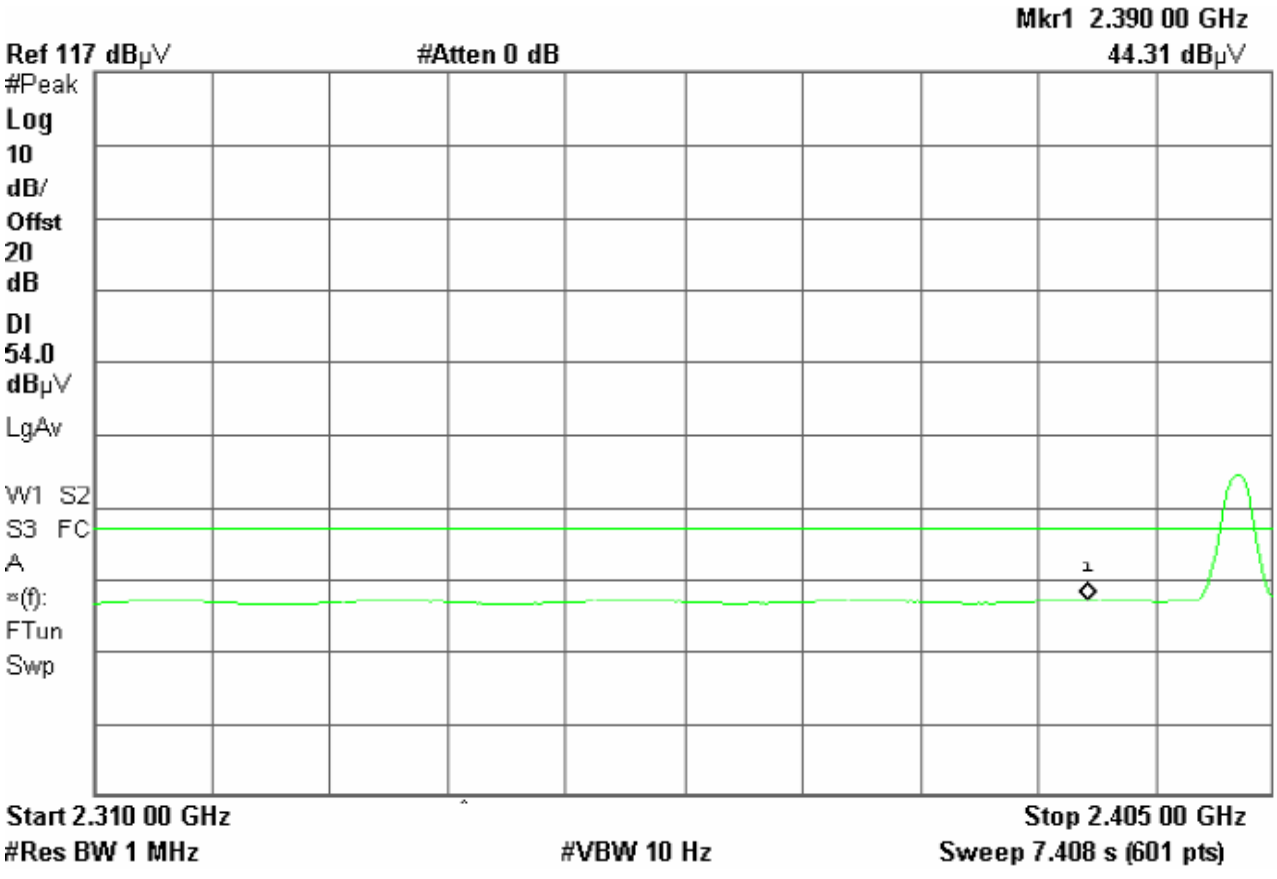
5.8.4 Limits And Measurement Result:

Limits and Measurement Result Of Band Edge		
Applicable Limits	**Measurement Result**	
	Test Data	Criteria
Per 15.247 (c) In any 100 KHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100 KHz bandwidth within the band that contains the highest level of the desired power.	See the test plots attached below	PASS

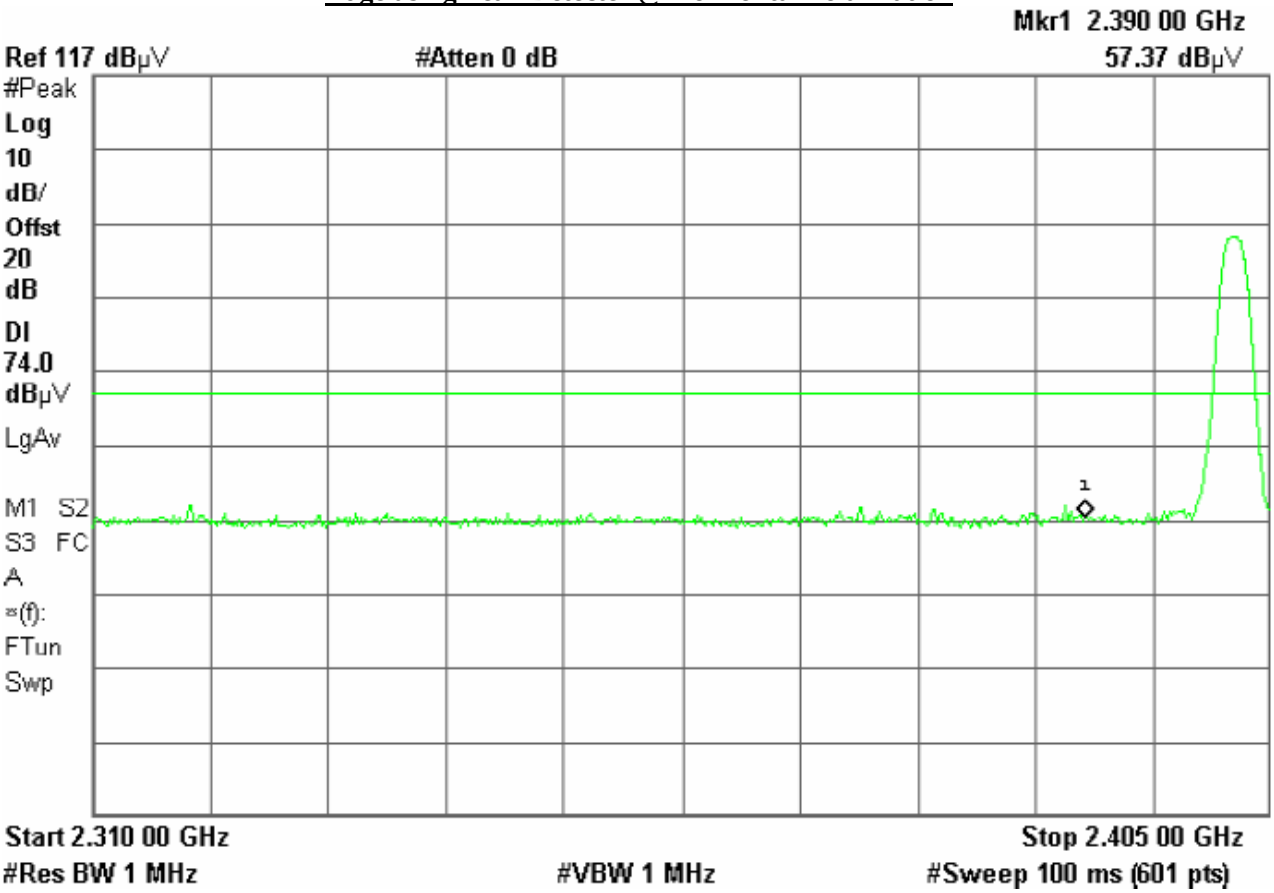
Test plot for Bottom Frequency Band
Edge using Peak Detecter @ Vertical Polarization



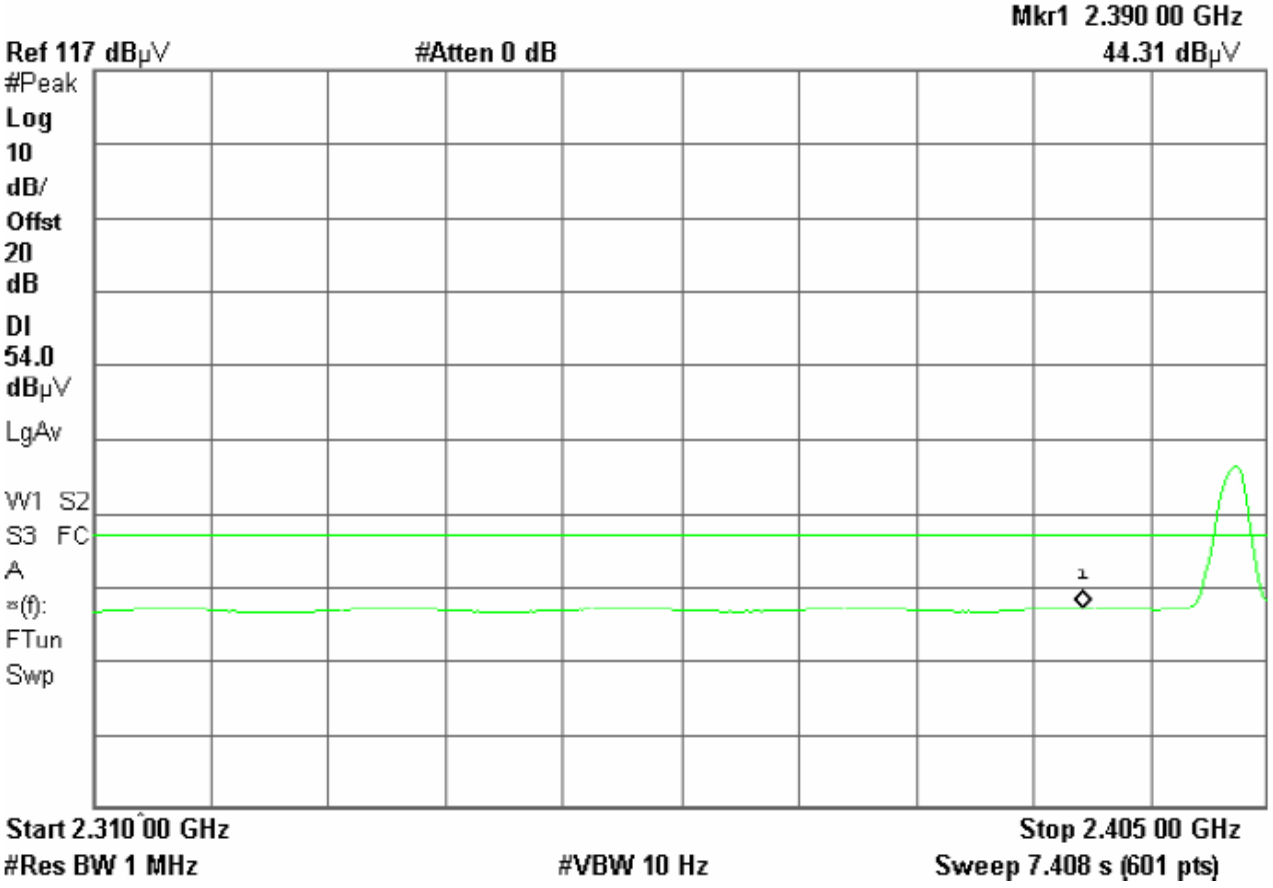
Test plot for Bottom Frequency Band
Edge using Average Detecter @ Vertical Polarization



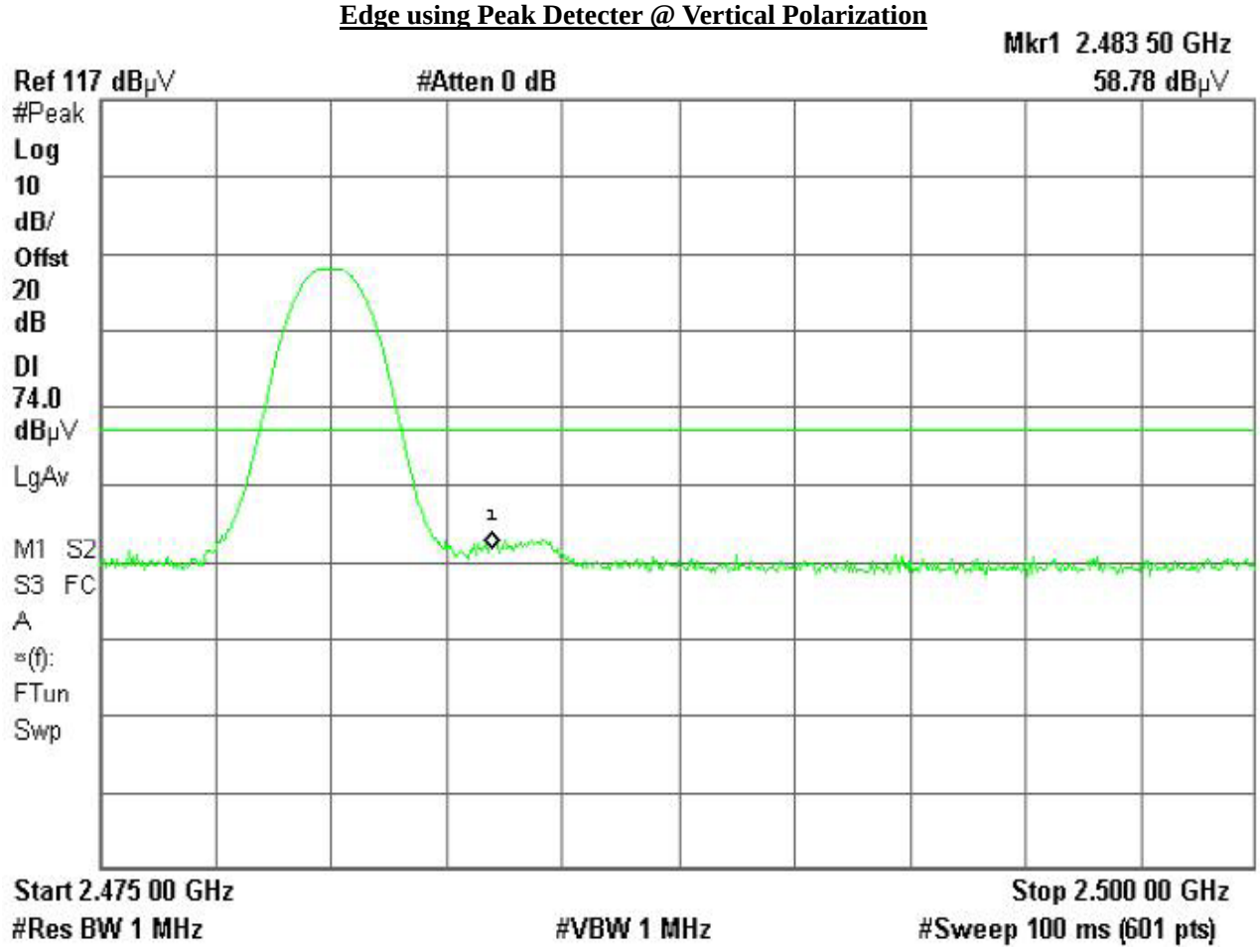
Test plot for Bottom Frequency Band
Edge using Peak Detecter @ Horizontal Polarization



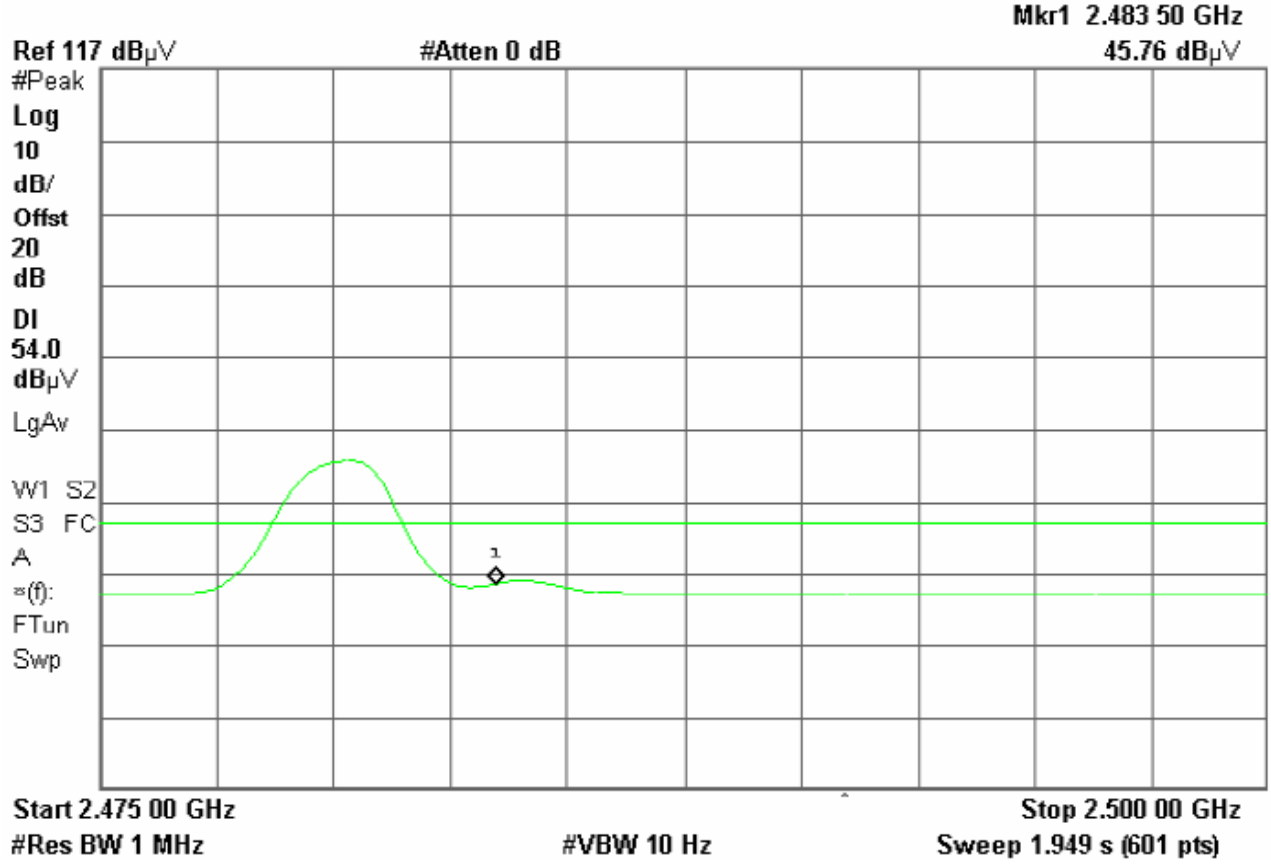
Test plot for Bottom Frequency Band
Edge using Average Detecter @ Horizontal Polarization



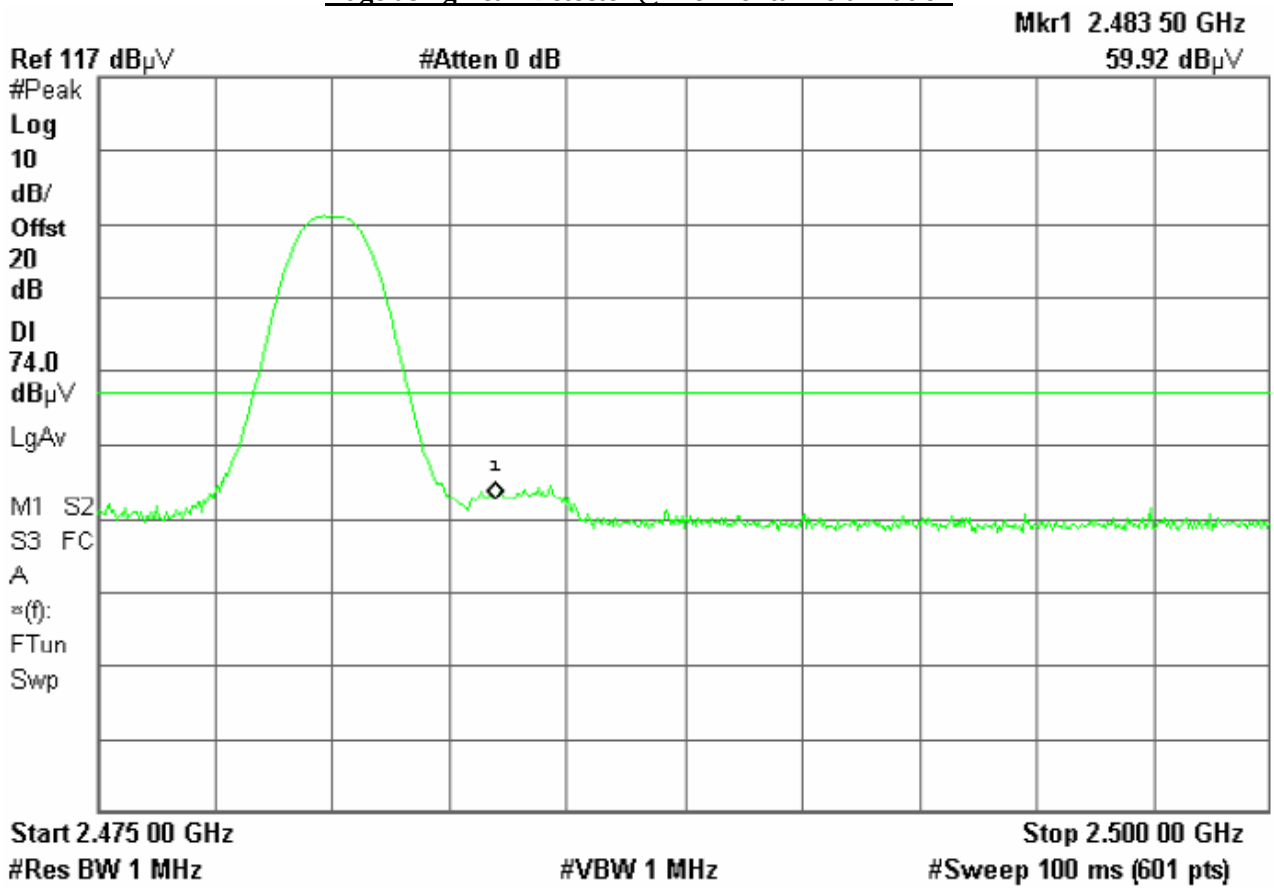
Test plot for Top Frequency Band
Edge using Peak Detecter @ Vertical Polarization



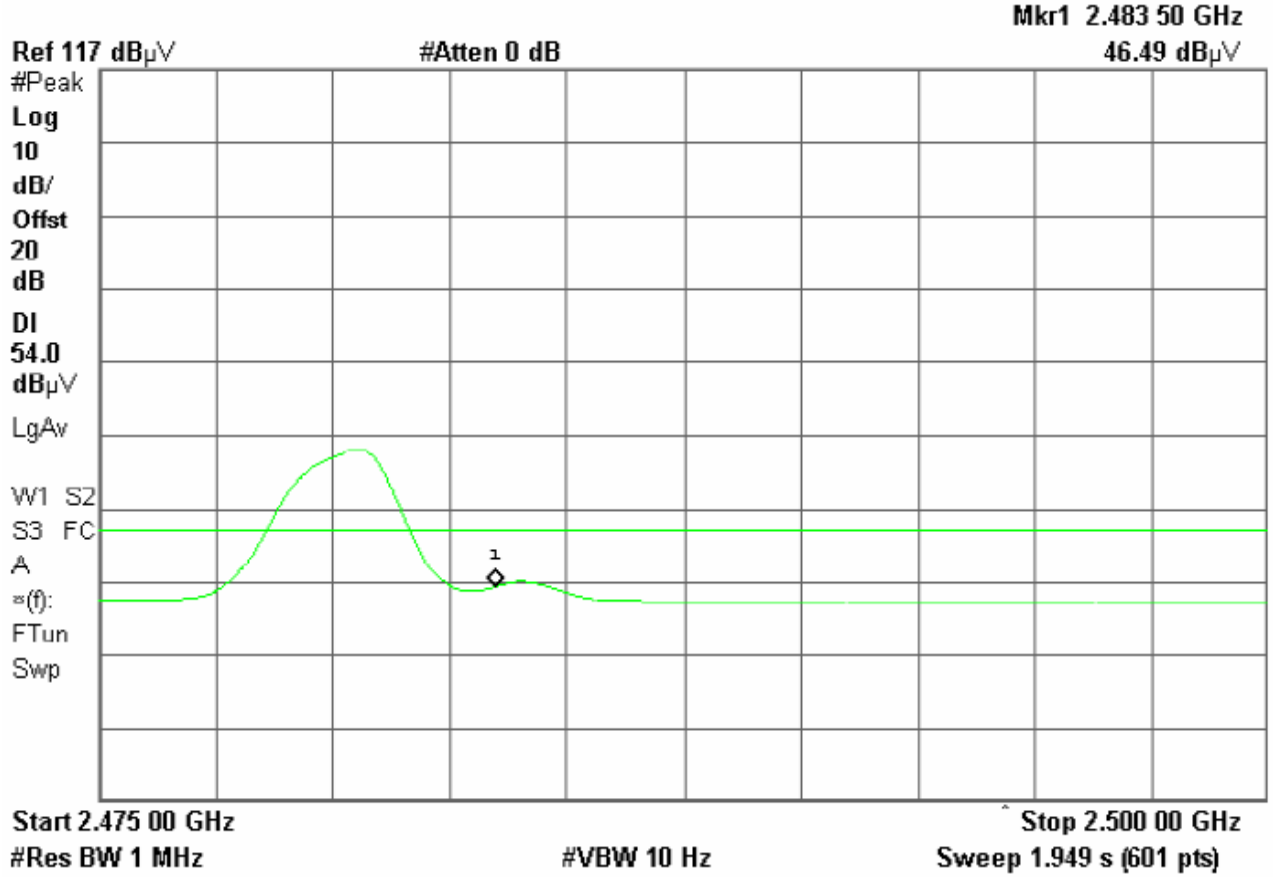
Test plot for Top Frequency Band
Edge using Average Detecter @ Vertical Polarization



Test plot for Top Frequency Band
Edge using Peak Detecter @ Horizontal Polarization



Test plot for Top Frequency Band
Edge using Average Detecter @ Horizontal Polarization



5.9 Spurious Emission At Receiving Mode

5.9.1 Measurement Procedure:

1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2 Support equipment, if needed, was placed as per ANSI C63.4.
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4 The EUT received DC3V from the adapter, and the adapter received AC120V/60Hz power through the outlet socket under the turntable. All support equipments received AC 120V/60Hz power from socket under the turntable, if any.
5 The antenna was placed at 10 meter away from the EUT as stated in CISPR 22. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
6 The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

5.9.2 Test SET-UP (Block Diagram of Configuration)

The same as described in section 5.2.2

5.9.3 Measurement Equipment Used:

3/5 Anechoic Chamber Radiation Test Site # 4					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2005/11	2006/11
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2005/11	2006/11
RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	N/A	N/A
TURNTABLE	ETS	2088	2149	N/A	N/A
ANTENNA MAST	ETS	2075	2346	N/A	N/A
EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	NA	N/A	N/A

5.9.4 Limits And Measurement Result:

Limits and Measurement Result Of Spurious Emission		
Applicable Limits	**Measurement Result**	
	Test Data	Criteria
§ 15.209 shall apply	See as the chart below	PASS

Operation Mode:	Receiving Mode	Test Date :	June 10, 2006
Temperature :	25 ℃	Test By:	Jimmy Zhang
Humidity :	59 %	Pol:	Vertical & Horizontal

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
Below 1 GHz	V	Peak	---				At least 20
Below 1 GHz	H	Peak	---				dB down
Above 1 GHz	V	Peak	---				than the
Above 1 GHz	H	Peak	---				Limit

Remark：

(1) Measuring frequencies from 25 MHz to the 25 GHz。

(2) Datum of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) The IF bandwidth of EMI Test Receiver between 25MHz to 1GHz was 120KHz and 1 MHz for above 1 GHz

5.10 Dwell Time

5.10.1 Measurement Procedure:

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as Normal Operation mode
3. Set CF= 2402 MHz, SPA Span= 0 Hz, RBW= 1 MHz, VBW= 1 MHz
4. Set SPA Trace 1 Max hold,. Reducing the Sweeping time in order to make two complete specturm envelop can show on the screen, then of elapsed time for one complete envelop can be recorded as Td, the time between the drop edge of the first envelop and the second envelop shall be recorded as Tr.
5. The Dwell Time(To) can be calculated according to the formula: To= Td*(400*79)/Tr

5.10.2 Test SET-UP (Block Diagram of Configuration)

The same as described in Section 5.2.2

5.10.3 Measurement Equipment Used:

The same as described in Section 5.2.3

5.10.4 Limits And Measurement Result:

Limits and Measurement Result Of Dwell Time			
Applicable Limits	**Measurement Result**		
	Modes	Test Data	Criteria
Per 15.247 (a)(1)(ii) The average time of occupancy on any frequency shall not be greater than 0.4 seconds	DH1	134.4 ms	PASS
	DH3	268.8 ms	PASS
	DH5	311.5 ms	PASS

Notes:

The Dwell Time(Td) for each channel is calculated by the following formula:

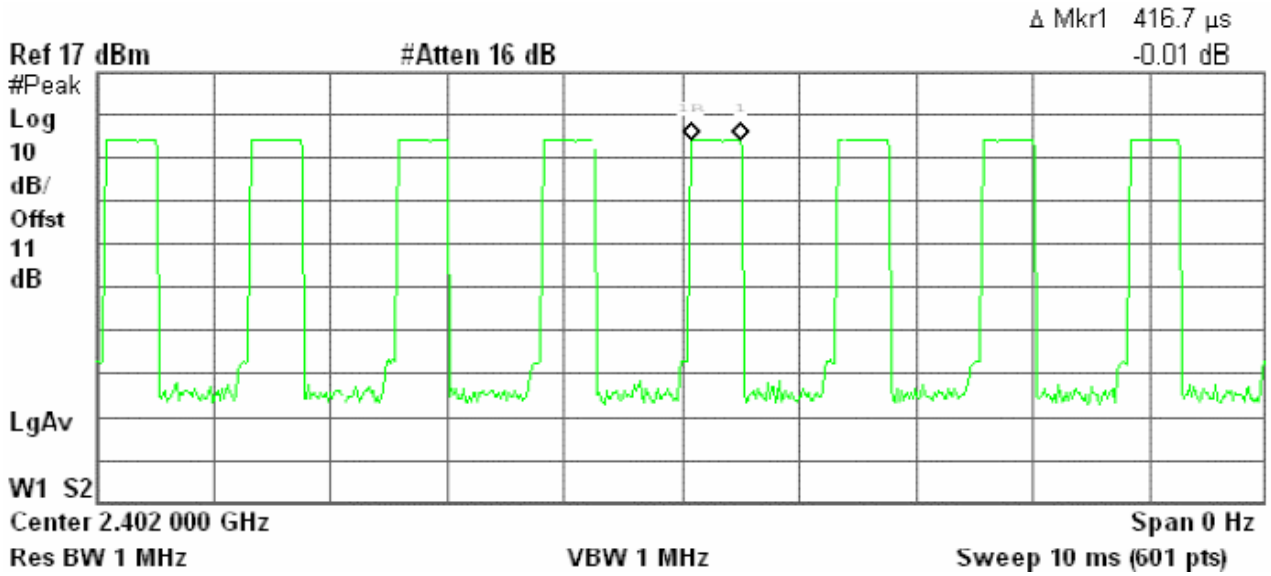
DH 1: T(Pulse Time) * (1600/2)/79 * T(Period Time) = 0.42 * (1600/2)/79 * 31.6 = 134.4 ms

DH 3: T(Pulse Time) * (1600/4)/79 * T(Period Time) = 1.68 * (1600/2)/79 * 31.6 = 268.8 ms

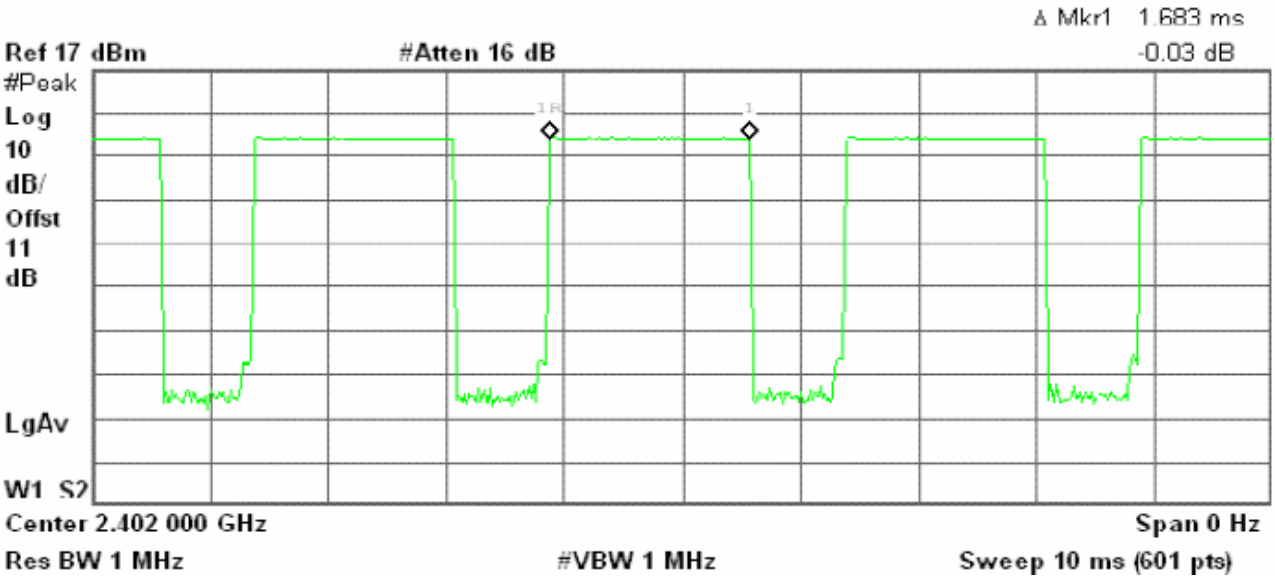
DH 5: T(Pulse Time) * (1600/6)/79 * T(Period Time) = 2.92 * (1600/2)/79 * 31.6 = 311.5 ms

Test plots for T(Pulse Time) have been attahced as following:

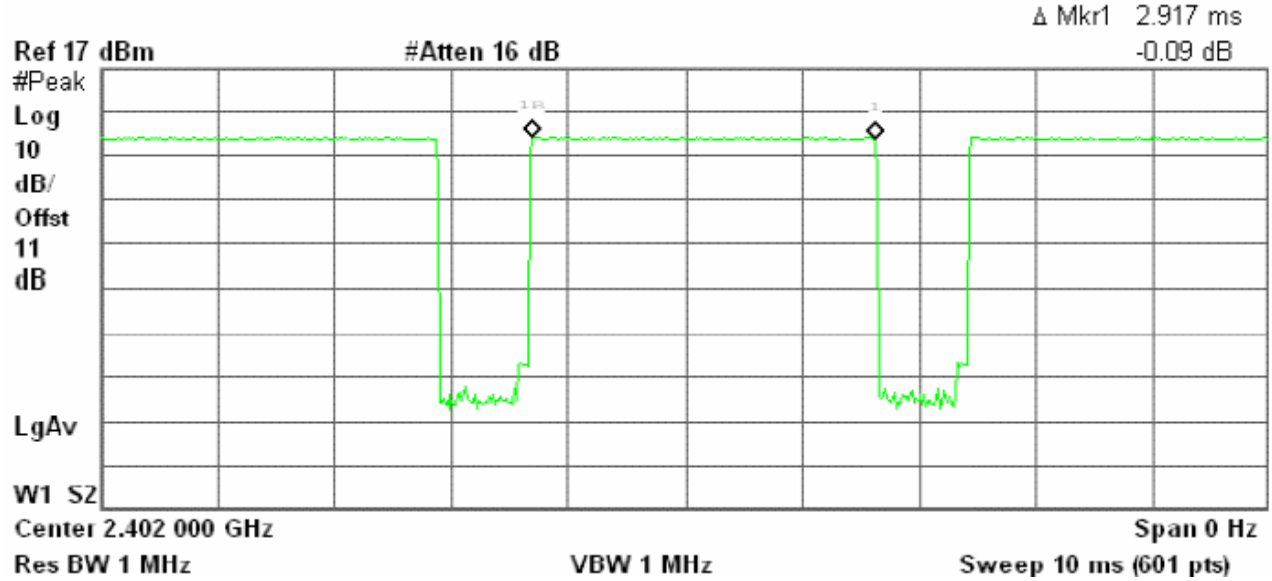
T(Pulse Time) for DH 1



T(Pulse Time) for DH 3



T(Pulse Time) for DH 5



5.11 Maximum Permissible Explosure

Calculation Method:

Given $E = \sqrt{\frac{30 \times P \times G}{d}}$ & $S = \frac{E^2}{3770}$

Where *E = Field Strength in Volts / meter*
P = Power in Watts
G=Numeric antenna gain
d=Distance in meters
S=Power Density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$d = \sqrt{\frac{30 \times P \times G}{3770 \times S}}$$

Changing to units of mW and cm, using:
P (mW) = P (W) / 1000 and
*d (cm) =100 * d (m)*

Yields

$$d = 100 \times \sqrt{\frac{30 \times (P/1000) \times G}{3770 \times S}} = 0.282 \times \sqrt{\frac{P \times G}{S}}$$

Where *d = distance in cm*
P = Power in mW
G = Numeric antenna gain
S = Power Density in mW / cm^2

Substituting the logarithmic form of power and gain using:
P (mW) = 10 ^ (P (dBm) / 10) and
G (numeric) = 10 ^ (G (dBi) / 10)

Yields

$$d = 0.282 \times \frac{10^{(P+G)/20}}{\sqrt{20}}$$ ***Equation 1***

Where d = MPE safe distance in cm
P = Power in dBm
G = Antenna Gain in dBi
S = Power Density Limit in mW / cm^2

EUT Output Power = 3.11 dBm
Antenna Gain = 1.58
S= 1.0 mW/ cm^2
Substituting these parameters into the above equation 1:
The Safety Distance is 0.108 cm

APPENDIX 1

PHOTOGRAPHS OF SET UP

Radiated Emission Setup Photos

APPENDIX 2

PHOTOGRAPHS OF EUT

Front View of EUT

Back View of EUT

Top View of EUT

Bottom View of EUT

Left View of EUT

Right View of EUT

Internal View-1

Internal View -2