
FCC Test Report

Report No.: AGC020110102F1

TEST NAME : FCC Part 15

FCC ID : YVP-V1

PRODUCT DESIGNATION : Bluetooth Slide Keyboard Case

BRAND NAME : N/A

TEST MODEL : V1

CLIENT : SHENZHEN CTECH SCIENCE & TECHNOLOGY DEVELOPMENT CO., LTD.

DATE OF ISSUE : Feb.25, 2011

STANDARD(S) : FCC Part 15 Rules

Attestation of Global Compliance Co., Ltd.

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VERIFICATION OF COMPLIANCE

Applicant:	SHENZHEN CTECH SCIENCE & TECHNOLOGY DEVELOPMENT CO., LTD.
Address	10G. Baihe yindu, Longgang District, Shenzhen, China
Manufacturer Name:	FLAGSHIP INDUSTRIAL DESIGN CO., LTD
Address:	A-302.Shennan Garden, Kexing Road, Nanshan District, Shenzhen, China
Product Description:	Bluetooth Slide Keyboard Case
Brand Name:	N/A
Model Number:	V1,V2,V3,V4,V5,V6,V7,V8,V9
Model Difference	Product appearance is different, The PCB is same
FCC ID	YVP-V1
Report Number:	AGC020110102F1
Date of Test:	Feb.17 , 2010 to Feb.25, 2011

WE HEREBY CERTIFY THAT:

The above equipment was tested by Attestation of Global Compliance 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.

Checked By: Jekey Zhang
Jekey Zhang Feb.25, 2011

Authorized By: King Zhang
King Zhang Feb.25, 2011

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

The EUT is a **Bluetooth Slide Keyboard Case**; It is short range, lower power. And it is designed by way of utilizing the FHSS technology to achieve the system operation.

A major technical description of EUT is described as following:

Operation Frequency	2.402 GHz to 2.480GHz
Output Power	2.25 dBm
Modulation	GFSK
Number of channels	79
Antenna Designation	Integrated Antenna
Power Supply	Internal Lion Composite Battery DC 3.7~4.2V by battery It's only Charged from PC

1.2 TABLE OF CARRIER FREQUENCIES

Frequency Band	Channel Number	Frequency
2400~2483.5MHZ	0	2402MHZ
	1	2403MHZ
	:	:
	38	2440 MHZ
	39	2441 MHZ
	40	2442 MHZ
	:	:
	77	2479 MHZ
	78	2480 MHZ

1.3 RECEIVER INPUT BANDWIDTH AND BEHAVIOUR FOR REPEATED SINGLE OR MULTIPLE PACKETS

The input bandwidth of the receiver is 1MHz, In every connection one Bluetooth device is the master and the other one is slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally the type of connection (e.g. single or multislot packet) is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings. Repeating of a packet has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means, a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.

1.4 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: YVP-V1 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

1.5 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.

1.6 TEST FACILITY

All measurement facilities used to collect the measurement data are located at Attestation of Global Compliance Co., Ltd.

1F, No.2 Building, Huafeng No.1 Technical, Industrial Park, Sanwei, Xixiang, Baoan District,,
Shenzhen, China

The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003.
FCC register No.: 259865

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

1.7 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

1.8 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2. SYSTEM TEST CONFIGURATION

2.1 CONFIGURATION OF TESTED SYSTEM



2.2 EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID
1	Bluetooth Slide Keyboard Case	--	V1	YVP-V1
2	PC	HEDY	K4	--

2.3 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	$\pm 2.3\text{dB}$	Confidence levels of 95%
Maximum Peak Conducted Output Power	$\pm 0.8\text{dB}$	Confidence levels of 95%
Hopping Channel Separation	$\pm 8.5 \times 10^{-8}$	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	$\pm 0.8\text{dB}$	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	$\pm 1.9\text{dB}$	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	$\pm 1.9\text{dB}$	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	$\pm 1.9\text{dB}$	Confidence levels of 95%
Temperature	$\pm 0.7^{\circ}\text{C}$	Confidence levels of 95%
Humidity	$\pm 3.2\%$	Confidence levels of 95%
DC / AC Power Source	$\pm 1.4\%$	Confidence levels of 95%

3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.207	Conduction Emission	Compliant
§15.209	Radiated Emission	Compliant
§15.247	Maximum Output Power	Compliant
§15.247	20 dB Bandwidth	Compliant
§15.247	Band Edges	Compliant
§15.247	Spurious Emission	Compliant
§15.247	Frequency Separation	Compliant
§15.247	Number of Hopping Frequency	Compliant
§15.247	Time of Occupancy	Compliant

4. DESCRIPTION OF TEST MODES

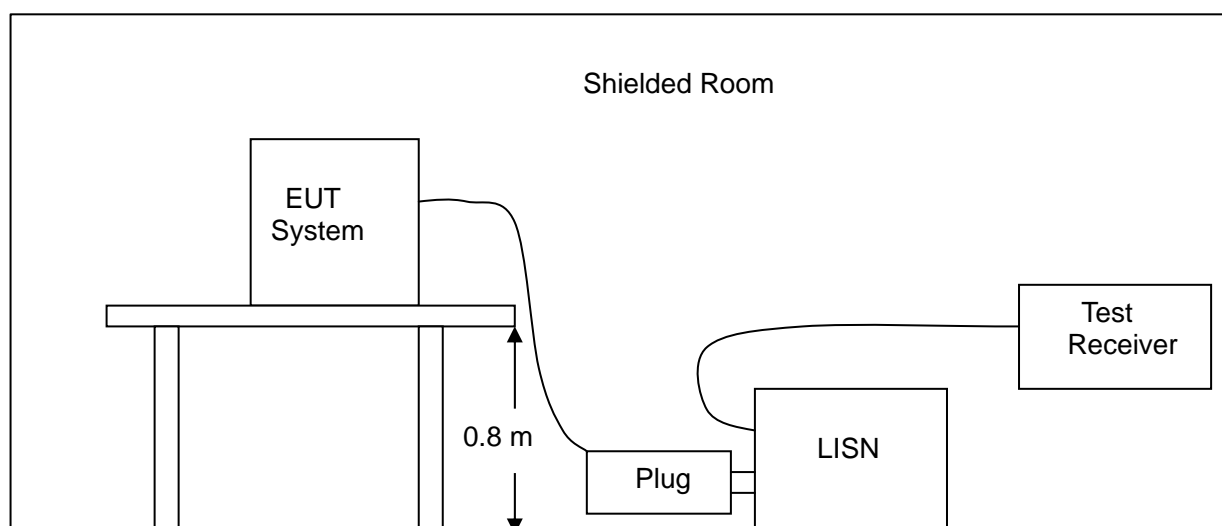
1. The EUT has been set to operate continuously on the lowest, the middle and the highest operation frequency individually.
2. The EUT stays in continuous transmitting mode on the operation frequency being set.

5. CONDUCTION EMISSIONS

5.1 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 DC3.7V through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC 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.

5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



5.3 MEASUREMENT EQUIPMENT USED:

Conducted Emission Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Cal. Date
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/29/2011
LISN	Rohde & Schwarz	ESH2-Z5	834549/005	05/29/2011
LISN	Rohde & Schwarz	ESH2-Z5	834549/005	05/29/2011
50 Ω Coaxial Switch	Anritsu	MP59B	M20531	05/29/2011

5.4 LIMITS AND MEASUREMENT RESULT:

LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

- 1**Note: 1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

MEASURING INSTRUMENT AND SETTING

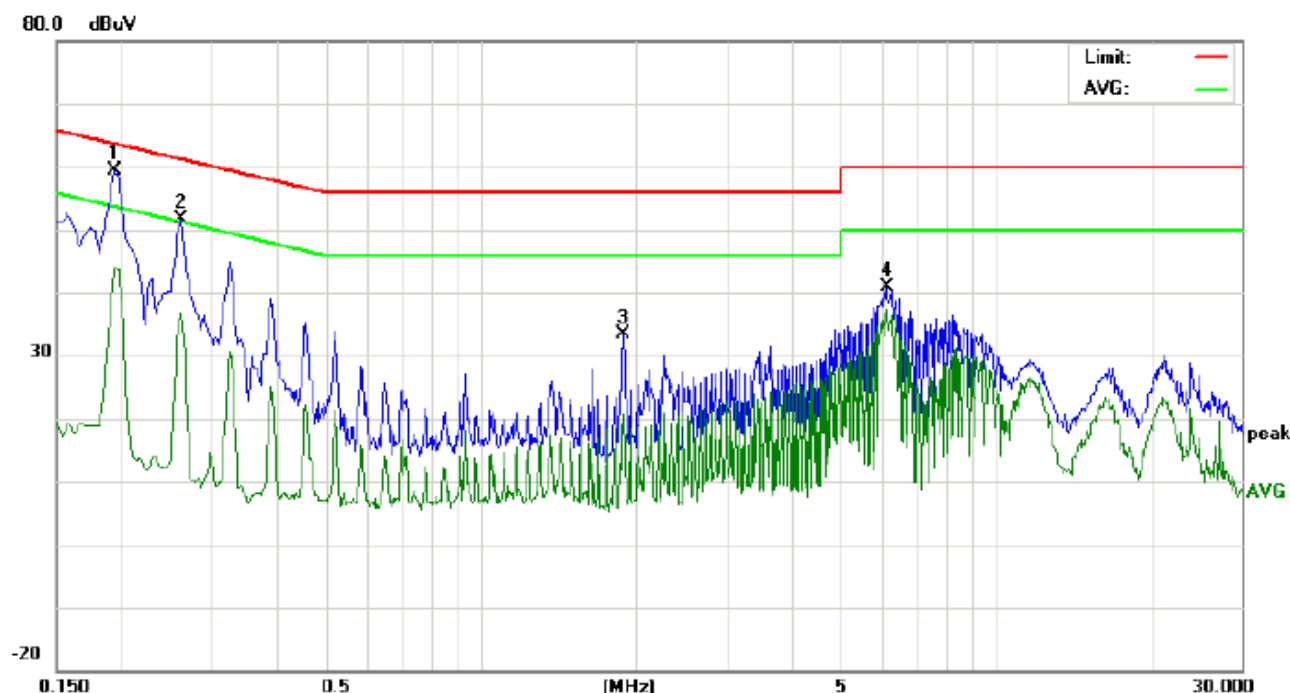
The following table is the setting of receiver.

Receiver Parameter	Setting
Attenuation	10dB
Start Frequency	0.15MHz
Stop Frequency	30MHz
6dB bandwidth	9KHz for QP
IF bandwidth	9KHz for AV

TEST RESULT AT CHARGE MODE:

Operation Mode:	CHARGE(connected to PC)	Test Date:	Feb.20, 2011
Temperature:	25°C	Tested by:	Jekey Zhang
Humidity:	55 % RH	Polarity:	--

TEST RESULT OF LINE -L CONDUCTED EMISSION TEST



Site: Conduction

Phase: **L1**

Temperature: 26

Limit: FCC Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 60 %

EUT: BT Slide Keyboard Case

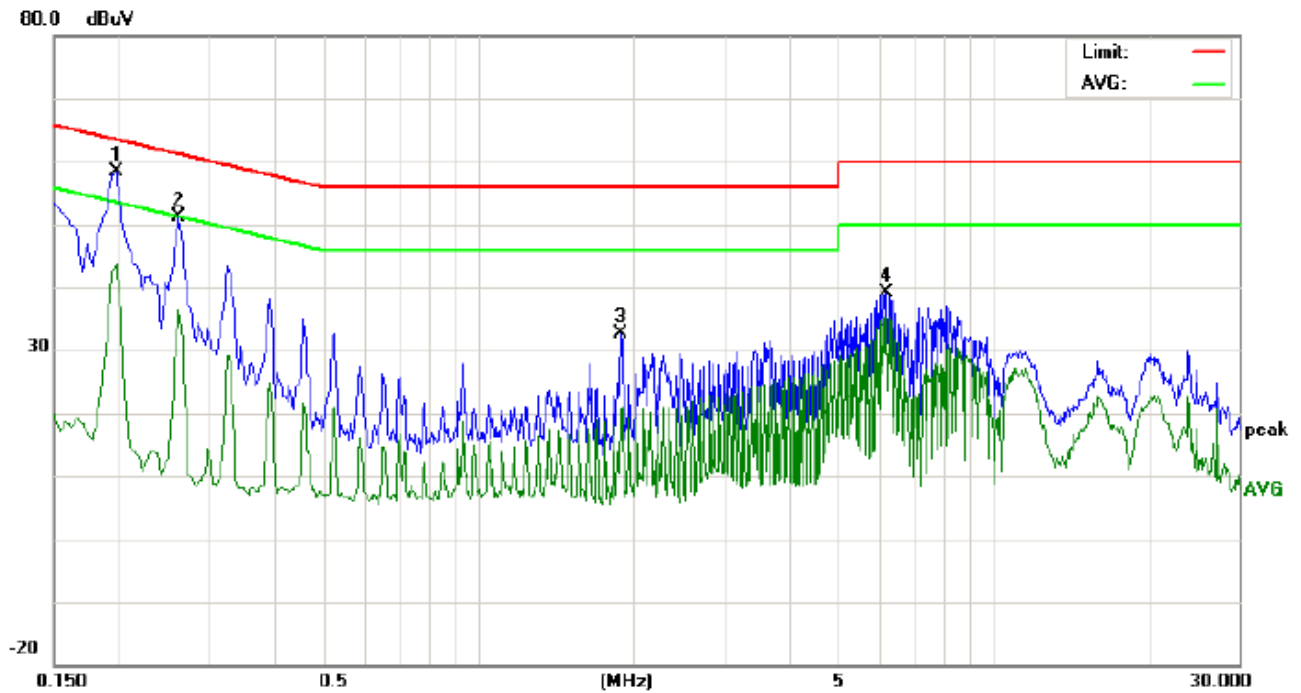
M/N: V1

Mode:CHARGE

Note:

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor (dB)	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1940	49.14		33.75	10.21	59.35		43.96	63.86	53.86	-4.51	-9.90	P	
2	0.2620	41.34		26.43	10.27	51.61		36.70	61.36	51.36	-9.75	-14.66	P	
3	1.8900	23.06		10.39	10.26	33.32		20.65	56.00	46.00	-22.68	-25.35	P	
4	6.1220	30.67		27.17	10.28	40.95		37.45	60.00	50.00	-19.05	-12.55	P	

TEST RESULT OF LINE -N CONDUCTED EMISSION TEST



Site: Conduction

Phase: **N**

Temperature: 26

Limit: FCC Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 60 %

EUT:BT Slide Keyboard Case

M/N: V1

Mode:CHARGE

Note:

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1980	48.12		33.35	10.21	58.33		43.56	63.69	53.69	-5.36	-10.13	P	
2	0.2620	40.84		26.06	10.27	51.11		36.33	61.36	51.36	-10.25	-15.03	P	
3	1.8940	22.36		10.12	10.25	32.61		20.37	56.00	46.00	-23.39	-25.63	P	
4	6.2140	28.94		24.86	10.29	39.23		35.15	60.00	50.00	-20.77	-14.85	P	

6. MAXIMUM OUTPUT POWER

6.1 MEASUREMENT PROCEDURE:

CONDUCTED METHOD

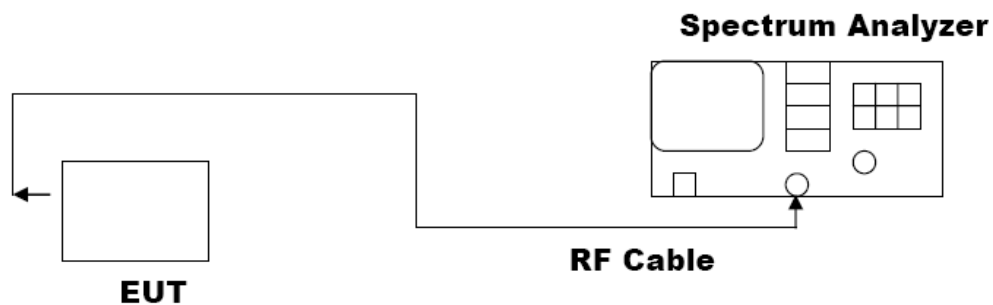
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Set SPA Centre Frequency = Operation Frequency, RBW= 1 MHz, VBW= 1 MHz.
5. Set SPA Trace 1 Max hold, then View.

RADIATED METHOD

According to ANSI C63.4:2003

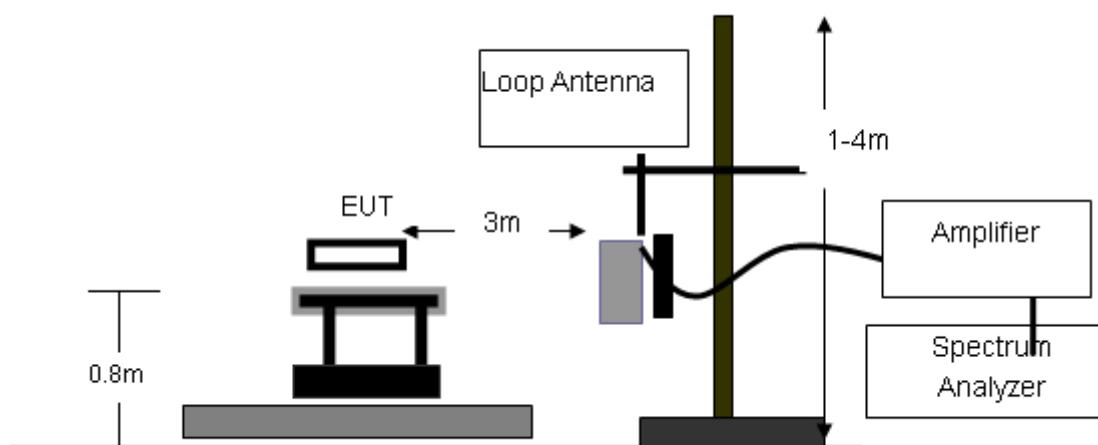
6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

CONDUCTED METHOD

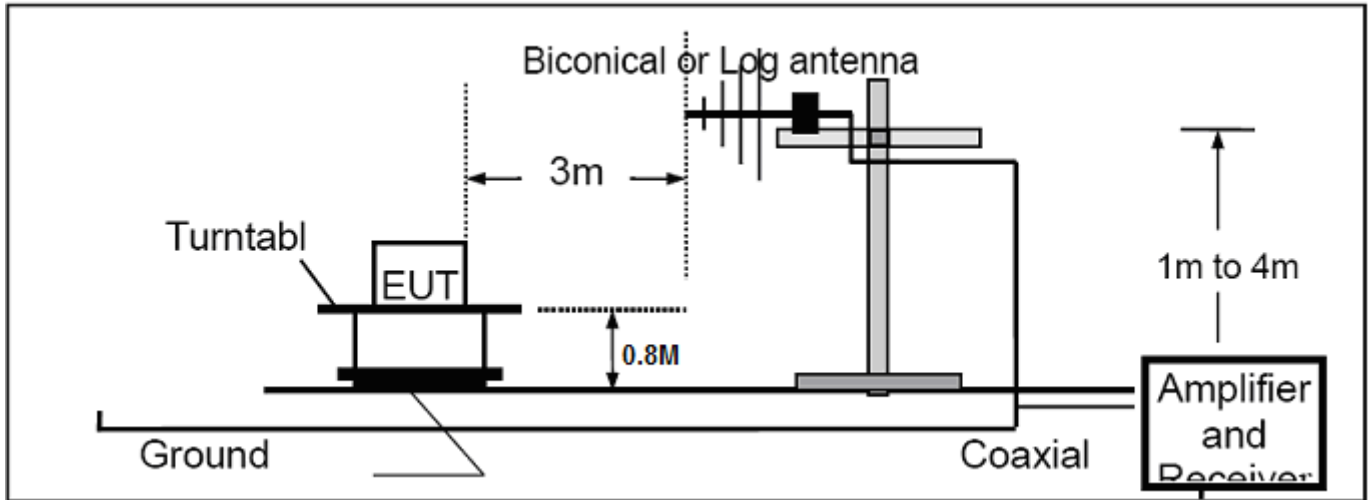


RADIATED EMISSION TEST SETUP

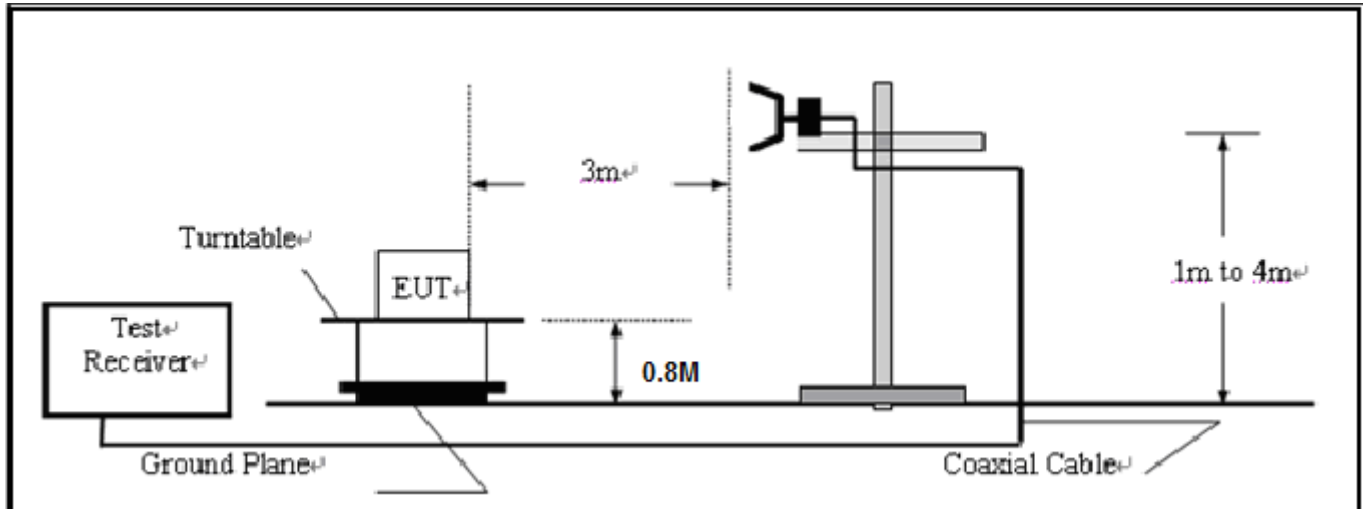
RADIATED MISSION TEST SETUP BELOW 30MHz



RADIATED MISSION TEST SETUP 30MHz-1000MHz

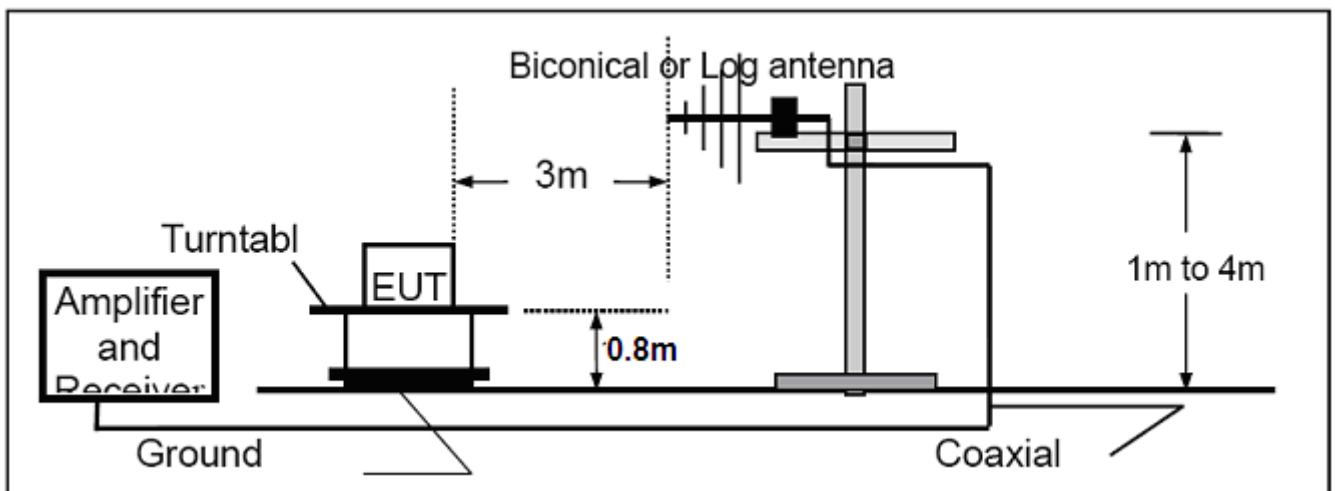


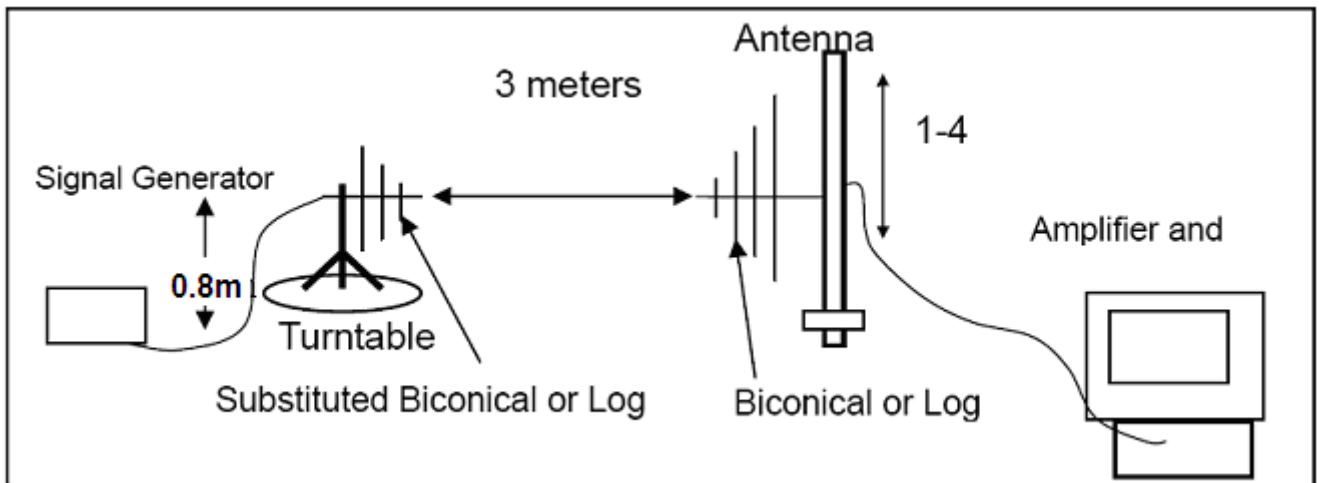
RADIATED MISSION TEST SETUP ABOVE 1000MHz



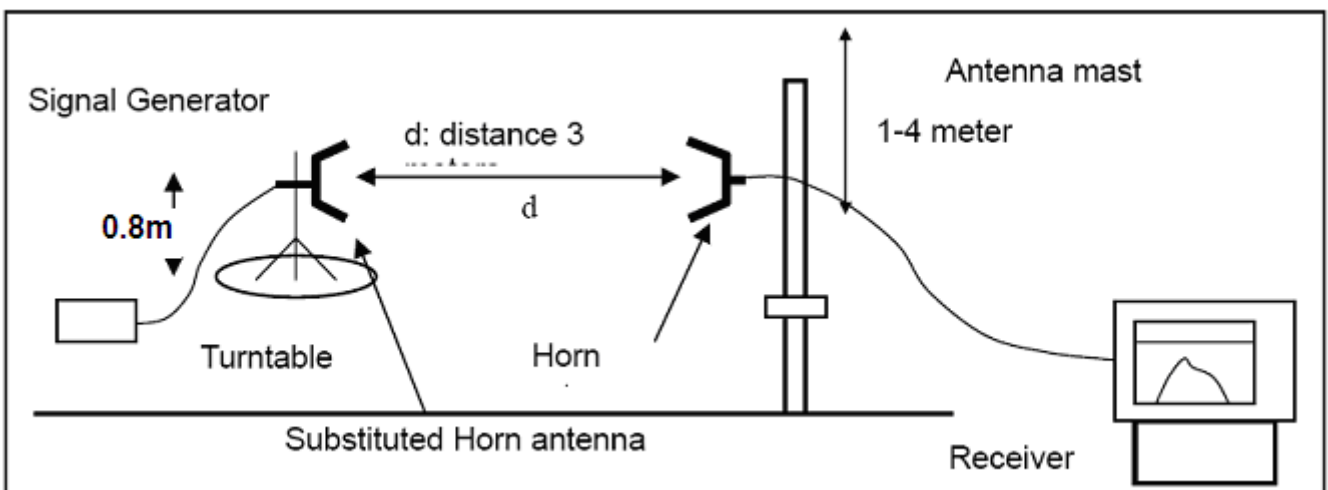
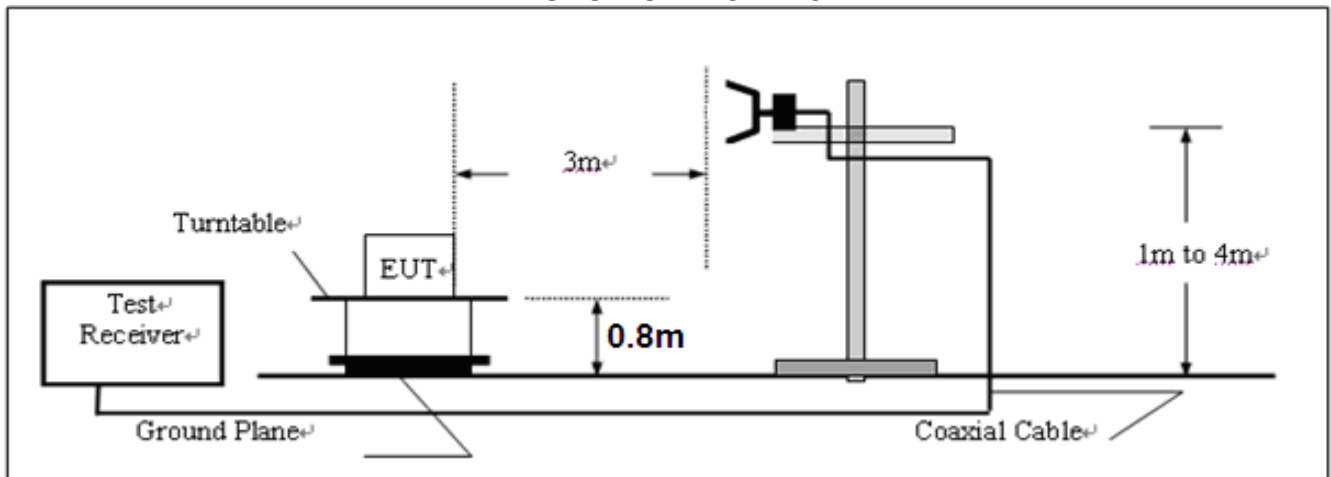
EIRP TEST SETUP

TEST SETUP BELOW 1GHZ





TEST SETUP ABOVE 1GHZ



6.3 MEASUREMENT EQUIPMENT USED:

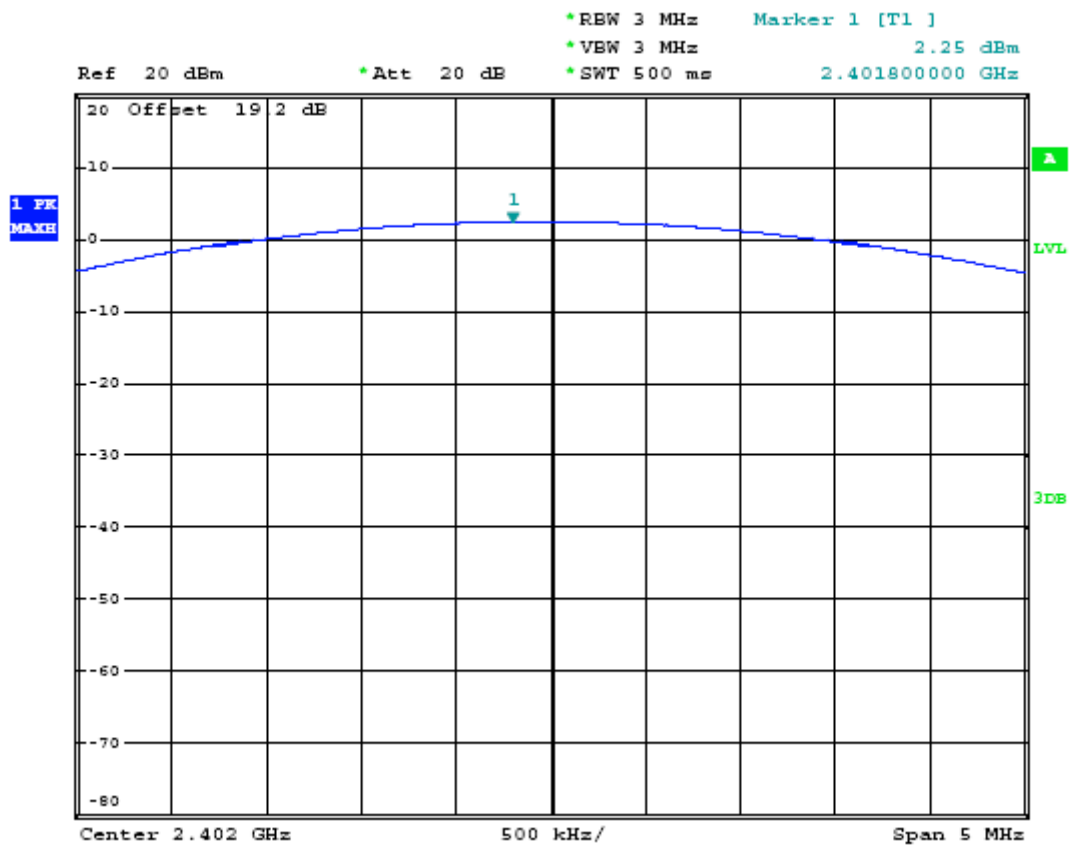
Description	Manufacturer	Model	SERIAL NUMBER	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4440A	N/A	06/29/2010	06/28/2011
Amplifier	EM	EM30180	0607030	06/29/2010	06/28/2011
Horn Antenna	EM	EM-AH-10180	N/A	06/29/2010	06/28/2011
EMI Test Receiver	Rohde & Schwarz	ESCI	N/A	06/29/2010	06/28/2011
Amplifier	EM	EM30180	N/A	06/29/2010	06/28/2011
Biological Antenna	A.H. Systems Inc.	SAS-521-4	N/A	06/29/2010	06/28/2011
Loop Antenna	Daze	ZN30900N	SEL0097	06/29/2010	06/28/2011
Isolation Transformer	LETEAC	LTBK	--	06/08/2010	06/07/2011

6.4 LIMITS AND MEASUREMENT RESULT:

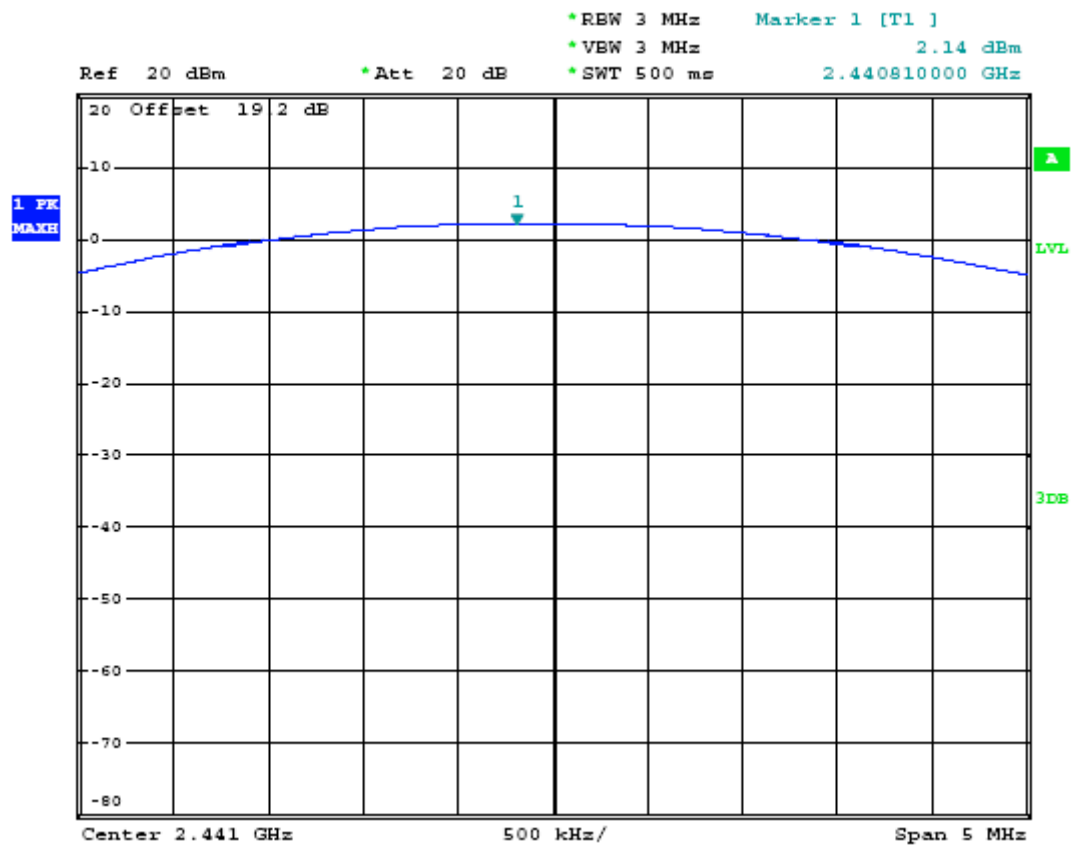
Operation Mode:	RF MODE	Test Date:	Feb.20, 2010
Temperature:	25°C	Tested by:	Jekey Zhang
Humidity:	55 % RH		

Channel	Frequency (MHZ)	Reading (dBm)	Limit (dBm)	Result
0	2402	2.25	30	Pass
39	2441	2.14	30	Pass
78	2480	1.62	30	Pass

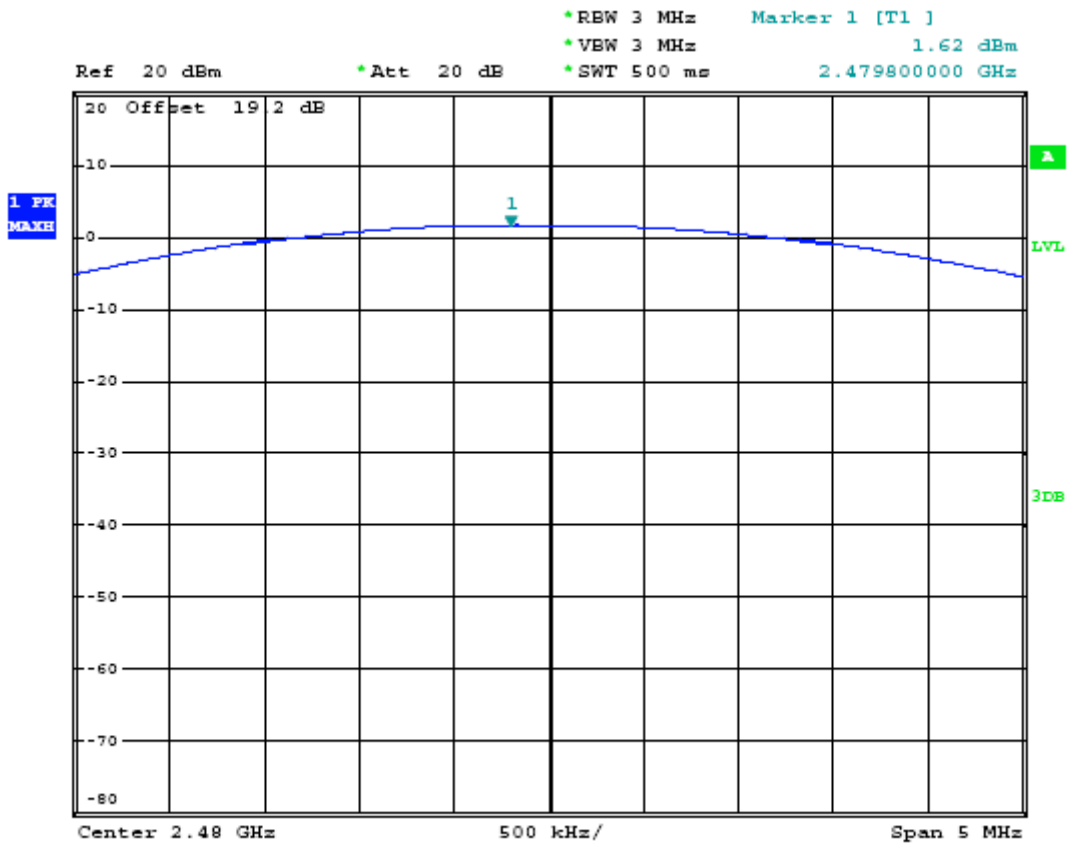
TEST PLOT OF BOTTOM CHANNEL:



TEST PLOT OF MIDDLE CHANNEL:



TEST PLOT OF TOP CHANNEL:



7. 20 DB BANDWIDTH

7.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW= 100 KHz.
4. Set SPA Trace 1 Max hold, then View.

7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The Same as described in Section 6.2

7.3 MEASUREMENT EQUIPMENT USED:

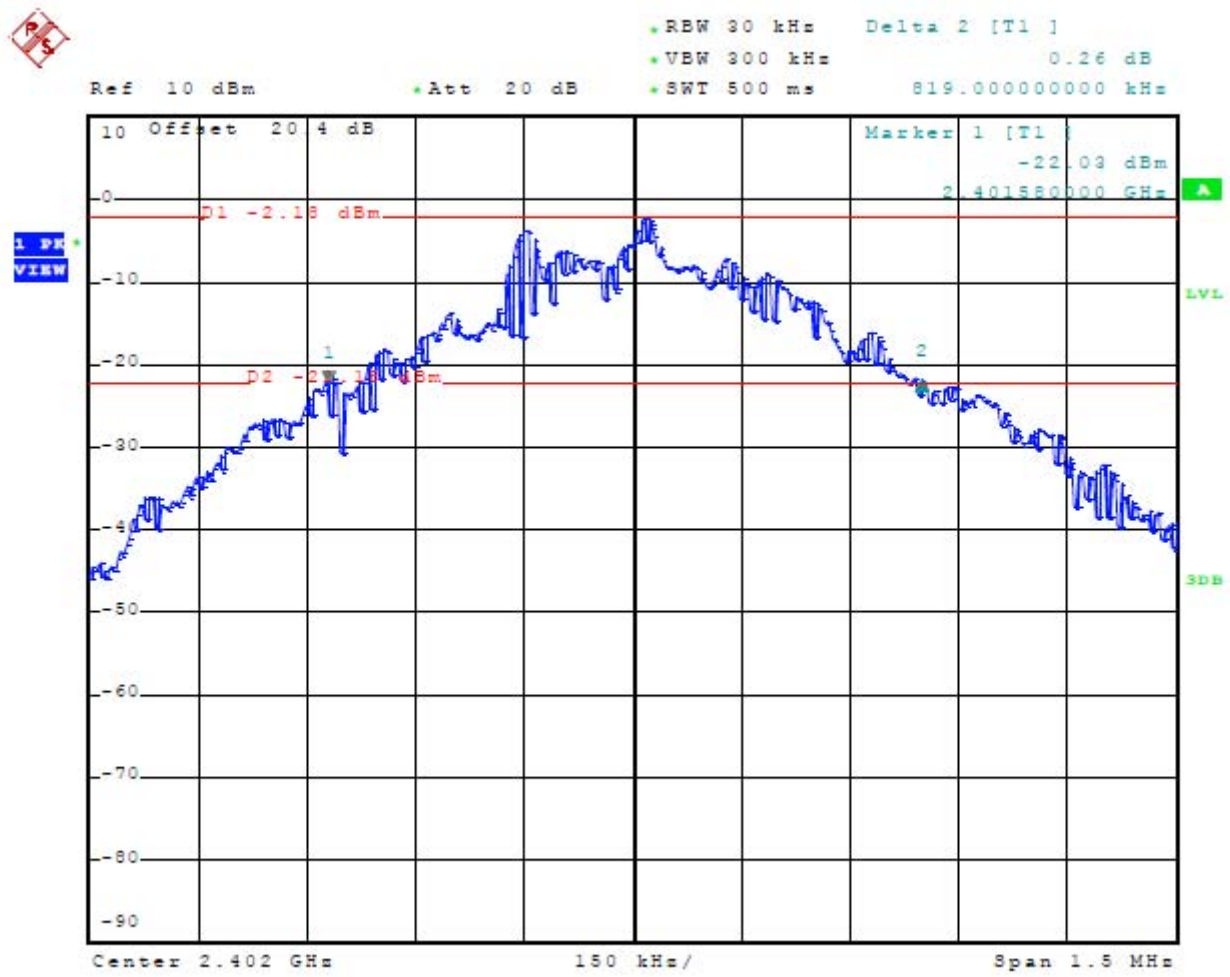
The same as described in Section 6.3

7.4 LIMITS AND MEASUREMENT RESULTS:

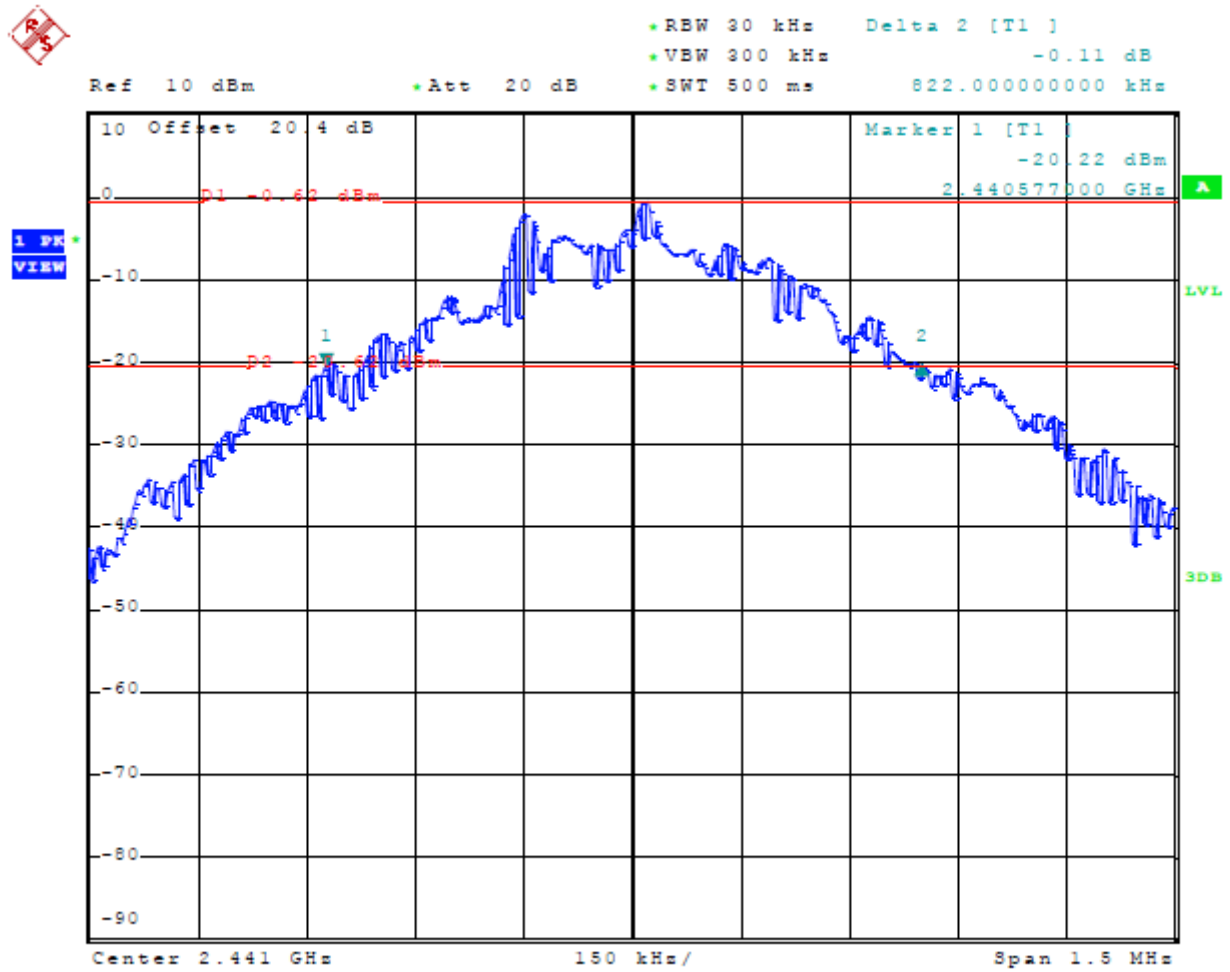
Operation Mode:	RF MODE	Test Date:	Feb.20, 2010
Temperature:	25°C	Tested by:	Jekey Zhang
Humidity:	55 % RH	Polarity:	--

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)		Criteria
--	Bottom Channel	0.819	PASS
	Middle Channel	0.822	PASS
	Top Channel	0.834	PASS

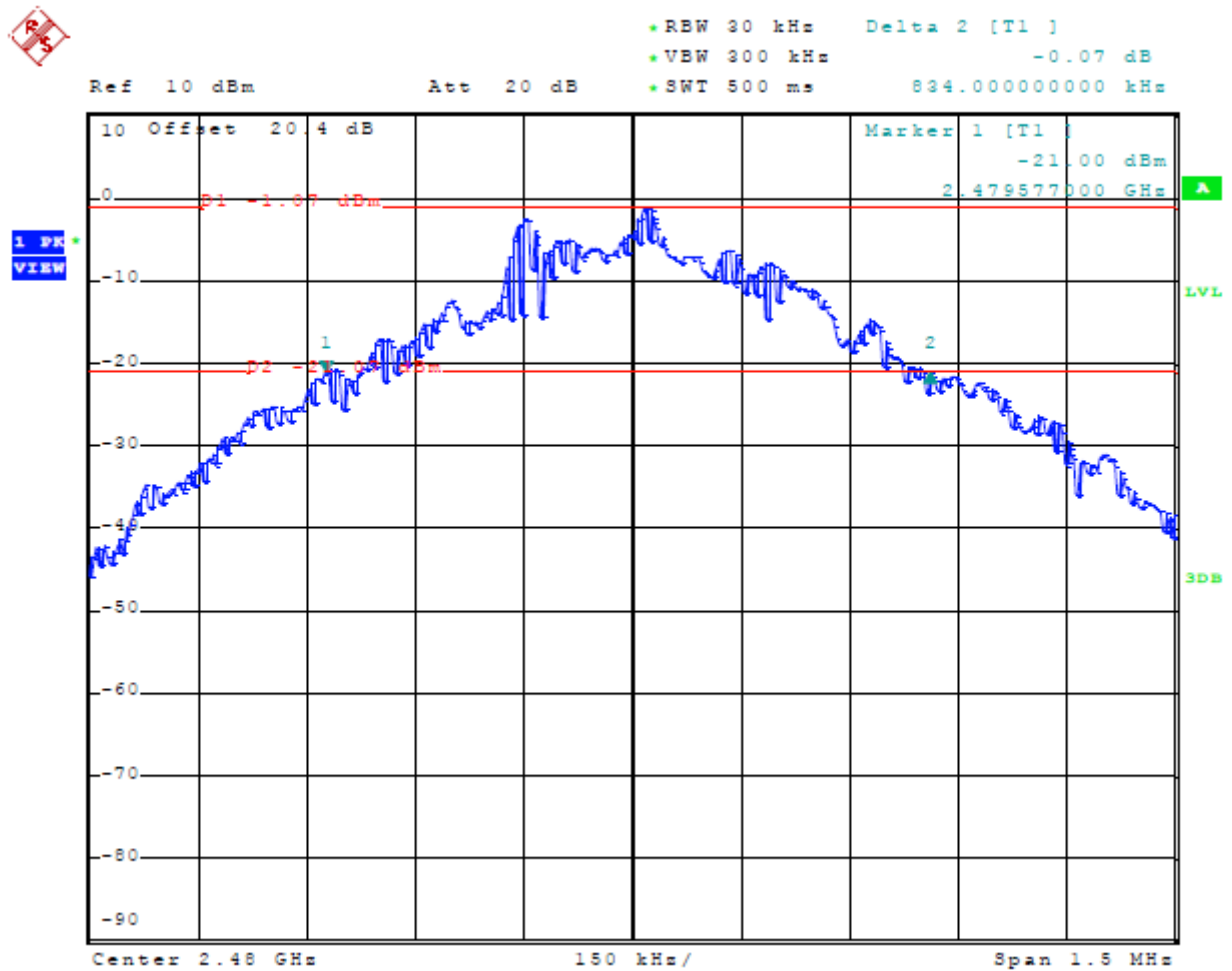
TEST PLOT OF BANDWIDTH FOR BOTTOM CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR TOP CHANNEL

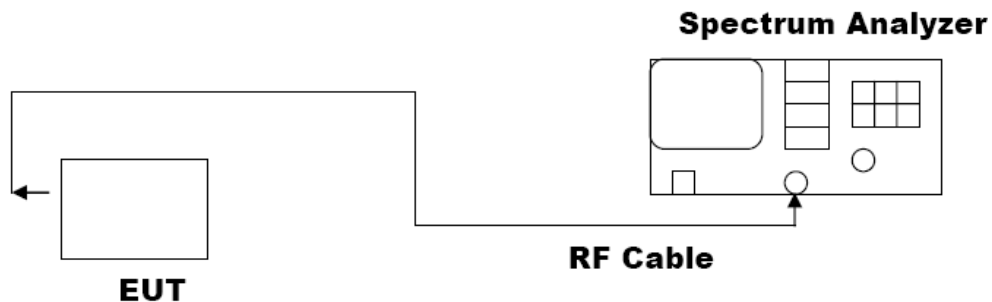


8. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY (N/A)

8.1 MEASUREMENT PROCEDURE:

- (1). The EUT was placed on a turn table which is 0.8m above ground plane.
- (2). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (3). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (4). Set SPA Centre Frequency = Operation Frequency, RBW= 3 KHz,
VBW= 10 KHz., Sweep time= Auto
- (5). Set SPA Trace 1 Max hold, then View.

8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



8.3 MEASUREMENT EQUIPMENT USED:

SHIELDING ROOM					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4440A	N/A	06/29/2010	06/28/2011

8.4 LIMITS AND MEASUREMENT RESULT:

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (dBm/3KHz)		Criteria
8 dBm / 3KHz	Bottom Channel	--	--
	Middle Channel	--	--
	Top Channel	--	--

9. OUT OF BAND EMISSION

9.1 MEASUREMENT PROCEDURE:

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW= 100 KHz.
4. Set SPA Trace 1 Max hold, then View.

9.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The Same as described in section 6.2

1. Conducted test setup
2. Radiated Emission test Setup below 1Ghz and Above 1GHz

9.3 MEASUREMENT EQUIPMENT USED:

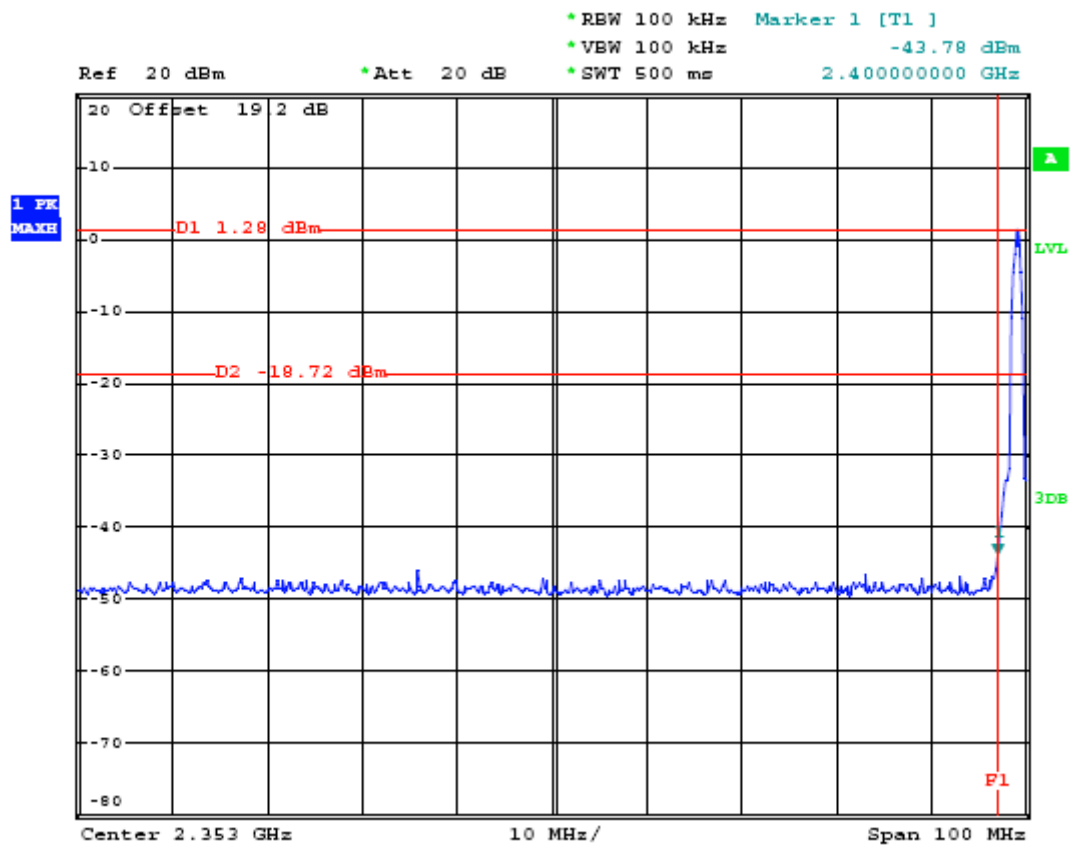
The Same as described in section 6.3

9.4 LIMITS AND MEASUREMENT RESULT:

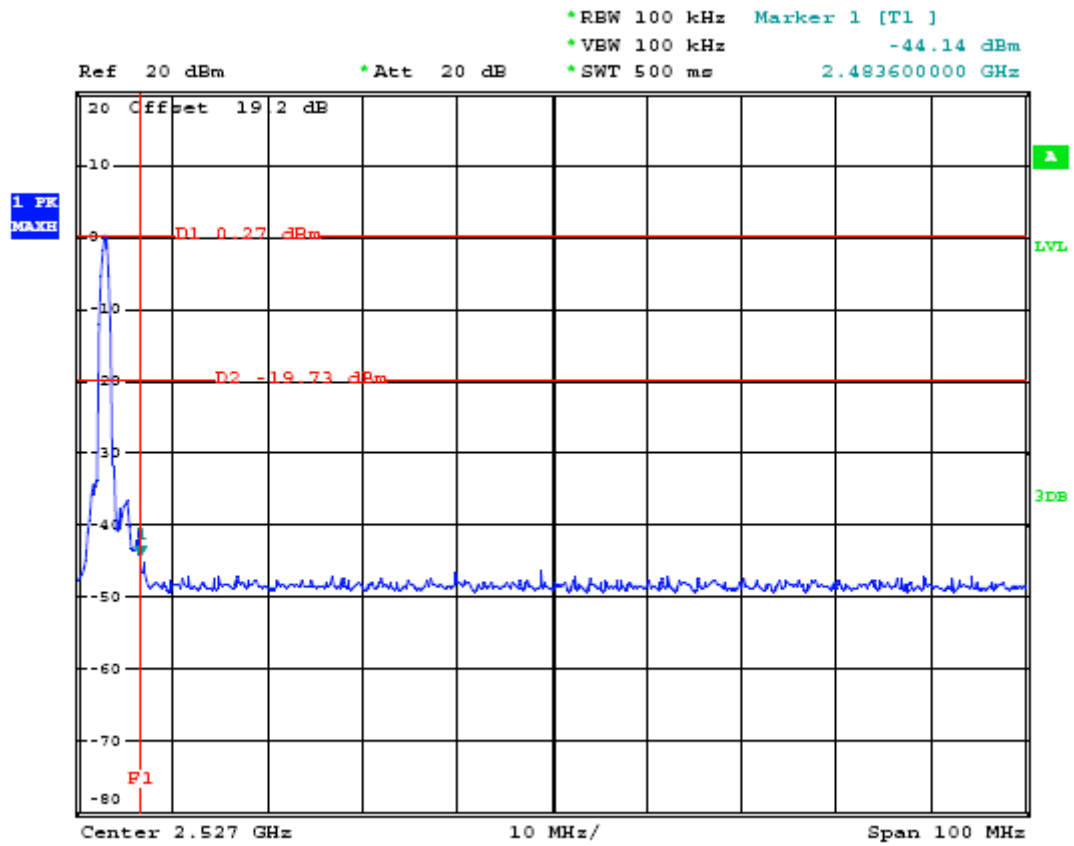
LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Criteria
<p>In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.</p> <p>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))</p>	At least -20dBc than the limit Specified on the BOTTOM Channel	PASS
	At least -20dBc than the limit Specified on the TOP Channel	PASS

Humidity:	55 % RH	Test Date:	Feb .20, 2010
Temperature:	25°C	Tested by:	Mary Liu

TEST PLOT OF BAND ELDG FOR BOTTOM CHANNEL



TEST PLOT OF BAND ELDG FOR TOP CHANNEL



RADIATED EMISSIONS

MEASUREMENT PROCEDURE

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

The following table is the setting of spectrum analyzer and receiver.'

Spectrum Parameter	Setting
Start Frequency	1GHz
Stop Frequency	26.5GHz
RB/VB(Emission in restricted band)	1MHz/1MHz for Peak, 1MHz/10Hz for Average
RB/VB(Emission in non-restricted band)	1MHz/1MHz for peak

Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

TEST SET-UP

The Same as described in section 6.2

TEST RESULT OF RADIATED EMISSION TEST (9KHz ~30MHz)

Distance	3m	Test Date:	Feb.20, 2010
Temperature:	25°C	Tested by:	Jekey Zhang
Humidity:	55 % RH		

Operation Mode: BT MODE

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

Note:

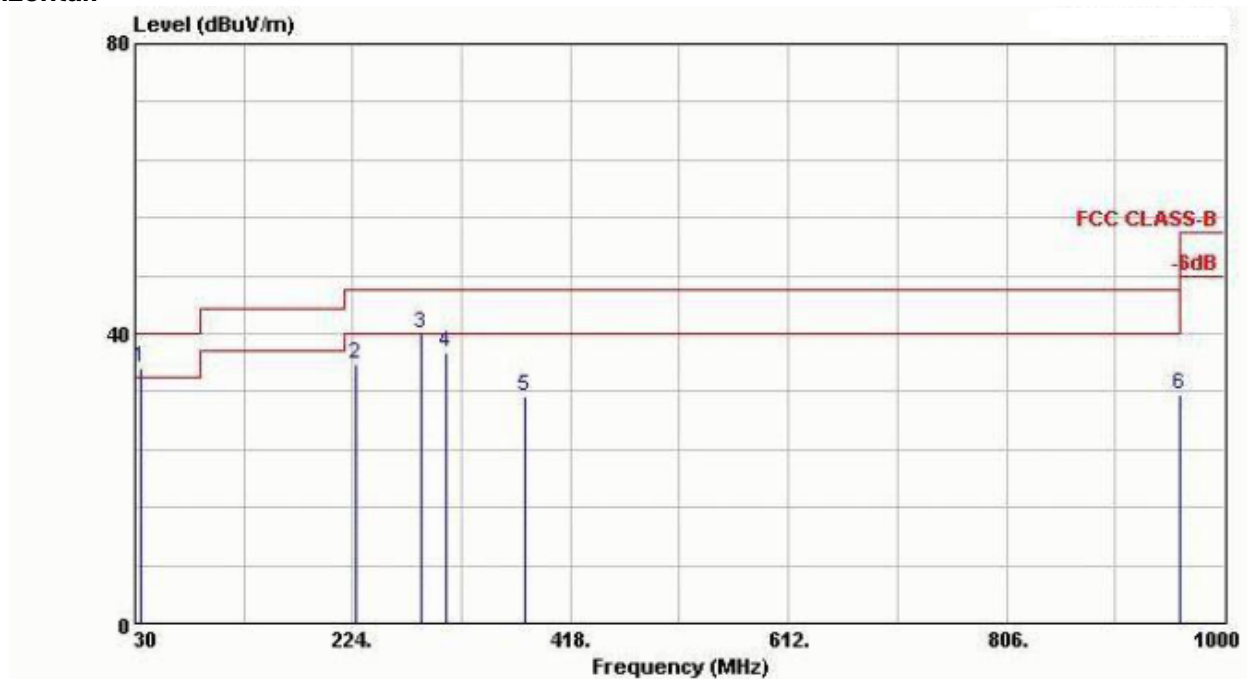
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $20 \log (\text{specific distance} / \text{test distance})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

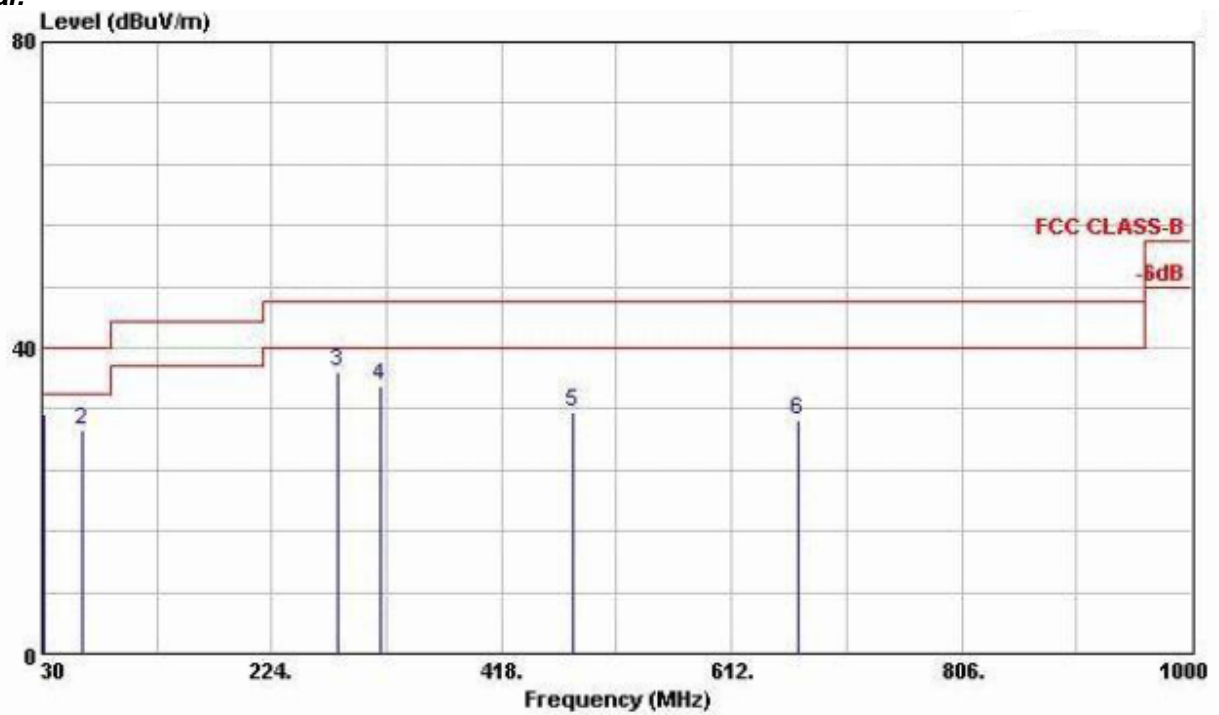
TEST RESULT OF RADIATED EMISSION TEST (30MHZ-1GHZ)

Operation Mode:	CHARGE MODE (connected to PC)	Test Date:	Feb.20, 2010
Temperature:	25°C	Tested by:	Mary Liu
Humidity:	55 % RH		

Horizontal:

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 !	35.130	35.39	-4.61	40.00	46.45	16.29	0.91	28.26	100	157 Peak
2	226.020	35.82	-10.18	46.00	50.88	10.72	1.97	27.75	---	---
3 !	284.340	40.06	-5.94	46.00	53.12	12.39	2.18	27.63	---	---
4	307.000	37.33	-8.67	46.00	50.14	12.58	2.26	27.65	---	---
5	377.000	31.24	-14.76	46.00	41.90	14.98	2.49	28.14	---	---
6	960.100	31.71	-22.29	54.00	31.37	25.04	3.99	28.68	---	---

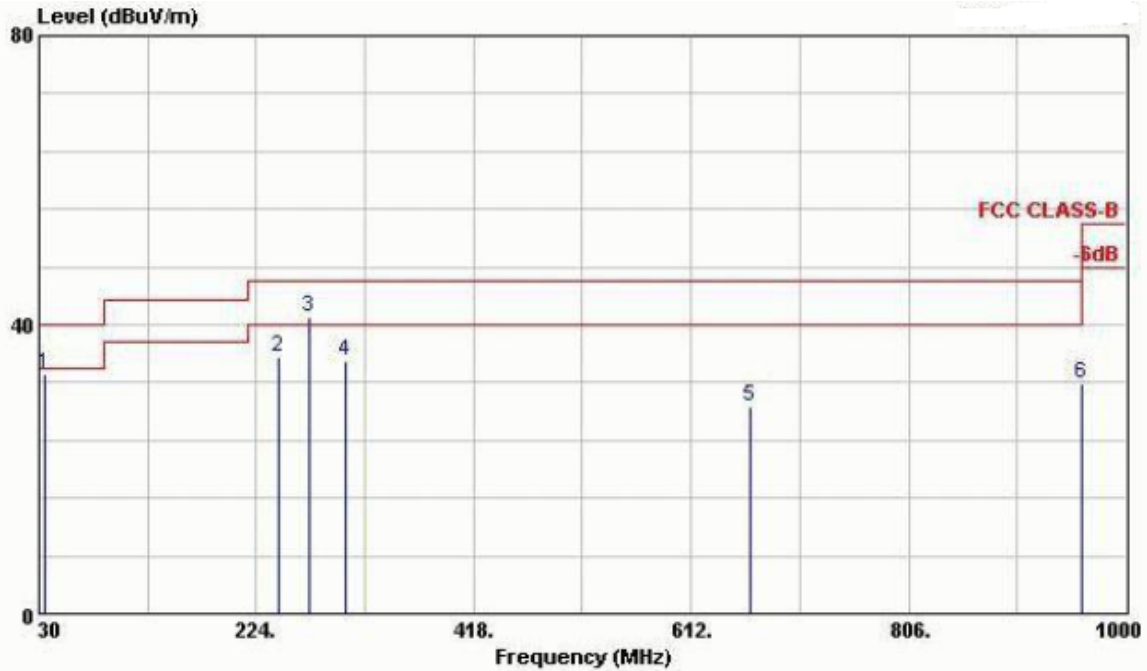
Vertical:



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	31.080	31.26	-8.74	40.00	42.27	16.36	0.88	28.25	100	58	Peak
2	64.020	29.21	-10.79	40.00	52.05	4.29	1.14	28.27	---	---	Peak
3	280.020	36.87	-9.13	46.00	49.93	12.41	2.17	27.64	---	---	Peak
4	315.400	34.97	-11.03	46.00	47.54	12.84	2.29	27.70	---	---	Peak
5	478.500	31.61	-14.39	46.00	41.03	16.65	2.77	28.85	---	---	Peak
6	668.200	30.63	-15.37	46.00	36.22	20.06	3.45	29.10	---	---	Peak

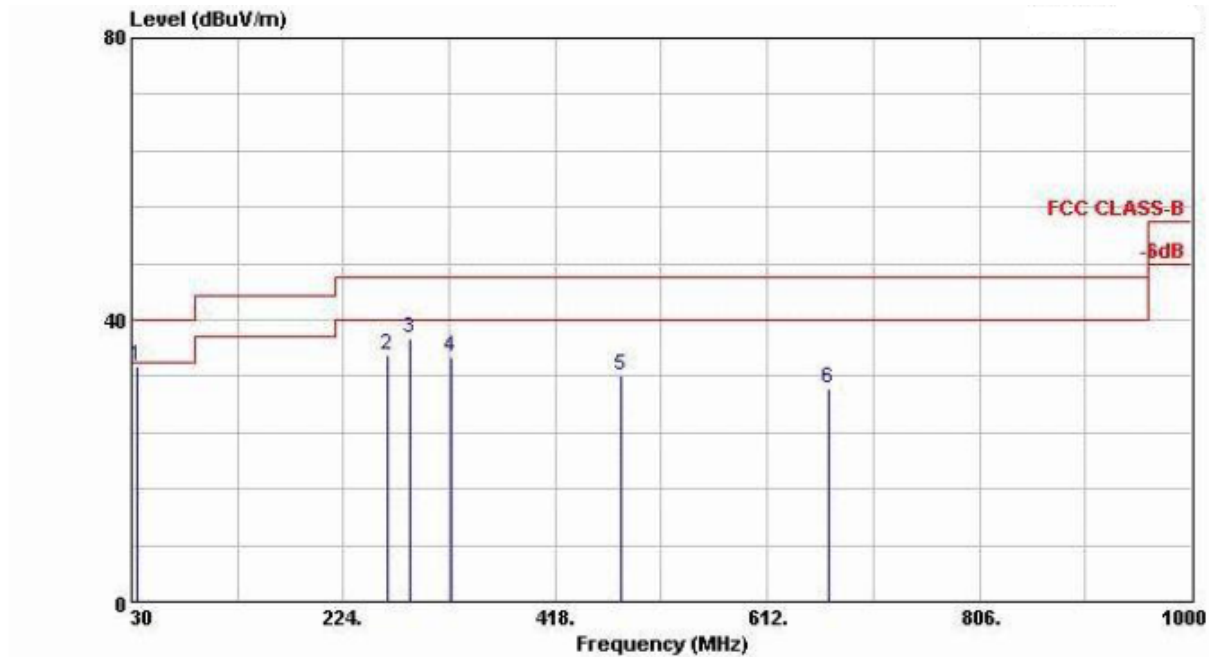
Operation Mode:	BT MODE(channel 39)	Test Date:	Feb.20, 2010
Temperature:	25°C	Tested by:	Mary Liu
Humidity:	55 % RH		

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBUV/m	dB	dBUV/m	dBUV	dB/m	dB	dB	cm	deg	
1	35.940	33.28	-6.72	40.00	45.22	15.40	0.93	28.27	---	---	Peak
2	243.300	35.54	-10.46	46.00	49.17	12.05	2.03	27.71	---	---	Peak
3 !	271.650	40.93	-5.07	46.00	53.99	12.46	2.13	27.66	100	254	Peak
4	304.200	35.01	-10.99	46.00	47.91	12.48	2.25	27.63	---	---	Peak
5	665.400	28.77	-17.23	46.00	34.37	20.06	3.45	29.10	---	---	Peak
6	960.100	31.90	-22.10	54.00	31.56	25.04	3.99	28.68	---	---	Peak

Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Preamp Loss Factor	Ant Pos	Table Pos	Remark		
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	35.130	33.35	-6.65	40.00	44.41	16.29	0.91	28.26	100	46	Peak
2	263.820	35.07	-10.93	46.00	48.14	12.50	2.10	27.67	---	---	Peak
3	285.420	37.35	-8.65	46.00	50.41	12.39	2.19	27.63	---	---	Peak
4	321.700	34.64	-11.36	46.00	47.00	13.08	2.31	27.75	---	---	Peak
5	478.500	32.17	-13.83	46.00	41.59	16.65	2.77	28.85	---	---	Peak
6	668.200	30.21	-15.79	46.00	35.80	20.06	3.45	29.10	---	---	Peak

Note:

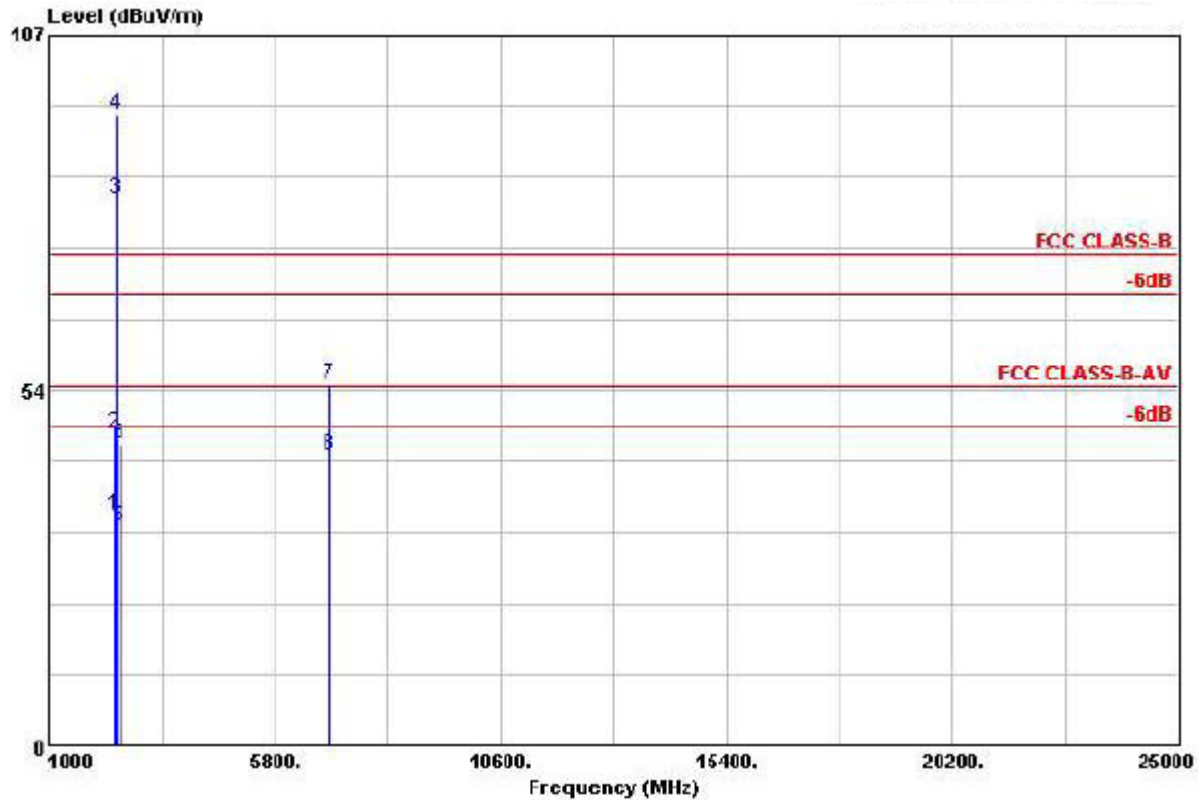
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

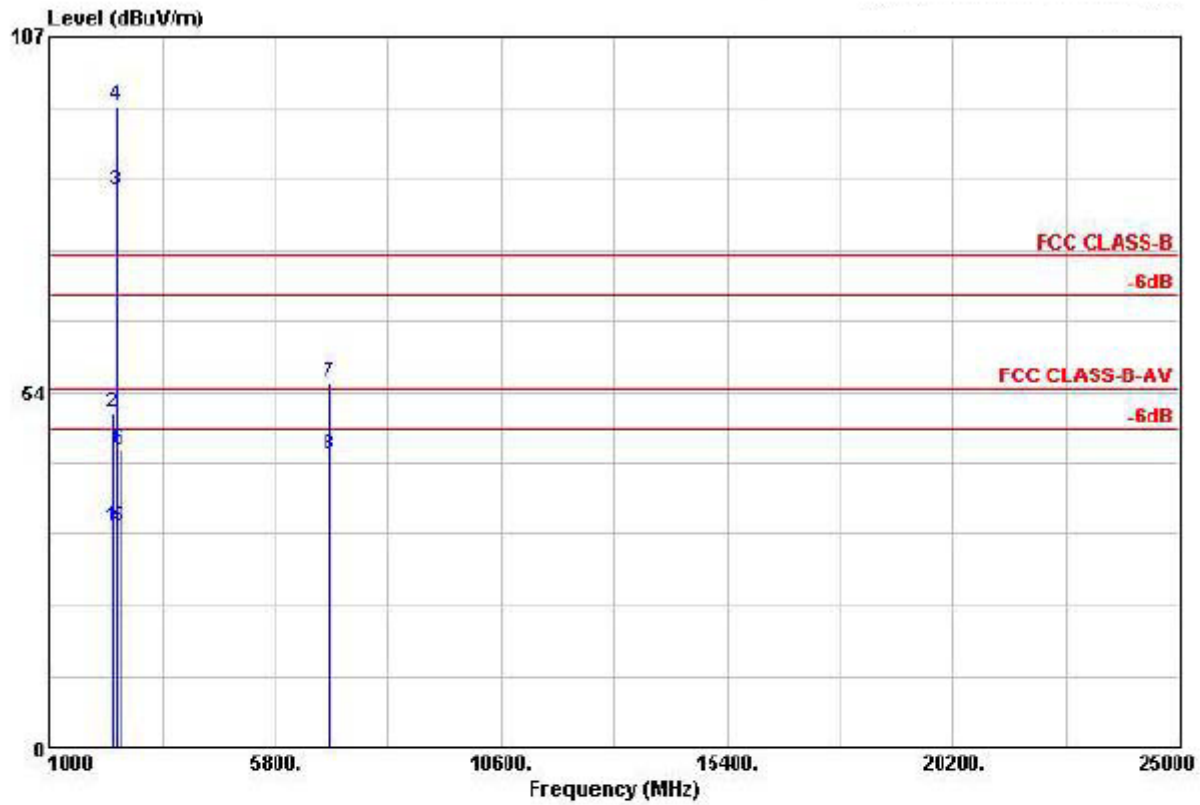
TEST RESULT OF RADIATED EMISSION TEST(1GHZ-10TH HARMONIC)

Operation Mode:	channel 0	Test Date:	Feb.20, 2010
Temperature:	25°C	Tested by:	Mary Liu
Humidity:	55 % RH		

Horizontal

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1	2389.420	34.66	-19.34	54.00	32.16	32.54	3.74	33.78	160	101 Average
2	2389.420	46.99	-27.01	74.00	44.49	32.54	3.74	33.78	100	0 Peak
3 X	2402.000	82.26			79.76	32.54	3.74	33.78	160	101 Average
4 X	2402.000	95.07			92.57	32.54	3.74	33.78	100	0 Peak
5	2486.000	33.12	-20.88	54.00	30.49	32.59	3.84	33.80	160	101 Average
6	2486.000	45.26	-28.74	74.00	42.63	32.59	3.84	33.80	100	0 Peak
7	6942.000	54.41	-19.59	74.00	44.61	36.00	6.34	32.54	100	0 Peak
8	6942.000	43.60	-10.40	54.00	33.80	36.00	6.34	32.54	100	188 Average

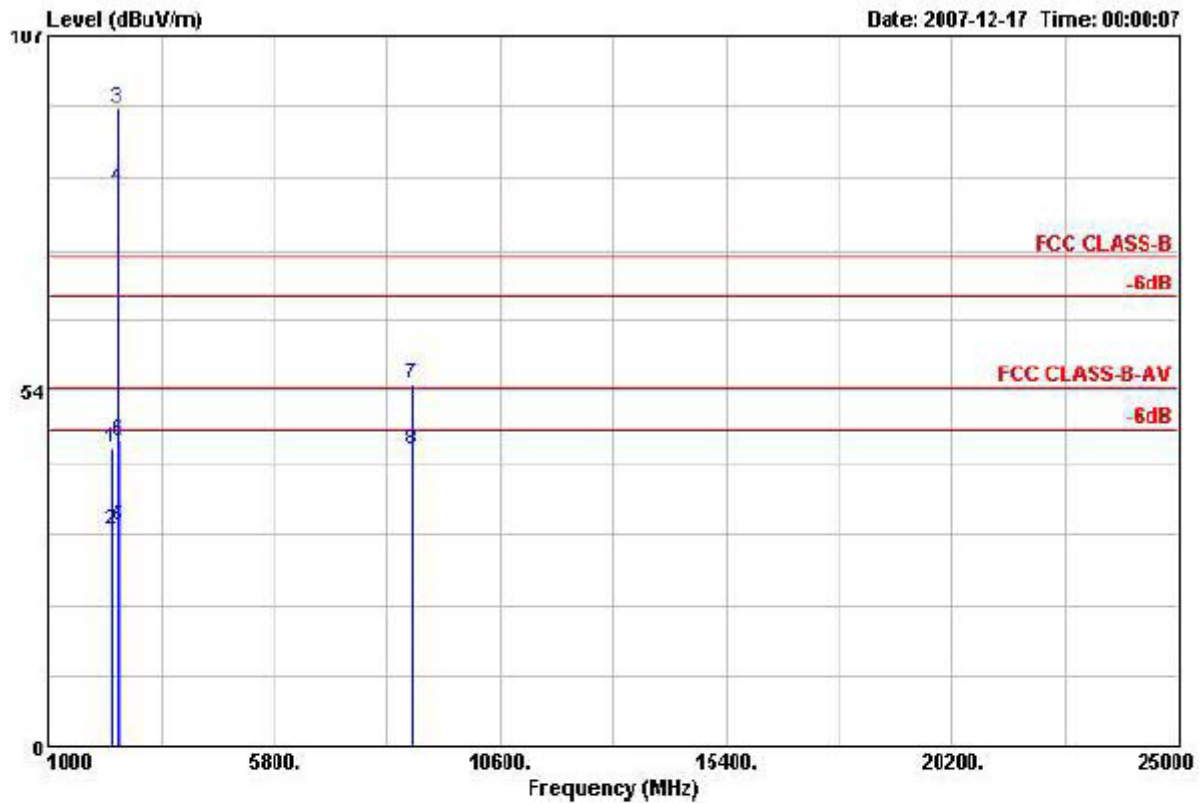
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2349.140	33.08	-20.92	54.00	30.65	32.51	3.69	33.77	101	68	Average
2	2349.140	50.33	-23.67	74.00	47.90	32.51	3.69	33.77	100	0	Peak
3 @	2402.000	83.87			81.37	32.54	3.74	33.78	101	68	Average
4 X	2402.000	96.69			94.19	32.54	3.74	33.78	100	0	Peak
5	2492.000	33.10	-20.90	54.00	30.46	32.60	3.84	33.80	101	68	Average
6	2492.000	44.76	-29.24	74.00	42.12	32.60	3.84	33.80	100	0	Peak
7	6957.000	54.81	-19.19	74.00	44.99	36.00	6.34	32.52	100	0	Peak
8	6957.000	43.86	-10.14	54.00	34.04	36.00	6.34	32.52	100	181	Average

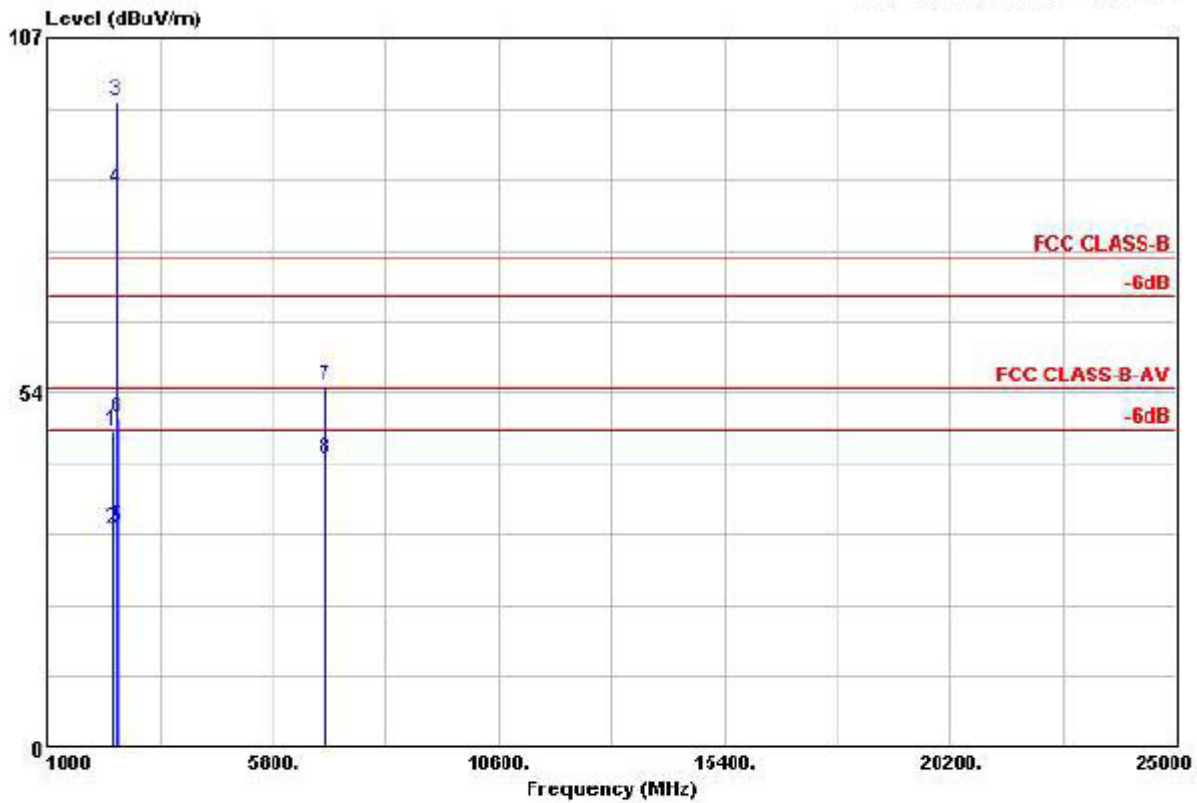
Operation Mode:	channel 39	Test Date:	Feb.20, 2010
Temperature:	25°C	Tested by:	Mary Liu
Humidity:	55 % RH		

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/n	dB	dB	cm	deg	
1	2324.000	45.21	-28.79	74.00	42.82	32.50	3.66	33.77	100	0	Peak
2	2324.000	32.80	-21.20	54.00	30.41	32.50	3.66	33.77	156	98	Average
3 @	2441.000	96.07			93.50	32.57	3.79	33.79	100	0	Peak
4 @	2441.000	84.27			81.70	32.57	3.79	33.79	156	98	Average
5	2486.000	33.35	-20.65	54.00	30.72	32.59	3.84	33.80	156	98	Average
6	2486.000	46.12	-27.88	74.00	43.49	32.59	3.84	33.80	100	0	Peak
7	6721.000	54.76	-19.24	74.00	45.73	36.47	7.13	34.58	100	0	Peak
8 @	6721.000	44.70	-9.30	54.00	35.67	36.47	7.13	34.58	100	147	Average

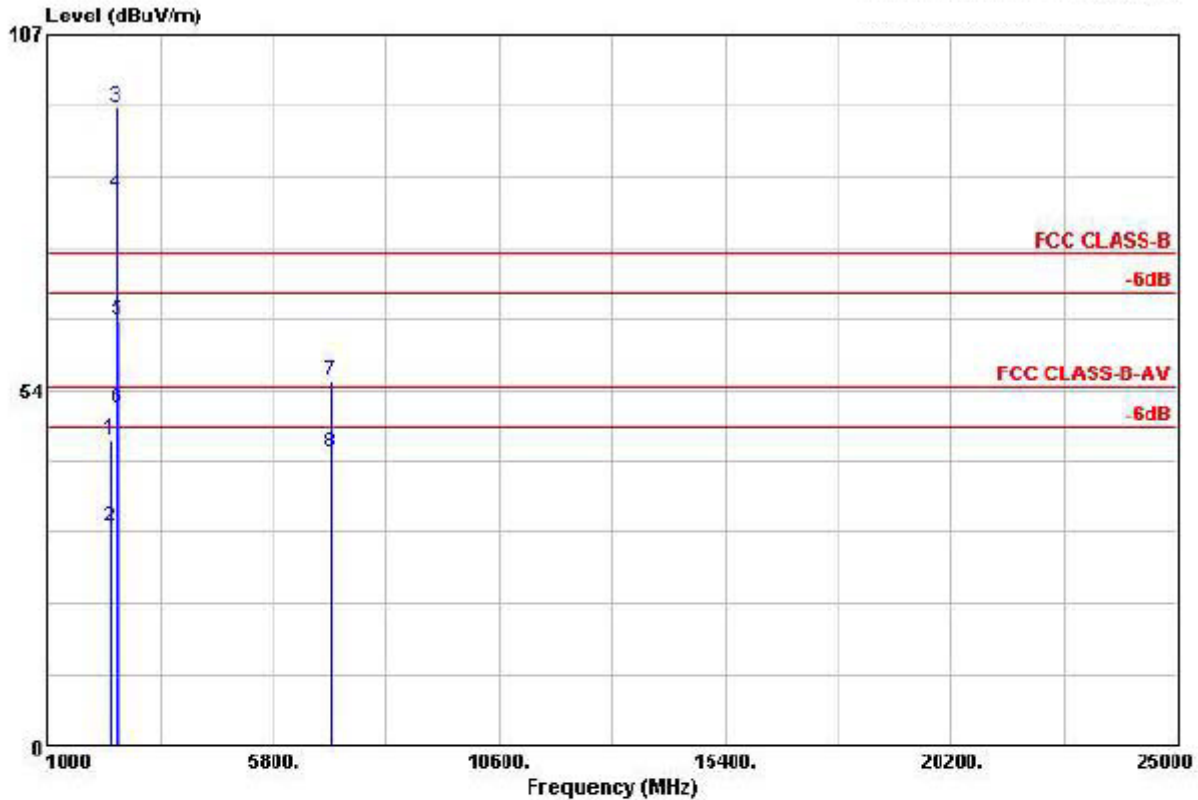
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2388.000	47.54	-26.46	74.00	45.04	32.54	3.74	33.78	100	0	Peak
2	2388.000	32.96	-21.04	54.00	30.46	32.54	3.74	33.78	100	308	Average
3 @	2441.000	97.40			94.83	32.57	3.79	33.79	100	0	Peak
4 @	2441.000	84.36			81.79	32.57	3.79	33.79	100	308	Average
5	2494.000	33.30	-20.70	54.00	30.66	32.60	3.84	33.80	100	308	Average
6	2494.000	49.62	-24.38	74.00	46.98	32.60	3.84	33.80	100	0	Peak
7	6906.000	54.22	-19.78	74.00	44.45	36.00	6.33	32.55	100	0	Peak
8 @	6906.000	43.45	-10.55	54.00	33.68	36.00	6.33	32.55	100	168	Average

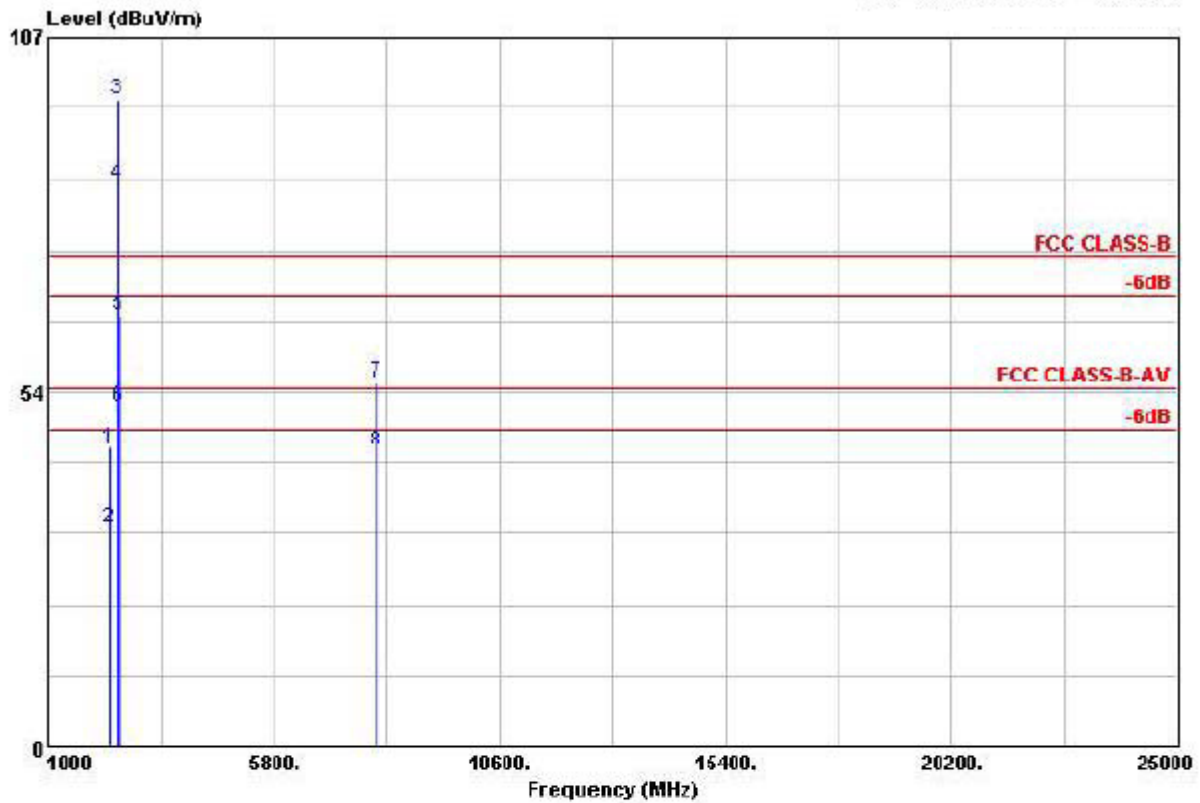
Operation Mode:	channel 78	Test Date:	Feb.20, 2010
Temperature:	25°C	Tested by:	Mary Liu
Humidity:	55 % RH		

Horizontal



	Freq	Level	Over Limit	Limit Line	Readantenna Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2340.000	46.00	-28.00	74.00	43.57	32.51	3.69	33.77	100	0	Peak
2	2340.000	32.71	-21.29	54.00	30.28	32.51	3.69	33.77	102	94	Average
3 X	2480.000	96.13			93.50	32.59	3.84	33.80	100	0	Peak
4 X	2480.000	82.79			80.16	32.59	3.84	33.80	102	94	Average
5	2483.500	63.73	-10.27	74.00	61.10	32.59	3.84	33.80	100	0	Peak
6 I	2483.500	50.60	-3.40	54.00	47.97	32.59	3.84	33.80	102	94	Average
7	7050.000	54.81	-19.19	74.00	45.06	36.00	6.38	32.63	100	0	Peak
8	7050.000	44.06	-9.94	54.00	34.31	36.00	6.38	32.63	100	102	Average

Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/n	dB	dB	cm	deg	
1	2318.000	45.00	-29.00	74.00	42.61	32.50	3.66	33.77	100	0	Peak
2	2318.000	32.80	-21.20	54.00	30.41	32.50	3.66	33.77	150	99	Average
3 X	2480.000	97.55			94.92	32.59	3.84	33.80	100	0	Peak
4 @	2480.000	84.75			82.12	32.59	3.84	33.80	150	99	Average
5	2483.500	65.00	-9.00	74.00	62.37	32.59	3.84	33.80	100	0	Peak
6 I	2483.500	51.31	-2.69	54.00	48.68	32.59	3.84	33.80	150	99	Average
7	7998.000	54.90	-19.20	74.00	45.45	36.20	6.76	33.61	100	0	Peak
8	7998.000	44.45	-9.55	54.00	35.10	36.20	6.76	33.61	100	146	Average

10. NUMBER OF HOPPING FREQUENCY

10.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer Start = 2.4GHz Stop = 2.4835GHz, span=20MHz
4. Set the Spectrum Analyzer as RBW = VBW = 510KHz

10.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2

1. Conducted Method.

10.3 MEASUREMENT EQUIPMENT USED

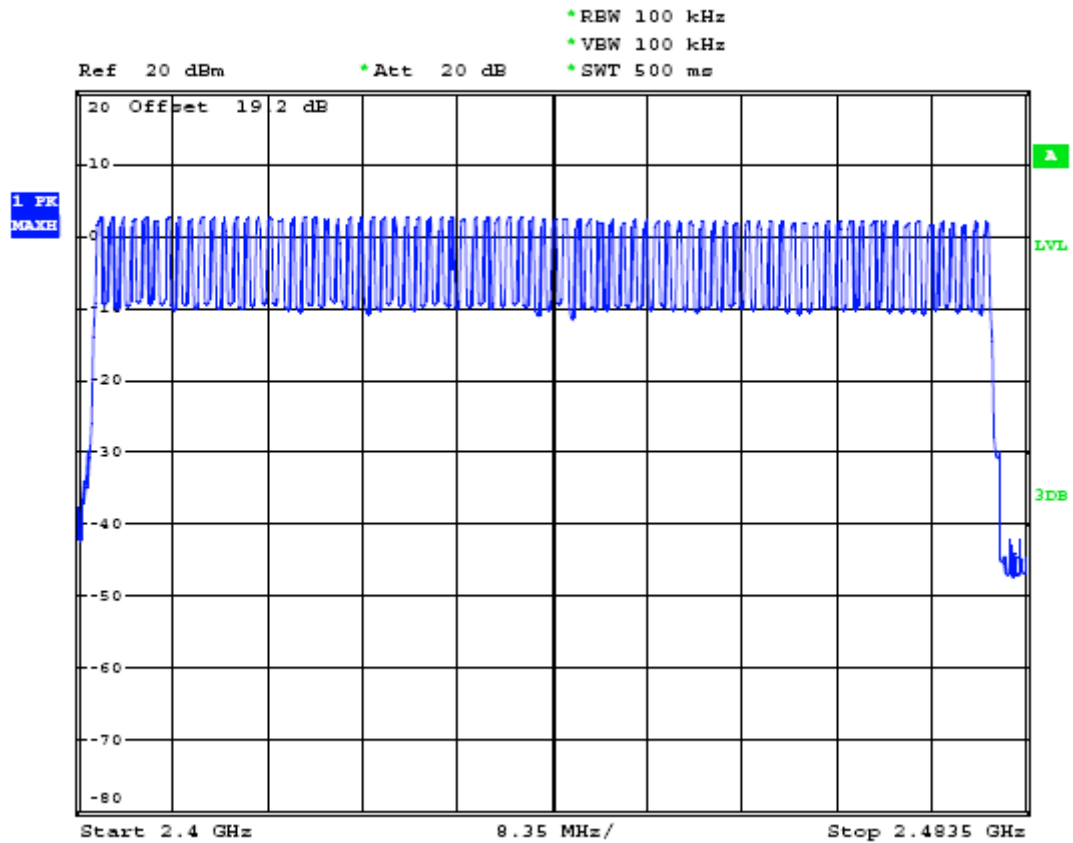
The Same as described in section 6.3

10.4 LIMITS AND MEASUREMENT RESULT:

TOTAL NO. OF HOPPING CHANNEL	LIMIT (NO. OF CH)	MEASUREMENT (NO. OF CH)	RESULT
	≥ 15	79	PASS

Humidity:	55 % RH	Test Date:	Feb.20, 2011
Temperature:	25°C	Tested by:	Jekey Zhang

NUMBER OF HOPPING CHANNEL PLOT ON CHANNEL 0~78



11. TIME OF OCCUPANCY (DWELL TIME)

11.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer
3. Set center frequency of spectrum analyzer = Operating frequency
4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0 Hz,

11.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2

Conducted Method

11.3 MEASUREMENT EQUIPMENT USED

The same as described in section 6.3

11.4 LIMITS AND MEASUREMENT RESULT

BOTTOM CHANNEL					
Mode	Frequency (MHz)	Spectrum Reading (uS)	Test Result (mS)	Limit (mS)	Pass / Fail
DH1	2402	370	118.40	400	Pass
DH3	2402	1627	260.32	400	Pass
DH5	2402	2870	306.13	400	Pass

MIDDLE CHANNEL					
Mode	Frequency (MHz)	Spectrum Reading (uS)	Test Result (mS)	Limit (mS)	Pass / Fail
DH1	2441	373.3	119.46	400	Pass
DH3	2441	1627	260.32	400	Pass
DH5	2441	2860	305.07	400	Pass

TOP CHANNEL					
Mode	Frequency (MHz)	Spectrum Reading (uS)	Test Result (mS)	Limit (mS)	Pass / Fail
DH1	2480	370	118.40	400	Pass
DH3	2480	1627	260.32	400	Pass
DH5	2480	2860	305.07	400	Pass

A Period Time = $79 \times 0.4 = 31.6$ S

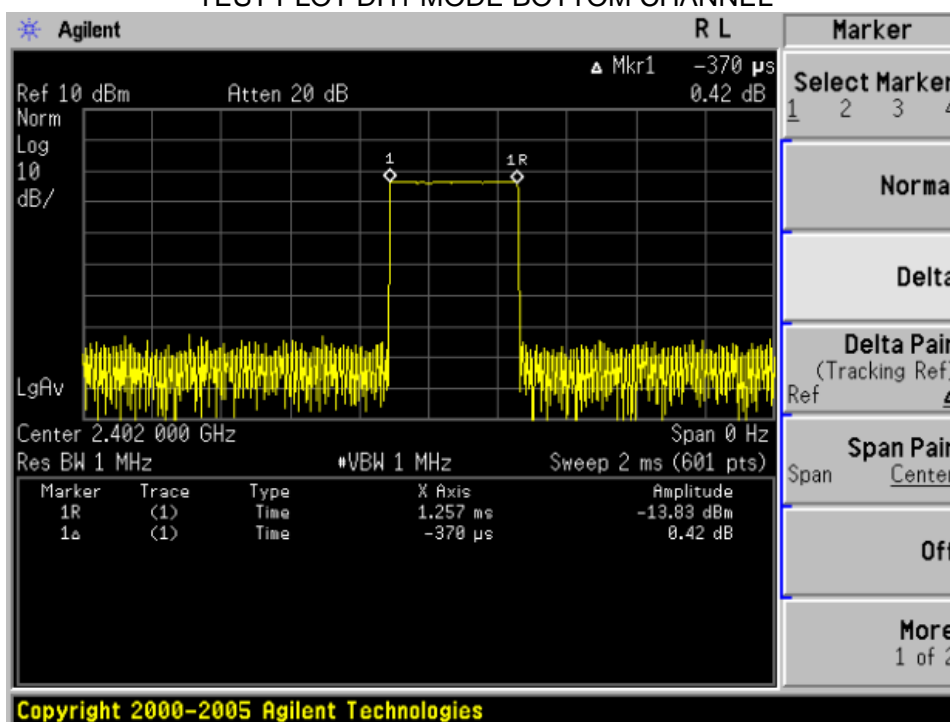
DH1 Time Slot: Reading * $(1600/2) \times 31.6/79$

DH3 Time Slot: Reading * $(1600/4) \times 31.6/79$

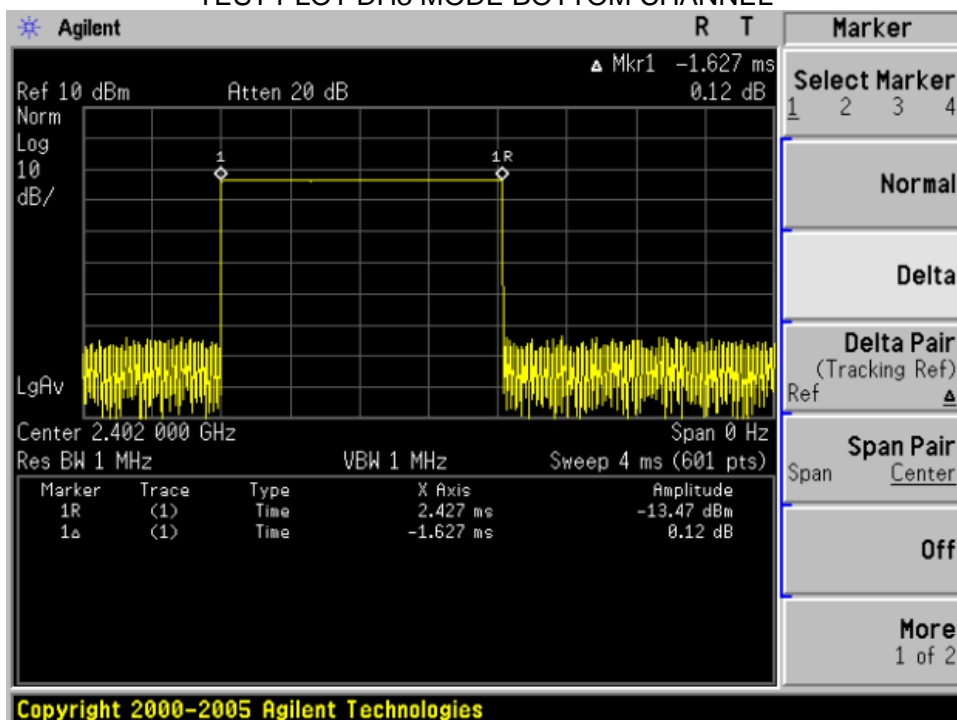
DH5 Time Slot: Reading * $(1600/6) \times 31.6/79$

Humidity:	55 % RH	Test Date:	Feb.20, 2010
Temperature:	25°C	Tested by:	Mary Liu
Configurations	DH1, DH3, DH5		

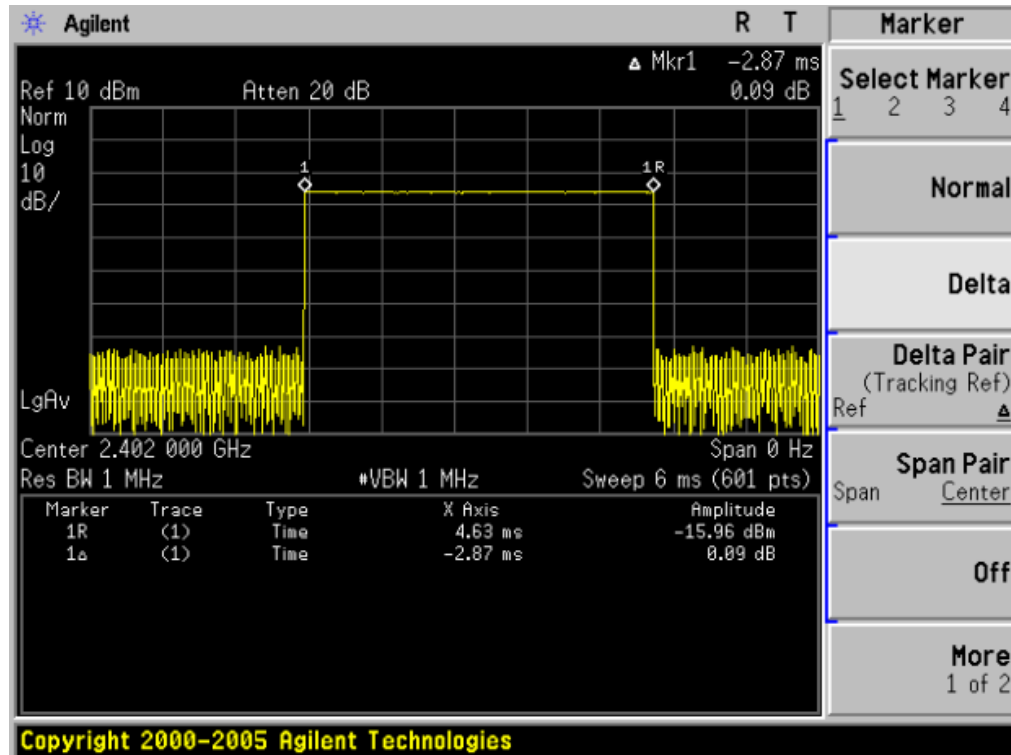
TEST PLOT DH1 MODE BOTTOM CHANNEL



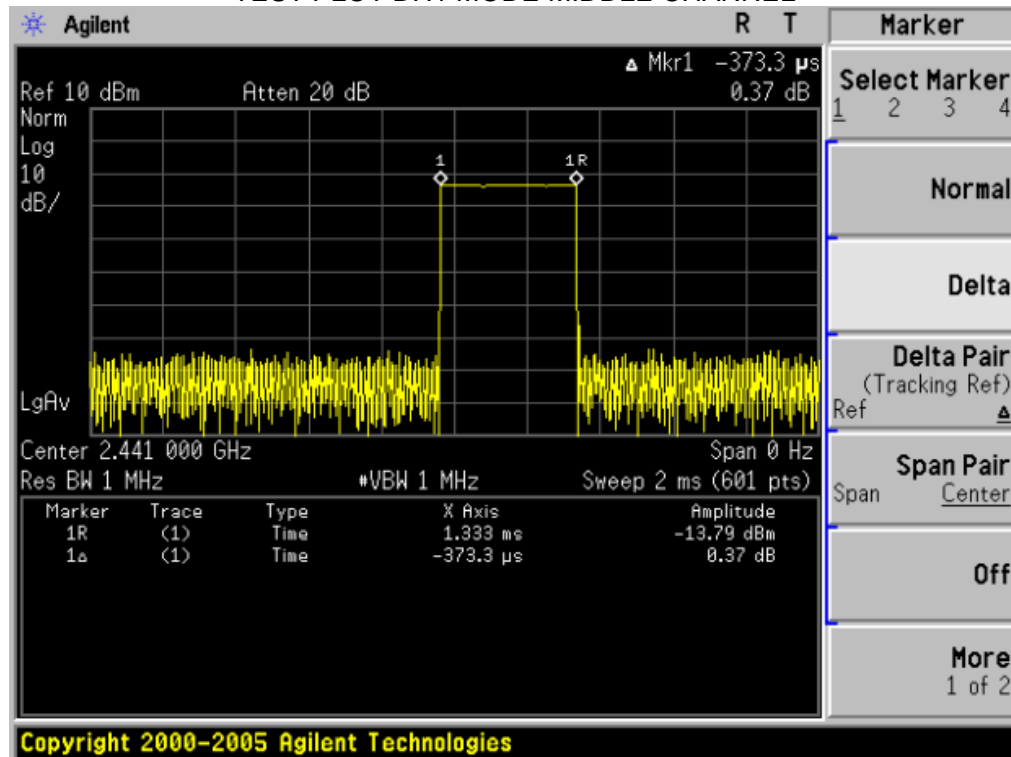
TEST PLOT DH3 MODE BOTTOM CHANNEL



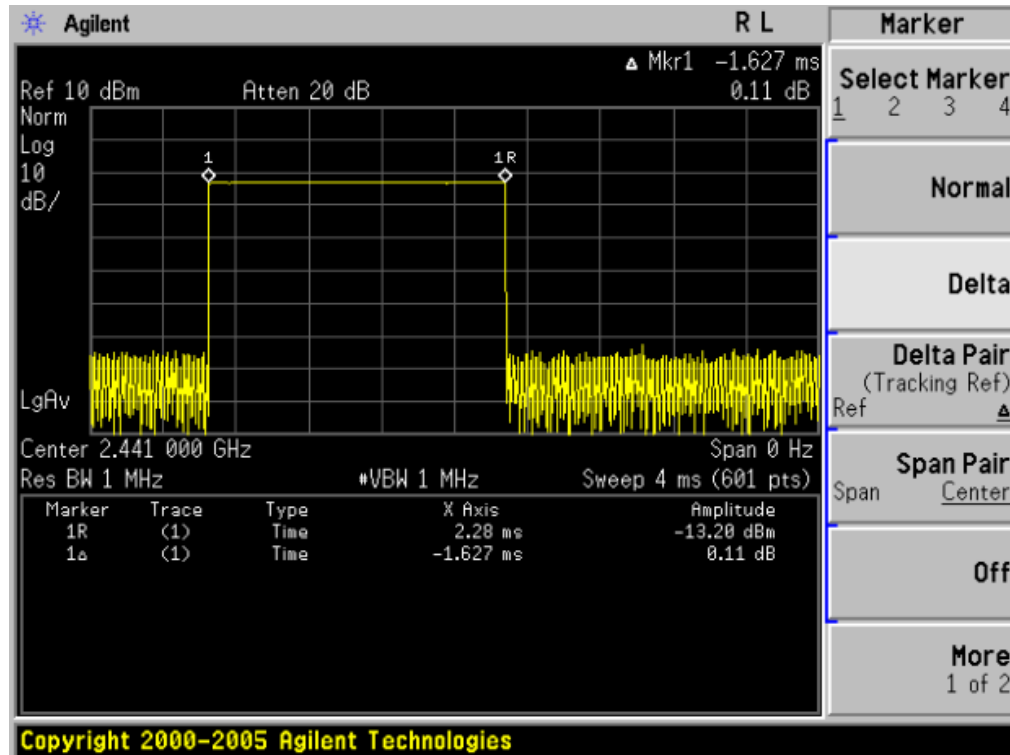
TEST PLOT DH5 MODE BOTTOM CHANNEL



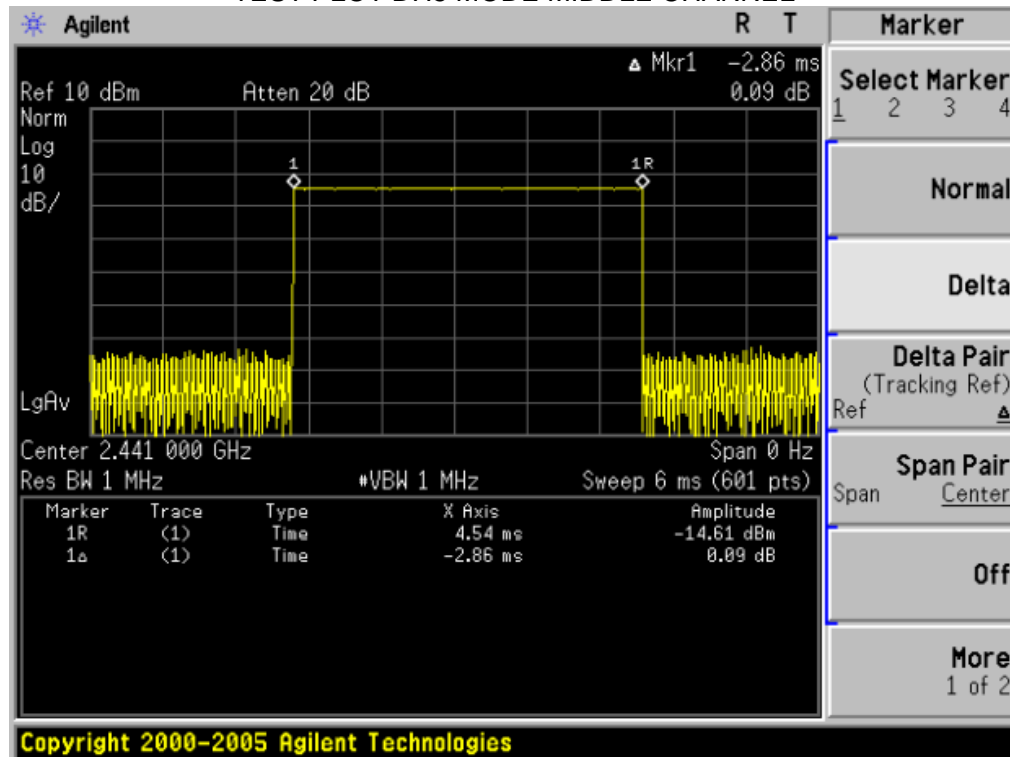
TEST PLOT DH1 MODE MIDDLE CHANNEL



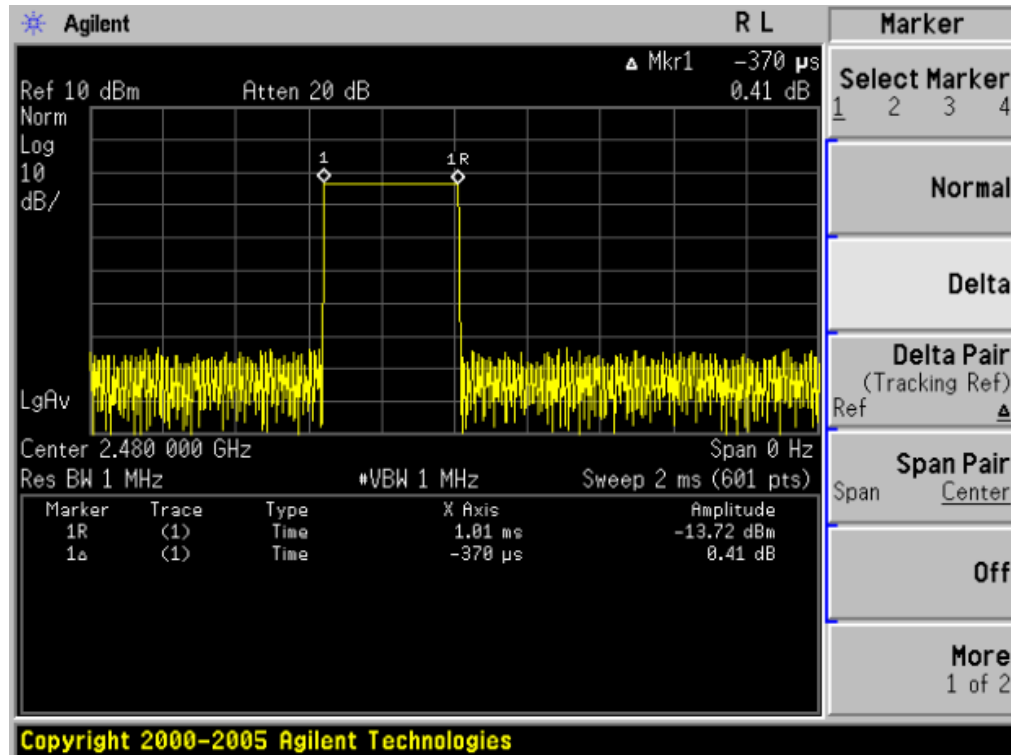
TEST PLOT DH3 MODE MIDDLE CHANNEL



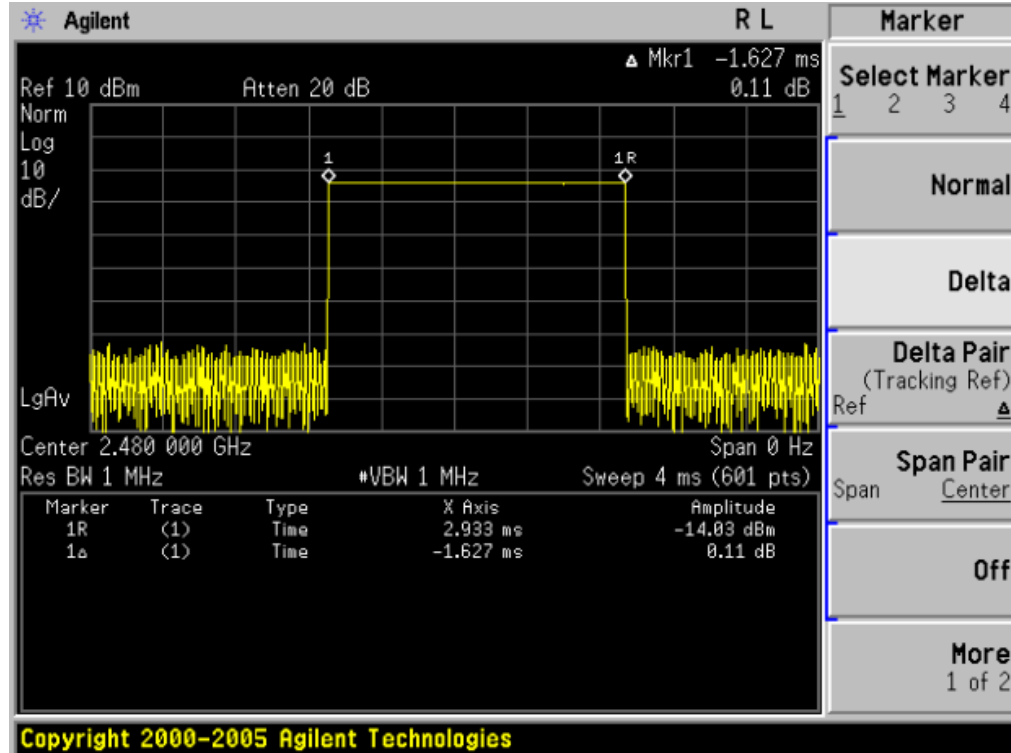
TEST PLOT DH5 MODE MIDDLE CHANNEL



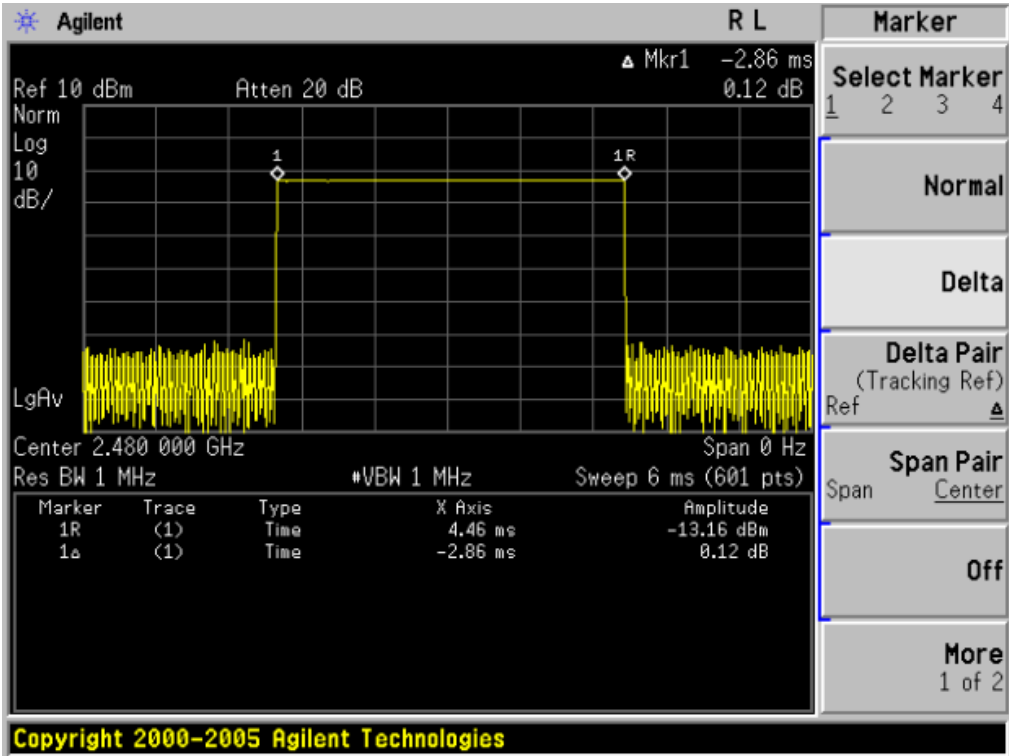
TEST PLOT DH1 MODE TOP CHANNEL



TEST PLOT DH3 MODE TOP CHANNEL



TEST PLOT DH5 MODE TOP CHANNEL



12. FREQUENCY SEPARATION

12.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer
3. Set center frequency of spectrum analyzer = Middle of Operating frequency
4. Set the spectrum analyzer as RBW, VBW=100KHz, Span = 5 MHz,

12.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2

12.3 MEASUREMENT EQUIPMENT USED

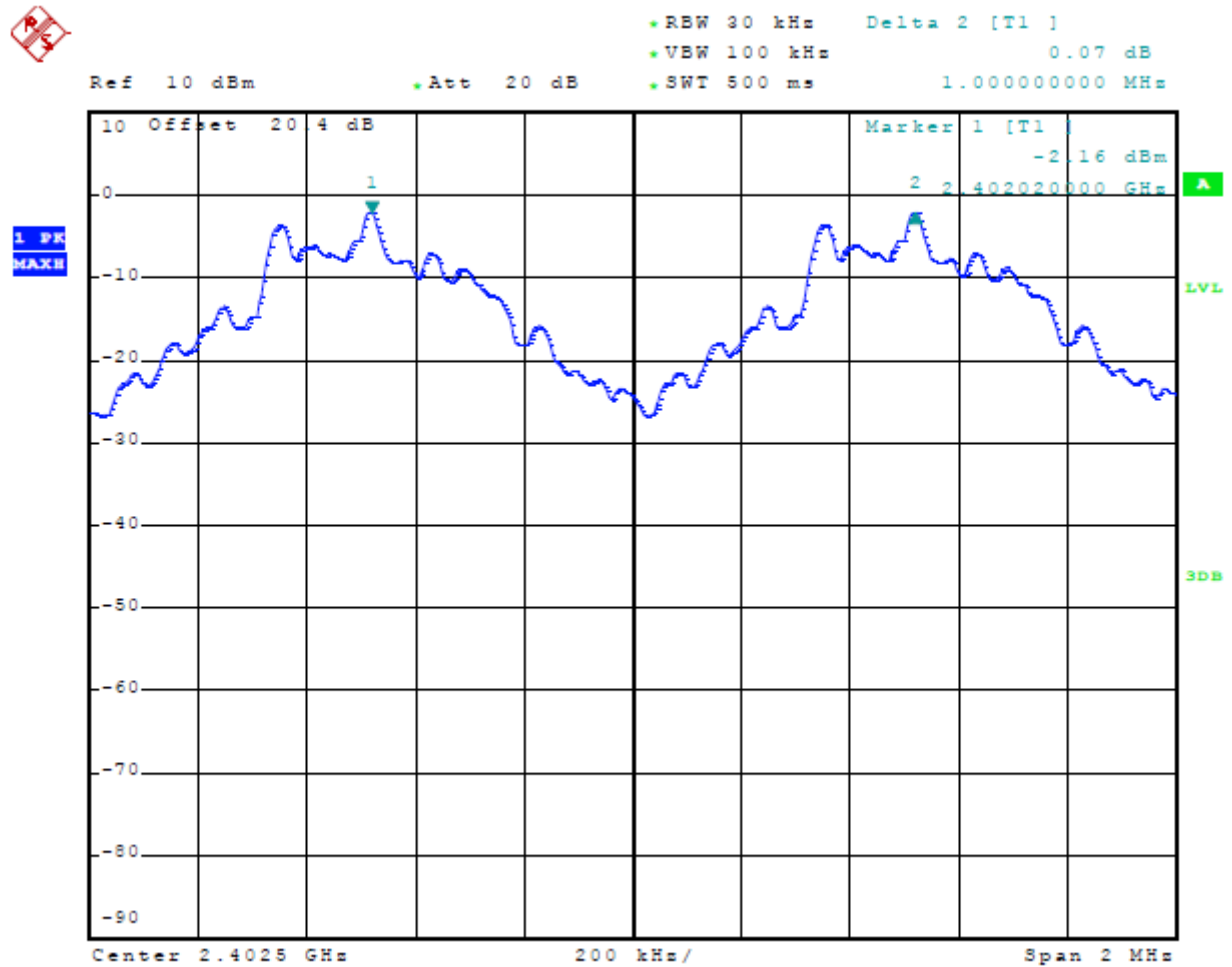
The same as described in section 6.3

12.4 LIMITS AND MEASUREMENT RESULT

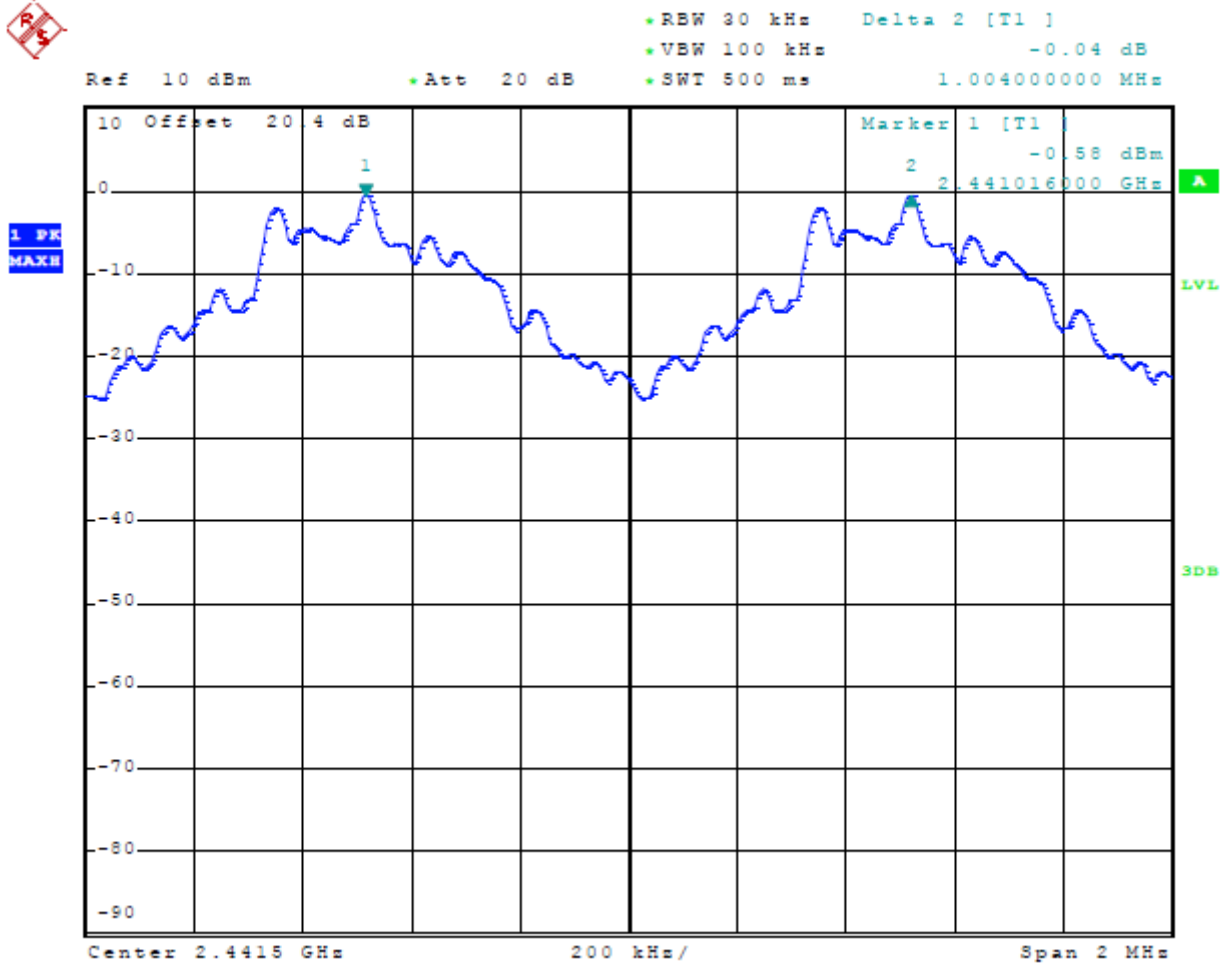
CHANNEL	CHANNEL SEPARATION	LIMIT	RESULT
	KHz	KHz	Pass
CH00-CH01	1000	>=25 KHz or 2/3 20 dB BW	
CH39-CH40	1000		
CH77-CH78	1000		

Humidity:	55 % RH	Test Date:	Feb.20, 2011
Temperature:	25°C	Tested by:	Jekey Zhang
Configurations	Channel 0-1, channel39-40, channel78-79		

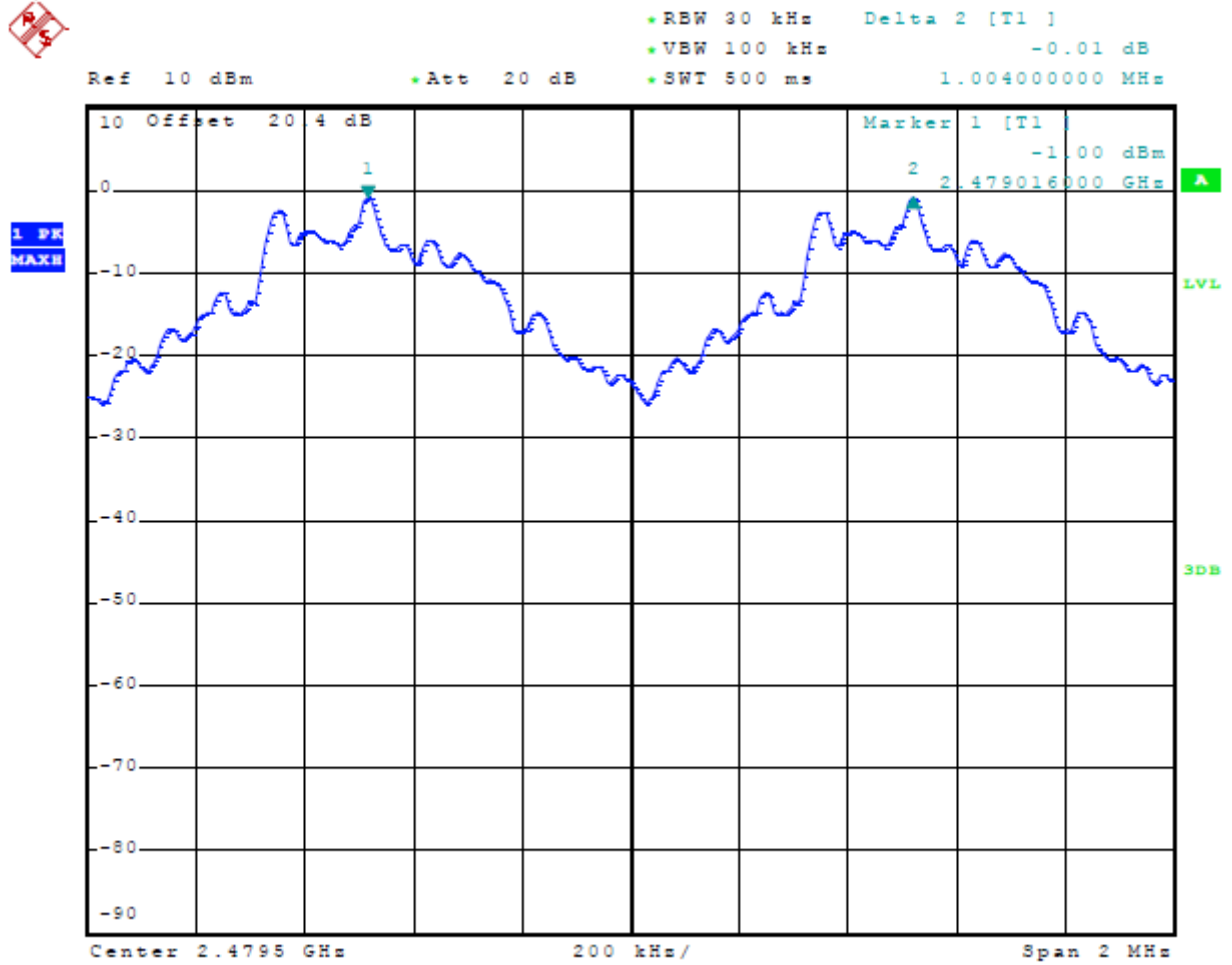
TEST PLOT FOR FREQUENCY SEPARATION –CHANNEL0-1



TEST PLOT FOR FREQUENCY SEPARATION –CHANNEL39-40



TEST PLOT FOR FREQUENCY SEPARATION -CHANNEL77-78



APPENDIX I
PHOTOGRAPHS OF THE EUT
TOP VIEW OF SAMPLE



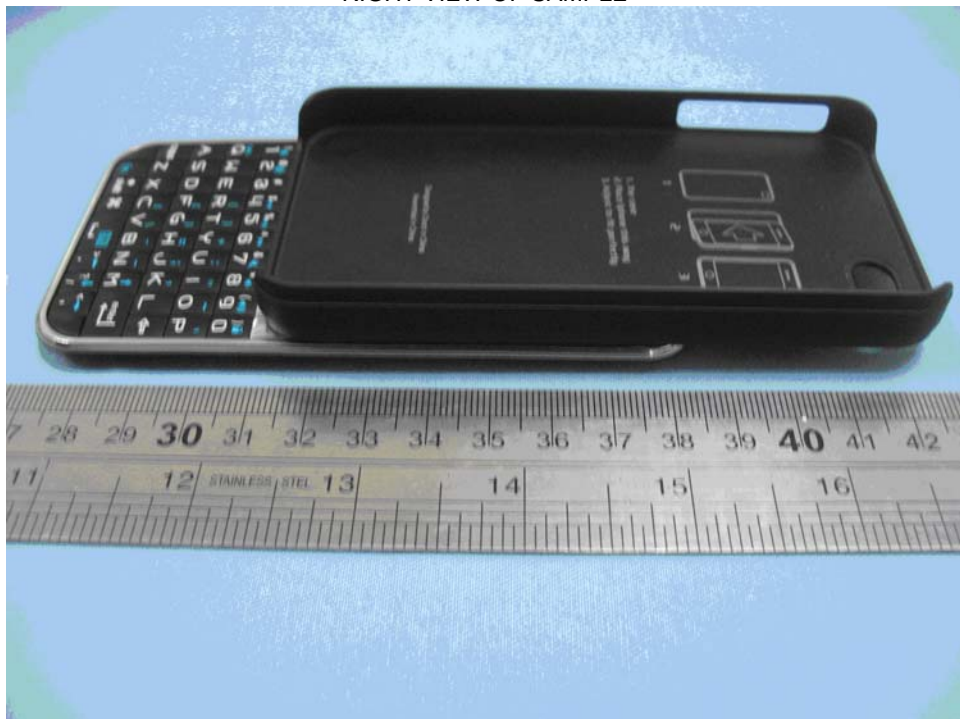
BACK VIEW OF SAMPLE



LEFT VIEW OF SAMPLE



RIGHT VIEW OF SAMPLE



FRONT VIEW OF SAMPLE



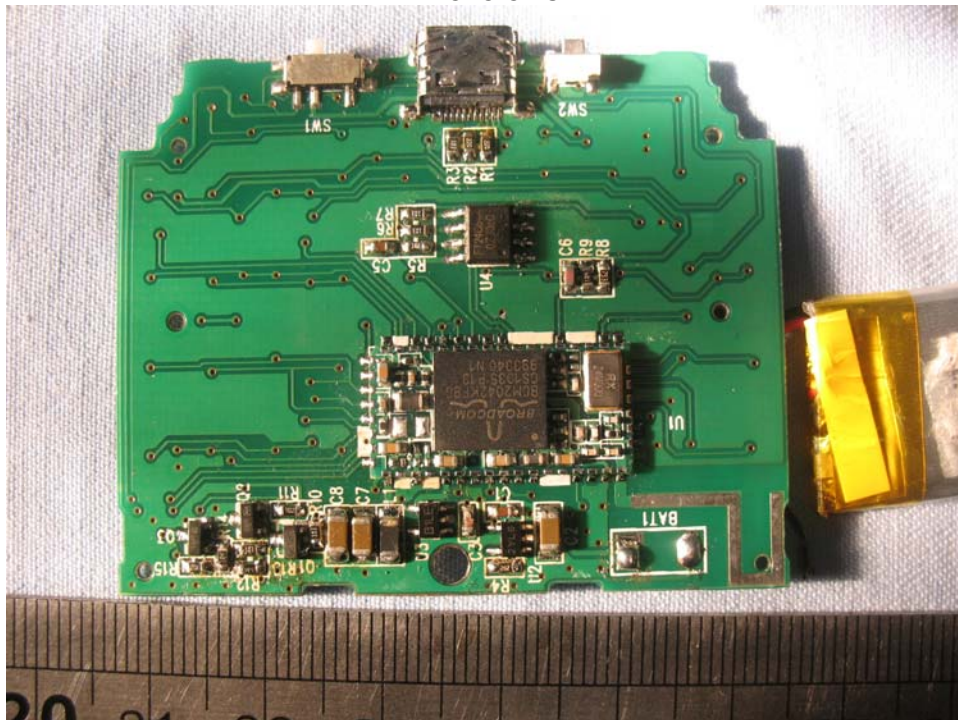
BACK VIEW OF SAMPLE



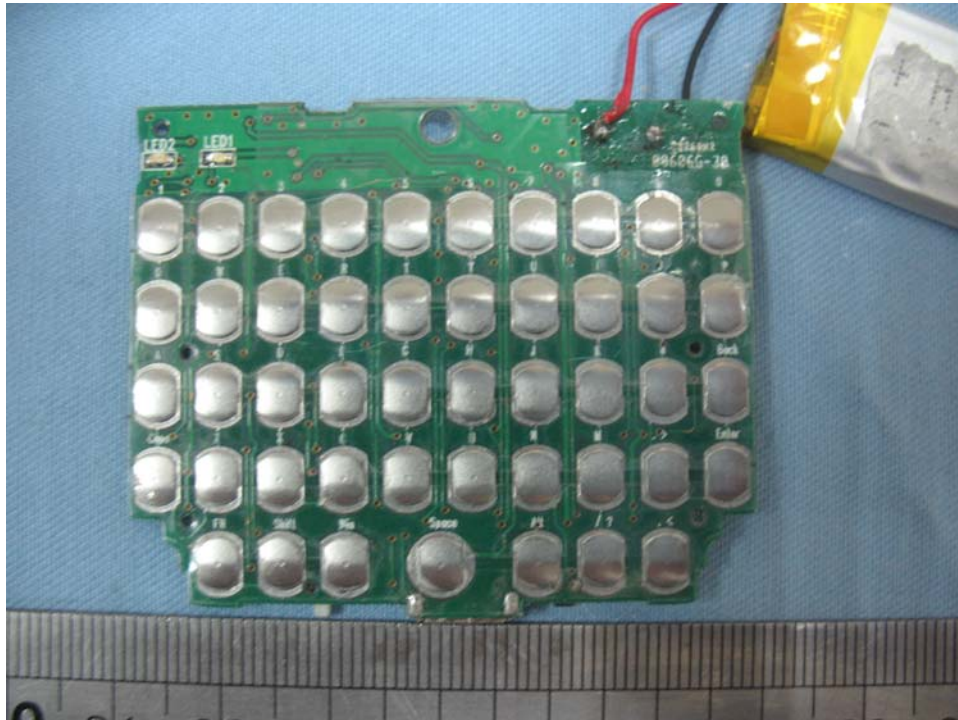
INTERNAL PHOTO OF SAMPLE – 1



INTERNAL PHOTO OF SAMPLE – 1



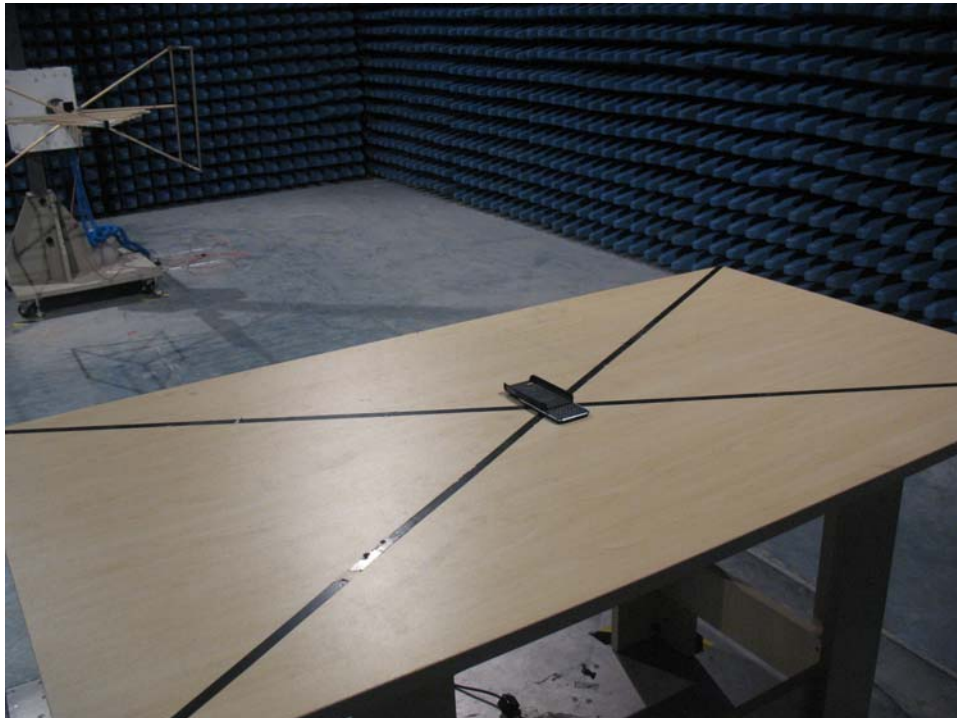
INTERNAL PHOTO OF SAMPLE – 2



APPENDIX II
PHOTOGRAPHS OF THE TEST SETUP
CONDUCTED EMISSION TEST



RADIATED EMISSION TEST SETUP



----END OF REPORT----