FCC RF Test Report

APPLICANT	:	Palm, Inc.
EQUIPMENT	:	Phone
BRAND NAME	:	HP and Palm
MODEL NUMBER	:	P160UEU
FCC ID	:	O8F-BROY
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	Digital Transmission System (DTS)

The product was received on Sep. 17, 2010 and completely tested on Dec. 20, 2010. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Anderson Chiu

Anderson Chiu / Deputy Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR091719A	Rev. 01	Initial issue of report	Jan. 13, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(1)	A8.4(2)	Number of Channels	≥ 15Chs	Pass	-
3.2	15.247(a)(1)	A8.1(a)	20dB Bandwidth	NA	Pass	-
3.2	-	Gen 4.4.1	99% Bandwidth	-	Pass	-
3.3	15.247(a)(1)	A8.1(b)	Channel Separation	≥ 2/3 of 20dB BW	Pass	-
3.4	15.247(a)(1)	A8.1(d)	Dwell Time of Each Channel	≤ 0.4sec in 31.6sec period	Pass	-
3.5	15.247(b)(1)	A8.1(b)	Peak Output Power	≤ 1W	Pass	-
3.6	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.7	15.247(f)	A8.3(2)	Power Spectral Density	< 8dBm/3kHz	Pass	-
3.8	15.247(d)	A8.5	Spurious Emission	< 20 dBc	Pass	-
3.9	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 6.4 dB at 0.438 MHz
3.10	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 7.17 dB at 2483.50 MHz
3.11	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Palm, Inc.
950 W Maude Avenue, Sunnyvale, CA 94085

1.2 Manufacturer

Palm, Inc.
950 W Maude Avenue, Sunnyvale, CA 94085

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Phone
Brand Name	HP and Palm
Model Number	P160UEU
FCC ID	O8F-BROY
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Channel Spacing	1 MHz
Maximum Output Power to Antenna	Bluetooth (1Mbps) : 5.83 dBm (0.0038 W) Bluetooth EDR (2Mbps) : 3.36 dBm (0.0022 W) Bluetooth EDR (3Mbps) : 3.49 dBm (0.0022 W)
Antenna Type	Integral Antenna with gain 1.6 dBi
HW Version	D3
SW Version	2.1.1
Type of Modulation	Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : π /4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH05-HY	722060/4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC Public Notice DA 00-705
- ANSI C63.4-2003
- IC RSS-210 Issue 8

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Output Power

Preliminary tests were performed in different data rate and recorded the RF output power in the following table:

Channel	Frequency	Bluetooth RF Output Power		
		Data Rate / Modulation		
		GFSK	π /4-DQPSK	8-DPSK
		1Mbps	2Mbps	3Mbps
Ch00	2402MHz	5.51 dBm	3.12 dBm	3.17 dBm
Ch39	2441MHz	**5.83 dBm**	3.36 dBm	3.49 dBm
Ch78	2480MHz	5.68 dBm	3.13 dBm	3.15 dBm

Remark:

1. The data rate was set in 1Mbps for all the test items due to the highest RF output power.

2. The EUT is programmed to transmit signals continuously for all testing.

2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Pre-scanned tests were conducted to determine the final configuration from all possible combinations. The following tables are showing the test modes as the worst cases and recorded in this report.

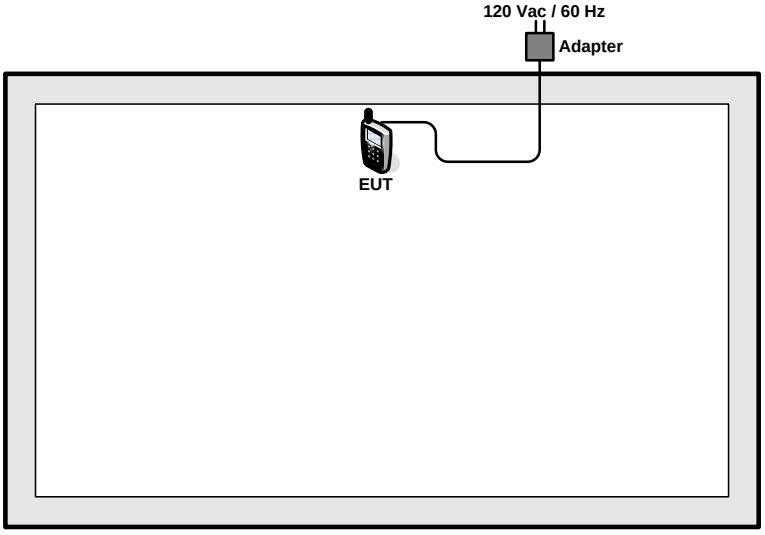
Test Cases			
Test Item	**Data Rate / Modulation**		
	Bluetooth 1Mbps GFSK	**Bluetooth EDR 2Mbps π /4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
Conducted TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	Mode 4: CH00_2402 MHz Mode 5: CH39_2441 MHz Mode 6: CH78_2480 MHz	Mode 7: CH00_2402 MHz Mode 8: CH39_2441 MHz Mode 9: CH78_2480 MHz
Radiated TCs	Mode 1: CH00_2402 MHz + TC Mode 2: CH39_2441 MHz + TC Mode 3: CH78_2480 MHz + TC	N/A	N/A
AC Conducted Emission	Mode 1 : GSM850 Idle + WLAN Link + Battery 1 + Earphone + Audio Adapter + Inductive Charger + USB Cable 1 (Charging from Adapter 1) Mode 2 : WCDMA Band II Idle + Bluetooth Link + WLAN Link + Battery 2 + USB Cable 2 (Charging from Adapter 2)		

Remark:

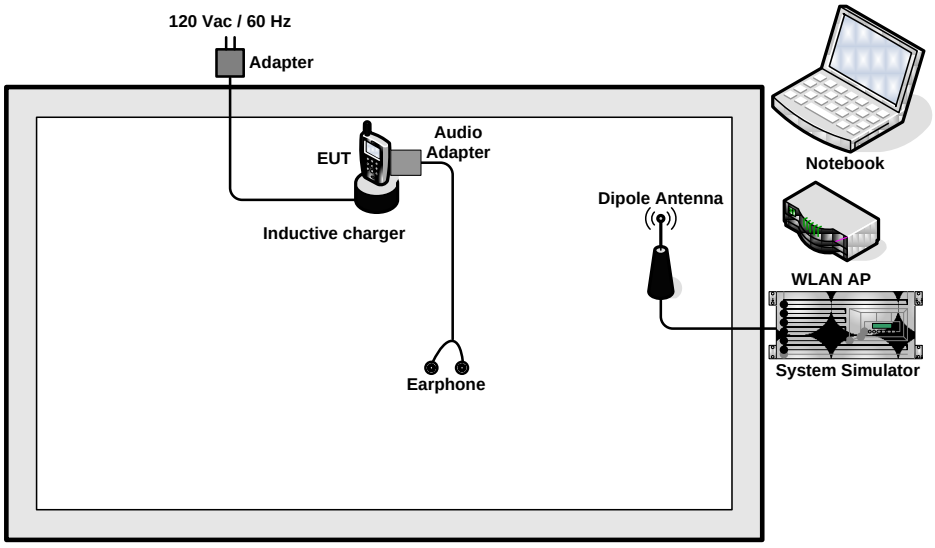
1. TC stands for Test Configuration, and consists of USB cable 2 and adapter 2.
2. For radiated TCs, the data rate was set in 1Mbps due to the highest RF output power; only the data of these modes was reported.
3. For conducted emission, the worst case is mode 2; only the test data of it was reported.
4. KDB 680106 "Client Device Considerations" was considered and evaluation performed as applicable to this device. The inductive charger has been certified under FCC ID: O8F-TST1. For more information, please refer to this inductive charger FCC ID. EUT is working in charging mode with the inductive charger. The inductive backcover (receiving hardware) is non-removable, is part of the phone.

2.3 Connection Diagram of Test System

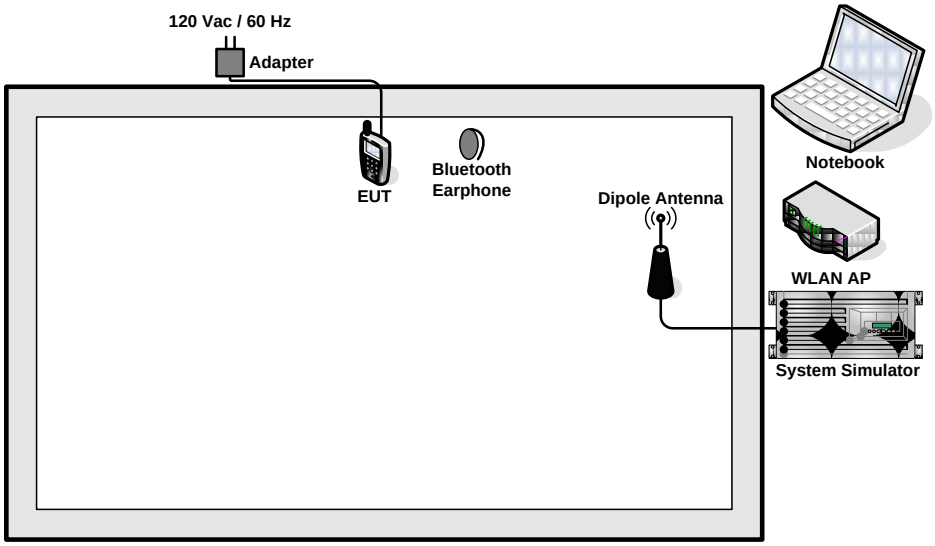
<Bluetooth Tx Mode>



<EUT with Inductive charger Mode>



<EUT with Adapter Mode>



2.4 RF Utility

For Bluetooth function, the RF utility, “Compliance” is installed in EUT to provide functions like channel selection, data rate and the application type. The RF Utility can send transmitting signal for all testing.

3 Test Result

3.1 Number of Channel Measurement

3.1.1 Limits of Number of Hopping Frequency

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

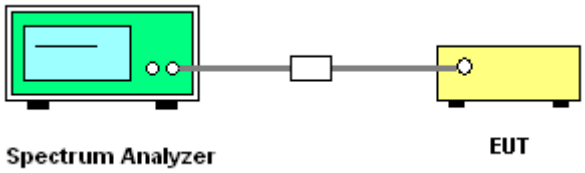
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The modulation types of EUT are irrelevant to number of hopping channels deviation.
4. The EUT must have its hopping function enabled. Use the following spectrum analyzer settings: Span = the frequency band of operation; RBW ≥ 1% of the span; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
5. The number of hopping frequency used is defined as the device has the numbers of total channel.

3.1.4 Test Setup

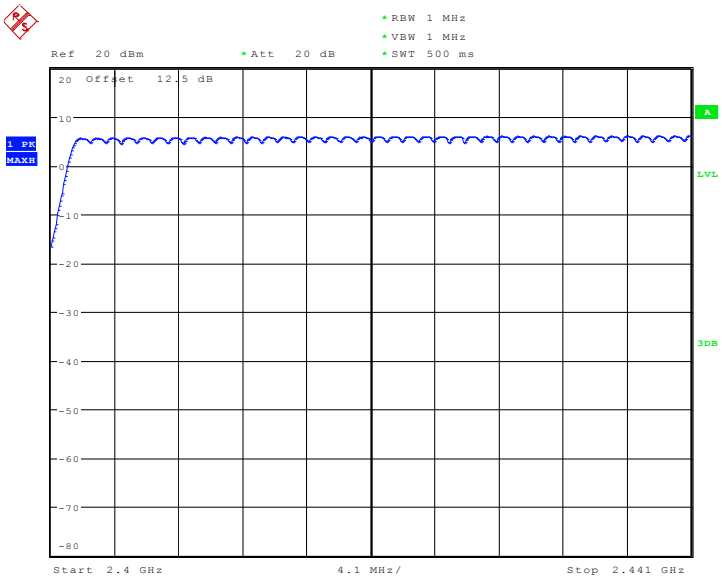


3.1.5 Test Result of Number of Hopping Frequency

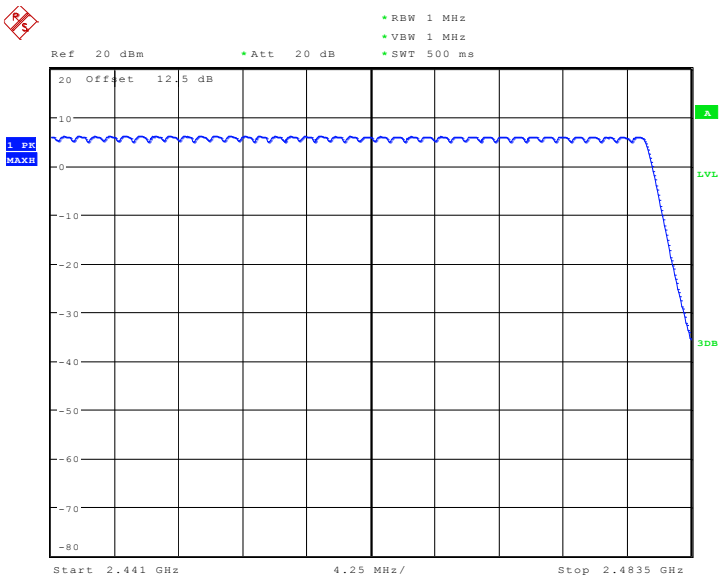
Test Mode :	Mode 1~3	Temperature :	25~27℃
Test Engineer :	Lancelot Chen	Relative Humidity :	43~46%

Number of Hopping Channels (Channel)	Limits (Channel)	Pass/Fail
79	> 15	Pass

Number of Hopping Channel Plot on Channel 00 - 78



Date: 18.NOV.2010 14:52:48



Date: 18.NOV.2010 14:57:11

3.2 20dB and 99% Bandwidth Measurement

3.2.1 Limit of 20dB Bandwidth

N/A

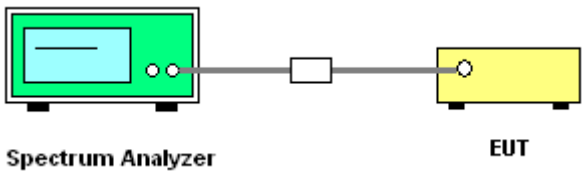
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. Use the following spectrum analyzer settings:
   Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel;
   RBW ≥ 1% of the 20 dB bandwidth; VBW ≥ RBW; Sweep = auto; Detector function = peak;
   Trace = max hold.
5. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

3.2.4 Test Setup

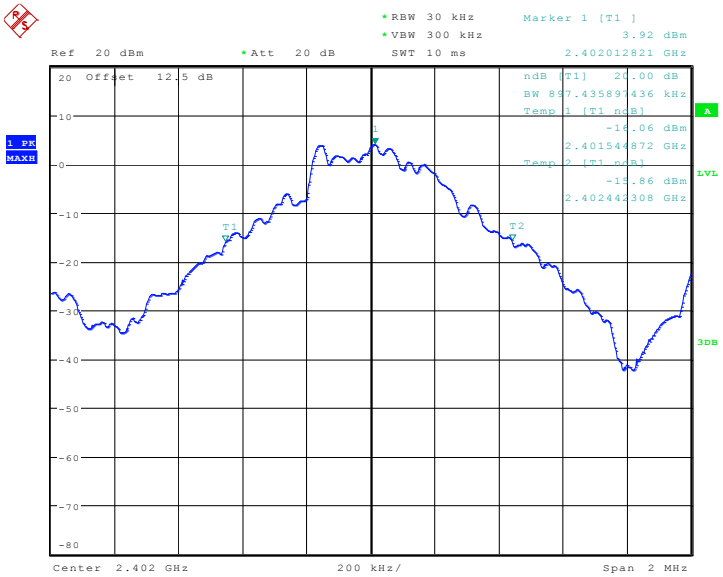


3.2.5 Test Result of 20dB Bandwidth

Test Mode :	Mode 1~3	Temperature :	25~27℃
Test Engineer :	Lancelot Chen	Relative Humidity :	43~46%

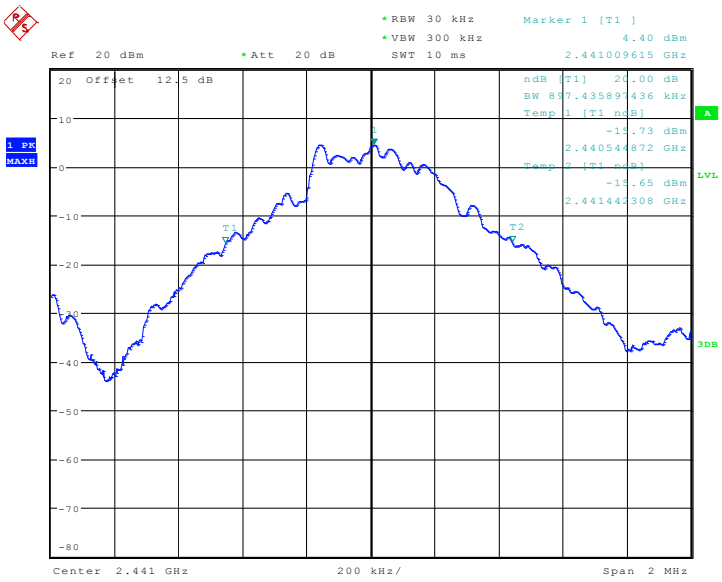
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.897
39	2441	0.897
78	2480	0.894

20 dB Bandwidth Plot on Channel 00



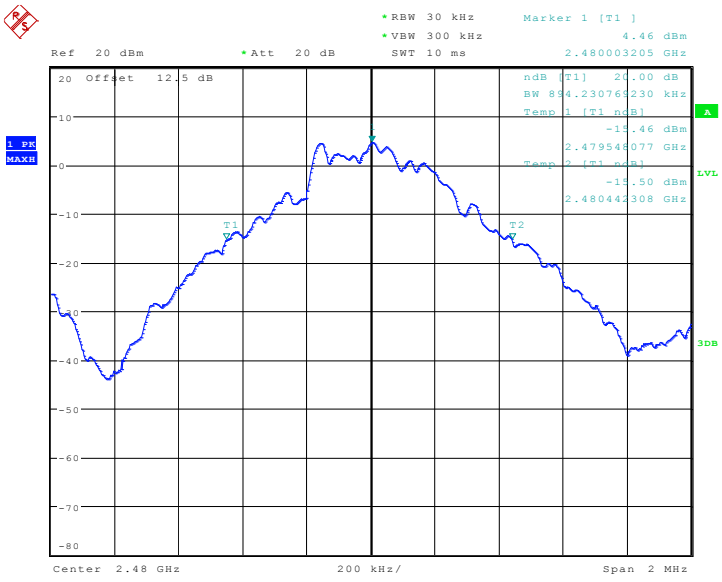
Date: 18.NOV.2010 17:11:38

20 dB Bandwidth Plot on Channel 39



Date: 18.NOV.2010 17:12:28

20 dB Bandwidth Plot on Channel 78

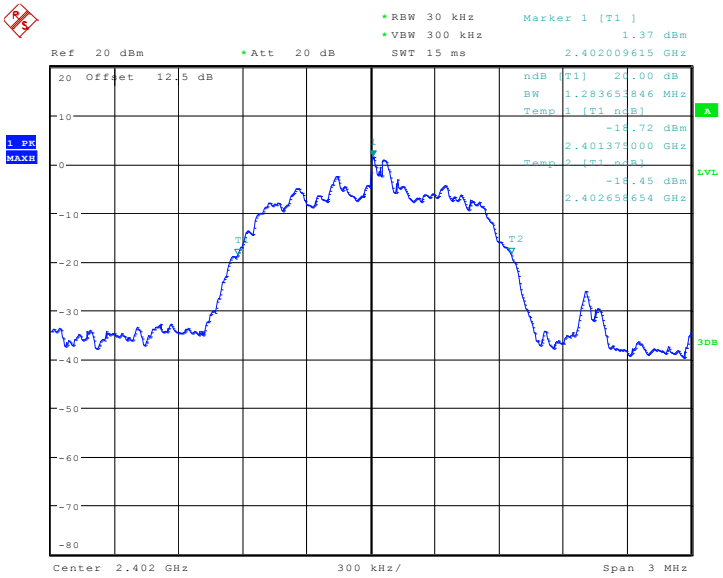


Date: 18.NOV.2010 17:13:18

Test Mode :	Mode 4~6	Temperature :	25~27℃
Test Engineer :	Lancelot Chen	Relative Humidity :	43~46%

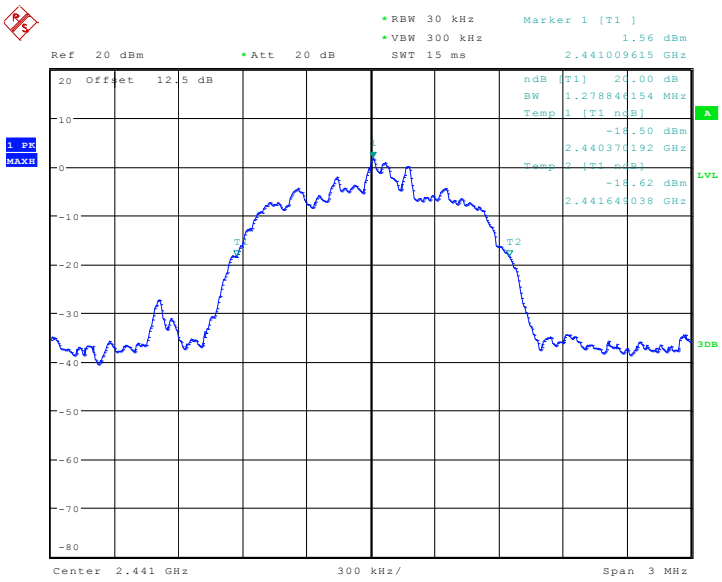
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.284
39	2441	1.279
78	2480	1.274

20 dB Bandwidth Plot on Channel 00



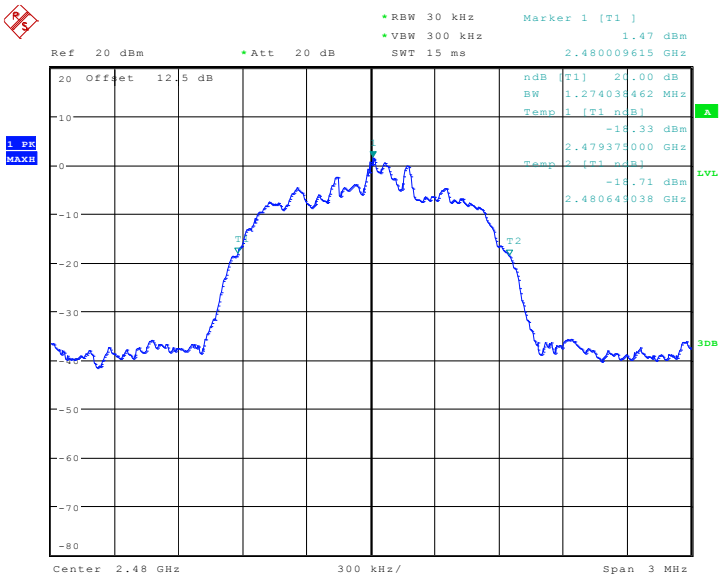
Date: 18.NOV.2010 15:11:37

20 dB Bandwidth Plot on Channel 39



Date: 18.NOV.2010 15:18:23

20 dB Bandwidth Plot on Channel 78

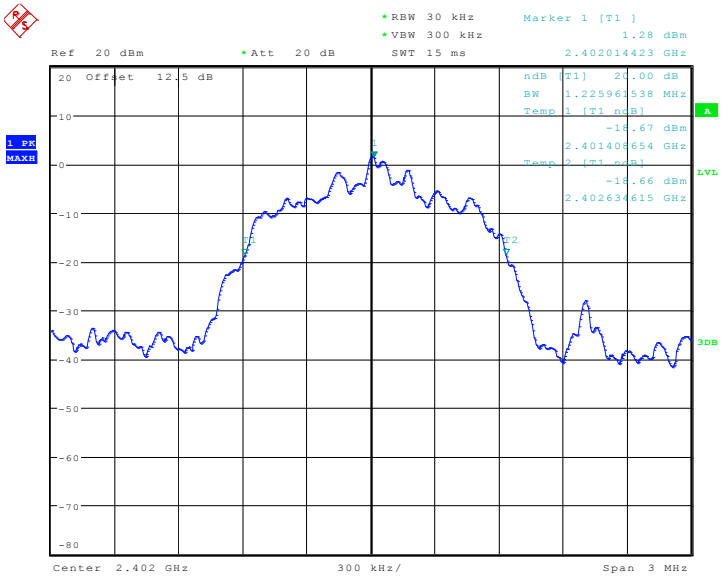


Date: 18.NOV.2010 15:20:18

Test Mode :	Mode 7~9	Temperature :	25~27℃
Test Engineer :	Lancelot Chen	Relative Humidity :	43~46%

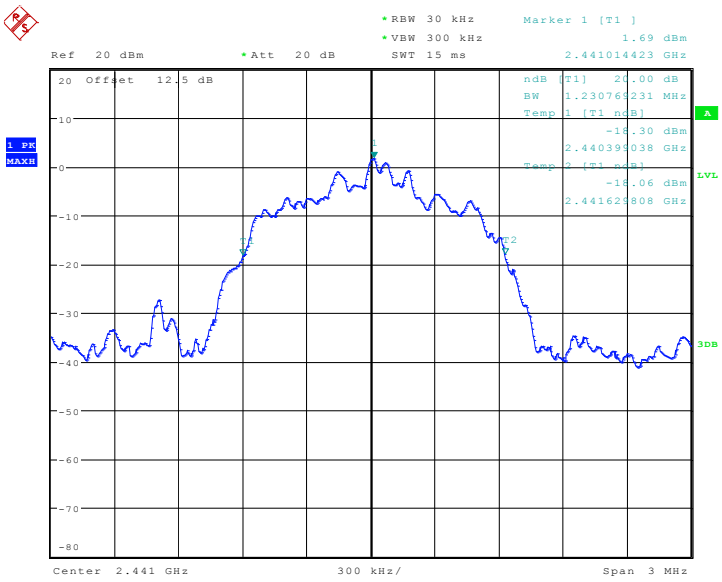
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.226
39	2441	1.231
78	2480	1.226

20 dB Bandwidth Plot on Channel 00



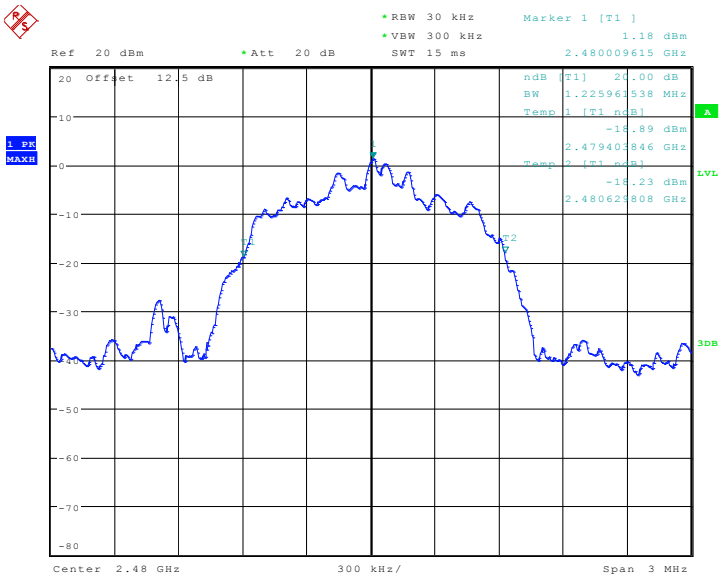
Date: 18.NOV.2010 15:33:14

20 dB Bandwidth Plot on Channel 39



Date: 18.NOV.2010 15:25:44

20 dB Bandwidth Plot on Channel 78



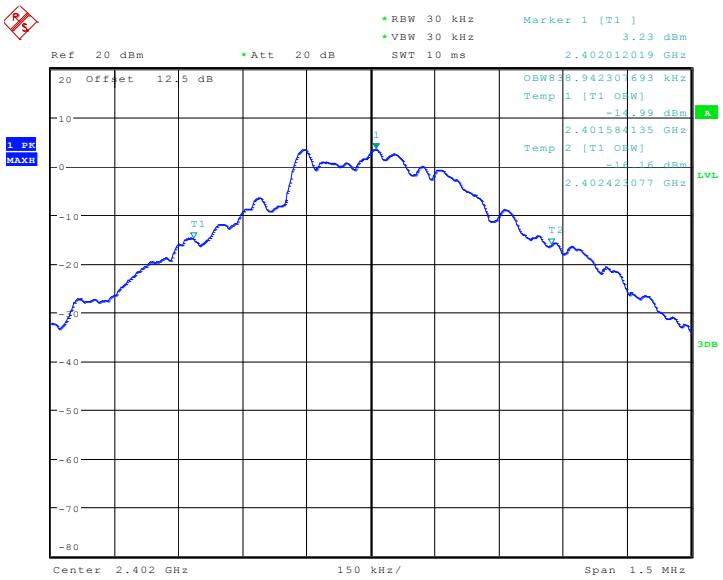
Date: 18.NOV.2010 15:23:40

3.2.6 Test Result of 99% Occupied Bandwidth

Test Mode :	Mode 1~3	Temperature :	25~27℃
Test Engineer :	Lancelot Chen	Relative Humidity :	43~46%

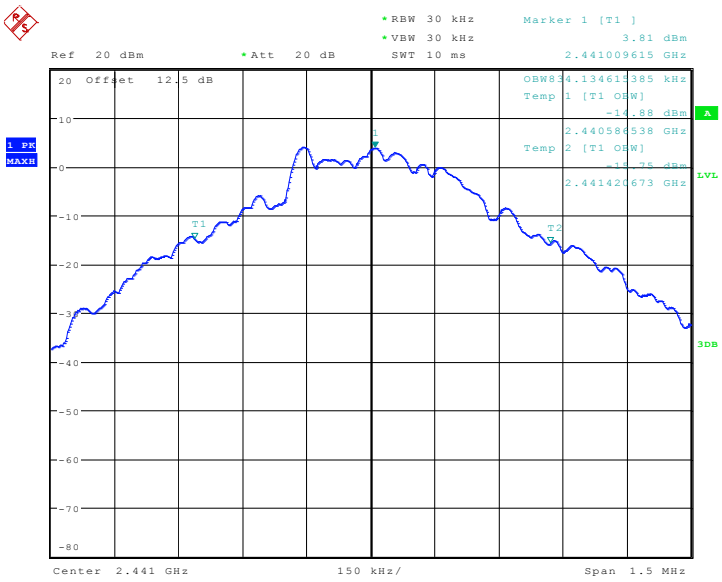
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	0.839
39	2441	0.834
78	2480	0.832

99% Bandwidth Plot on Channel 00



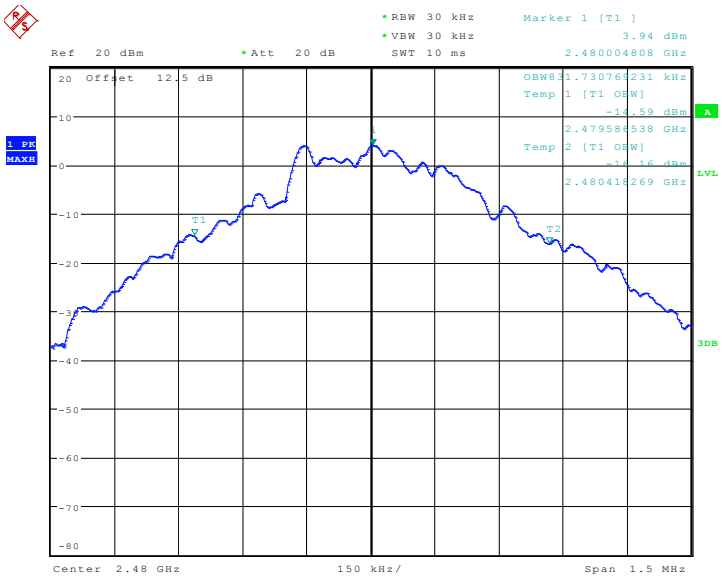
Date: 18.NOV.2010 17:22:07

99% Occupied Bandwidth Plot on Channel 39



Date: 18.NOV.2010 17:18:29

99% Occupied Bandwidth Plot on Channel 78

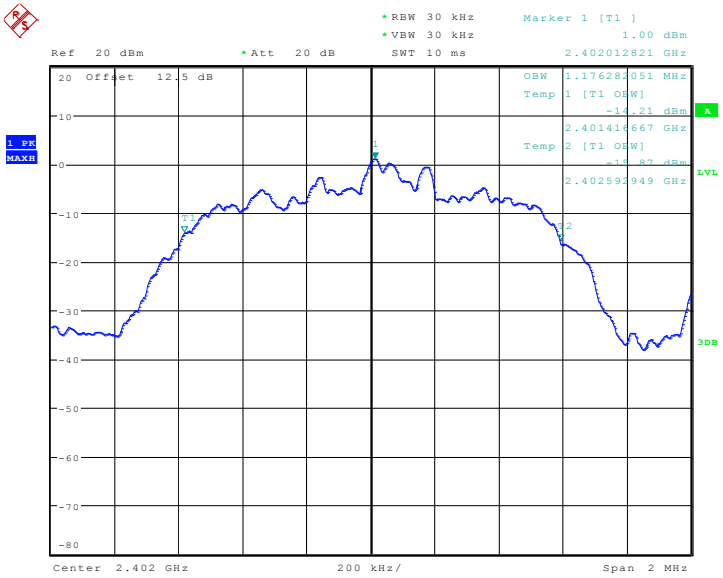


Date: 18.NOV.2010 17:14:03

Test Mode :	Mode 4~6	Temperature :	25~27℃
Test Engineer :	Lancelot Chen	Relative Humidity :	43~46%

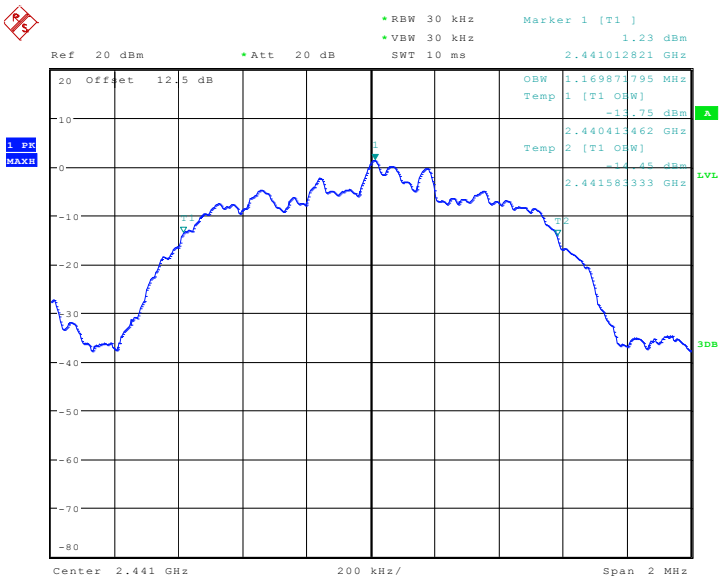
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	1.176
39	2441	1.170
78	2480	1.170

99% Bandwidth Plot on Channel 00



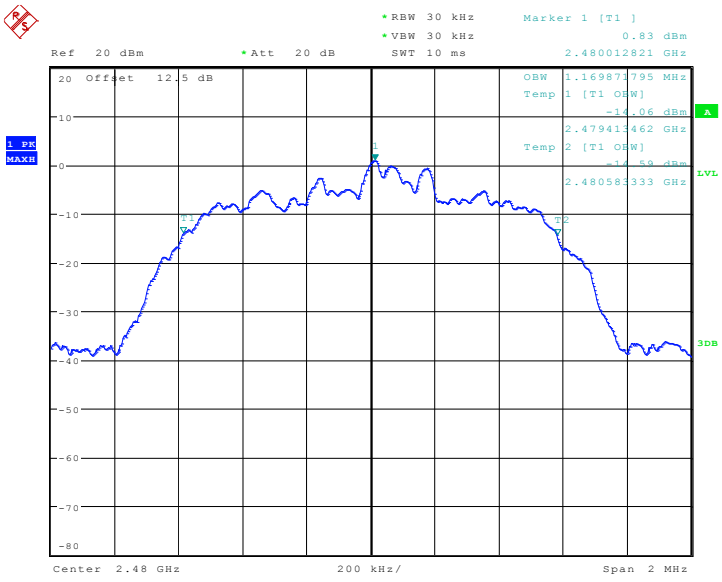
Date: 18.NOV.2010 15:17:46

99% Occupied Bandwidth Plot on Channel 39



Date: 18.NOV.2010 15:19:44

99% Occupied Bandwidth Plot on Channel 78

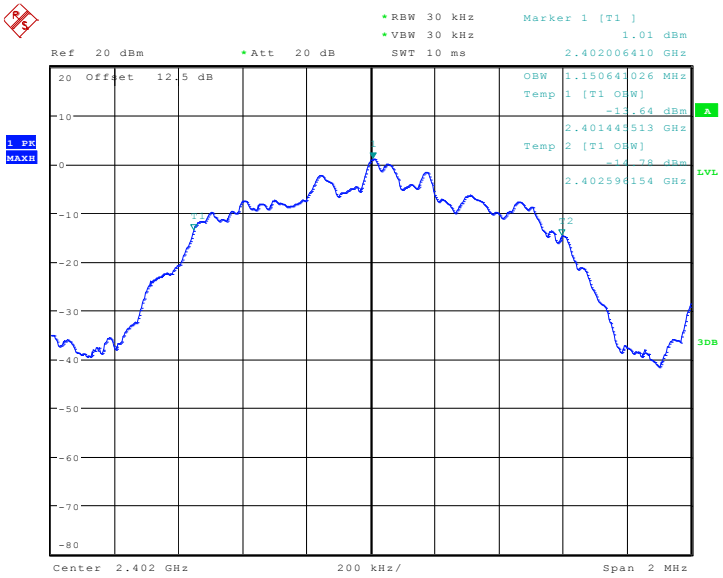


Date: 18.NOV.2010 15:21:46

Test Mode :	Mode 7~9	Temperature :	25~27℃
Test Engineer :	Lancelot Chen	Relative Humidity :	43~46%

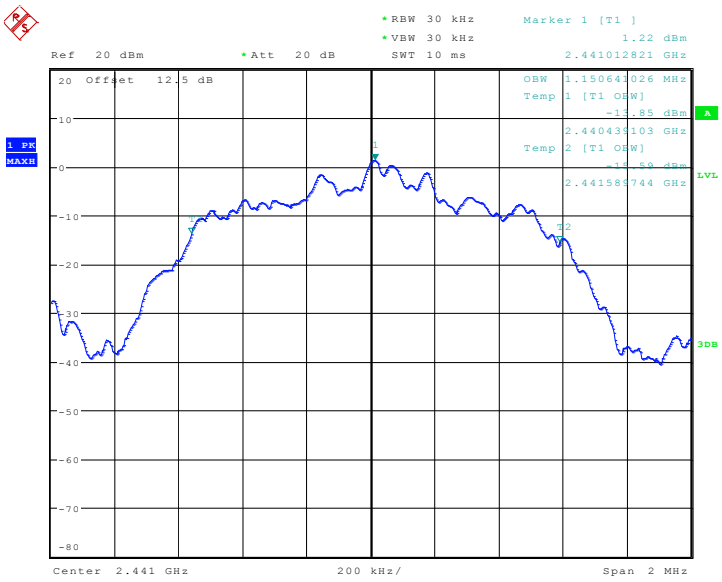
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	1.151
39	2441	1.151
78	2480	1.147

99% Bandwidth Plot on Channel 00



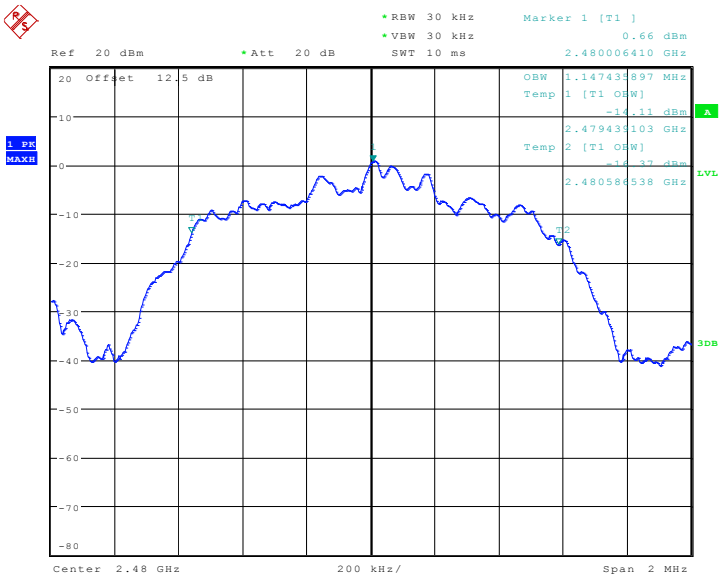
Date: 18.NOV.2010 15:31:22

99% Occupied Bandwidth Plot on Channel 39



Date: 18.NOV.2010 15:27:06

99% Occupied Bandwidth Plot on Channel 78



Date: 18.NOV.2010 15:25:10

3.3 Hopping Channel Separation Measurement

3.3.1 Limit of Hopping Channel Separation

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

3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. Please refer FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peaks of two adjacent channels; RBW ≥ 1% of the span; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
5. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

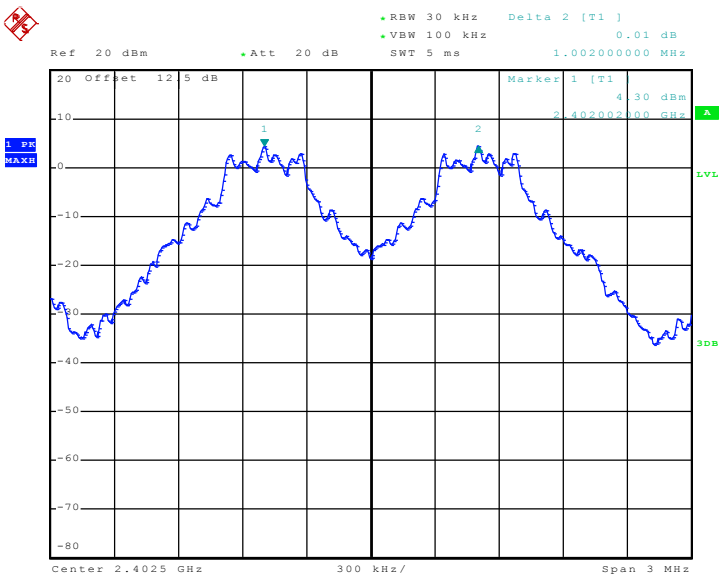
3.3.4 Test Setup

3.3.5 Test Result of Hopping Channel Separation

Test Mode :	Mode 1~3	Temperature :	25~27℃
Test Engineer :	Lancelot Chen	Relative Humidity :	43~46%

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.598	Pass
39	2441	1.002	0.598	Pass
78	2480	1.002	0.596	Pass

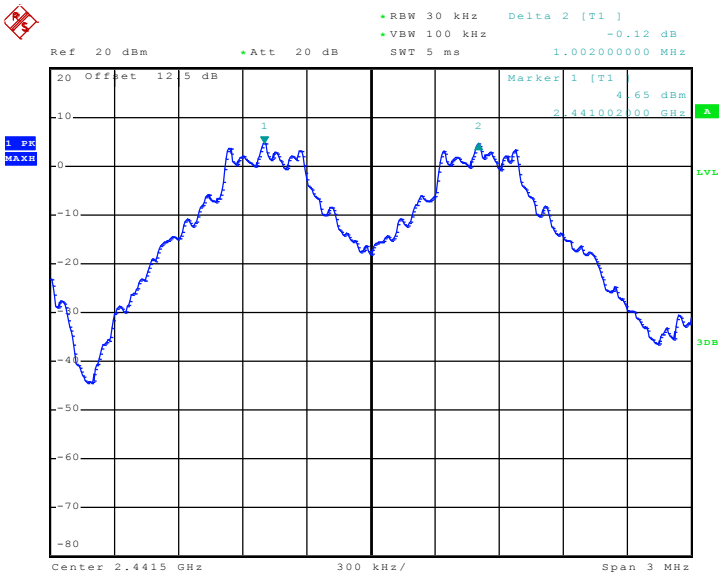
Channel Separation Plot on Channel 00 - 01



Pra01

Date: 18.NOV.2010 14:43:19

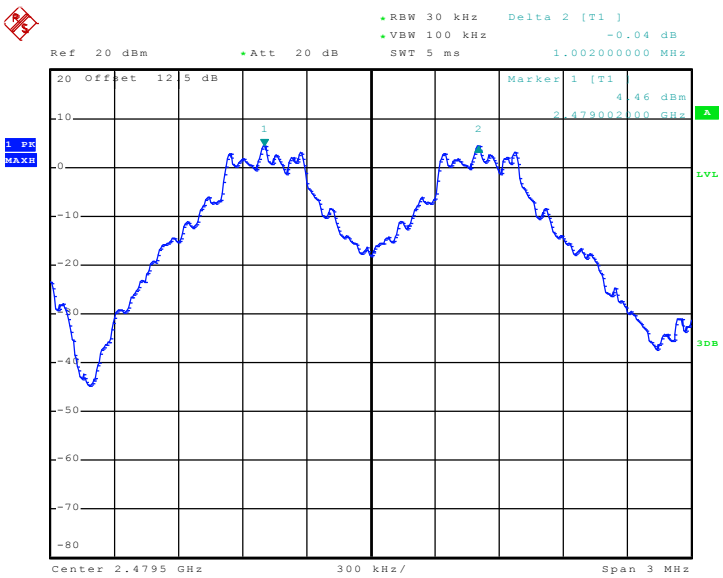
Channel Separation Plot on Channel 39 - 40



Pra01

Date: 18.NOV.2010 14:44:40

Channel Separation Plot on Channel 77 - 78



Pra01

Date: 18.NOV.2010 14:46:02

3.4 Dwell Time Measurement

3.4.1 Limit of Dwell Time

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. The EUT must have its hopping function enabled. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.
5. Use the marker-delta function to calculate the dwell time.

3.4.4 Test Setup

3.4.5 Test Result of Dwell Time

Test Mode :	Mode 2	Temperature :	25~27℃
Test Engineer :	Lancelot Chen	Relative Humidity :	43~46%

Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
DH5	2.90	3084.00	0.28	0.4	Pass

Remark:

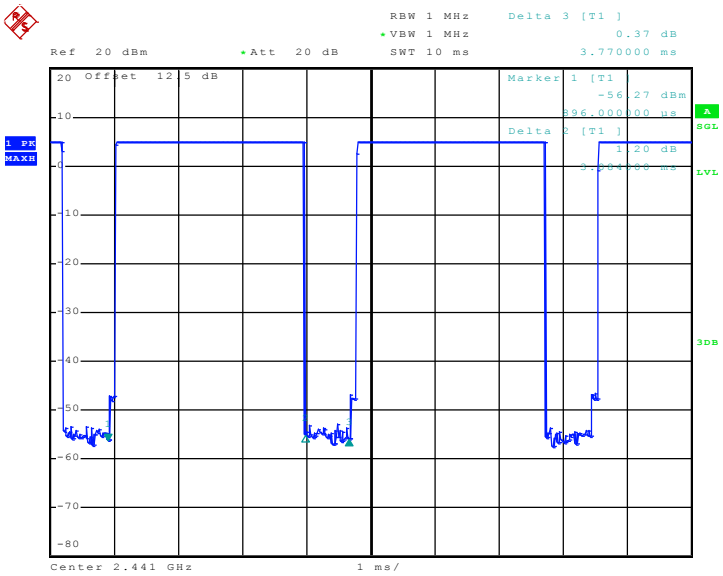
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time

2. 79 channels come from the Hopping Channel number.

3. Average Hopping Channel = hops/sweep time

4. t: Package Transfer Time(us)

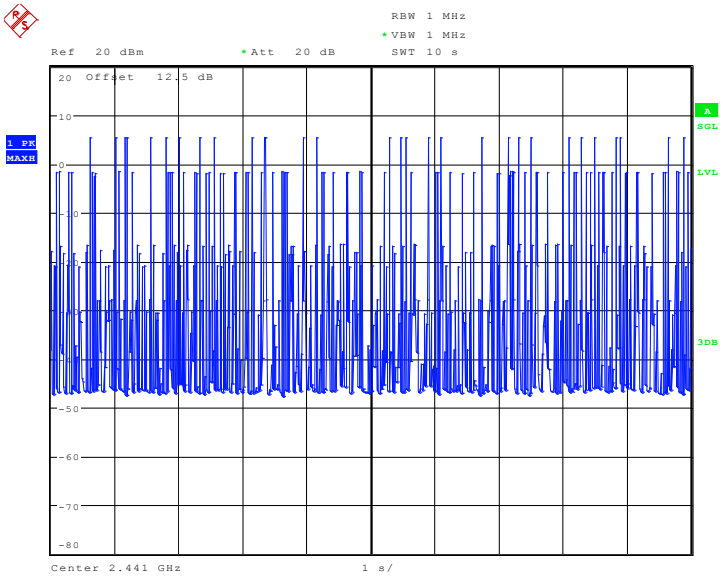
DH5 Dwell Time (One Pulse) Plot on Channel 39



Pra01

Date: 17.NOV.2010 09:50:05

DH5 Dwell Time (Count Pulses) Plot on Channel 39



Date: 18.NOV.2010 17:57:31

3.5 Peak Output Power Measurement

3.5.1 Limit of Peak Output Power

Frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1W (30 dBm).

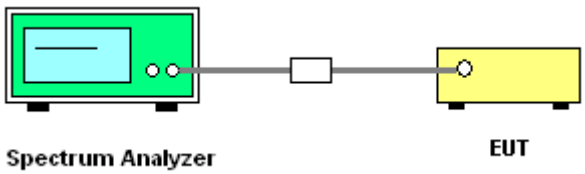
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.

3.5.4 Test Setup

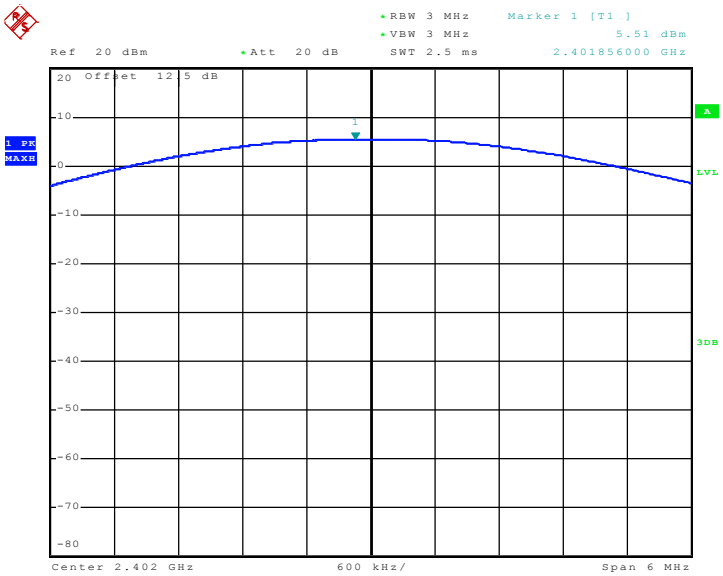


3.5.5 Test Result of Peak Output Power

Test Mode :	Mode 1~3	Temperature :	25~27℃
Test Engineer :	Lancelot Chen	Relative Humidity :	43~46%

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	5.51	30	Pass
39	2441	5.83	30	Pass
78	2480	5.68	30	Pass

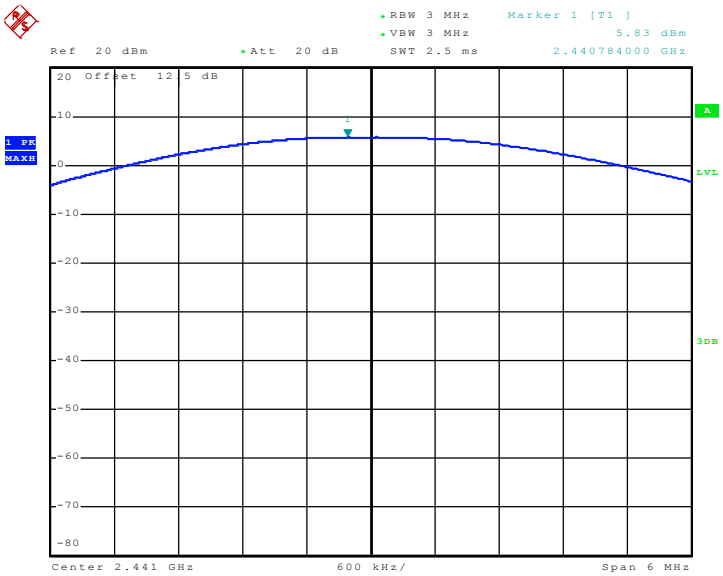
Peak Output Power Plot on Channel 00



Pra01

Date: 17.NOV.2010 09:14:21

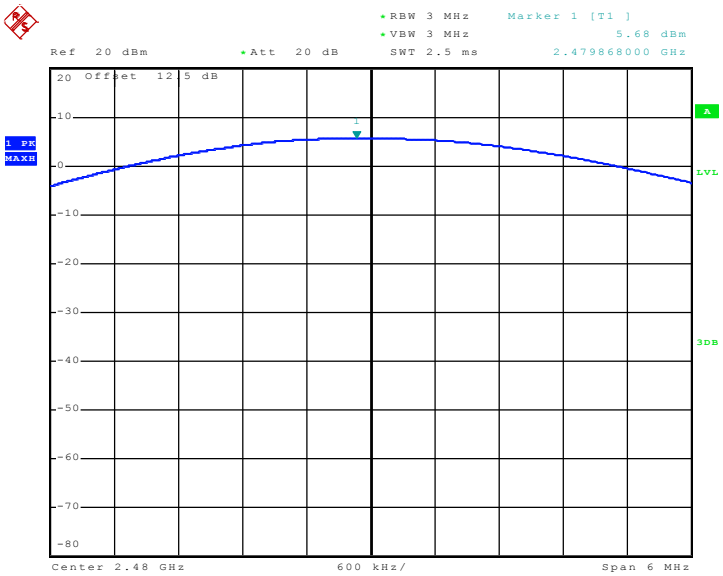
Peak Output Power Plot on Channel 39



Pra01

Date: 17.NOV.2010 09:15:24

Peak Output Power Plot on Channel 78



Pra01

Date: 17.NOV.2010 09:16:06

3.6 Band Edges Measurement

3.6.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

3.6.2 Measuring Instruments

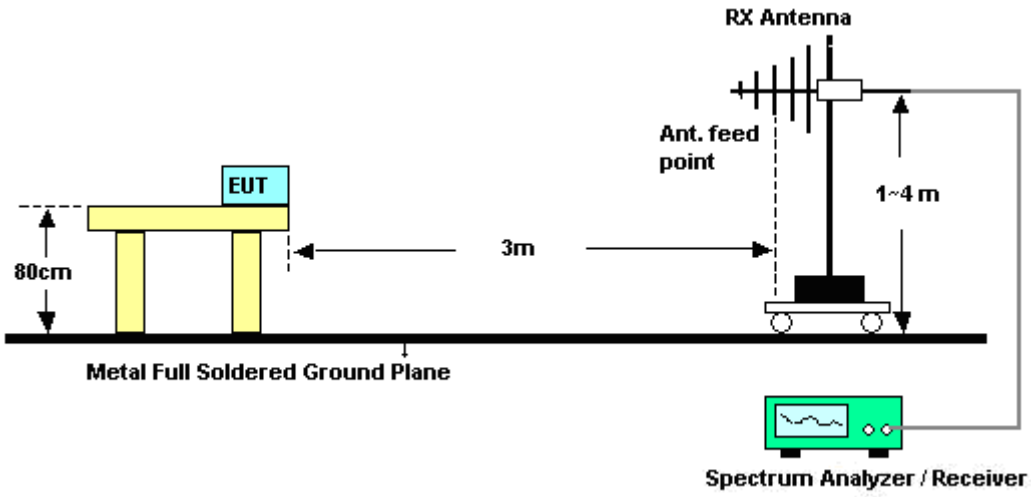
See list of measuring instruments of this test report.

3.6.3 Test Procedures

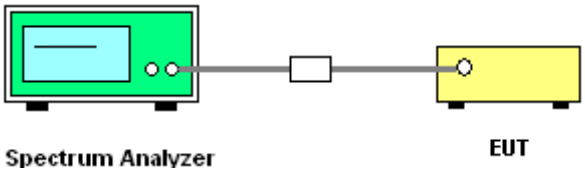
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC Public Notice DA 00-705 Measurement Guidelines.
2. RF antenna conducted test: Set RBW = 300kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 300k Hz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Applies to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 1MHz, Sweep: Auto for Peak; set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto for Average. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation. See FCC Section 15.35(b) and (c).
4. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

3.6.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>



3.6.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	25~27°C
Test Channel :	00	Relative Humidity :	48~50%
		Test Engineer :	Kai Wang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2314.37	44.81	-29.19	74.00	42.31	31.61	4.38	33.49	104	0	Peak
2314.37	33.01	-20.99	54.00	30.51	31.61	4.38	33.49	104	0	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2372.51	45.22	-28.78	74.00	42.58	31.68	4.47	33.51	118	344	Peak
2372.51	32.11	-21.89	54.00	29.47	31.68	4.47	33.51	118	344	Average

Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	78	Relative Humidity :	48~50%
		Test Engineer :	Kai Wang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	66.83	-7.17	74.00	64.03	31.78	4.59	33.57	100	0	Peak
2483.50	38.43	-15.57	54.00	35.63	31.78	4.59	33.57	100	0	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBµV/m)	Delta Result (dB)	Average Result (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
Single Carrier Mode	87.75	49.32	38.43	54.00	-15.57	Pass
Hopping Mode	87.75	50.84	36.91	54.00	-17.09	Pass

Note : Average result = Maximum field strength – Delta result

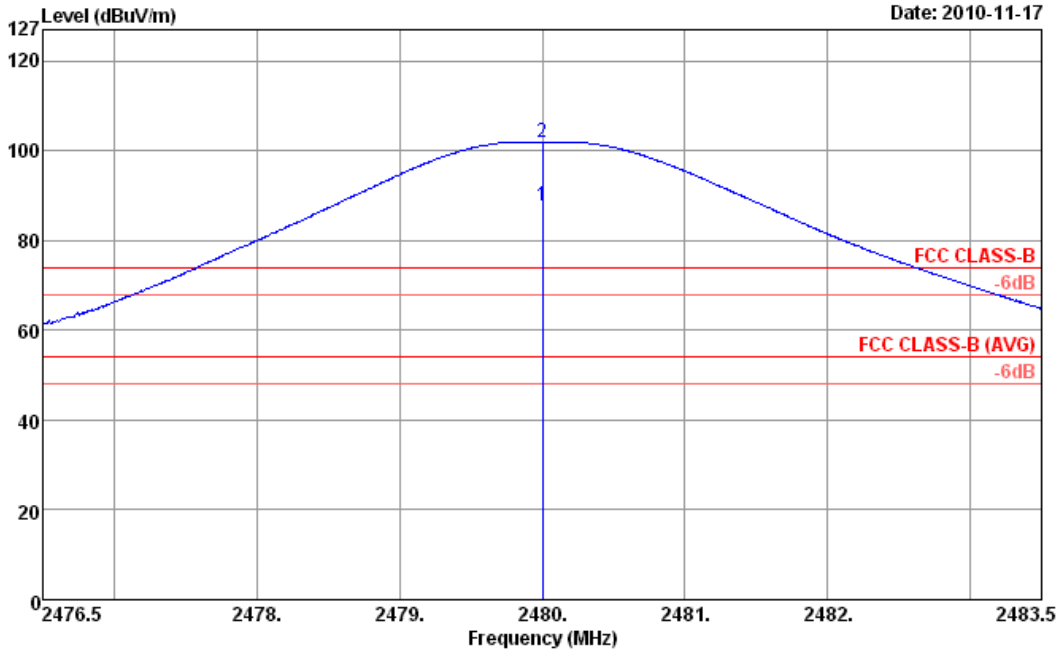
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	58.48	-15.52	74.00	55.68	31.78	4.59	33.57	100	318	Peak
2483.50	31.10	-22.90	54.00	28.30	31.78	4.59	33.57	100	318	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBµV/m)	Delta Result (dB)	Average Result (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
Single Carrier Mode	79.96	48.86	31.10	54.00	-22.90	Pass
Hopping Mode	79.96	50.22	29.74	54.00	-24.26	Pass

Note : Average result = Maximum field strength – Delta result

Test Mode :	Mode 3	**Temperature :**	25~27°C
Test Channel :	78	**Relative Humidity :**	48~50%
Test Engineer :	Kai Wang	**Polarization :**	Horizontal

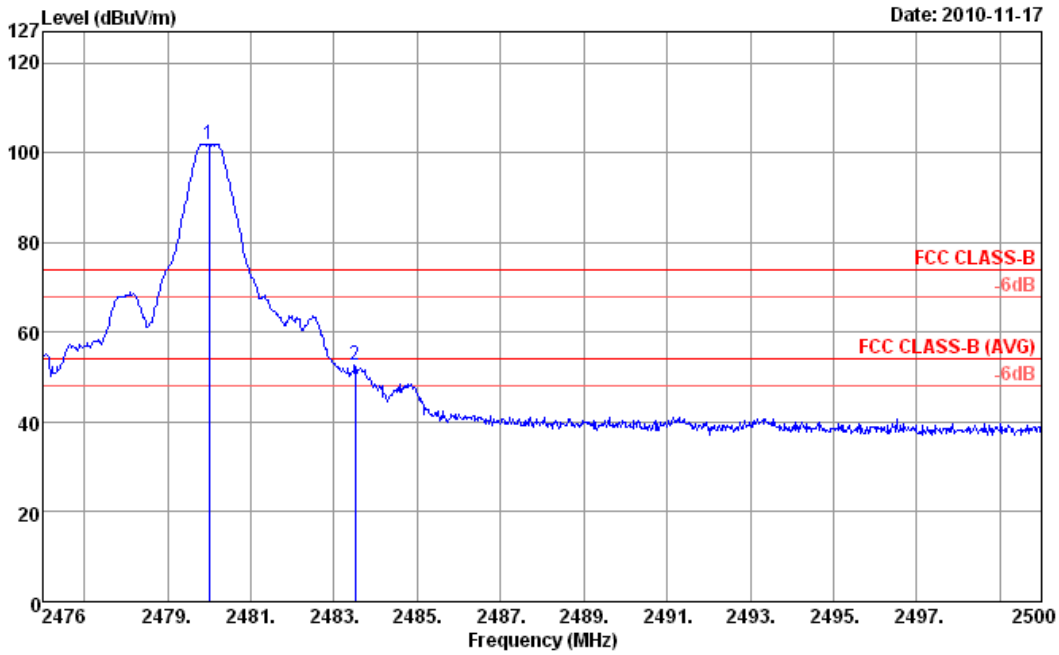


Site : 03CH05-HY
Condition : FCC CLASS-B HF_ANT_100824 HORIZONTAL
Project : FR 091719
Mode : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	87.75	33.75	54.00	84.95	31.78	4.59	33.57	100	0	Average
2 X	2480.00	101.99	27.99	74.00	99.19	31.78	4.59	33.57	100	0	Peak

* Maximum field strength of the fundamental emission

Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	78	Relative Humidity :	48~50%
Test Engineer :	Kai Wang	Polarization :	Horizontal

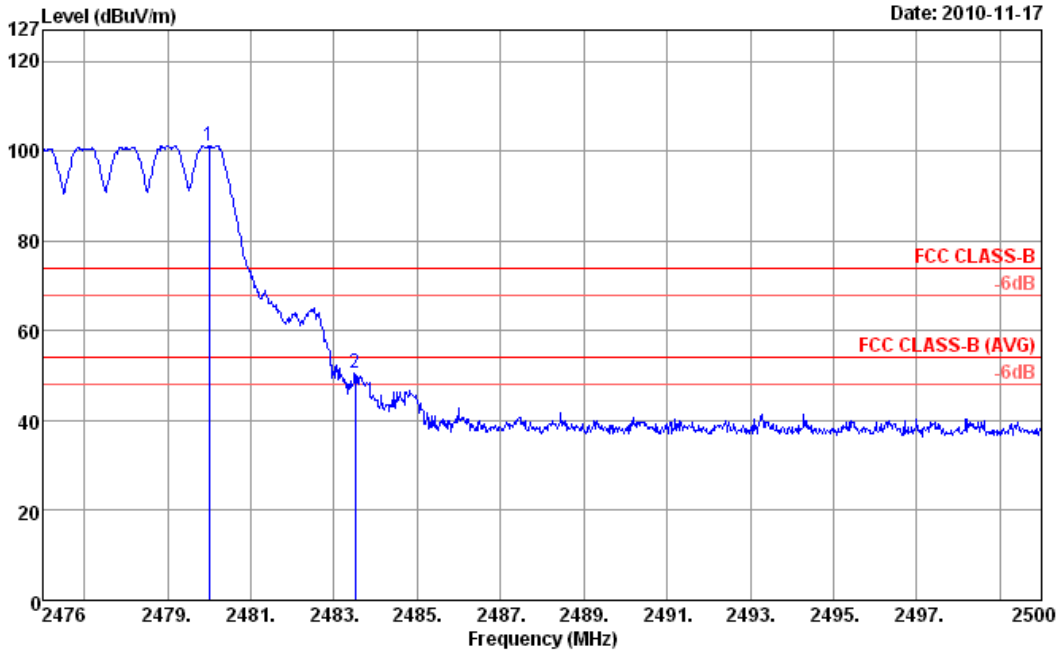


Site : 03CH05-HY
Condition : FCC CLASS-B HF_ANT_100824 HORIZONTAL
Project : FR 091719
Mode : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	101.95	27.95	74.00	99.15	31.78	4.59	33.57	100	0	Peak
2	2483.50	52.63	-21.37	74.00	49.83	31.78	4.59	33.57	100	0	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 49.32 dB , single carrier Mode

Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	78	Relative Humidity :	48~50%
Test Engineer :	Kai Wang	Polarization :	Horizontal

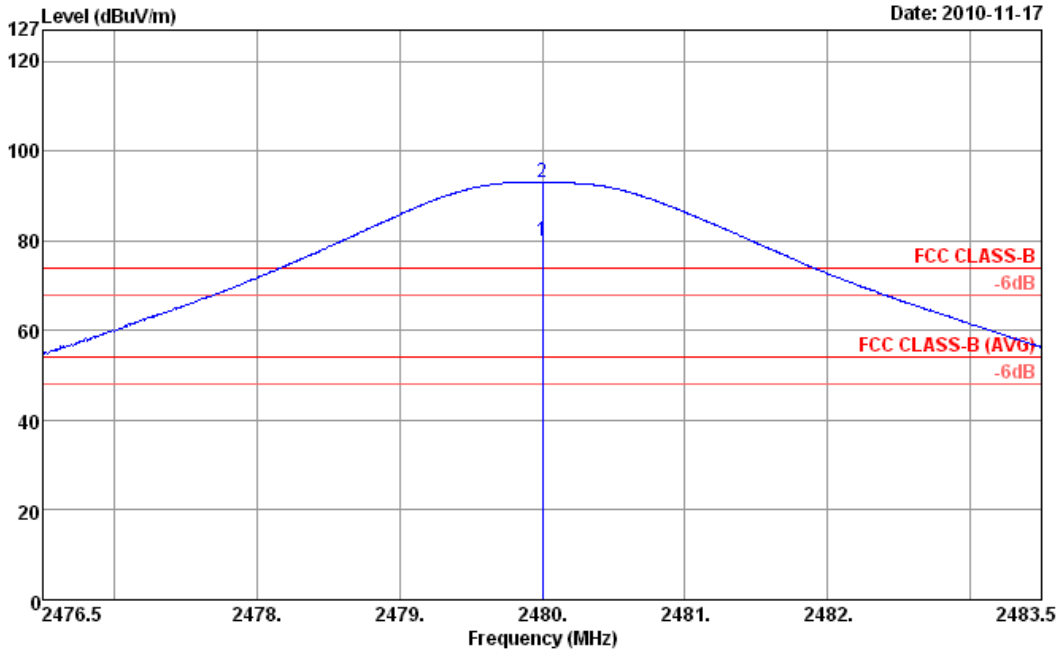


Site : 03CH05-HY
Condition : FCC CLASS-B HF_ANT_100824 HORIZONTAL
Project : FR 091719
Mode : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	101.27	27.27	74.00	98.47	31.78	4.59	33.57	100	0	Peak
2	2483.50	50.43	-23.57	74.00	47.63	31.78	4.59	33.57	100	0	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 50.84 dB , Hopping Mode

Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	78	Relative Humidity :	48~50%
Test Engineer :	Kai Wang	Polarization :	Vertical

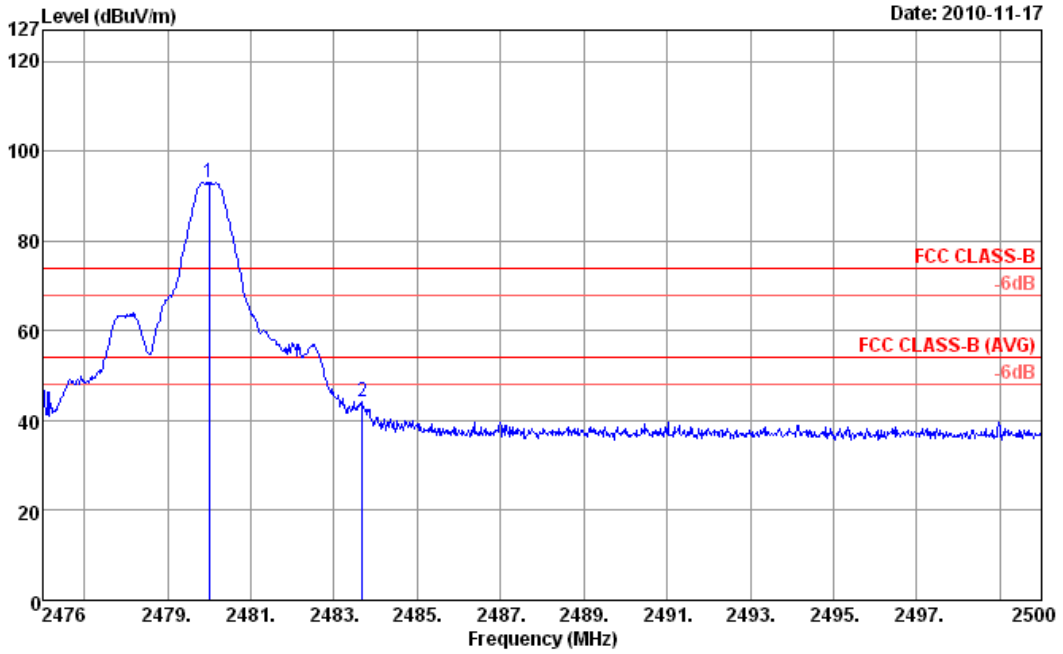


Site : 03CH05-HY
Condition : FCC CLASS-B HF_ANT_100824 VERTICAL
Project : FR 091719
Mode : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	79.96	25.96	54.00	77.16	31.78	4.59	33.57	100	318	Average
2 X	2480.00	93.04	19.04	74.00	90.24	31.78	4.59	33.57	100	318	Peak

* Maximum field strength of the fundamental emission

Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	78	Relative Humidity :	48~50%
Test Engineer :	Kai Wang	Polarization :	Vertical

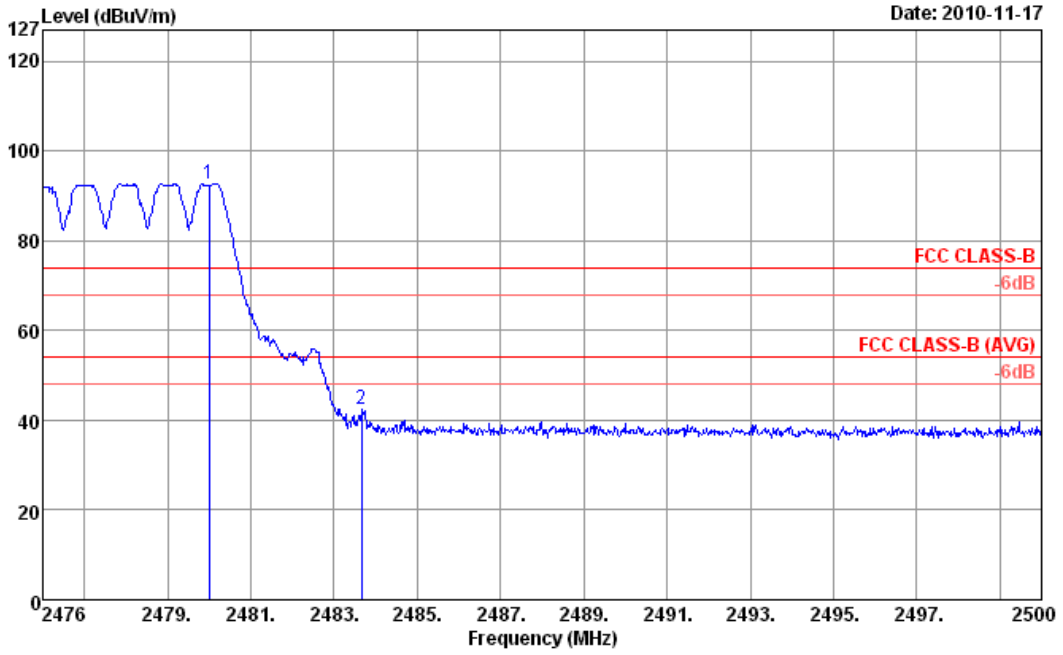


Site : 03CH05-HY
Condition : FCC CLASS-B HF_ANT_100824 VERTICAL
Project : FR 091719
Mode : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	92.99	18.99	74.00	90.19	31.78	4.59	33.57	100	318	Peak
2	2483.68	44.13	-29.87	74.00	41.33	31.78	4.59	33.57	100	318	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 48.86 dB , single carrier Mode

Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	78	Relative Humidity :	48~50%
Test Engineer :	Kai Wang	Polarization :	Vertical



Site : 03CH05-HY
Condition : FCC CLASS-B HF_ANT_100824 VERTICAL
Project : FR 091719
Mode : Mode 3

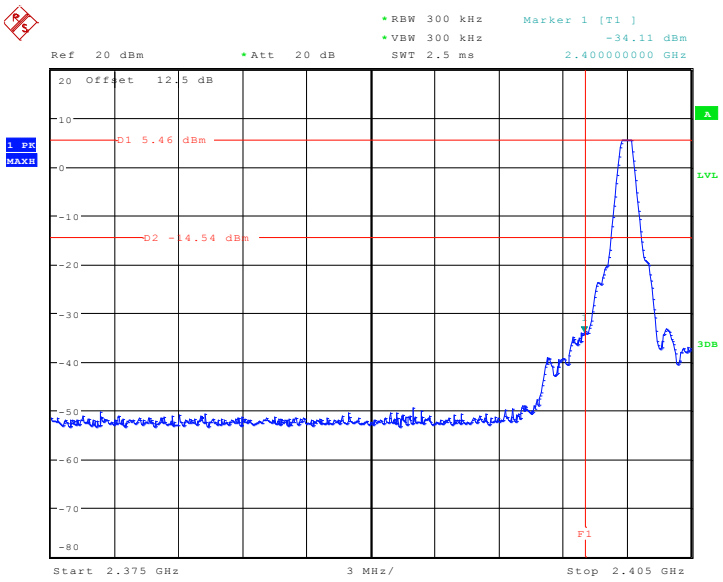
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	92.60	18.60	74.00	89.80	31.78	4.59	33.57	100	318	Peak
2	2483.66	42.38	-31.62	74.00	39.58	31.78	4.59	33.57	100	318	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 50.22 dB , Hopping Mode

3.6.6 Test Result of Conducted Band Edges

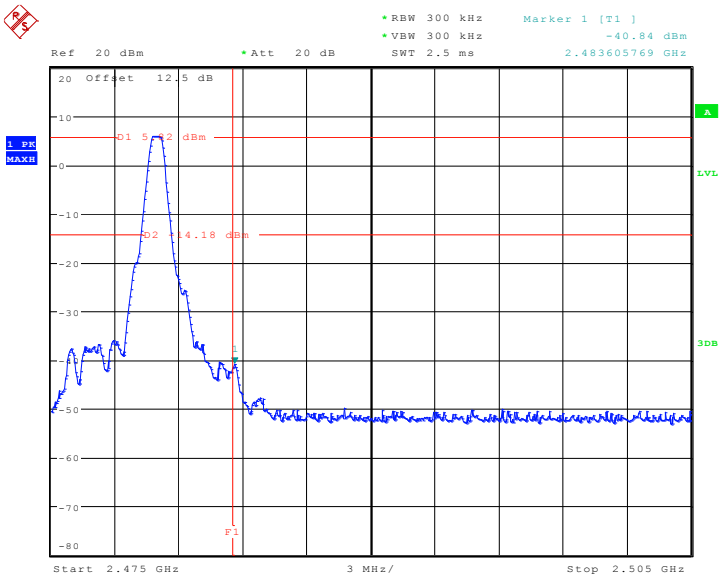
Test Mode :	Mode 1 and 3	**Temperature :**	25~27℃
Test Channel :	00 and 78	**Relative Humidity :**	43~46%
		Test Engineer :	Lancelot Chen

Low Band Edge Plot on Channel 00



Date: 18.NOV.2010 14:23:17

High Band Edge Plot on Channel 78



Date: 18.NOV.2010 15:06:18

3.7 Power Spectral Density Measurement

3.7.1 Limit of Power Spectral Density Measurement

The peak power spectral density shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

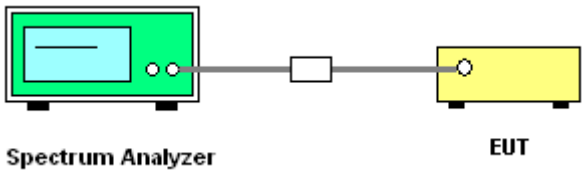
3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedure

1. The transmitter output was connected to spectrum analyzer directly.
2. The spectrum analyzer's resolution bandwidth was set RBW at 3kHz and VBW at 30kHz of the fundamental frequency. Set the sweep time=span/3kHz.
3. The power spectral density was measured and recorded.
4. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

3.7.4 Test Setup

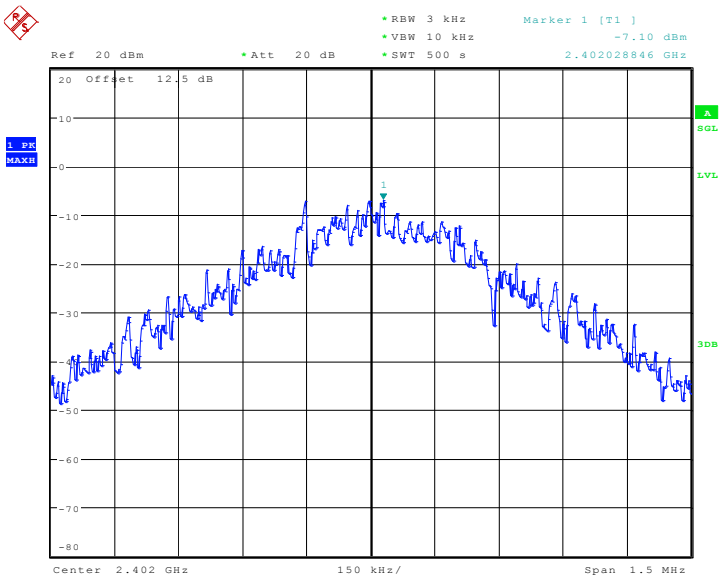


3.7.5 Test Result

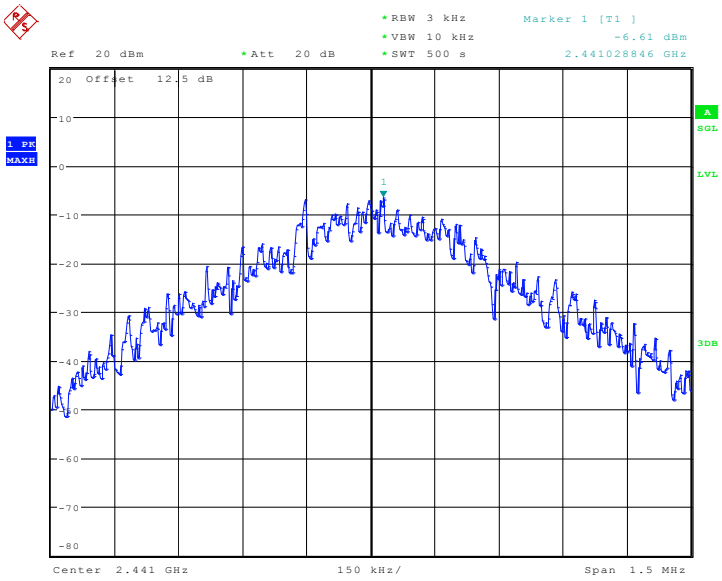
Test Mode :	Mode 1~3	Temperature :	25~27℃
Test Engineer :	Lancelot Chen	Relative Humidity :	43~46%

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Max. Limits (dBm)	Pass/Fail
00	2402	-7.10	8	Pass
39	2441	-6.61	8	Pass
78	2480	-6.96	8	Pass

Power Spectral Density Plot on Channel 00

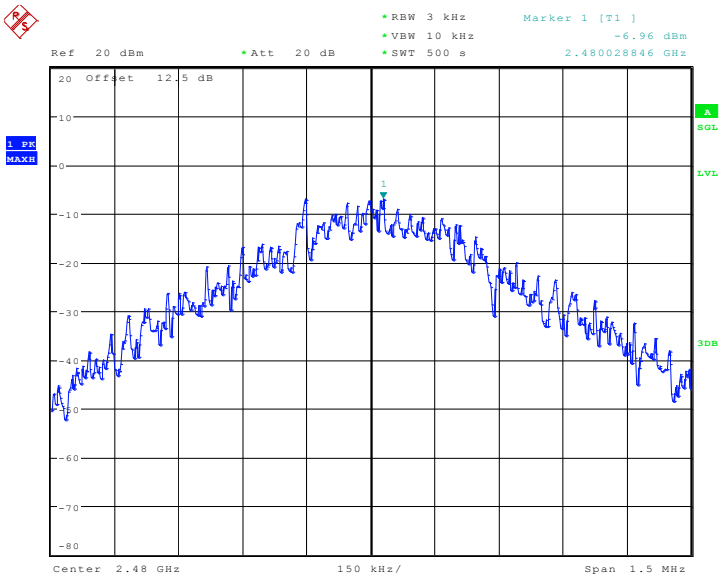


Power Spectral Density Plot on Channel 39



Date: 18.NOV.2010 14:10:06

Power Spectral Density Plot on Channel 78



Date: 18.NOV.2010 14:19:56

3.8 Spurious Emission Measurement

3.8.1 Limit of Spurious Emission Measurement

All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band.

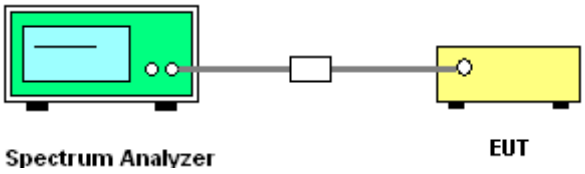
3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

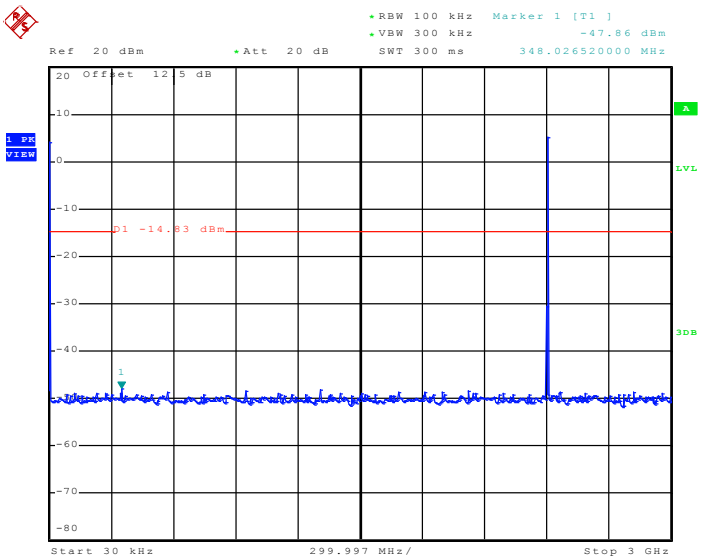
3.8.4 Test Setup



3.8.5 Test Result

Test Mode :	Mode 1	Temperature :	25~27℃
Test Channel :	00	Relative Humidity :	43~46%
		Test Engineer :	Lancelot Chen

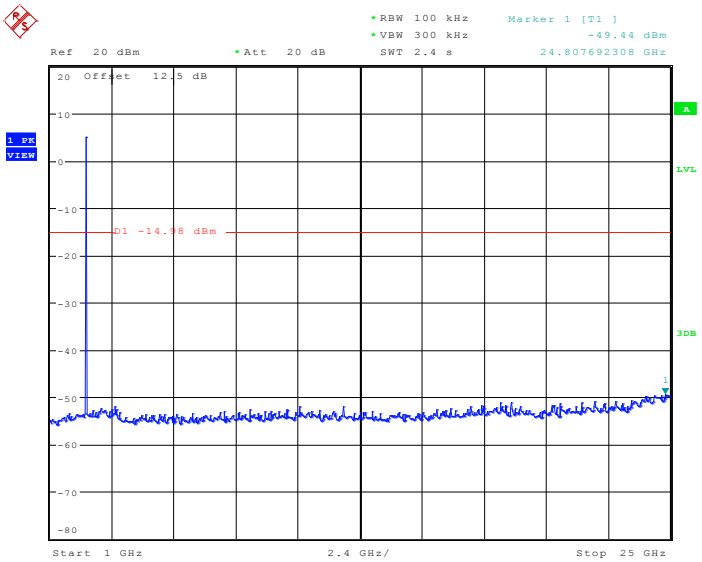
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Pra01

Date: 18.NOV.2010 15:08:07

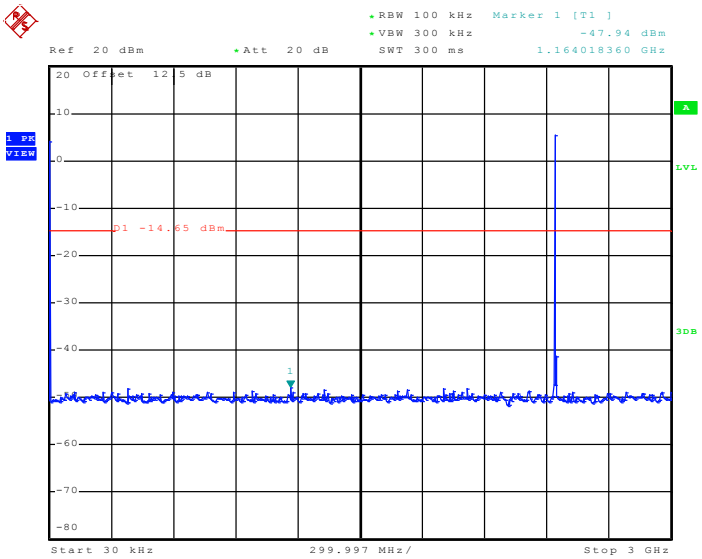
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 18.NOV.2010 16:24:52

Test Mode :	Mode 2	**Temperature :**	25~27℃
Test Channel :	39	**Relative Humidity :**	43~46%
		Test Engineer :	Lancelot Chen

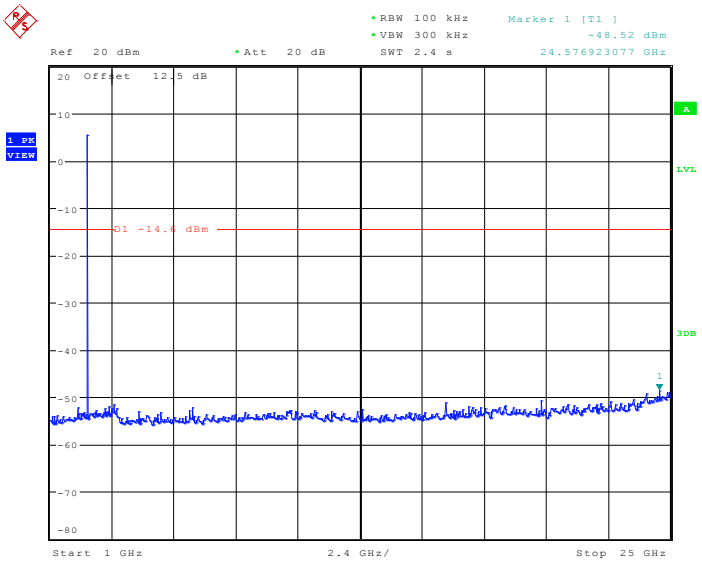
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Pra01

Date: 18.NOV.2010 15:09:00

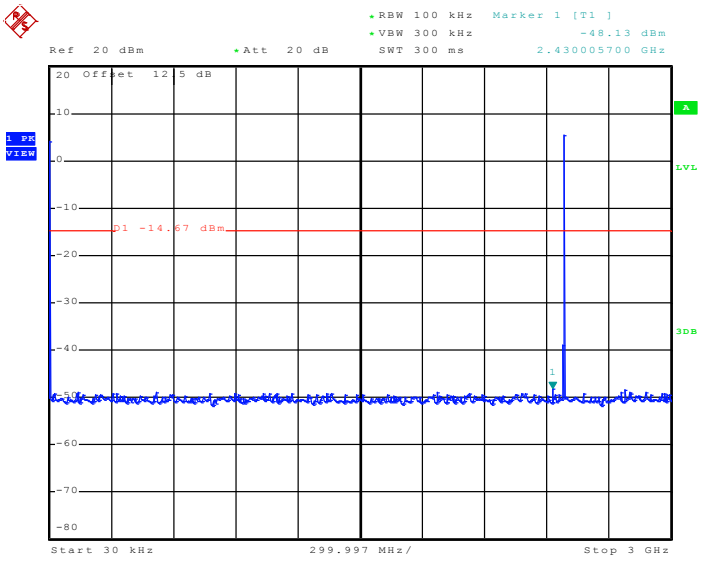
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 18.NOV.2010 16:23:53

Test Mode :	Mode 3	**Temperature :**	25~27℃
Test Channel :	78	**Relative Humidity :**	43~46%
		Test Engineer :	Lancelot Chen

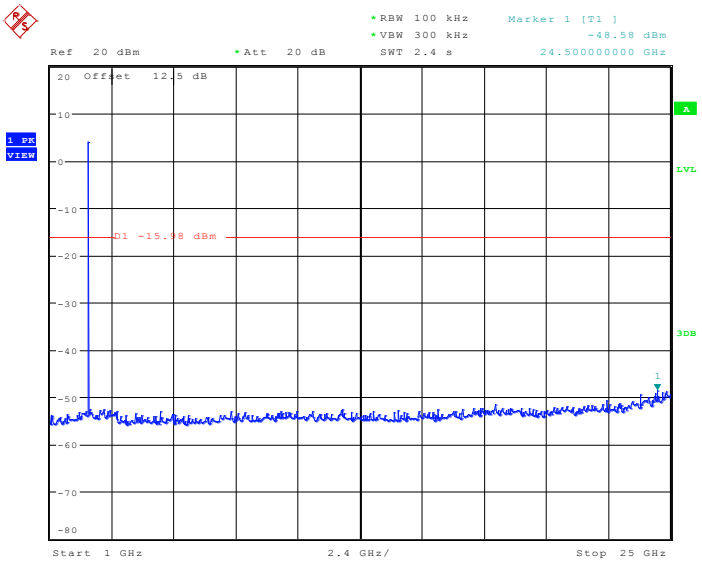
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Pra01

Date: 18.NOV.2010 15:09:43

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 18.NOV.2010 16:22:51

3.9 AC Conducted Emission Measurement

3.9.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted 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.

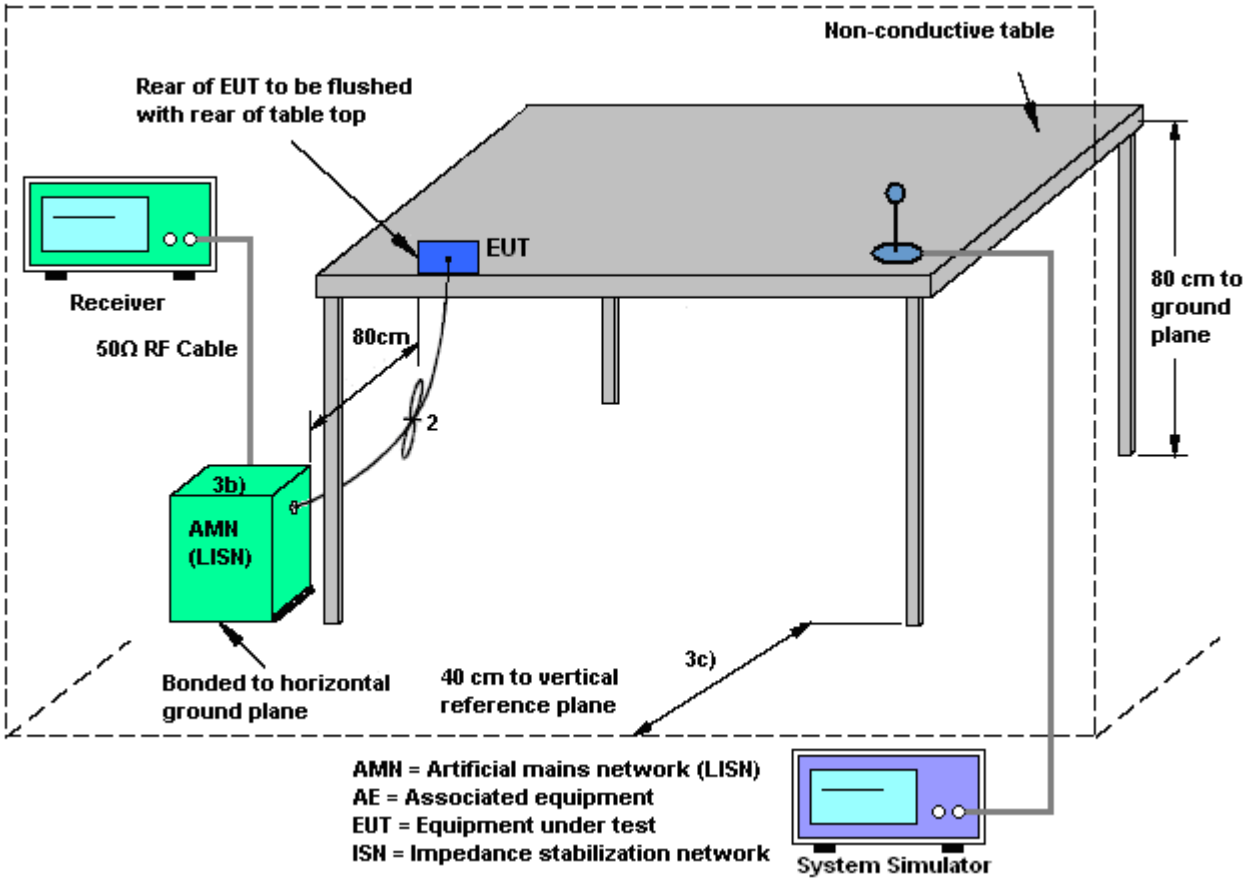
3.9.2 Measuring Instruments

See list of measuring instruments of this test report.

3.9.3 Test Procedures

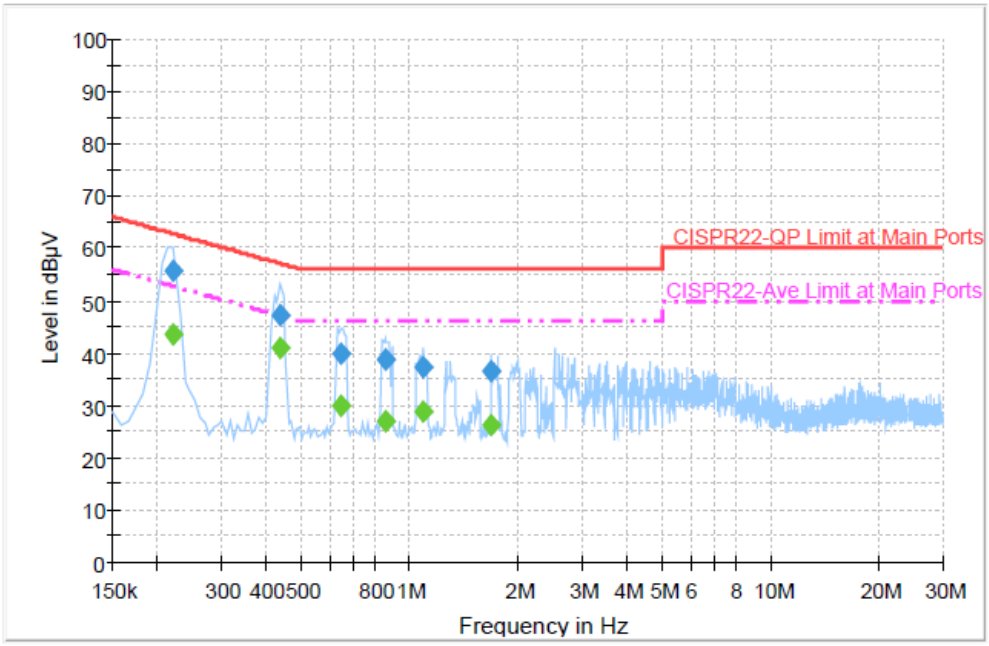
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.9.4 Test Setup



3.9.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	**Temperature :**	20~22℃
Test Engineer :	Novic Jiang	**Relative Humidity :**	36~38%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WCDMA Band II Idle + Bluetooth Link + WLAN Link + Battery 2 + USB Cable 2 (Charging from Adapter 2)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



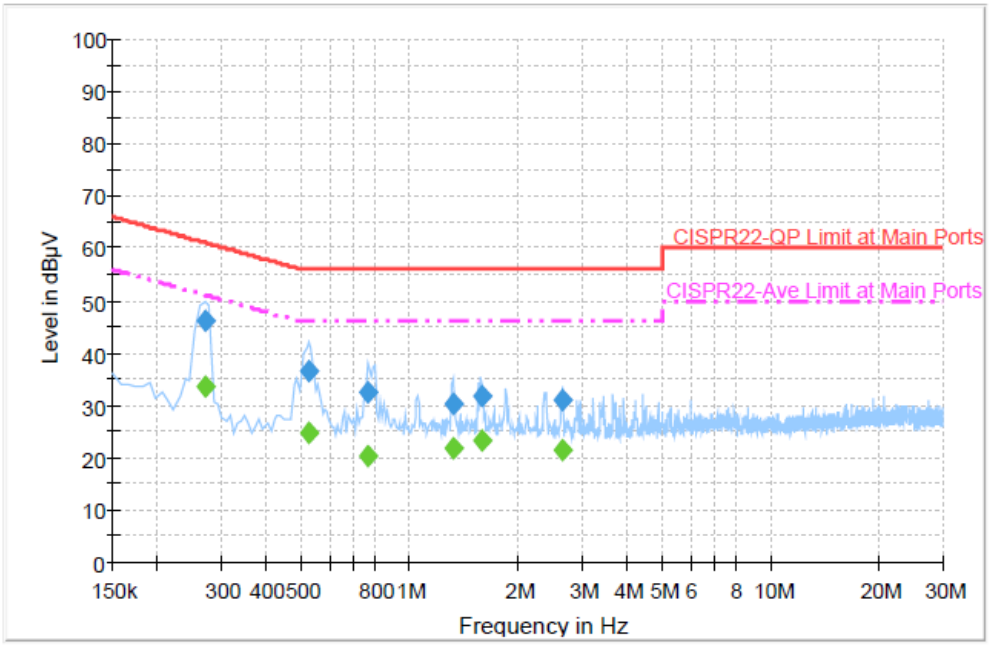
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.222000	55.6	Off	L1	19.3	7.4	63.0
0.438000	47.2	Off	L1	19.4	10.1	57.3
0.646000	40.0	Off	L1	19.3	16.0	56.0
0.854000	38.8	Off	L1	19.5	17.2	56.0
1.094000	37.3	Off	L1	19.4	18.7	56.0
1.678000	36.5	Off	L1	19.5	19.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.222000	43.4	Off	L1	19.3	9.6	53.0
0.438000	40.9	Off	L1	19.4	6.4	47.3
0.646000	29.9	Off	L1	19.3	16.1	46.0
0.854000	27.0	Off	L1	19.5	19.0	46.0
1.094000	28.9	Off	L1	19.4	17.1	46.0
1.678000	26.2	Off	L1	19.5	19.8	46.0

Test Mode :	Mode 2	**Temperature :**	20~22℃
Test Engineer :	Novic Jiang	**Relative Humidity :**	36~38%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	WCDMA Band II Idle + Bluetooth Link + WLAN Link + Battery 2 + USB Cable 2 (Charging from Adapter 2)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.270000	46.3	Off	N	19.4	15.1	61.4
0.526000	36.4	Off	N	19.3	19.6	56.0
0.766000	32.3	Off	N	19.4	23.7	56.0
1.318000	30.1	Off	N	19.5	25.9	56.0
1.590000	31.9	Off	N	19.4	24.1	56.0
2.646000	30.9	Off	N	19.5	25.1	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.270000	33.6	Off	N	19.4	17.8	51.4
0.526000	24.8	Off	N	19.3	21.2	46.0
0.766000	20.3	Off	N	19.4	25.7	46.0
1.318000	21.8	Off	N	19.5	24.2	46.0
1.590000	23.4	Off	N	19.4	22.6	46.0
2.646000	21.3	Off	N	19.5	24.7	46.0

3.10 Radiated Emission Measurement

3.10.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.10.2 Measuring Instruments

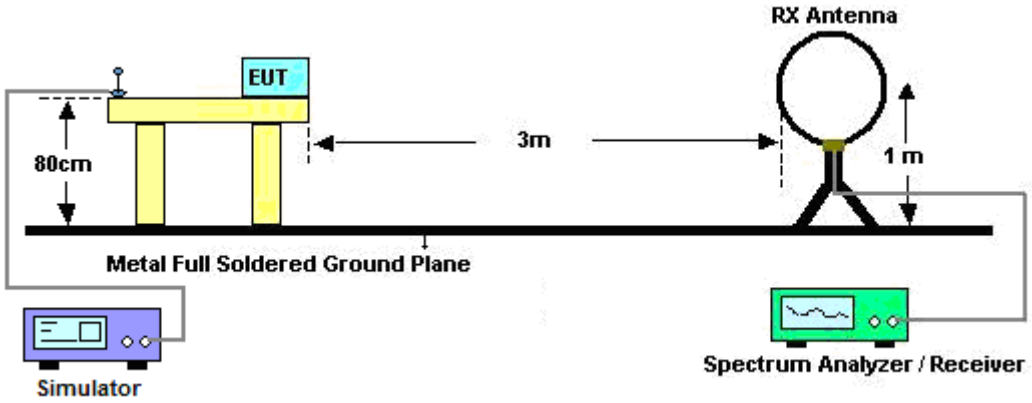
See list of measuring instruments of this test report.

3.10.3 Test Procedures

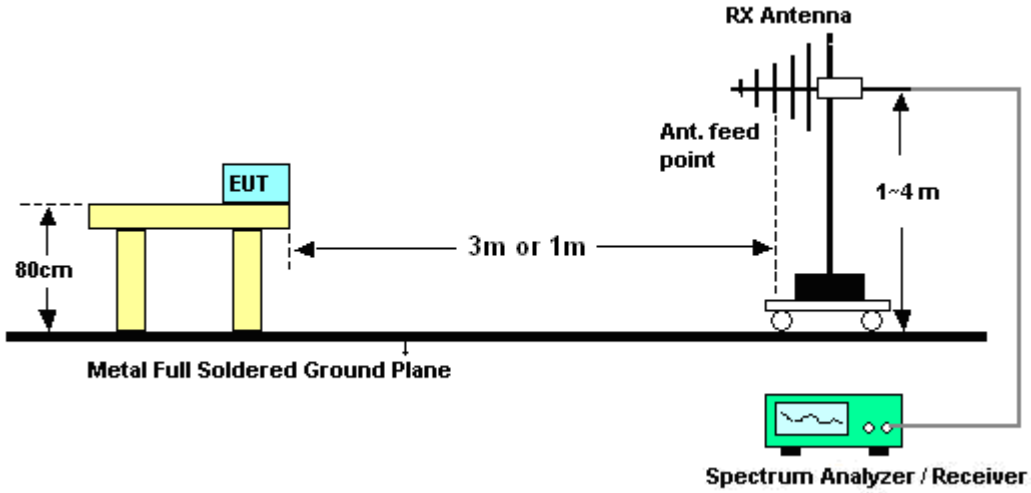
1. The testing follows the guidelines in FCC Public Notice DA 00-705 Measurement Guidelines.
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
   (2) Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.
   Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB)
3. Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.10.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



3.10.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

Test Engineer :	Kai Wang	Temperature :	25~27°C
		Relative Humidity :	48~50%

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

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

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

3.10.6 Test Result of Radiated Emission (30 MHz ~ 10th Harmonic)

Test Mode :	Mode 1	**Temperature :**	25~27°C
Test Channel :	00	**Relative Humidity :**	48~50%
Test Engineer :	Kai Wang	**Polarization :**	Horizontal
Remark :	2402 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
146.64	28.94	-14.56	43.50	48.89	10.41	1.14	31.50	100	360	Peak
189.03	27.58	-15.92	43.50	49.47	8.36	1.23	31.48	-	-	Peak
273.27	25.61	-20.39	46.00	43.64	11.90	1.48	31.41	-	-	Peak
457.50	23.04	-22.96	46.00	36.16	16.10	1.92	31.14	-	-	Peak
871.20	25.08	-20.92	46.00	31.33	21.56	2.68	30.49	-	-	Peak
995.80	27.08	-26.92	54.00	29.53	24.00	3.77	30.22	-	-	Peak
2314.37	33.01	-20.99	54.00	30.51	31.61	4.38	33.49	104	0	Average
2314.37	44.81	-29.19	74.00	42.31	31.61	4.38	33.49	104	0	Peak
2402.00	87.06	-	-	84.38	31.70	4.50	33.52	104	0	Average
2402.00	101.16	-	-	98.48	31.70	4.50	33.52	104	0	Peak
2484.00	31.62	-22.38	54.00	28.82	31.78	4.59	33.57	104	0	Average
2484.00	44.04	-29.96	74.00	41.24	31.78	4.59	33.57	104	0	Peak

Test Mode :	Mode 1	Temperature :	25~27°C
Test Channel :	00	Relative Humidity :	48~50%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	2402 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
84.27	30.36	-9.64	40.00	53.73	7.34	0.84	31.55	-	-	Peak
140.16	27.12	-16.38	43.50	46.90	10.66	1.07	31.51	-	-	Peak
191.46	33.90	-9.60	43.50	55.82	8.33	1.23	31.48	100	287	Peak
426.00	26.33	-19.67	46.00	40.26	15.36	1.87	31.16	-	-	Peak
552.70	27.11	-18.89	46.00	37.97	17.94	2.15	30.95	-	-	Peak
999.30	27.49	-26.51	54.00	29.85	24.07	3.77	30.20	-	-	Peak
2372.51	32.11	-21.89	54.00	29.47	31.68	4.47	33.51	118	344	Average
2372.51	45.22	-28.78	74.00	42.58	31.68	4.47	33.51	118	344	Peak
2402.00	81.10	-	-	78.42	31.70	4.50	33.52	118	344	Average
2402.00	94.48	-	-	91.80	31.70	4.50	33.52	118	344	Peak
2486.00	31.63	-22.37	54.00	28.83	31.78	4.59	33.57	118	344	Average
2486.00	43.63	-30.37	74.00	40.83	31.78	4.59	33.57	118	344	Peak

Test Mode :	Mode 2	Temperature :	25~27°C
Test Channel :	39	Relative Humidity :	48~50%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	2441 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
142.05	29.83	-13.67	43.50	49.69	10.58	1.07	31.51	100	360	Peak
189.03	26.78	-16.72	43.50	48.67	8.36	1.23	31.48	-	-	Peak
271.38	25.89	-20.11	46.00	43.95	11.88	1.48	31.42	-	-	Peak
394.50	23.30	-22.70	46.00	38.04	14.63	1.82	31.19	-	-	Peak
457.50	23.07	-22.93	46.00	36.19	16.10	1.92	31.14	-	-	Peak
994.40	27.51	-26.49	54.00	30.00	23.96	3.77	30.22	-	-	Peak
2378.00	33.87	-20.13	54.00	31.23	31.68	4.47	33.51	104	350	Average
2378.00	43.98	-30.02	74.00	41.34	31.68	4.47	33.51	104	350	Peak
2441.00	88.37	-	-	85.61	31.75	4.56	33.55	104	350	Average
2441.00	102.17	-	-	99.41	31.75	4.56	33.55	104	350	Peak
2494.00	33.60	-20.40	54.00	30.75	31.80	4.62	33.57	104	350	Average
2494.00	44.61	-29.39	74.00	41.76	31.80	4.62	33.57	104	350	Peak

Test Mode :	Mode 2	Temperature :	25~27°C
Test Channel :	39	Relative Humidity :	48~50%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	2441 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
84.54	29.76	-10.24	40.00	53.13	7.34	0.84	31.55	-	-	Peak
124.50	25.57	-17.93	43.50	45.08	10.94	1.07	31.52	-	-	Peak
191.19	33.51	-9.99	43.50	55.43	8.33	1.23	31.48	100	71	Peak
426.00	26.22	-19.78	46.00	40.15	15.36	1.87	31.16	-	-	Peak
753.60	25.43	-20.57	46.00	33.32	20.14	2.51	30.54	-	-	Peak
983.90	26.44	-27.56	54.00	29.69	23.71	3.31	30.27	-	-	Peak
2370.00	32.06	-21.94	54.00	29.42	31.68	4.47	33.51	116	343	Average
2370.00	44.50	-29.50	74.00	41.86	31.68	4.47	33.51	116	343	Peak
2441.00	81.09	-	-	78.33	31.75	4.56	33.55	116	343	Average
2441.00	94.14	-	-	91.38	31.75	4.56	33.55	116	343	Peak
2492.00	31.82	-22.18	54.00	28.97	31.80	4.62	33.57	116	343	Average
2492.00	43.64	-30.36	74.00	40.79	31.80	4.62	33.57	116	343	Peak

Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	78	Relative Humidity :	48~50%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	2480 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
142.05	34.56	-8.94	43.50	54.42	10.58	1.07	31.51	400	0	Peak
186.33	28.20	-15.30	43.50	50.04	8.42	1.23	31.49	-	-	Peak
272.46	25.64	-20.36	46.00	43.68	11.89	1.48	31.41	-	-	Peak
426.70	25.25	-20.75	46.00	39.16	15.38	1.87	31.16	-	-	Peak
801.90	25.29	-20.71	46.00	32.23	21.03	2.57	30.54	-	-	Peak
990.90	27.09	-26.91	54.00	30.12	23.89	3.31	30.23	-	-	Peak
2330.00	32.17	-21.83	54.00	29.62	31.63	4.41	33.49	100	0	Average
2330.00	44.19	-29.81	74.00	41.64	31.63	4.41	33.49	100	0	Peak
2480.00	87.75	-	-	84.95	31.78	4.59	33.57	100	0	Average
2480.00	102.03	-	-	99.23	31.78	4.59	33.57	100	0	Peak
2483.50	38.43	-15.57	54.00	35.63	31.78	4.59	33.57	100	0	Average
2483.50	66.83	-7.17	74.00	64.03	31.78	4.59	33.57	100	0	Peak

Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	78	Relative Humidity :	48~50%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	2480 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
84.54	30.48	-9.52	40.00	53.85	7.34	0.84	31.55	-	-	Peak
191.19	34.33	-9.17	43.50	56.25	8.33	1.23	31.48	400	327	Peak
273.27	28.47	-17.53	46.00	46.50	11.90	1.48	31.41	-	-	Peak
426.00	26.73	-19.27	46.00	40.66	15.36	1.87	31.16	-	-	Peak
584.20	25.38	-20.62	46.00	35.65	18.45	2.18	30.90	-	-	Peak
745.20	25.08	-20.92	46.00	33.15	19.98	2.51	30.56	-	-	Peak
2366.00	32.20	-21.80	54.00	29.58	31.66	4.47	33.51	100	318	Average
2366.00	43.78	-30.22	74.00	41.16	31.66	4.47	33.51	100	318	Peak
2480.00	79.96	-	-	77.16	31.78	4.59	33.57	100	318	Average
2480.00	93.08	-	-	90.28	31.78	4.59	33.57	100	318	Peak
2483.50	31.10	-22.90	54.00	28.30	31.78	4.59	33.57	100	318	Average
2483.50	58.48	-15.52	74.00	55.68	31.78	4.59	33.57	100	318	Peak

3.11 Antenna Requirements

3.11.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.11.2 Antenna Connected Construction

The antennas type used in this product is Integral Antenna without connector and it is considered to meet antenna requirement.

3.11.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101329	9kHz~30GHz	Apr. 26, 2010	Apr. 25, 2011	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 13, 2010	Sep. 12, 2011	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 14, 2010	Sep. 13, 2011	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 16, 2010	Aug. 15, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz – 30MHz	Dec. 03, 2010	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz – 30MHz	Dec. 01, 2010	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	117997	N/A	May 14, 2009	May 13, 2011	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP30	101352	9KHz-40GHz	Nov. 03, 2010	Nov. 02, 2011	Radiation (03CH05-HY)
Amplifier	COM-POWER	PA-103	161069	1KHz - 1GHz	Mar. 29, 2010	Mar. 28, 2011	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 1GHz	Nov. 06, 2010	Nov. 05, 2011	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 15, 2010	Apr. 14, 2011	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 - 360 degree	N/A	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m - 4 m	N/A	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	00066584	1GHz ~ 18GHz	Aug. 05, 2010	Aug. 04, 2011	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH05-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**		

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**		

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				