FCC RF Test Report

APPLICANT	**:**	**CT Asia**
EQUIPMENT	**:**	**GSM mobile phone**
BRAND NAME	**:**	**BLU**
MODEL NAME	**:**	**Swing**
FCC ID	**:**	**YHLBLUSWING**
STANDARD	**:**	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	**:**	**Digital Spread Spectrum (DSS)**

The product was received on Dec. 08, 2011 and completely tested on Dec. 13, 2011. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai

Jones Tsai / Manager

ilac-MRA

TAF Testing Laboratory 1190

SPORTON INTERNATIONAL (KUNSHAN) INC.

No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR1D0807	Rev. 01	Initial issue of report	Dec. 15, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(1)	Number of Channels	≥ 15Chs	Pass	-
3.2	15.247(a)(1)	20dB Bandwidth	NA	Pass	-
3.3	15.247(a)(1)	Channel Separation	≥ 2/3 of 20dB BW	Pass	-
3.4	15.247(a)(1)	Dwell Time of Each Channel	≤ 0.4sec in 31.6sec period	Pass	-
3.5	15.247(b)(1)	Peak Output Power	≤ 125 mW	Pass	-
3.6	15.247(d)	Frequency Band Edges	≤ 20dBc	Pass	-
3.7	15.247(d)	Spurious Emission	< 20 dBc	Pass	-
3.8	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 12.86 dB at 2.64 MHz
3.9	15.247(d)	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 9.89 dB at 47.82 MHz
3.10	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

CT Asia
RMA2011, 20/F, GOLDEN CENTRAL TOWER , NO.3037# JINTIAN ROAD , FUTIAN DISTRICT

1.2 Manufacturer

zechin communication co., Ltd
Unit804, 8th Floor Desay Tech Building Gaoxin Road South, Nanshan District Shenzhen, China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	GSM mobile phone
Brand Name	BLU
Model Name	Swing
FCC ID	YHLBLUSWING
Tx/Rx Frequency Range	2402 MHz ~ 2480 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) : 9.44 dBm (0.0088 W) Bluetooth EDR (2Mbps) : 9.24 dBm (0.0084 W) Bluetooth EDR (3Mbps) : 9.45 dBm (0.00881 W)
Antenna Type	PIFA Antenna with gain -1 dBi
HW Version	E200-MB-V03
SW Version	E200_BLU_LEN_BT_FM_FL_SC_004_V017
Type of Modulation	Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : π/4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK
EUT Stage	Identical Prototype

Remark:

1. This test report recorded only product characteristics and test results of Digital Spread Spectrum (DSS).
2. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
3. There are two different types of EUT. They are single SIM card mobile and dual SIM card mobile. The others are the same including circuit design, PCB board, structure and all components. It is special to declare. After pre-scan two types of EUT, we found test result of the sample that dual SIM was the worst, so we choose dual SIM card mobile to perform all test.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		
	TH01-KS	CO01-KS	03CH01-KS

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

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 (Certification), 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.	Bluetooth Base Station	R&S	CBT	N/A	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
4.	DC Power Supply	TOPWARD	GPS-3030D	N/A	N/A	Unshielded, 1.8 m

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	9.15	dBm	8.92	dBm	9.14	dBm
Ch39	2441MHz	9.44	dBm	9.24	dBm	9.45	dBm
Ch78	2480MHz	8.73	dBm	8.49	dBm	8.75	dBm

Remark:

1. The data rate was set in 3Mbps 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, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

The following tables are showing the test modes as the worst cases (E2 plane) and recorded in this report.

The following tables are showing the test modes as the worst cases and recorded in this report.

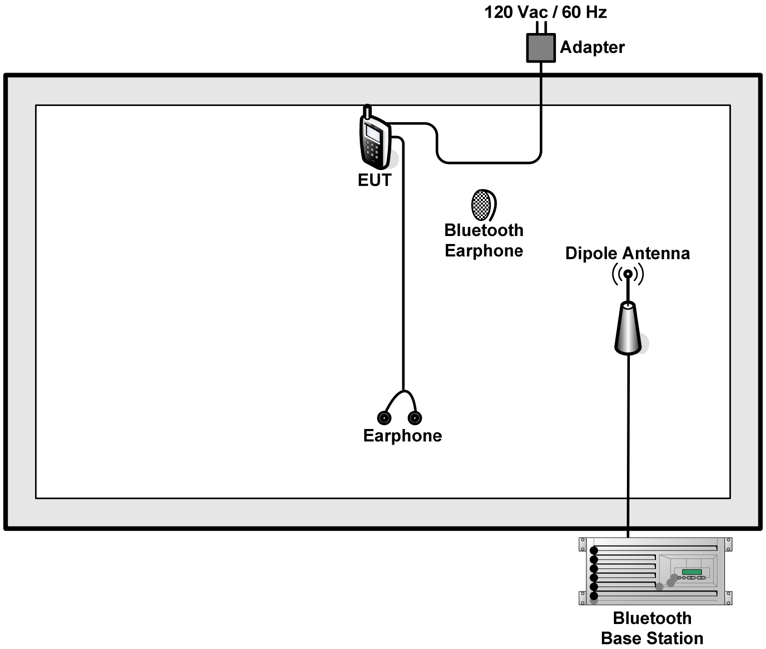
Test Cases			
Test Item	Data Rate / Modulation		
	Bluetooth 1Mbps GFSK	Bluetooth EDR 2Mbps π/4-DQPSK	Bluetooth EDR 3Mbps 8-DPSK
Conducted TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	Mode 4: CH00_2402 MHz Mode 5: CH39_2441 MHz Mode 6: CH78_2480 MHz	Mode 7: CH00_2402 MHz Mode 8: CH39_2441 MHz Mode 9: CH78_2480 MHz
Radiated TCs	N/A	N/A	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz
AC Conducted Emission	Mode 1 :GSM 850 Idle + Bluetooth Link + Adapter + Earphone		

Remark:

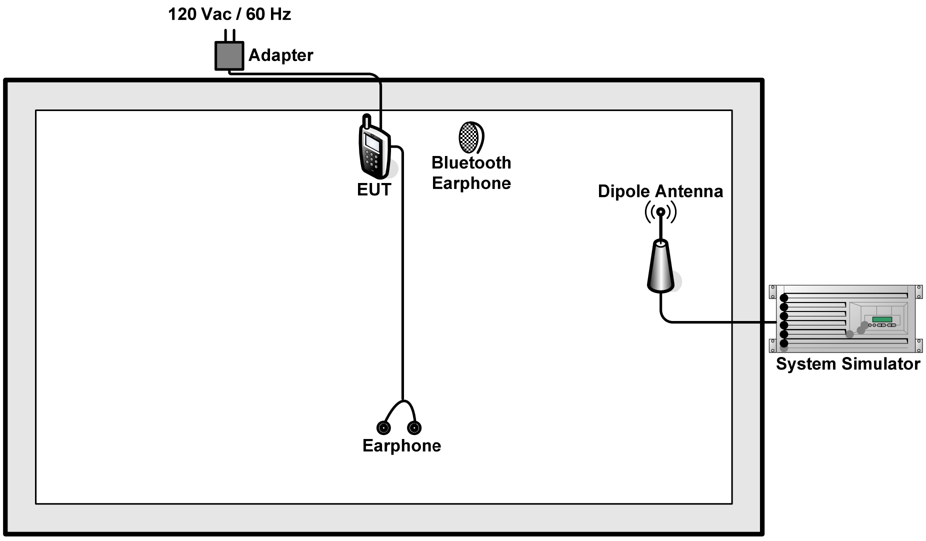
1. For radiated TCs, the data rate was set in 3Mbps due to the highest RF output power; only the data of these modes was reported.
2. For conducted emission, the worst case is mode 1; only the test data of this mode was reported.

2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

For Bluetooth function, the RF utility, "＊＃336633＃" was installed in EUT which was programmed in order to make the EUT into the engineering modes to contact with Bluetooth base station for transmitting and receiving signals continuously.

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.

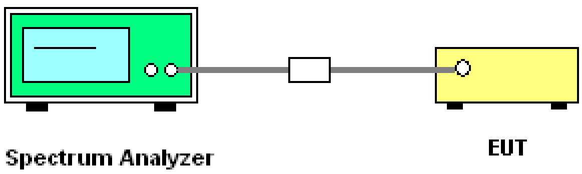
3.1.2 Measuring Instruments

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

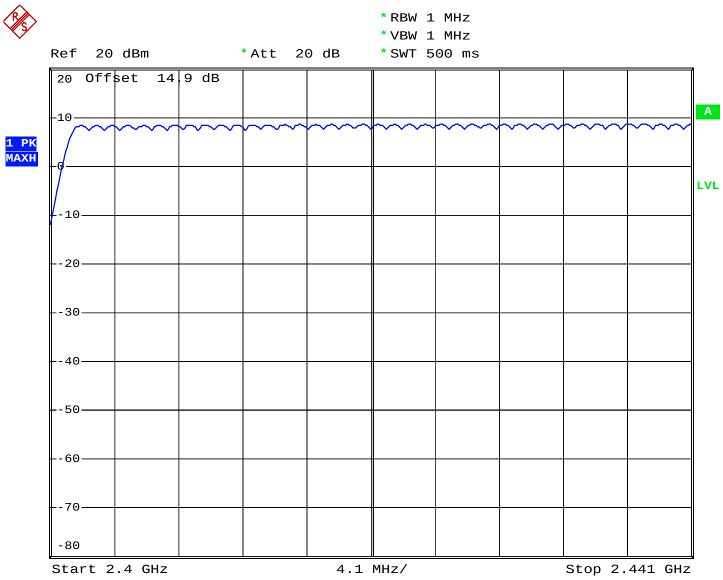


3.1.5 Test Result of Number of Hopping Frequency

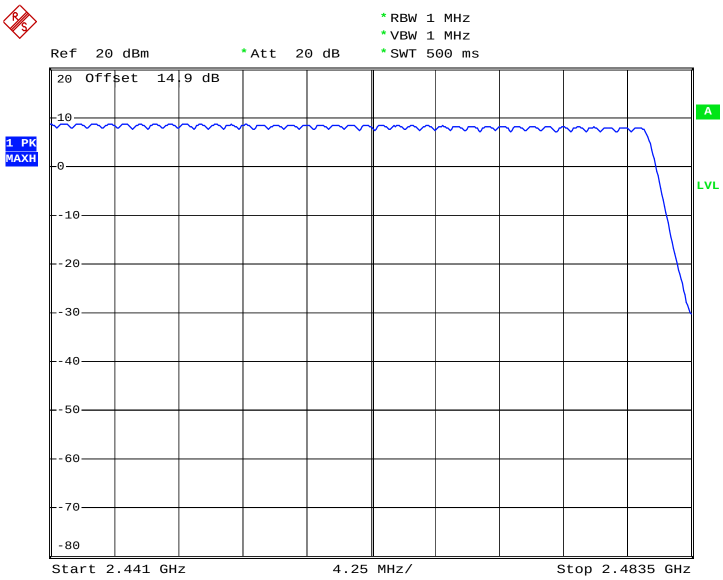
Test Mode :	Mode 7~9	**Temperature :**	24~26℃
Test Engineer :	Fly Chen	**Relative Humidity :**	50~53%

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

Number of Hopping Channel Plot on Channel 00 - 78



Date: 9.DEC.2011 13:12:57



Date: 9.DEC.2011 13:17:46

3.2 20dB Bandwidth Measurement

3.2.1 Limit of 20dB Bandwidth

N/A

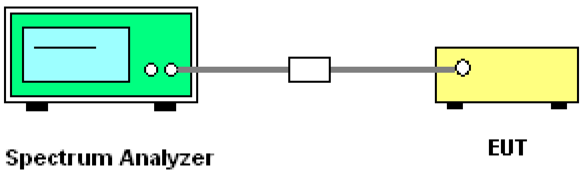
3.2.2 Measuring Instruments

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

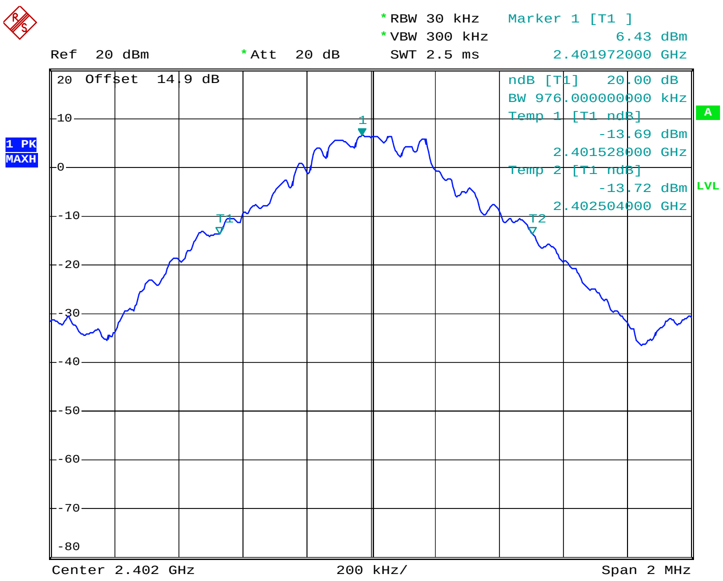


3.2.5 Test Result of 20dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

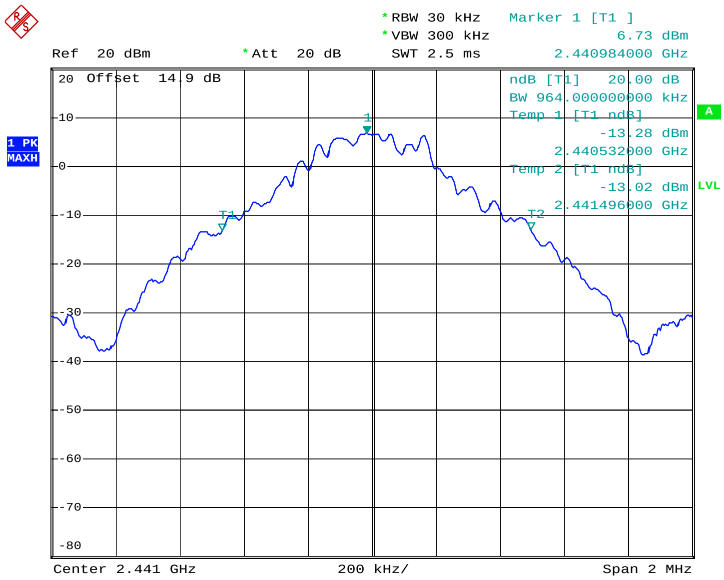
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.976
39	2441	0.964
78	2480	0.948

20 dB Bandwidth Plot on Channel 00



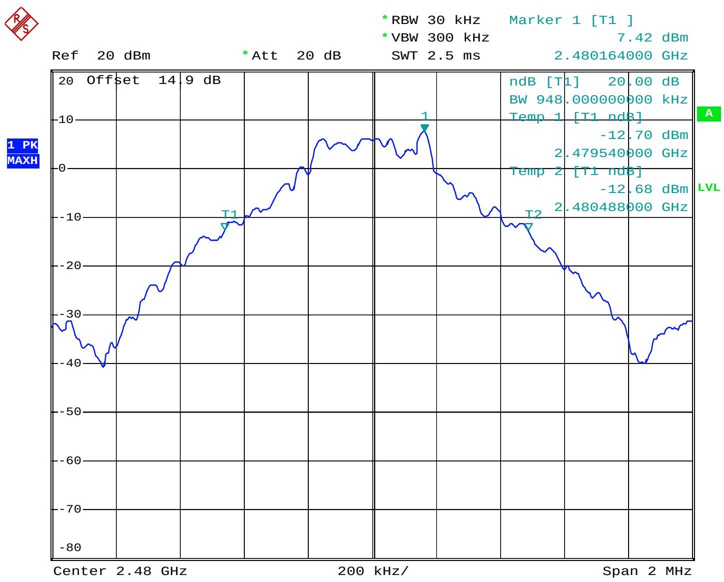
Date: 9.DEC.2011 11:54:22

20 dB Bandwidth Plot on Channel 39



Date: 9.DEC.2011 11:54:47

20 dB Bandwidth Plot on Channel 78

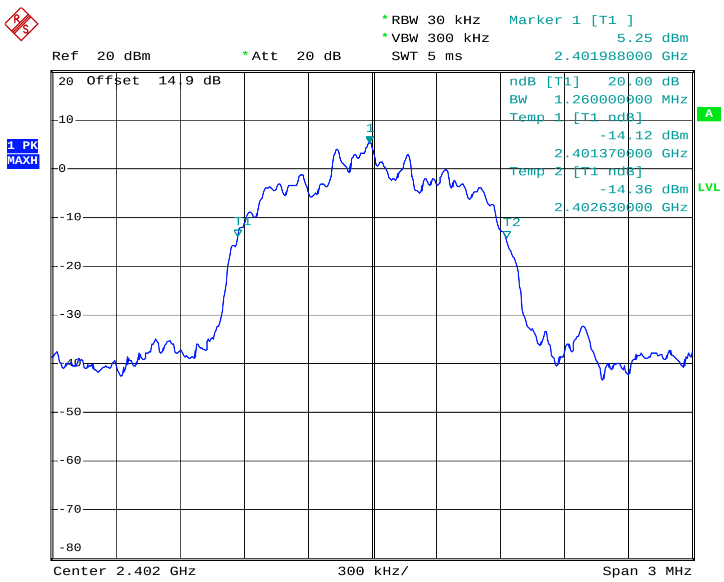


Date: 9.DEC.2011 11:56:04

Test Mode :	Mode 4, 5, 6	**Temperature :**	24~26℃
Test Engineer :	Fly Chen	**Relative Humidity :**	50~53%

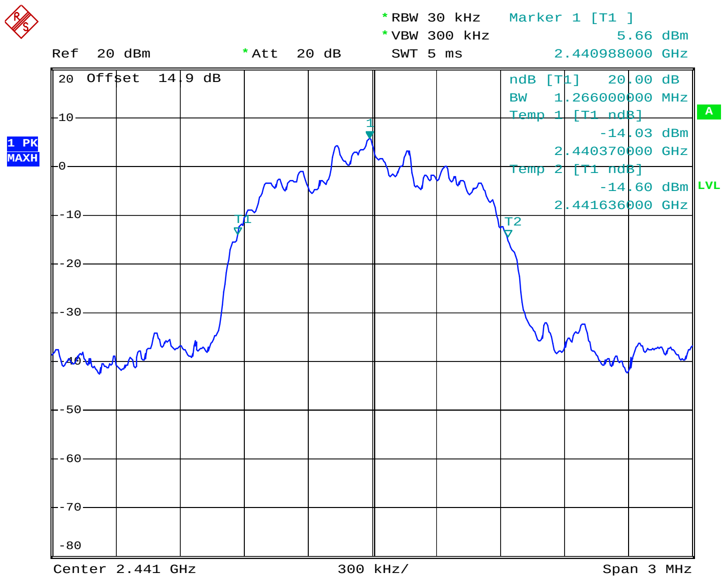
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.260
39	2441	1.266
78	2480	1.224

20 dB Bandwidth Plot on Channel 00



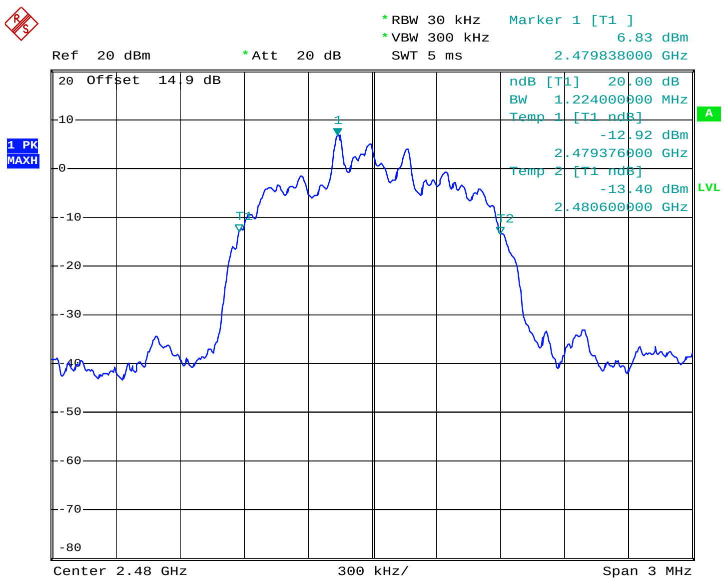
Date: 9.DEC.2011 11:56:30

20 dB Bandwidth Plot on Channel 39



Date: 9.DEC.2011 11:56:52

20 dB Bandwidth Plot on Channel 78

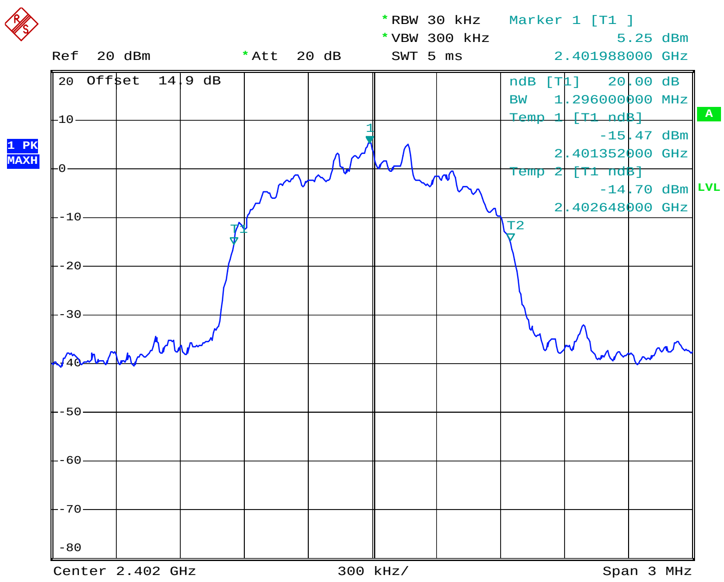


Date: 9.DEC.2011 11:57:20

Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

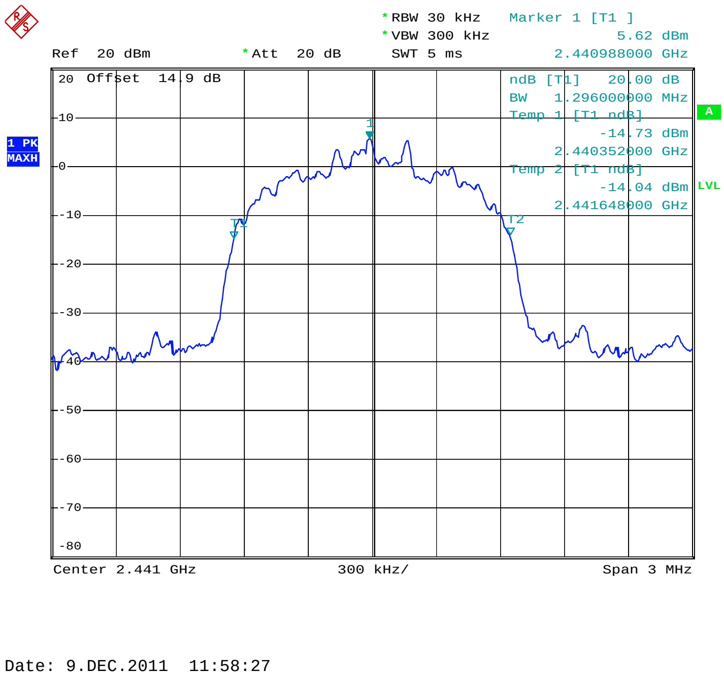
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.296
39	2441	1.296
78	2480	1.272

20 dB Bandwidth Plot on Channel 00

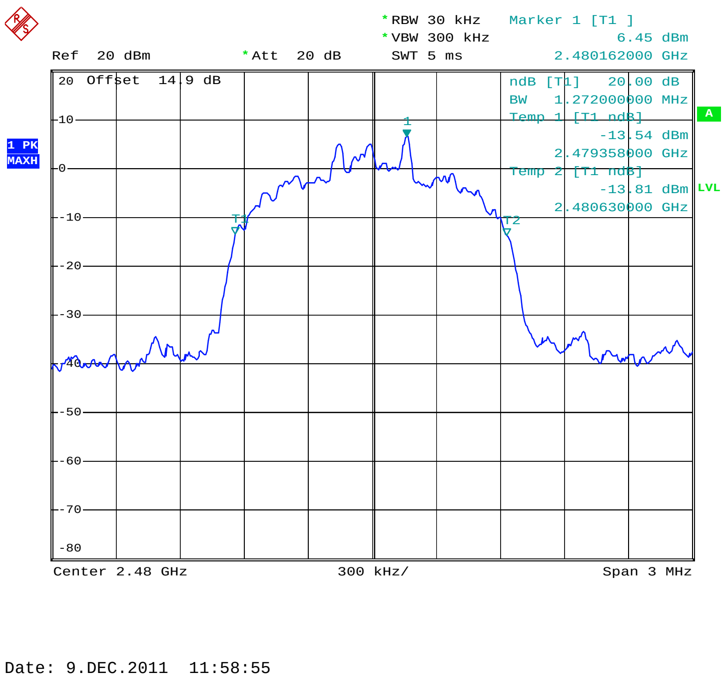


Date: 9.DEC.2011 11:58:02

20 dB Bandwidth Plot on Channel 39



20 dB Bandwidth Plot on Channel 78



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.

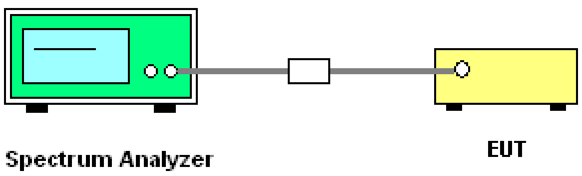
3.3.2 Measuring Instruments

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

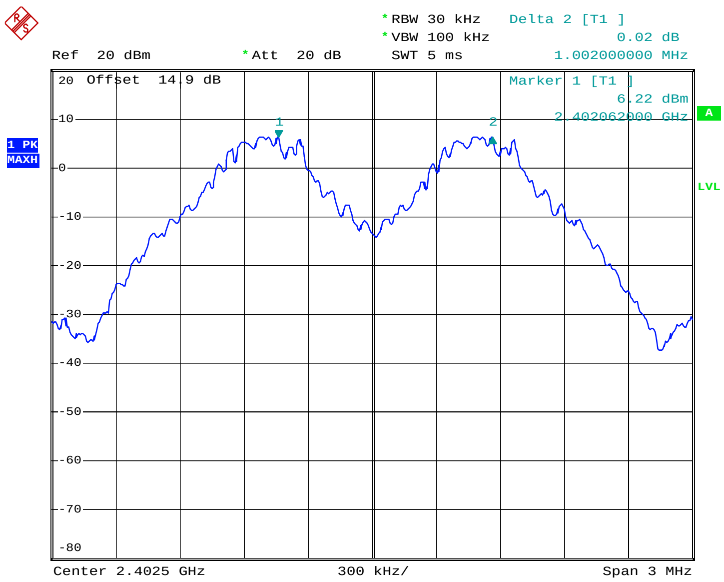


3.3.5 Test Result of Hopping Channel Separation

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

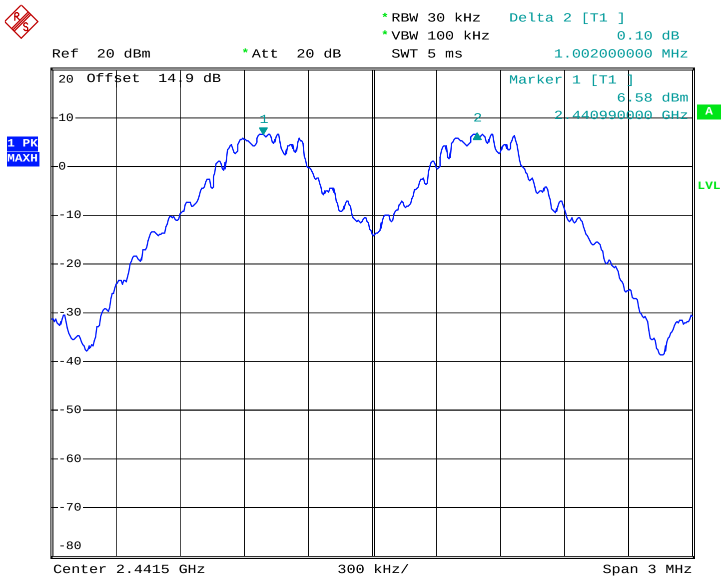
Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.651	Pass
39	2441	1.002	0.643	Pass
78	2480	1.002	0.632	Pass

Channel Separation Plot on Channel 00 - 01



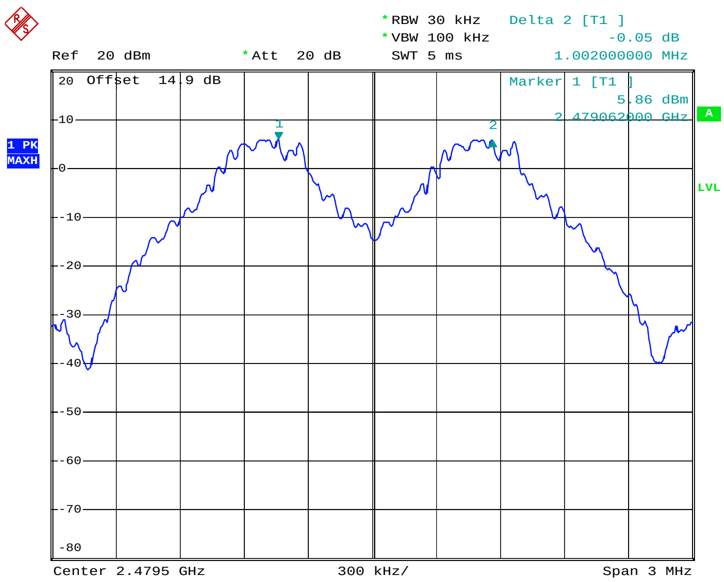
Date: 9.DEC.2011 11:40:48

Channel Separation Plot on Channel 39 - 40



Date: 9.DEC.2011 11:41:32

Channel Separation Plot on Channel 77 - 78

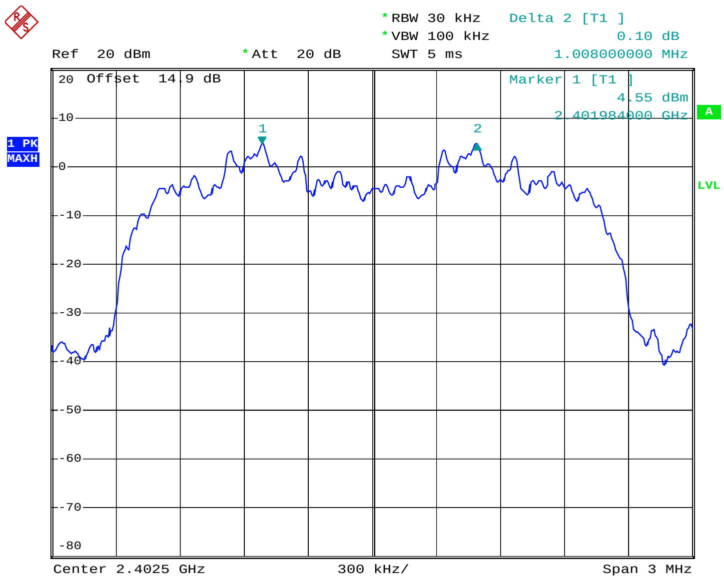


Date: 9.DEC.2011 11:42:57

Test Mode :	Mode 4, 5, 6	**Temperature :**	24~26℃
Test Engineer :	Fly Chen	**Relative Humidity :**	50~53%

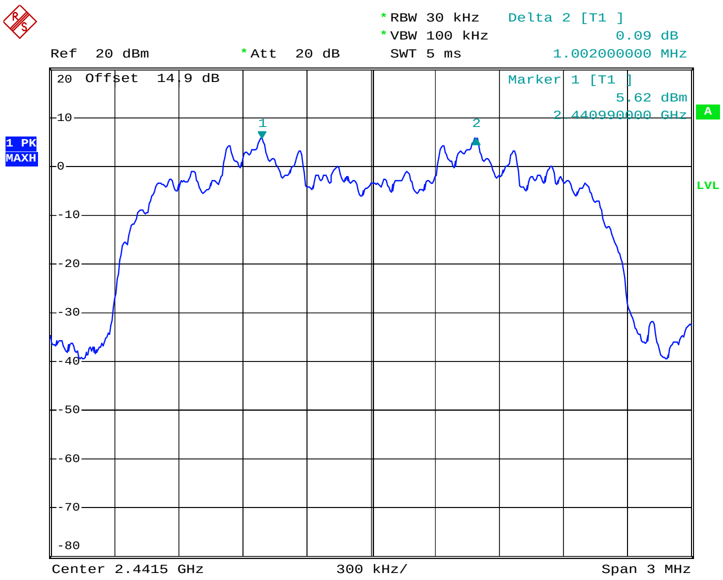
Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.008	0.840	Pass
39	2441	1.002	0.844	Pass
78	2480	1.002	0.816	Pass

Channel Separation Plot on Channel 00 - 01



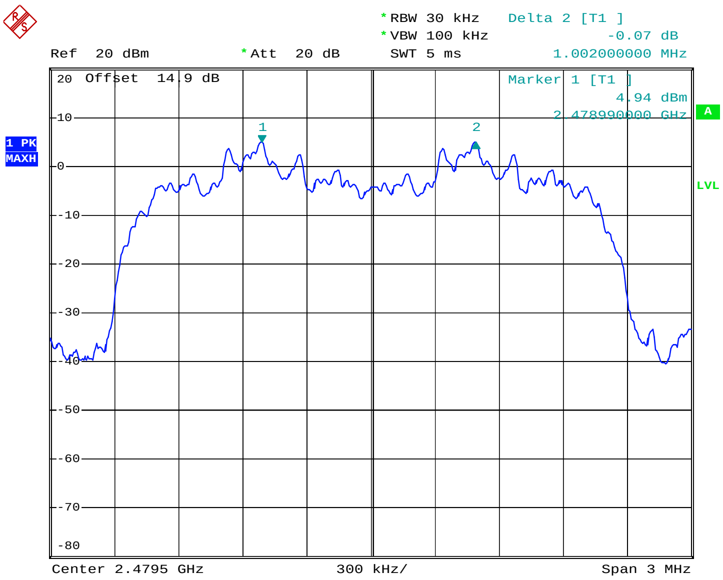
Date: 13.DEC.2011 16:47:29

Channel Separation Plot on Channel 39 - 40



Date: 9.DEC.2011 11:45:40

Channel Separation Plot on Channel 77 - 78

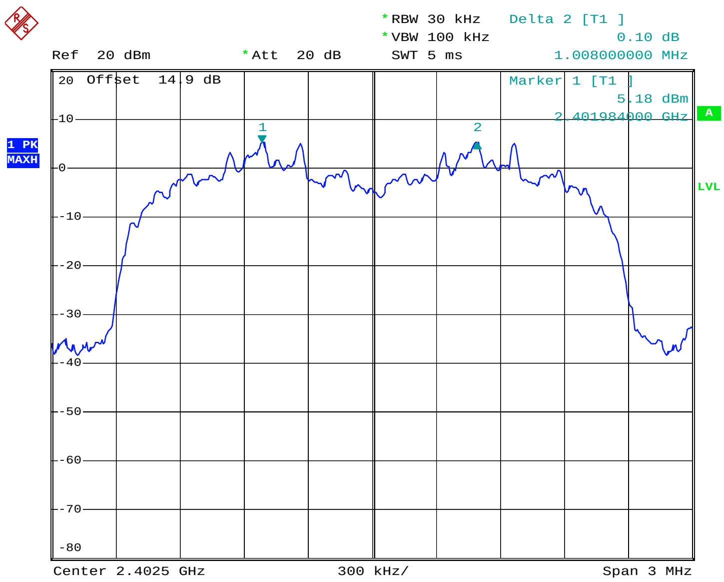


Date: 9.DEC.2011 11:46:19

Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

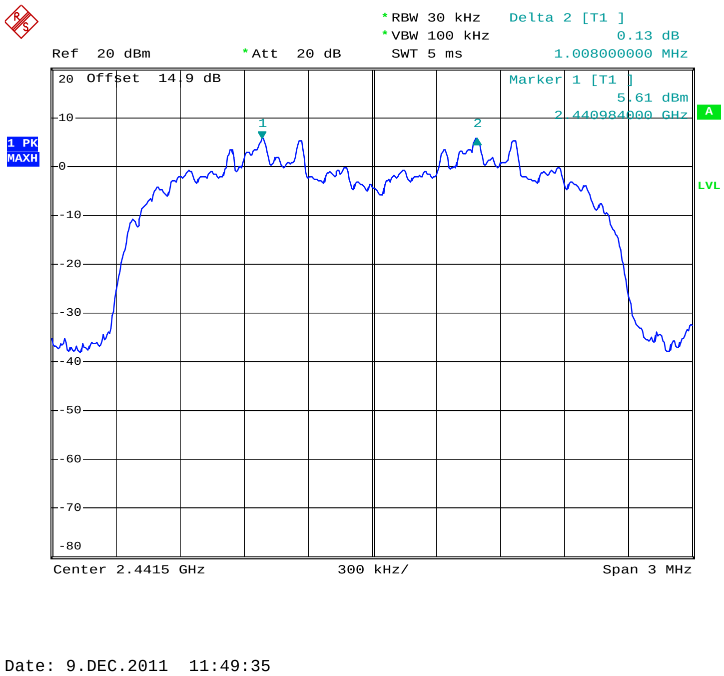
Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.008	0.864	Pass
39	2441	1.008	0.864	Pass
78	2480	1.002	0.848	Pass

Channel Separation Plot on Channel 00 - 01

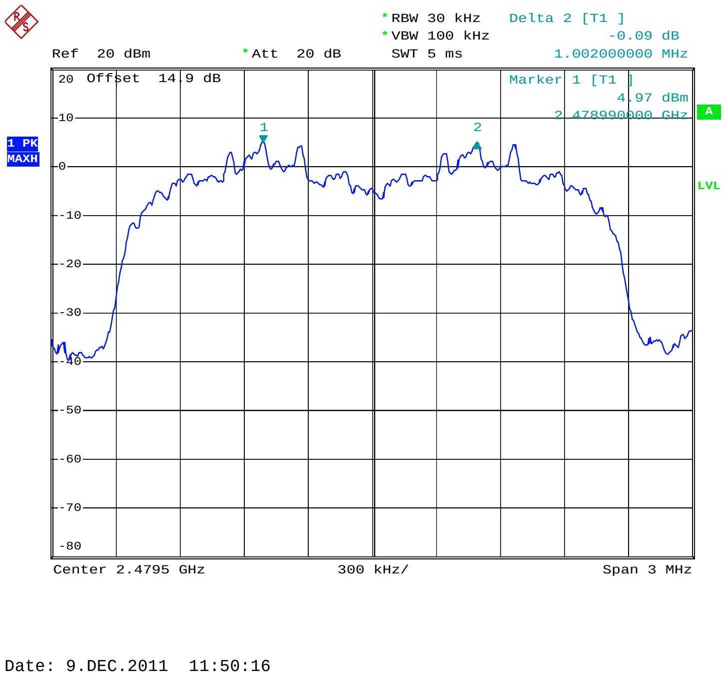


Date: 9.DEC.2011 11:47:56

Channel Separation Plot on Channel 39 - 40



Channel Separation Plot on Channel 77 - 78



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.

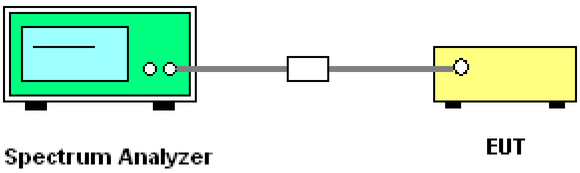
3.4.2 Measuring Instruments

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

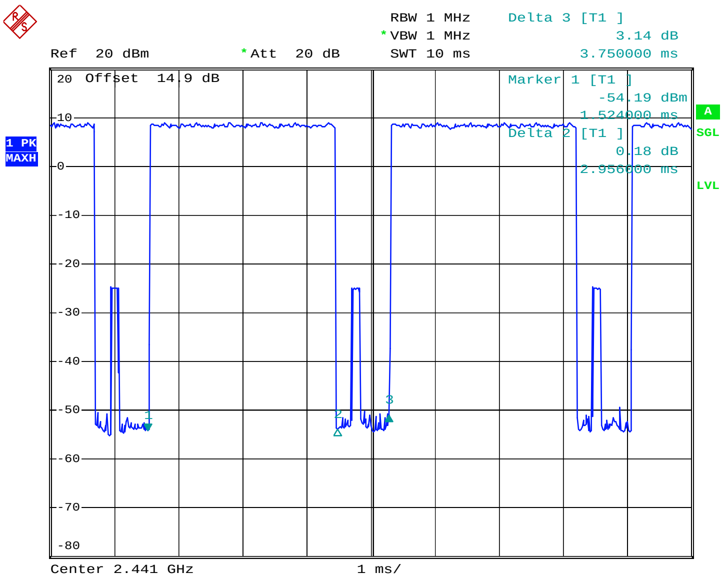
Test Mode :	Mode 8	Temperature :	24~26℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
3DH5	3.20	2956.00	0.30	0.4	Pass

Remark:

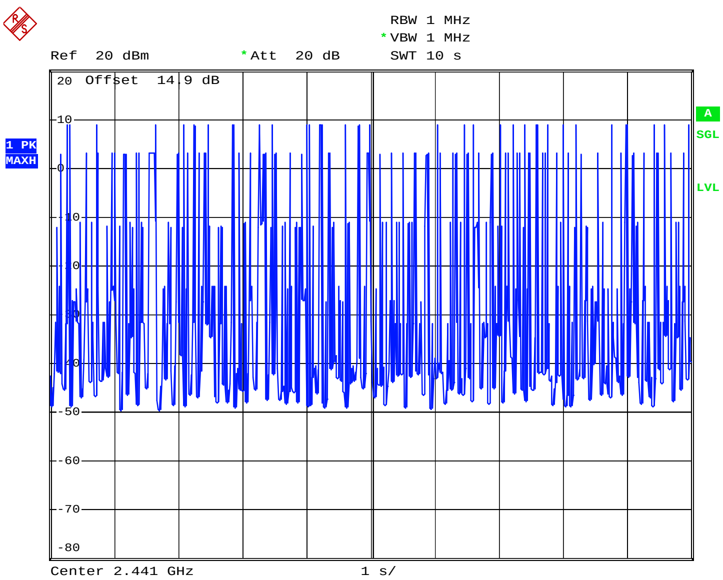
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
2. 79 channels come from the Hopping Channel number.
3. Average Hopping Channel = hops/sweep time
4. t: Package Transfer Time(us)

3DH5 Dwell Time (One Pulse) Plot on Channel 39



Date: 9.DEC.2011 11:39:14

3DH5 Dwell Time (Count Pulses) Plot on Channel 39



Date: 9.DEC.2011 11:52:30

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 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, provided the systems operate with an output power no greater than 125 mW (20.97dBm).

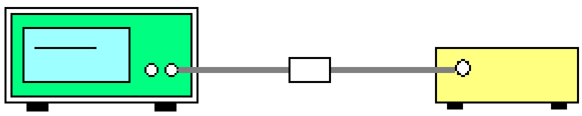
3.5.2 Measuring Instruments

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

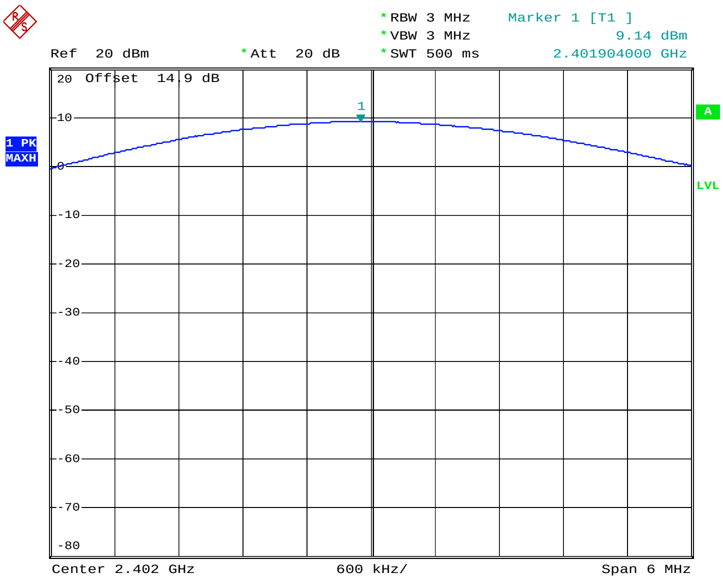


3.5.5 Test Result of Peak Output Power

Test Mode :	Mode 7, 8, 9	**Temperature :**	24~26℃
Test Engineer :	Fly Chen	**Relative Humidity :**	50~53%

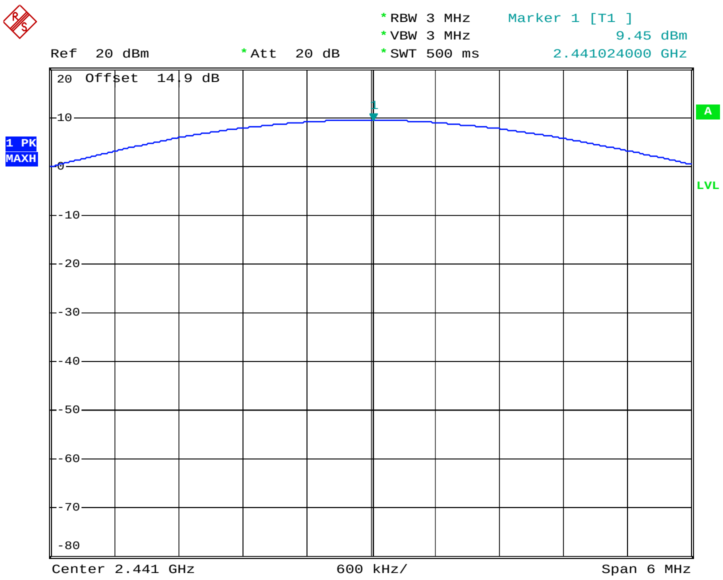
Channel	Frequency (MHz)	RF Power (dBm)		
		8-DPSK 3 Mbps	Max. Limits (dBm)	Pass/Fail
00	2402	9.14	20.97	Pass
39	2441	9.45	20.97	Pass
78	2480	8.75	20.97	Pass

Peak Output Power Plot on Channel 00



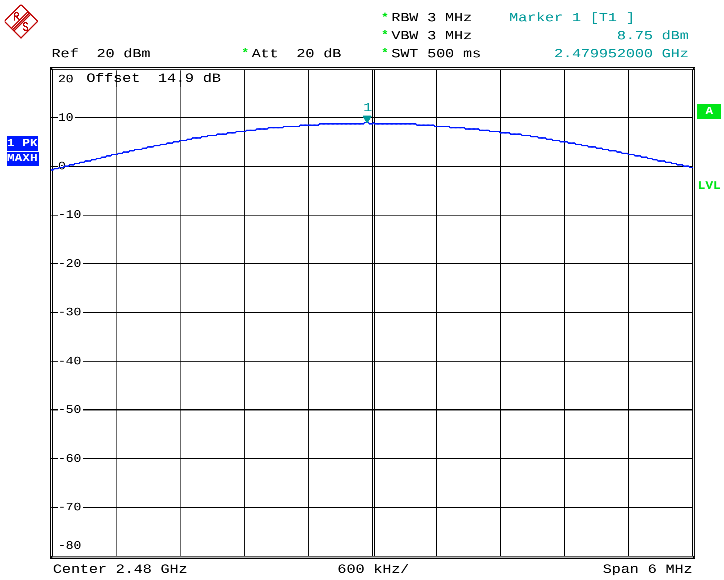
Date: 9.DEC.2011 11:20:18

Peak Output Power Plot on Channel 39



Date: 9.DEC.2011 11:21:34

Peak Output Power Plot on Channel 78



Date: 9.DEC.2011 11:22:48

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

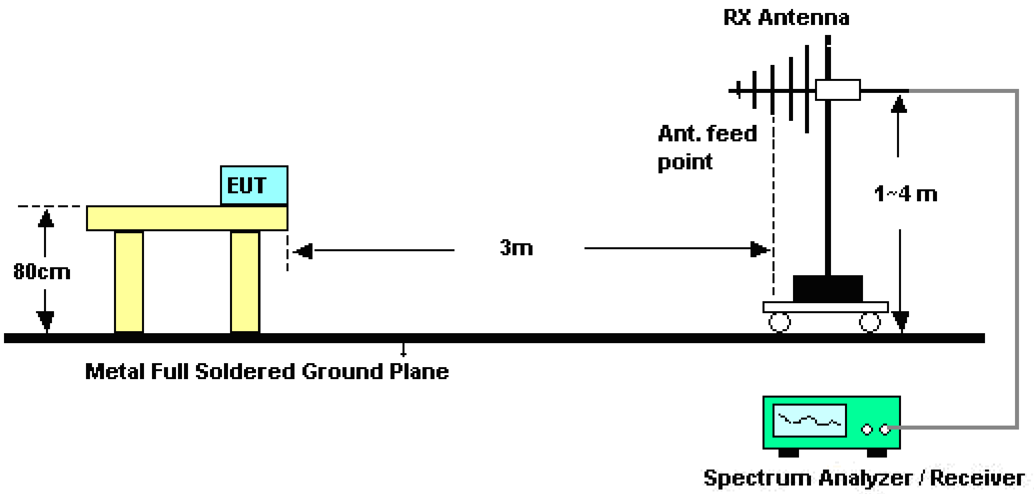
See list of measuring instruments of this test report.

3.6.3 Test Procedures

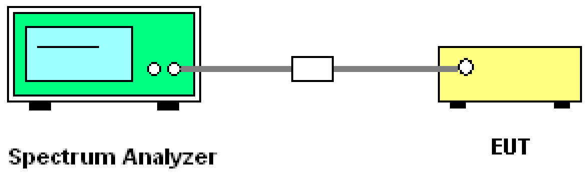
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC Public Notice DA 00-705 Measurement Guidelines.
2. RF antenna conducted test: Set RBW = 300kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured 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 :**	20~21°C
Test Channel :	00	**Relative Humidity :**	40~41%
		Test Engineer :	Jack Li

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**
2338.69	49.85	-24.15	74	47.68	32.78	3.33	33.94	122	301	Peak
2338.69	36.3	-17.7	54	34.13	32.78	3.33	33.94	122	301	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**
2346.1	50.1	-23.9	74	47.93	32.78	3.33	33.94	142	327	Peak
2346.1	37.19	-16.81	54	35.02	32.78	3.33	33.94	142	327	Average

Test Mode :	Mode 3	Temperature :	20~21°C
Test Channel :	78	Relative Humidity :	40~41%
		Test Engineer :	Jack Li

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
2484.74	45.13	-28.87	74	42.64	33.01	3.68	34.2	176	293	Peak
2484.74	29.88	-24.12	54	27.39	33.01	3.68	34.2	176	293	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	81.9	53.95	27.95	54	-26.05	Pass
Hopping Mode	81.9	52.02	29.88	54	-24.12	Pass

Note : Average result = Maximum field strength – Delta result

ANTENNA POLARITY : VERTICAL

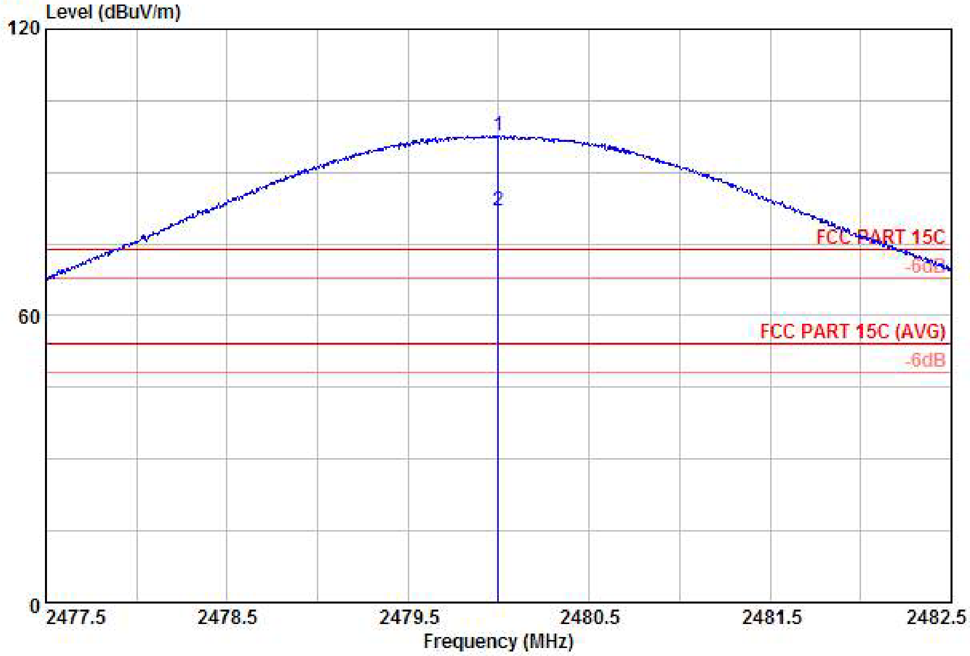
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.58	44.69	-29.31	74	42.2	33.01	3.68	34.2	169	351	Peak
2483.58	32.78	-21.22	54	30.29	33.01	3.68	34.2	169	351	Average

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	82.62	51.19	31.43	54	-22.57	Pass
Hopping Mode	82.62	49.84	32.78	54	-21.22	Pass

Note : Average result = Maximum field strength – Delta result

Test Mode :	Mode 3	Temperature :	20~21°C
Test Channel :	78	Relative Humidity :	40~41%
Test Engineer :	Jack Li	Polarization :	Horizontal

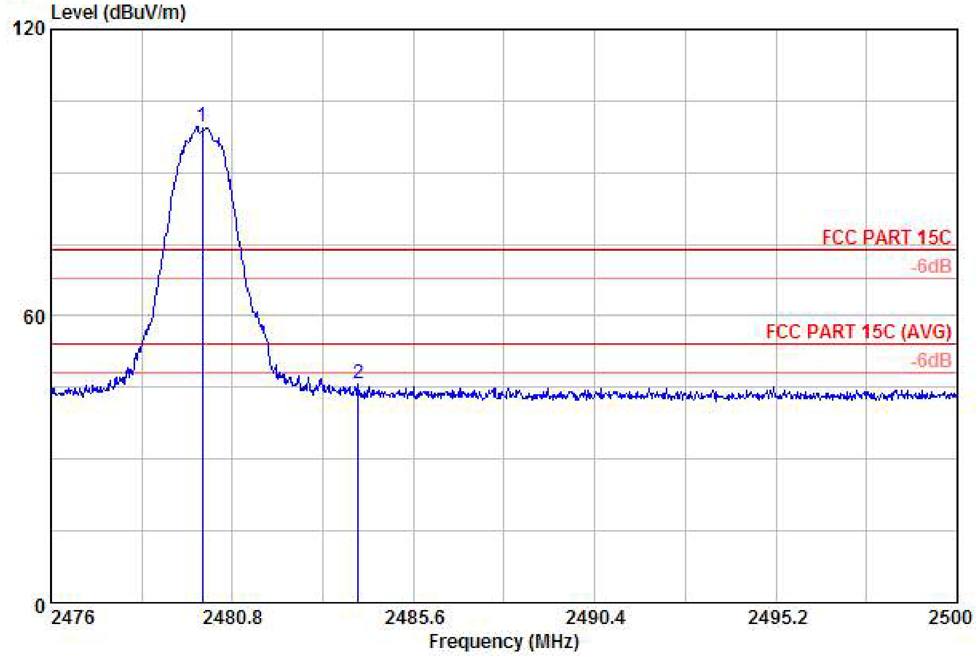


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 HORIZONTAL
Project : (FR) 1D0807
Mode : mode 3
Plane : E2

	Freq	Level	Over Limit	Limit Line	Read 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 X	2480.00	97.73	23.73	74.00	95.24	33.01	3.68	34.20	121	277	Peak
2 X	2480.00	81.90	27.90	54.00	79.41	33.01	3.68	34.20	121	277	Average

* Maximum field strength of the fundamental emission

Test Mode :	Mode 3	Temperature :	20~21°C
Test Channel :	78	Relative Humidity :	40~41%
Test Engineer :	Jack Li	Polarization :	Horizontal

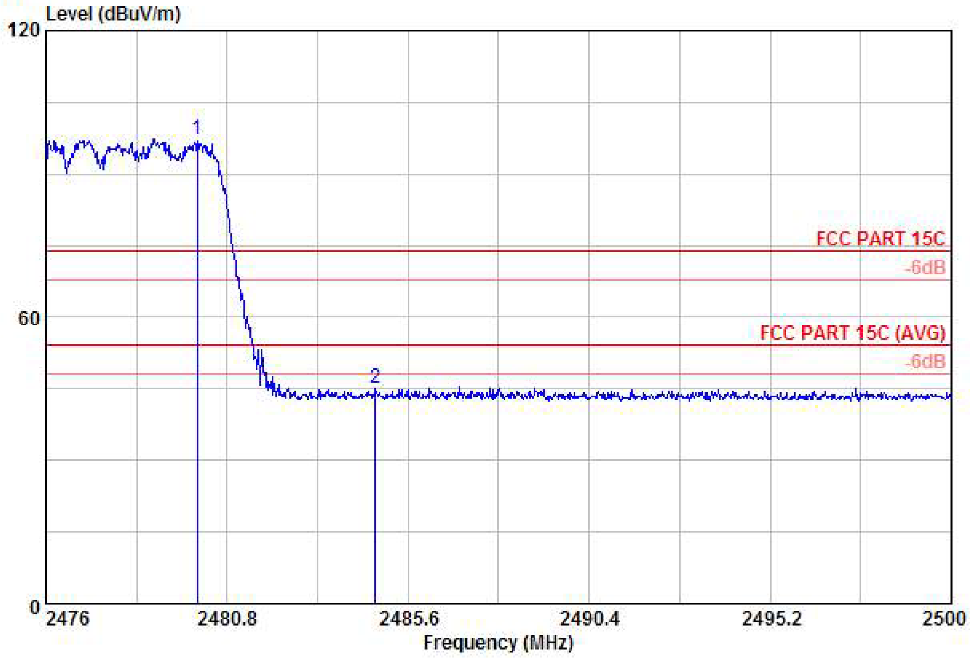


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 HORIZONTAL
Project : (FR) 1D0807
Mode : mode 3
Plane : E2

	Freq	Level	Over Limit	Limit Line	Read 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 X	2480.00	99.60	25.60	74.00	97.11	33.01	3.68	34.20	123	268	Peak
2	2484.14	45.65	-28.35	74.00	43.16	33.01	3.68	34.20	117	294	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 53.95 dB , single carrier Mode

Test Mode :	Mode 3	Temperature :	20~21°C
Test Channel :	78	Relative Humidity :	40~41%
Test Engineer :	Jack Li	Polarization :	Horizontal

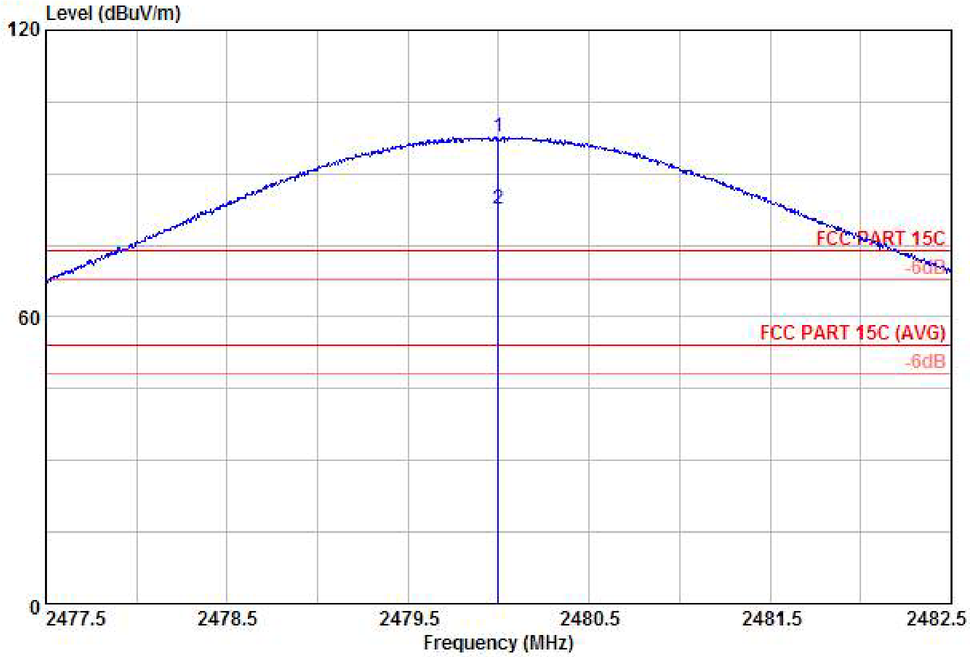


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 HORIZONTAL
Project : (FR) 1D0807
Mode : mode 3
Plane : E2

	Freq	Level	Over Limit	Limit Line	Read 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 X	2480.00	97.15	23.15	74.00	94.66	33.01	3.68	34.20	200	344	Peak
2	2484.74	45.13	-28.87	74.00	42.64	33.01	3.68	34.20	176	293	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 52.02 dB , Hopping Mode

Test Mode :	Mode 3	Temperature :	20~21°C
Test Channel :	78	Relative Humidity :	40~41%
Test Engineer :	Jack Li	Polarization :	Vertical

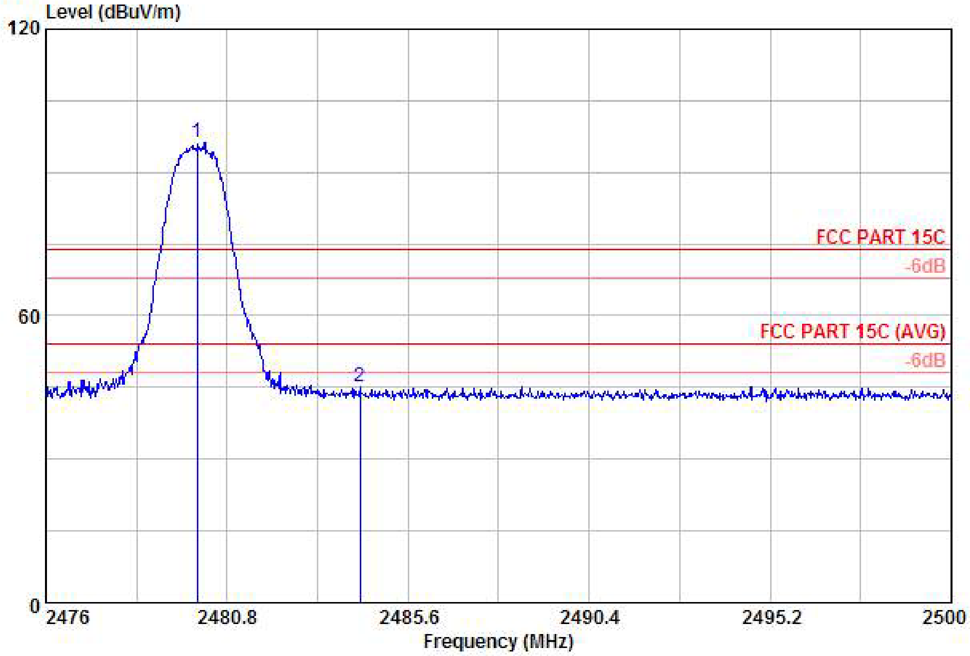



```
Site      : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 VERTICAL
Project   : (FR) 1D0807
Mode      : mode 3
Plane     : E2
```

	Freq	Level	Over Limit	Limit Line	Read 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 X	2480.00	97.65	23.65	74.00	95.16	33.01	3.68	34.20	193	268	Peak
2 X	2480.00	82.62	28.62	54.00	80.13	33.01	3.68	34.20	193	268	Average

* Maximum field strength of the fundamental emission

Test Mode :	Mode 3	Temperature :	20~21°C
Test Channel :	78	Relative Humidity :	40~41%
Test Engineer :	Jack Li	Polarization :	Vertical

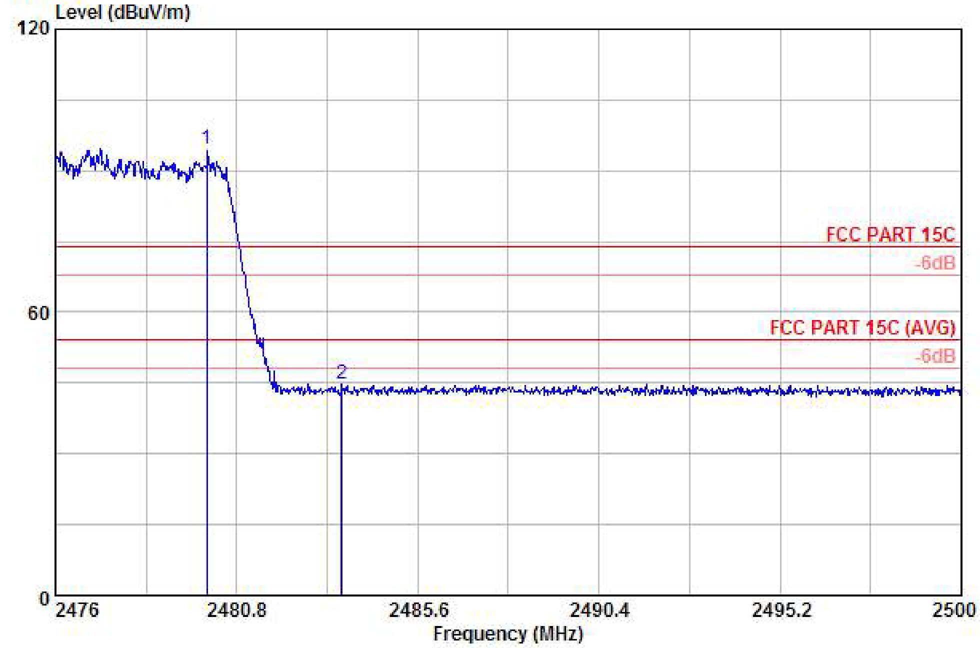


Site : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 VERTICAL
Project : (FR) 1D0807
Mode : mode 3
Plane : E2

	Freq	Level	Over Limit	Limit Line	Read 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 X	2480.00	96.42	22.42	74.00	93.93	33.01	3.68	34.20	120	270	Peak
2	2484.33	45.23	-28.77	74.00	42.74	33.01	3.68	34.20	120	0	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 51.19 dB , single carrier Mode

Test Mode :	Mode 3	**Temperature :**	20~21°C
Test Channel :	78	**Relative Humidity :**	40~41%
Test Engineer :	Jack Li	**Polarization :**	Vertical




```
Site      : 03CH01-KS
Condition: FCC PART 15C 3m HF ANT-100803 VERTICAL
Project   : (FR) 1D0807
Mode      : mode 3
Plane     : E2
```

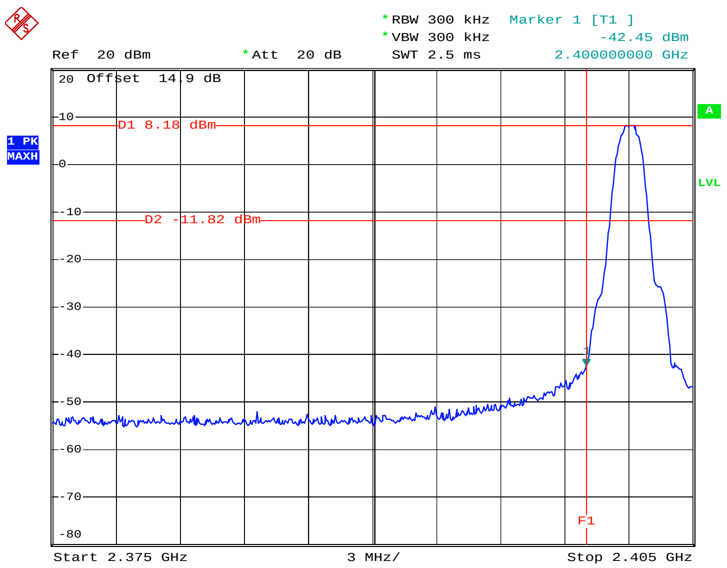
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	94.53	20.53	74.00	92.04	33.01	3.68	34.20	124	285	Peak
2	2483.58	44.69	-29.31	74.00	42.20	33.01	3.68	34.20	169	351	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 49.84 dB , Hopping Mode

3.6.6 Test Result of Conducted Band Edges

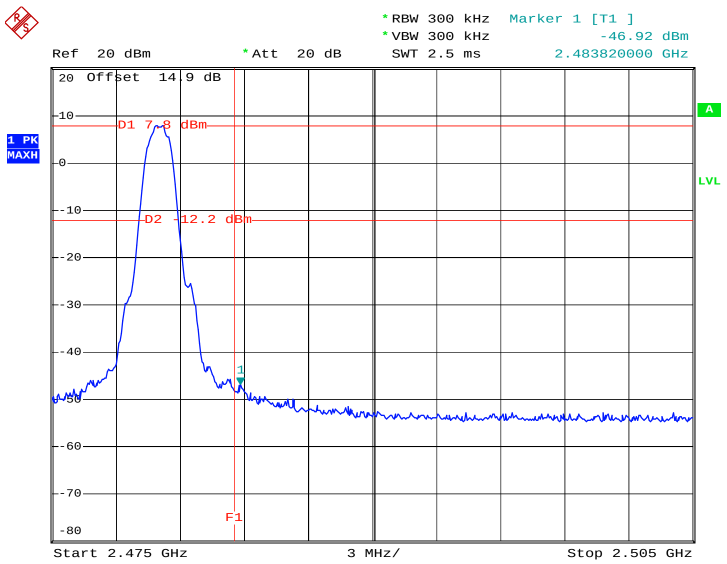
Test Mode :	Mode 7 and 9	Temperature :	24~26℃
Test Channel :	00 and 78	Relative Humidity :	50~53%
		Test Engineer :	Fly Chen

Low Band Edge Plot on Channel 00



Date: 9.DEC.2011 12:03:38

High Band Edge Plot on Channel 78



Date: 9.DEC.2011 12:04:41

3.7 Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

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

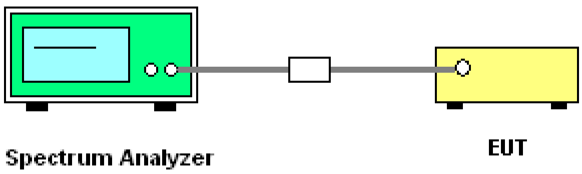
3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedure

1. The transmitter output was connected to 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.

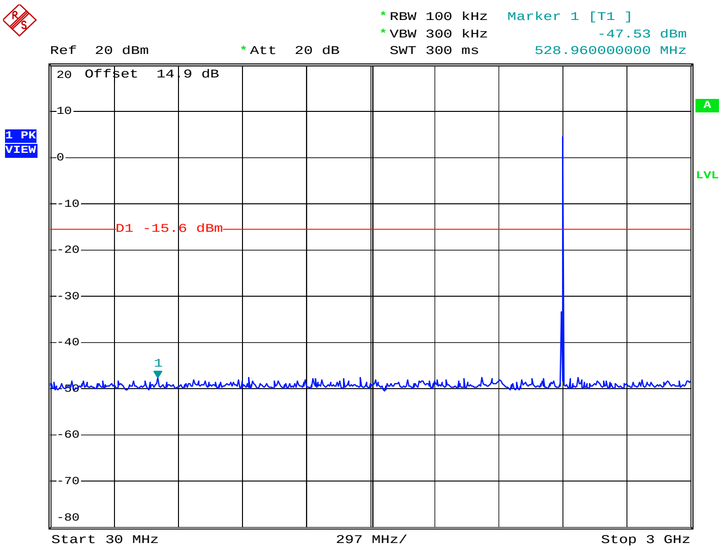
3.7.4 Test Setup



3.7.5 Test Result

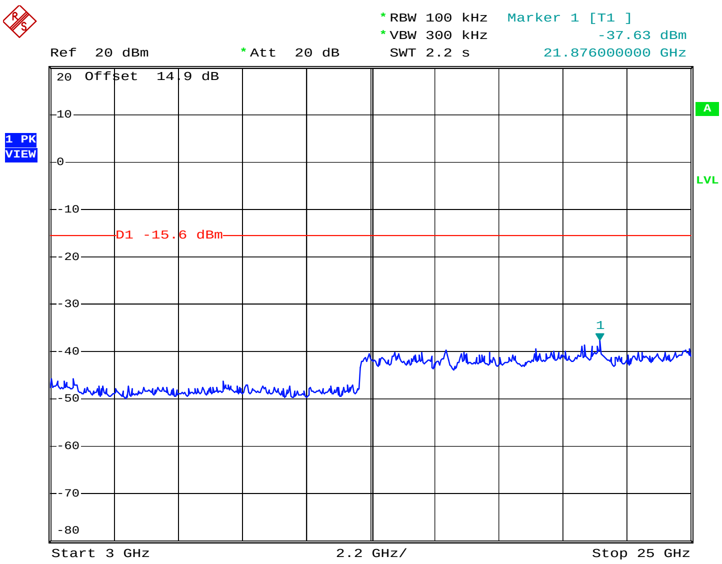
Test Mode :	Mode 7	Temperature :	24~26℃
Test Channel :	00	Relative Humidity :	50~53%
		Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.DEC.2011 12:11:00

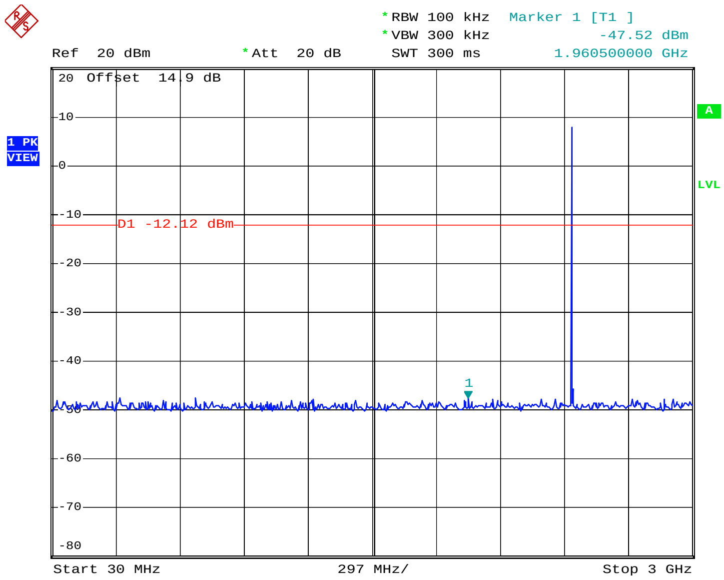
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 9.DEC.2011 12:11:12

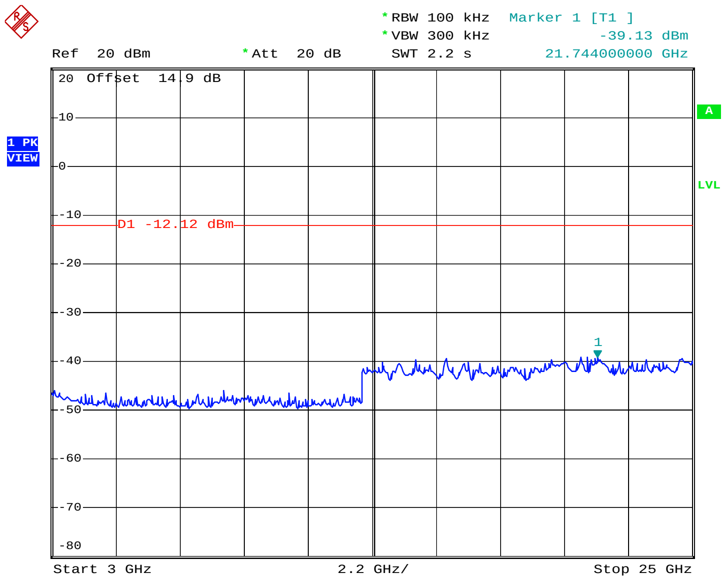
Test Mode :	Mode 8	Temperature :	24~26℃
Test Channel :	39	Relative Humidity :	50~53%
		Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.DEC.2011 12:12:04

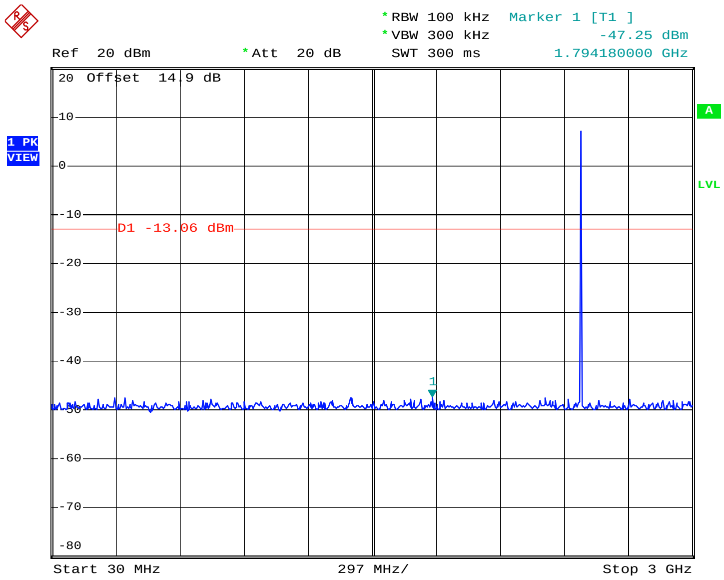
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 9.DEC.2011 12:12:16

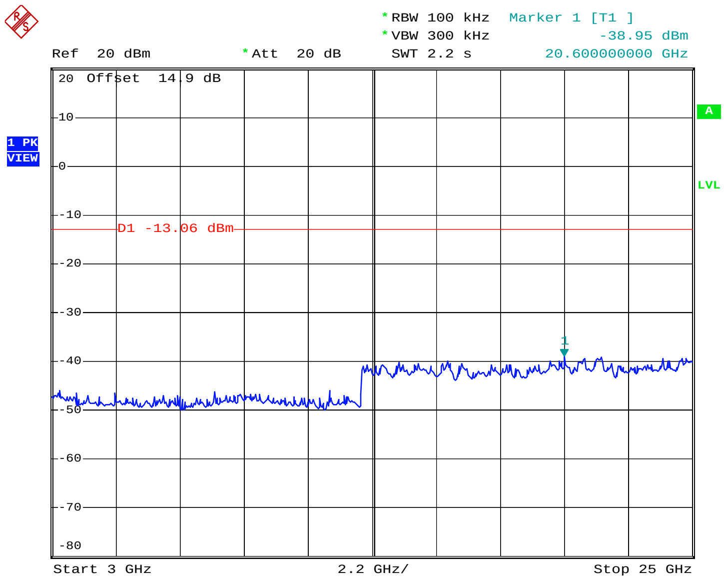
Test Mode :	Mode 9	Temperature :	24~26℃
Test Channel :	78	Relative Humidity :	50~53%
		Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 9.DEC.2011 12:13:08

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 9.DEC.2011 12:13:20

3.8 AC Conducted Emission Measurement

3.8.1 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.

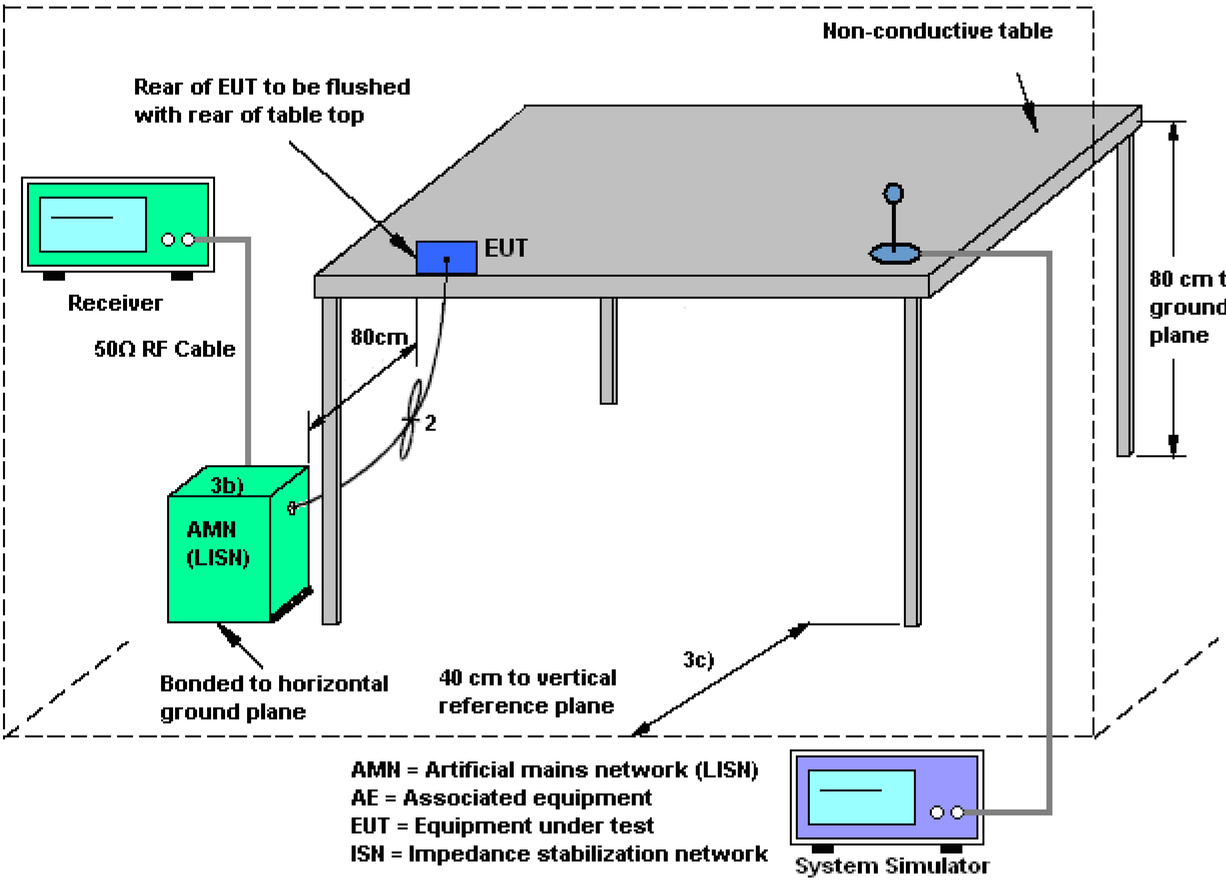
3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedures

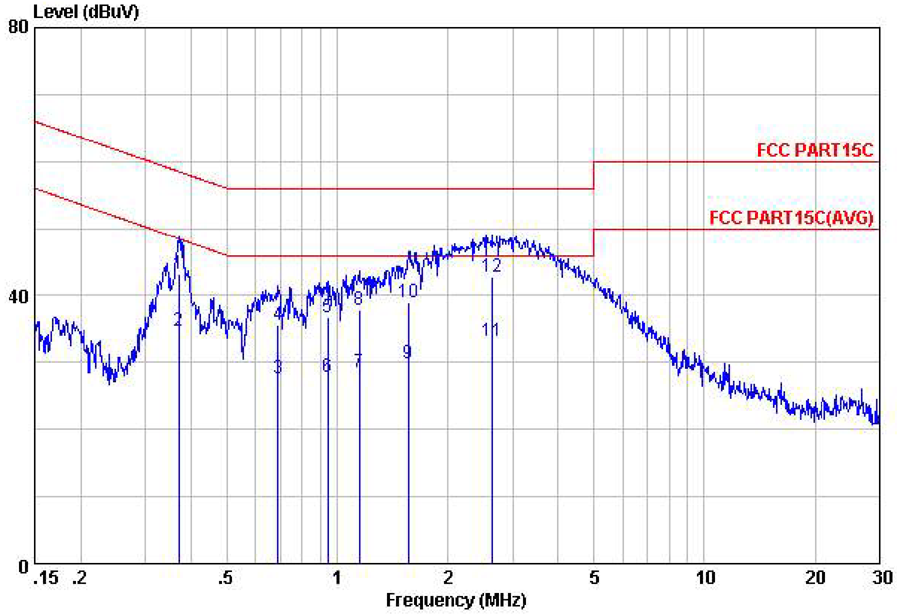
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All 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.

3.8.4 Test Setup



3.8.5 Test Result of AC Conducted Emission

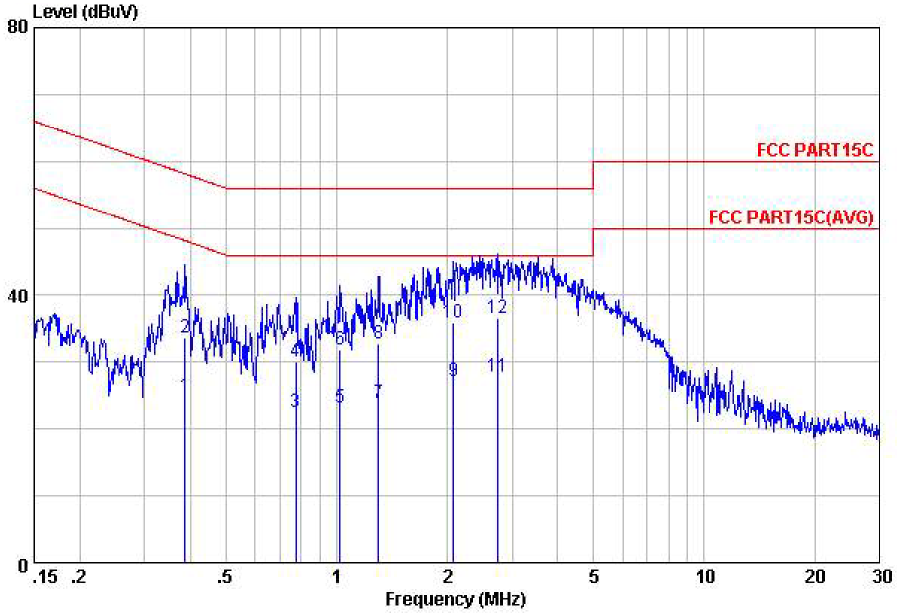
Test Mode :	Mode 1	**Temperature :**	21~22℃
Test Engineer :	Jack Li	**Relative Humidity :**	42~43%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	GSM 850 Idle + Bluetooth Link + Adapter + Earphone		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC PART15C LISN-100807 LINE
Project : (FD) 1D0807
mode : Mode 1
IMEI : 357172041553111

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.37	43.21	-15.26	58.47	33.10	-0.08	10.19	QP
2	0.37	34.71	-13.76	48.47	24.60	-0.08	10.19	Average
3	0.69	27.54	-18.46	46.00	17.40	-0.09	10.23	Average
4	0.69	35.74	-20.26	56.00	25.60	-0.09	10.23	QP
5	0.94	36.86	-19.14	56.00	26.70	-0.10	10.26	QP
6	0.94	27.96	-18.04	46.00	17.80	-0.10	10.26	Average
7	1.15	28.47	-17.53	46.00	18.30	-0.10	10.27	Average
8	1.15	37.97	-18.03	56.00	27.80	-0.10	10.27	QP
9	1.56	29.80	-16.20	46.00	19.61	-0.11	10.30	Average
10	1.56	38.90	-17.10	56.00	28.71	-0.11	10.30	QP
11	2.64	33.14	-12.86	46.00	22.89	-0.11	10.36	Average
12	2.64	42.74	-13.26	56.00	32.49	-0.11	10.36	QP

Test Mode :	Mode 1	**Temperature :**	21~22℃
Test Engineer :	Jack Li	**Relative Humidity :**	42~43%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	GSM 850 Idle + Bluetooth Link + Adapter + Earphone		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		




```
Site      : C001-KS
Condition: FCC PART15C LISN-100807 NEUTRAL
Project   : (FD) 1D0807
mode      : Mode 1
IMEI      : 357172041553111
```

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.39	24.91	-23.21	48.12	14.80	-0.08	10.19	Average
2	0.39	33.61	-24.51	58.12	23.50	-0.08	10.19	QP
3	0.78	22.56	-23.44	46.00	12.40	-0.08	10.24	Average
4	0.78	30.06	-25.94	56.00	19.90	-0.08	10.24	QP
5	1.02	23.07	-22.93	46.00	12.90	-0.09	10.26	Average
6	1.02	31.77	-24.23	56.00	21.60	-0.09	10.26	QP
7	1.30	23.89	-22.11	46.00	13.70	-0.10	10.29	Average
8	1.30	32.69	-23.31	56.00	22.50	-0.10	10.29	QP
9	2.08	27.12	-18.88	46.00	16.90	-0.11	10.33	Average
10	2.08	35.92	-20.08	56.00	25.70	-0.11	10.33	QP
11	2.74	27.85	-18.15	46.00	17.61	-0.12	10.36	Average
12	2.74	36.55	-19.45	56.00	26.31	-0.12	10.36	QP

3.9 Radiated Emission Measurement

3.9.1 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

3.9.2 Measuring Instruments

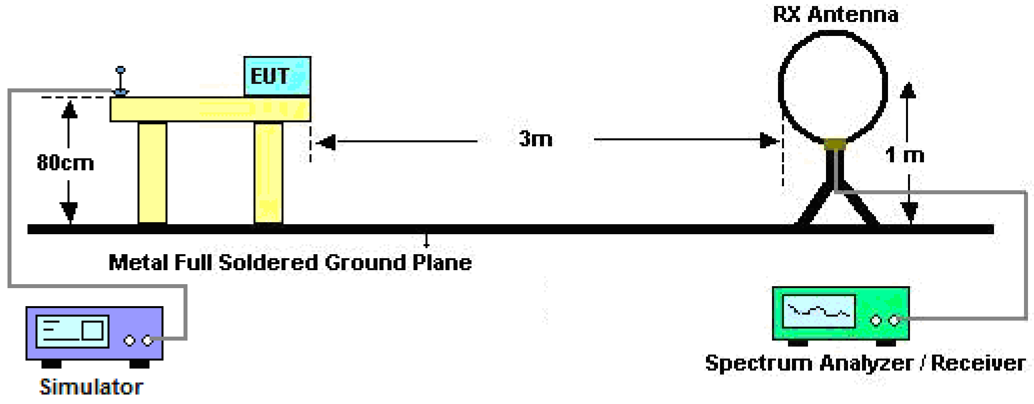
See list of measuring instruments of this test report.

3.9.3 Test Procedures

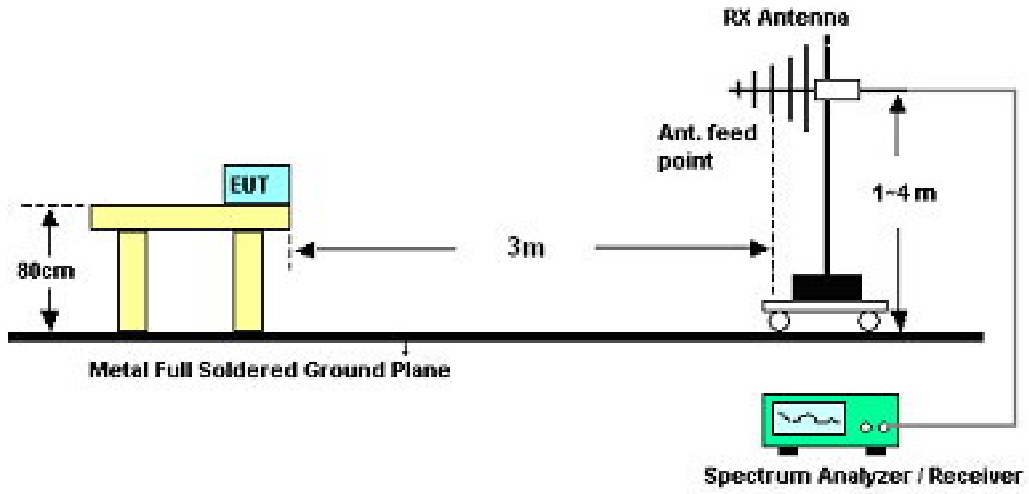
1. The testing follows the guidelines in FCC Public Notice DA 00-705 Measurement Guidelines.
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = 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.
4. Measured average value for the peak value is greater than 54 dBuv/m

3.9.4 Test Setup

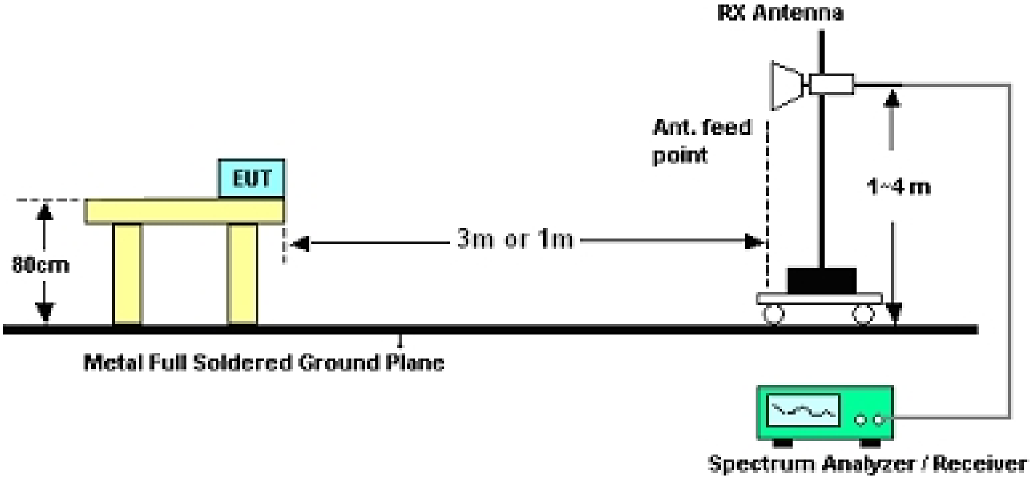
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	Jack Li	**Temperature :**	20~21°C
		Relative Humidity :	40~41%

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.

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

Test Mode :	Mode 1	Temperature :	20~21°C
Test Channel :	00	Relative Humidity :	40~41%
Test Engineer :	Jack Li	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
30	19.93	-20.07	40	31.75	18	0.26	30.08	-	-	Peak
172.02	20.02	-23.48	43.5	40.29	9.08	0.55	29.9	-	-	Peak
271.65	23.14	-22.86	46	39.95	12.41	0.69	29.91	-	-	Peak
808.9	28.27	-17.73	46	36.68	19.94	1.25	29.6	-	-	Peak
824.3	29.05	-16.95	46	37.25	20.16	1.26	29.62	200	0	Peak
883.1	26.01	-19.99	46	33.78	20.47	1.29	29.53	-	-	Peak
2338.69	49.85	-24.15	74	47.68	32.78	3.33	33.94	122	301	Peak
2338.69	36.3	-17.7	54	34.13	32.78	3.33	33.94	122	301	Average
2402	95.22	-	-	92.94	32.86	3.47	34.05	102	326	Peak
2402	81.04	-	-	78.76	32.86	3.47	34.05	102	326	Average
2489.55	49.46	-24.54	74	46.92	33.05	3.72	34.23	183	360	Peak
2489.55	36.62	-17.38	54	34.08	33.05	3.72	34.23	183	360	Average

Test Mode :	Mode 1	**Temperature :**	20~21°C
Test Channel :	00	**Relative Humidity :**	40~41%
Test Engineer :	Jack Li	**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
47.82	30.11	-9.89	40	51.47	8.5	0.27	30.13	102	359	Peak
148.26	30.24	-13.26	43.5	49.57	10.14	0.51	29.98	-	-	Peak
287.31	29	-17	46	45.44	12.8	0.71	29.95	-	-	Peak
531.7	33.95	-12.05	46	44.58	18.08	0.99	29.7	-	-	Peak
617.8	23.75	-22.25	46	33.61	18.69	1.08	29.63	-	-	Peak
824.3	25.05	-20.95	46	33.25	20.16	1.26	29.62	-	-	Peak
2346.1	50.1	-23.9	74	47.93	32.78	3.33	33.94	142	327	Peak
2346.1	37.19	-16.81	54	35.02	32.78	3.33	33.94	142	327	Average
2402	93.22	-	-	90.94	32.86	3.47	34.05	131	335	Peak
2402	79.85	-	-	77.57	32.86	3.47	34.05	131	335	Average
2488.03	49.71	-24.29	74	47.17	33.05	3.72	34.23	113	167	Peak
2488.03	37.67	-16.33	54	35.13	33.05	3.72	34.23	113	167	Average

Test Mode :	Mode 2	**Temperature :**	20~21°C
Test Channel :	39	**Relative Humidity :**	40~41%
Test Engineer :	Jack Li	**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
30.81	20.33	-19.67	40	32.87	17.29	0.25	30.08	-	-	Peak
103.98	14.25	-29.25	43.5	32.78	11.01	0.42	29.96	-	-	Peak
289.74	15.71	-30.29	46	32.1	12.85	0.71	29.95	-	-	Peak
811	26.45	-19.55	46	34.84	19.96	1.25	29.6	162	358	Peak
867.7	26.02	-19.98	46	33.84	20.49	1.29	29.6	-	-	Peak
937.7	25.92	-20.08	46	33.45	20.68	1.32	29.53	-	-	Peak
2373.84	49.92	-24.08	74	47.68	32.83	3.42	34.01	173	360	Peak
2373.84	36.76	-17.24	54	34.52	32.83	3.42	34.01	173	360	Average
2441	97.69	-	-	95.29	32.95	3.6	34.15	168	335	Peak
2441	81.43	-	-	79.03	32.95	3.6	34.15	168	335	Average
2484.42	49.92	-24.08	74	47.43	33.01	3.68	34.2	200	336	Peak
2484.42	37.13	-16.87	54	34.64	33.01	3.68	34.2	200	336	Average

Test Mode :	Mode 2	Temperature :	20~21°C
Test Channel :	39	Relative Humidity :	40~41%
Test Engineer :	Jack Li	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
47.28	29.86	-10.14	40	51.22	8.5	0.27	30.13	105	342	Peak
80.76	25.9	-14.1	40	48.99	6.6	0.35	30.04	-	-	Peak
99.93	21.47	-22.03	43.5	40.52	10.5	0.41	29.96	-	-	Peak
528.9	22.67	-23.33	46	33.4	17.99	0.98	29.7	-	-	Peak
873.3	25.19	-20.81	46	33	20.48	1.29	29.58	-	-	Peak
937.7	24.92	-21.08	46	32.45	20.68	1.32	29.53	-	-	Peak
2332.8	50.14	-23.86	74	48.01	32.76	3.27	33.9	169	332	Peak
2332.8	37.59	-16.41	54	35.46	32.76	3.27	33.9	169	332	Average
2441	94.31	-	-	91.91	32.95	3.6	34.15	128	272	Peak
2441	81.37	-	-	78.97	32.95	3.6	34.15	128	272	Average
2499.05	49.33	-24.67	74	46.79	33.05	3.72	34.23	196	307	Peak
2499.05	36.59	-17.41	54	34.05	33.05	3.72	34.23	196	307	Average
4882	52.19	-21.81	74	44.3	35.18	4.98	32.27	100	49	Peak
4882	43.13	-10.87	54	35.24	35.18	4.98	32.27	100	49	Average

Test Mode :	Mode 3	**Temperature :**	20~21°C
Test Channel :	78	**Relative Humidity :**	40~41%
Test Engineer :	Jack Li	**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
30.27	19.99	-20.01	40	31.81	18	0.26	30.08	-	-	Peak
127.2	14.07	-29.43	43.5	31.86	11.73	0.46	29.98	-	-	Peak
224.67	15.35	-30.65	46	34.16	10.5	0.63	29.94	-	-	Peak
806.8	25.72	-20.28	46	34.15	19.92	1.25	29.6	-	-	Peak
855.8	27.59	-18.41	46	35.45	20.5	1.28	29.64	103	0	Peak
937.7	26.43	-19.57	46	33.96	20.68	1.32	29.53	-	-	Peak
2354	49.45	-24.55	74	47.24	32.81	3.38	33.98	120	300	Peak
2354	36.52	-17.48	54	34.31	32.81	3.38	33.98	120	300	Average
2480	97.73	-	-	95.24	33.01	3.68	34.2	121	277	Peak
2480	81.9	-	-	79.41	33.01	3.68	34.2	121	277	Average
2484.74	45.13	-28.87	74	42.64	33.01	3.68	34.2	176	293	Peak
2484.74	29.88	-24.12	54	27.39	33.01	3.68	34.2	176	293	Average

Test Mode :	Mode 3	**Temperature :**	20~21°C
Test Channel :	78	**Relative Humidity :**	40~41%
Test Engineer :	Jack Li	**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
47.28	29.9	-10.1	40	51.26	8.5	0.27	30.13	100	0	Peak
84	27.65	-12.35	40	49.77	7.53	0.37	30.02	-	-	Peak
151.5	31.71	-11.79	43.5	51.21	9.96	0.51	29.97	-	-	Peak
630.4	26.07	-19.93	46	35.84	18.79	1.08	29.64	-	-	Peak
822.9	26.25	-19.75	46	34.49	20.12	1.26	29.62	-	-	Peak
937.7	27.29	-18.71	46	34.82	20.68	1.32	29.53	-	-	Peak
2384	50.72	-23.28	74	48.48	32.83	3.42	34.01	142	316	Peak
2384	37.48	-16.52	54	35.24	32.83	3.42	34.01	142	316	Average
2480	97.65	-	-	95.16	33.01	3.68	34.2	193	268	Peak
2480	82.62	-	-	80.13	33.01	3.68	34.2	193	268	Average
2483.58	44.69	-29.31	74	42.2	33.01	3.68	34.2	169	351	Peak
2483.58	32.78	-21.22	54	30.29	33.01	3.68	34.2	169	351	Average

3.10 Antenna Requirements

3.10.1 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.

3.10.2 Antenna Connected Construction

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

3.10.3 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	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Dec. 09, 2011~ Dec. 13, 2011	Jan. 06, 2012	Conducted (TH01-KS)
System Simulator	R&S	CMU200	837587/066	Full-Band	Jan. 07, 2011	Dec. 09, 2011~ Dec. 13, 2011	Jan. 06, 2012	Conducted (TH01-KS)
DC Power Supply	TOPWARD	GPS-3030D	E1884515	N/A	Aug. 23, 2011	Dec. 09, 2011~ Dec. 13, 2011	Aug. 22, 2012	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Jan. 17, 2011	Dec. 09, 2011~ Dec. 13, 2011	Jan. 16, 2012	Conducted (TH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 02, 2011	Dec. 11, 2011	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Jan. 07, 2011	Dec. 11, 2011	Jan. 06, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Jan. 07, 2011	Dec. 11, 2011	Jan. 06, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Dec. 11, 2011	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	Full-Band	Jan. 07, 2011	Dec. 11, 2011	Jan. 06, 2012	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Dec. 11, 2011	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Dec. 11, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Dec. 11, 2011	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/00	9 kHz~30 MHz	Jul. 28, 2011	Dec. 11, 2011	Jul. 27, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2011	Dec. 11, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 08, 2011	Dec. 11, 2011	Dec. 07, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Jan. 07, 2011	Dec. 11, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz-18GHz	Nov. 07, 2011	Dec. 11, 2011	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz -40GHz	Oct. 11, 2011	Dec. 11, 2011	Oct. 10, 2012	Radiation (03CH01-KS)
Bluetooth Base Station	R&S	CBT	100783	N/A	Aug. 18, 2011	Dec. 11, 2011	Aug. 17, 2012	Radiation (03CH01-KS)

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 $\Gamma1$ = 0.197 Antenna VSWR $\Gamma2$ = 0.194 Uncertainty = $20Log(1-\Gamma1*\Gamma2)$	+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**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP1D0807 as below.