FCC RF Test Report

APPLICANT	:	Ashtech S.A.S.
EQUIPMENT	:	MobileMapper 100, ProMark 100 and ProMark 200
BRAND NAME	:	ashtech
MODEL NAME	:	PM5
FCC ID	:	NZI802111A
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	Digital Spread Spectrum (DSS)

The product was received on Aug. 27, 2010 and completely tested on Sep. 09, 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 / 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.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR082738	Rev. 01	Initial issue of report	Nov. 18, 2010

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(d)	A8.5	Spurious Emission	< 20 dBc	Pass	-
3.8	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 6.7 dB at 0.502 MHz
3.9	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 1.88 dB at 2483.5 MHz
3.10	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Ashtech S.A.S.
Rue Th Edison- ZAC de la Fleuriaye-BP 60433, 44474 Carquefou Cedex, FRANCE

1.2 Manufacturer

Ashtech S.A.S.
Rue Th Edison- ZAC de la Fleuriaye-BP 60433, 44474 Carquefou Cedex, FRANCE

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	MobileMapper 100, ProMark 100 and ProMark 200
Brand Name	ashtech
Model Name	PM5
FCC ID	NZI802111A
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) : 3.41 dBm (0.002 W) Bluetooth EDR (2Mbps) : 2.75 dBm (0.002 W) Bluetooth EDR (3Mbps) : 3.07 dBm (0.002 W)
Antenna Type	PIFA Antenna with gain 1.12 dBi
HW Version	DV
SW Version	V2.2.4
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 Spread Spectrum (DSS).
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	03CH07-HY	TW1022/4086B-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 7

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.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
3.	PC	DELL	OPTIPLEX 760	FCC DoC	N/A	Unshielded, 1.8 m
4.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	Modem	ACCEX	DM1414	IFAXDM1414	Shielded, 1.5 m	N/A
6.	USB Disk	Sony	MSAC-UAM2	DoC	N/A	N/A
7.	(USB) Keyboard	Logitech	Y-S0002	FCC DoC	Shielded, 1.3 m	N/A
8.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
9.	(PS2) Mouse	GIGABYTE	GM-AP	FCC DoC	Shielded, 1.4 m	N/A
10.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	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	**3.41 dBm**	2.75 dBm	3.07 dBm
Ch39	2441MHz	3.24 dBm	2.44 dBm	2.79 dBm
Ch78	2480MHz	3.05 dBm	1.92 dBm	2.27 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).

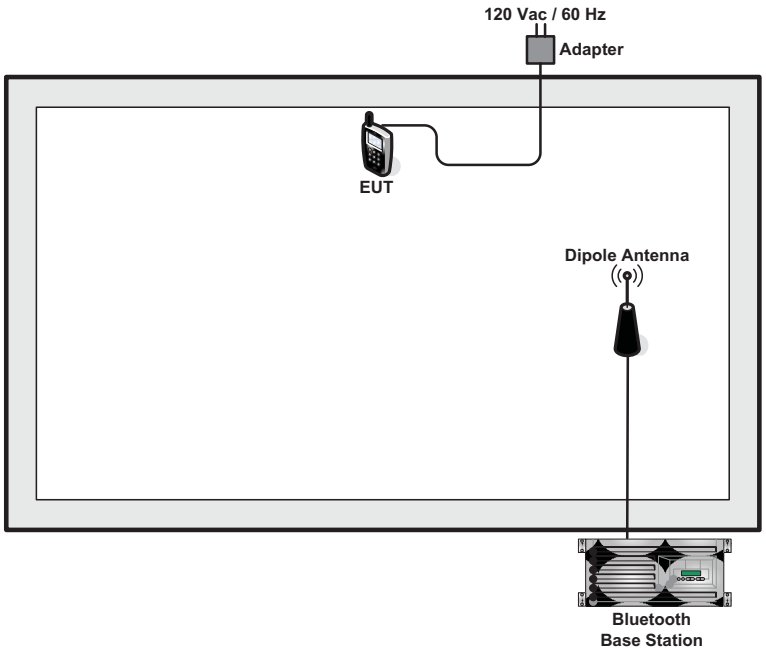
Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

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

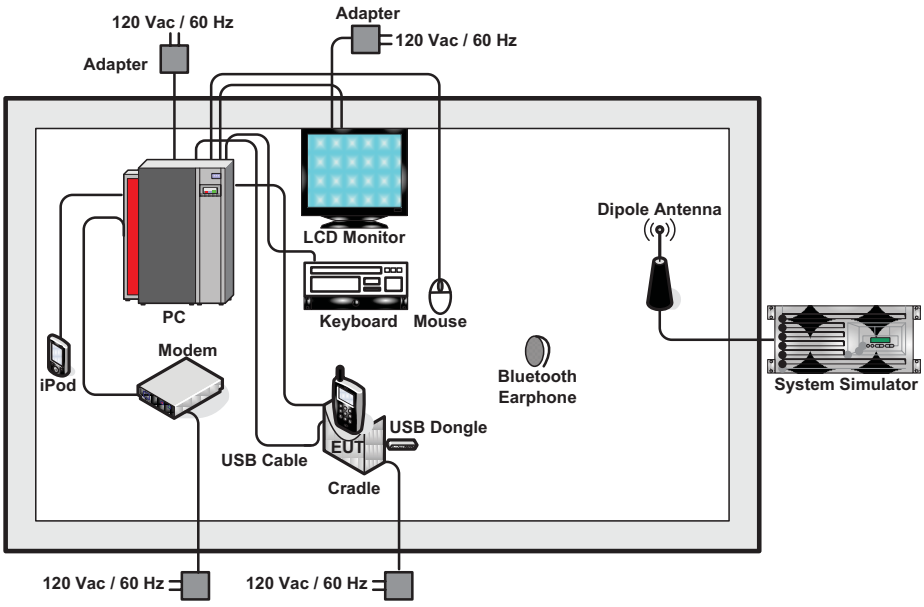
Test Cases			
Test Item	**Data Rate / Modulation**		
	Bluetooth 1Mbps GFSK	**Bluetooth EDR 2Mbps π /4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
Conducted TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	Mode 4: CH00_2402 MHz Mode 5: CH39_2441 MHz Mode 6: CH78_2480 MHz	Mode 7: CH00_2402 MHz Mode 8: CH39_2441 MHz Mode 9: CH78_2480 MHz
Radiated TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	N/A	N/A
AC Conducted Emission	Mode 1 :GSM850 (GPRS 8) Idle + Bluetooth Link + GNSS Rx + Cradle with Battery + Adapter + USB Cable + USB Dongle + RS232 Cable		
Remark: 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.			

2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

For Bluetooth function, 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.

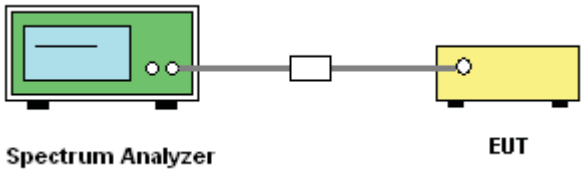
3.1.2 Measuring Instruments

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

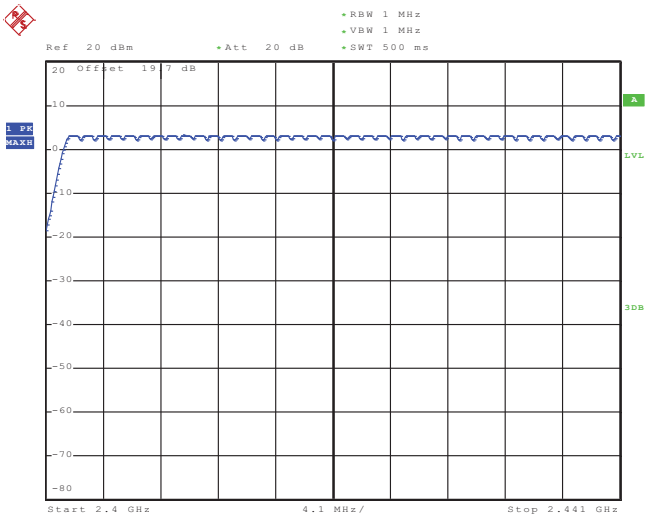


3.1.5 Test Result of Number of Hopping Frequency

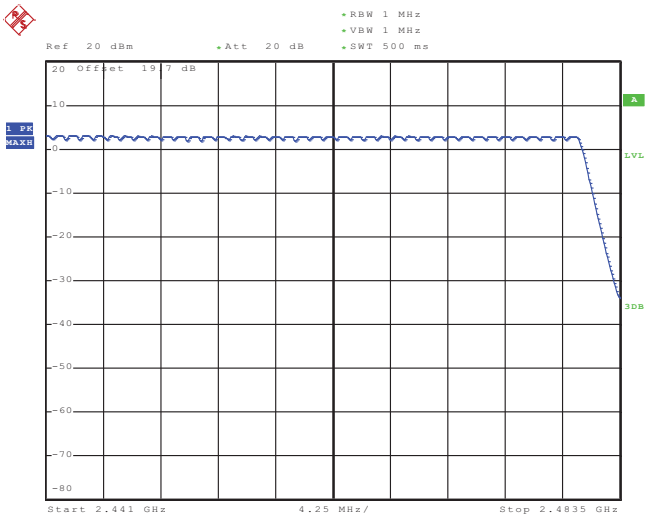
Test Mode :	Mode 1~3	Temperature :	27~29℃
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

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

Number of Hopping Channel Plot on Channel 00 - 78



Date: 30.AUG.2010 10:33:54



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3.2 20dB and 99% Bandwidth Measurement

3.2.1 Limit of 20dB Bandwidth

N/A

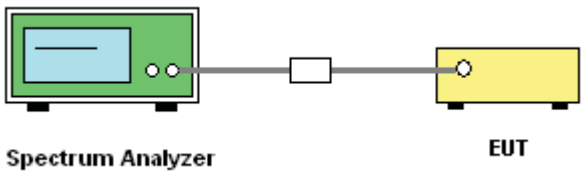
3.2.2 Measuring Instruments

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

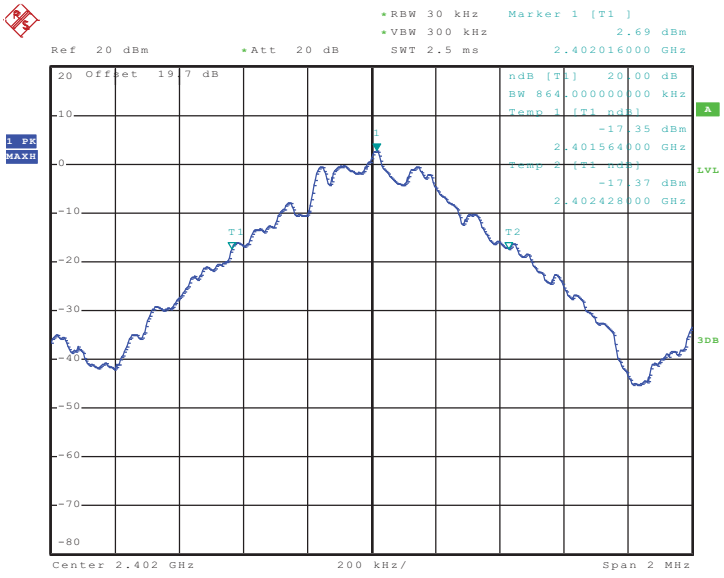


3.2.5 Test Result of 20dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	27~29℃
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.864
39	2441	0.852
78	2480	0.892

20 dB Bandwidth Plot on Channel 00



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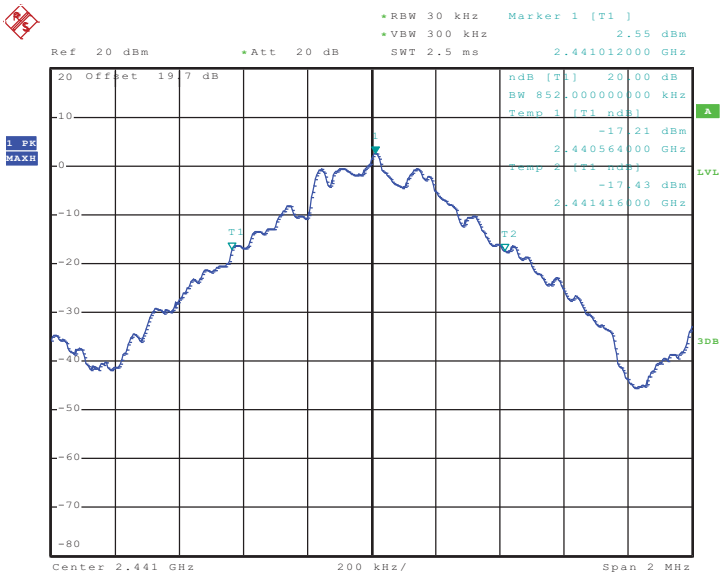
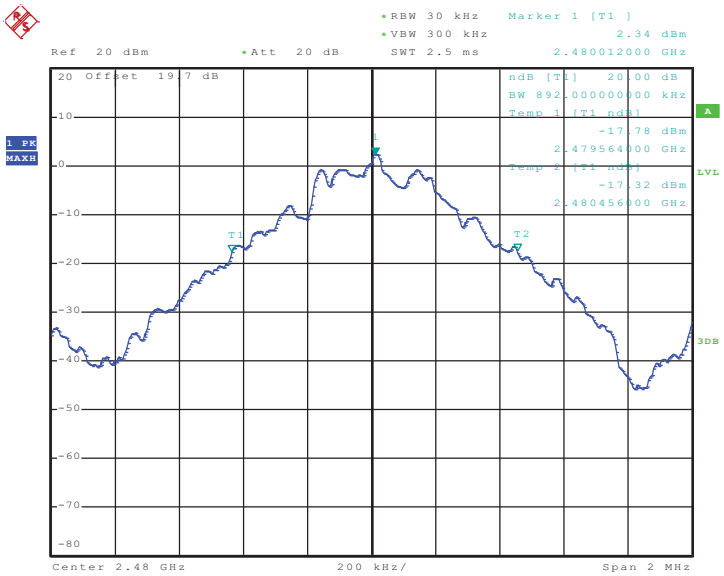
20 dB Bandwidth Plot on Channel 39



Date: 30.AUG.2010 09:18:14

20 dB Bandwidth Plot on Channel 78

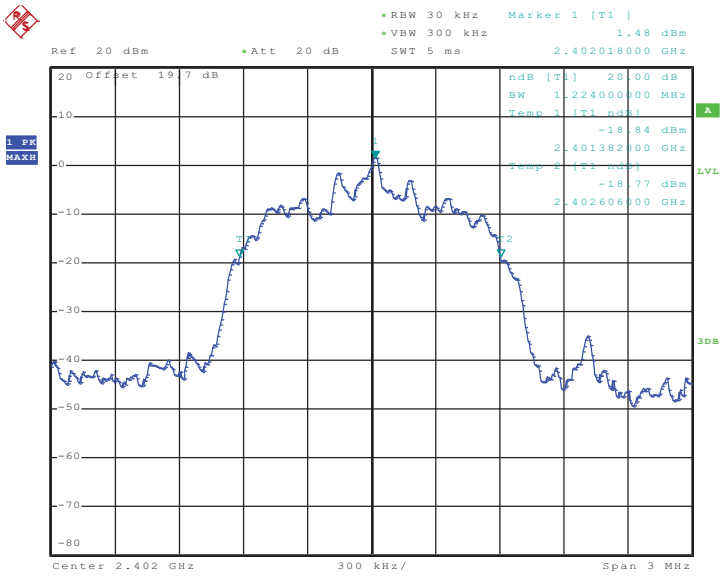


Date: 30.AUG.2010 09:19:03

Test Mode :	Mode 4, 5, 6	Temperature :	27~29℃
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

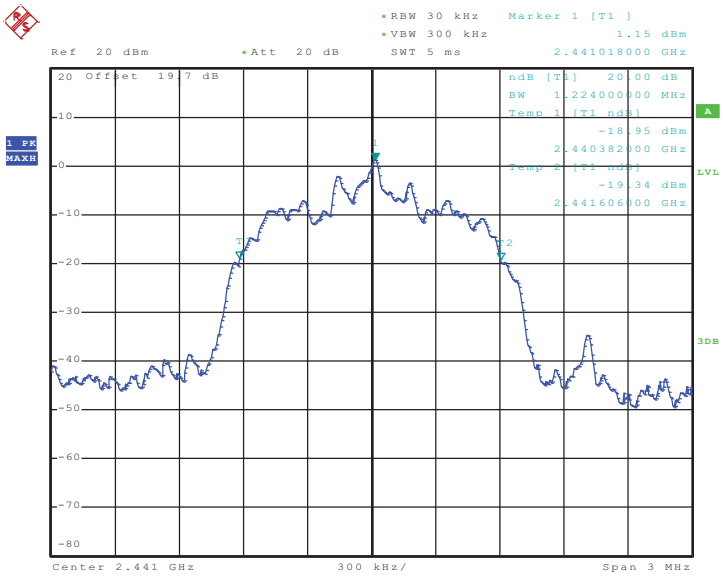
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.224
39	2441	1.224
78	2480	1.224

20 dB Bandwidth Plot on Channel 00



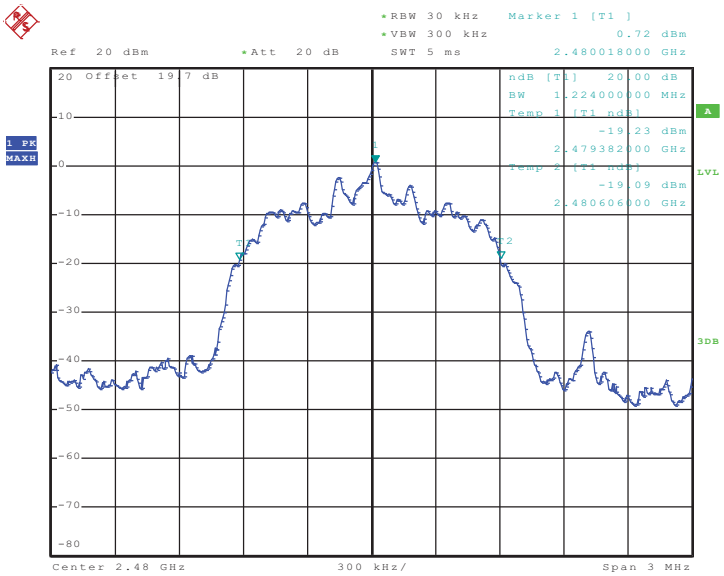
Date: 30.AUG.2010 09:21:32

20 dB Bandwidth Plot on Channel 39



Date: 30.AUG.2010 09:20:58

20 dB Bandwidth Plot on Channel 78

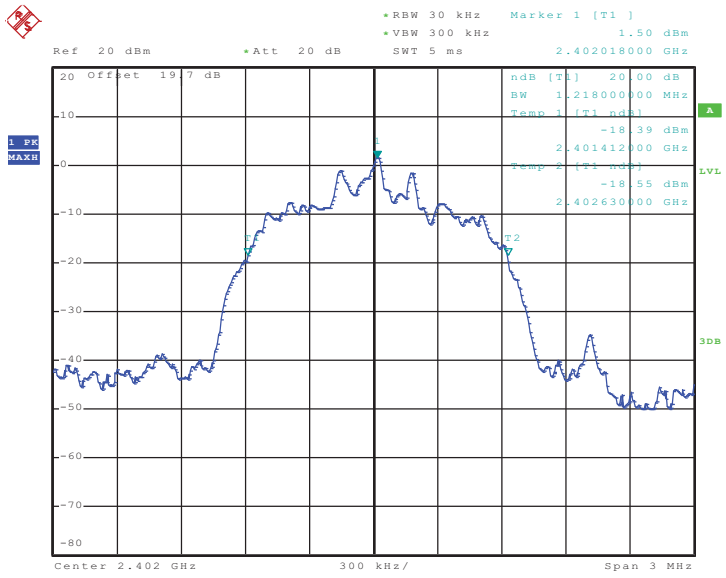


Date: 30.AUG.2010 09:20:27

Test Mode :	Mode 7, 8, 9	Temperature :	27~29℃
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

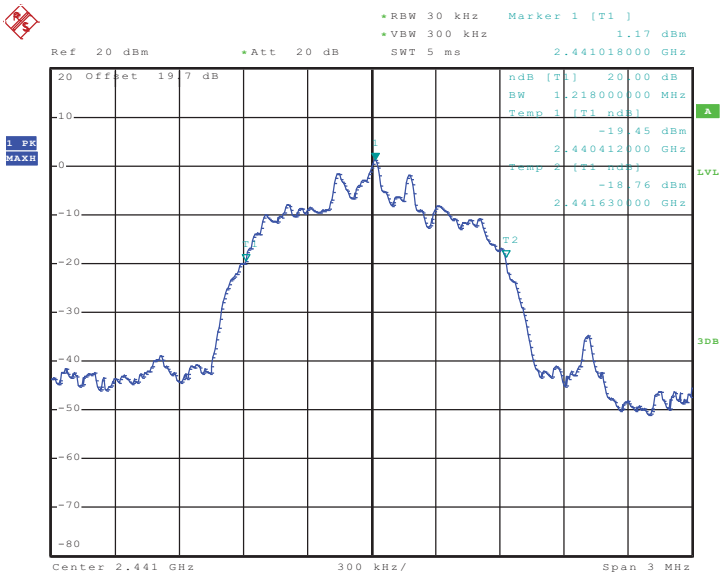
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.218
39	2441	1.218
78	2480	1.218

20 dB Bandwidth Plot on Channel 00



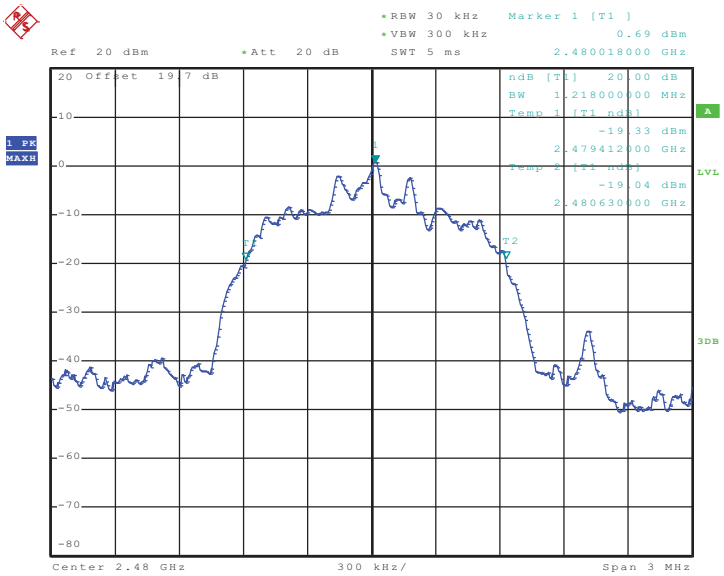
Date: 30.AUG.2010 09:22:21

20 dB Bandwidth Plot on Channel 39



Date: 30.AUG.2010 09:23:03

20 dB Bandwidth Plot on Channel 78



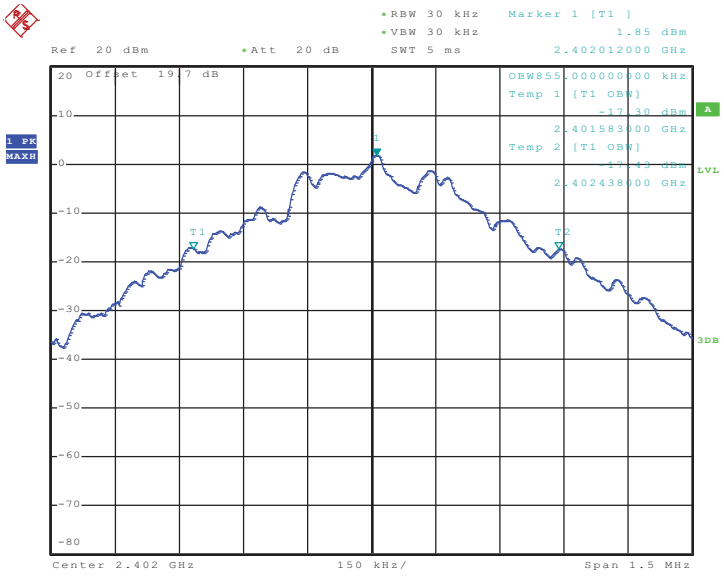
Date: 30.AUG.2010 09:23:59

3.2.6 Test Result of 99% Occupied Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	27~29℃
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

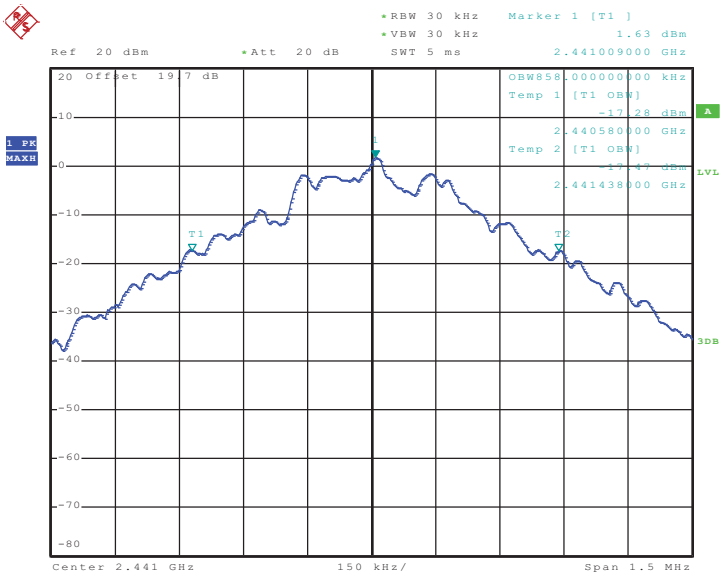
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	0.855
39	2441	0.858
78	2480	0.858

99% Bandwidth Plot on Channel 00



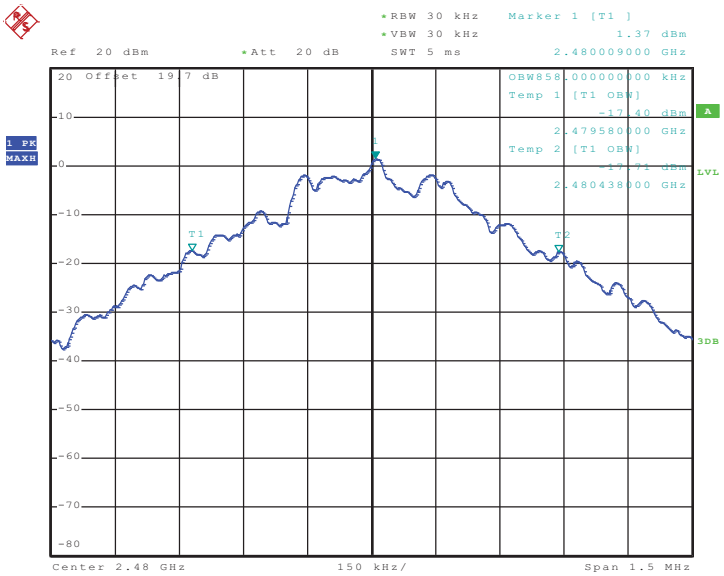
Date: 30.AUG.2010 11:33:12

99% Occupied Bandwidth Plot on Channel 39



Date: 30.AUG.2010 11:33:43

99% Occupied Bandwidth Plot on Channel 78

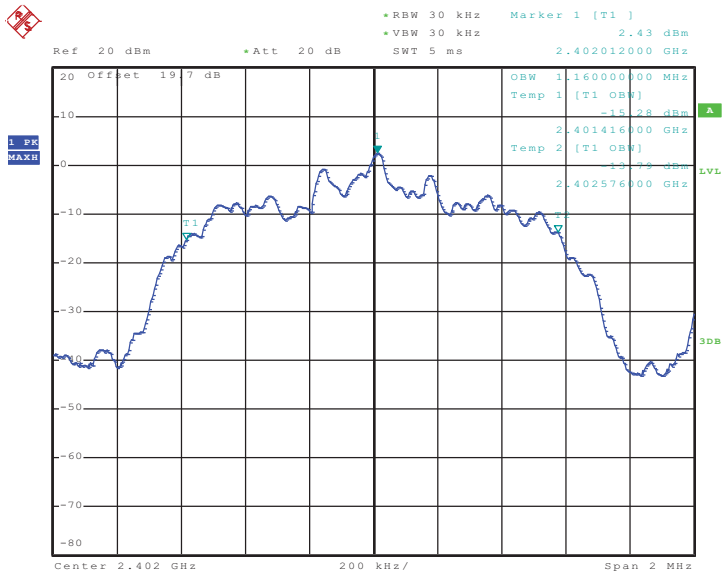


Date: 30.AUG.2010 11:34:15

Test Mode :	Mode 4, 5, 6	Temperature :	27~29℃
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

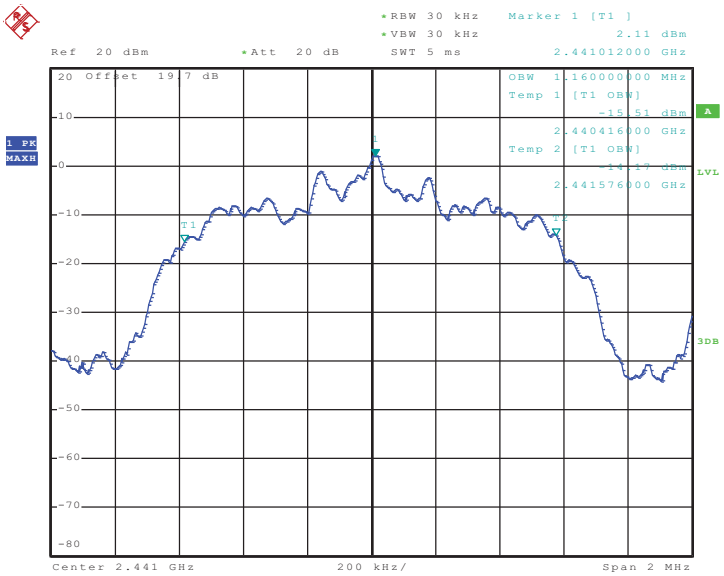
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	1.160
39	2441	1.160
78	2480	1.156

99% Bandwidth Plot on Channel 00



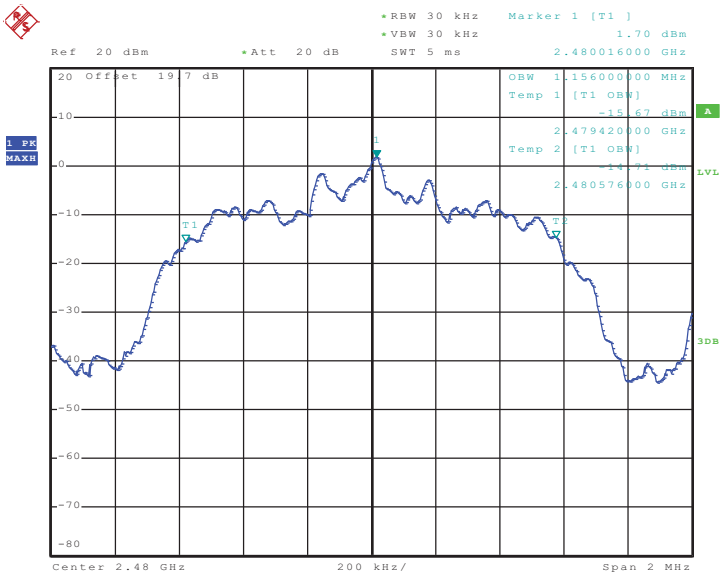
Date: 30.AUG.2010 11:29:40

99% Occupied Bandwidth Plot on Channel 39



Date: 30.AUG.2010 11:30:10

99% Occupied Bandwidth Plot on Channel 78

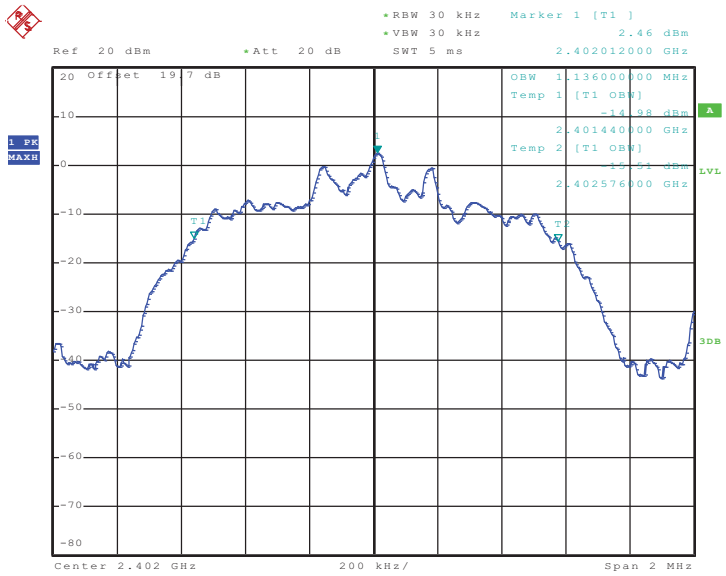


Date: 30.AUG.2010 11:30:39

Test Mode :	Mode 7, 8, 9	Temperature :	27~29℃
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

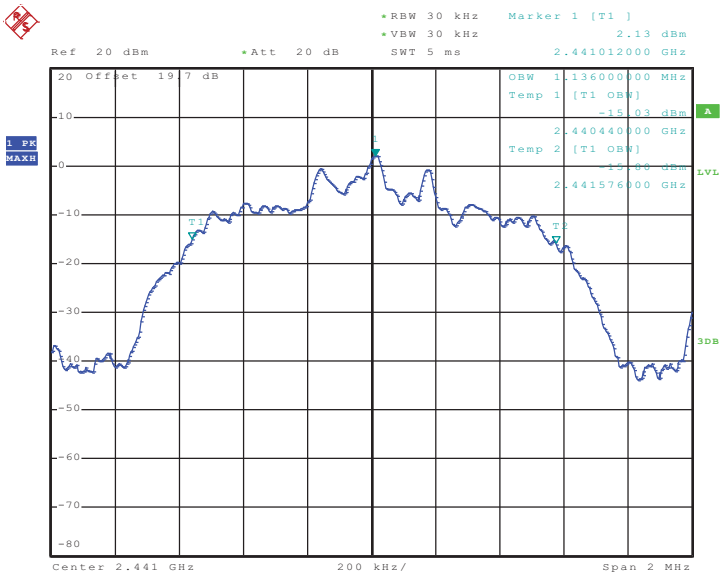
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	1.136
39	2441	1.136
78	2480	1.132

99% Bandwidth Plot on Channel 00



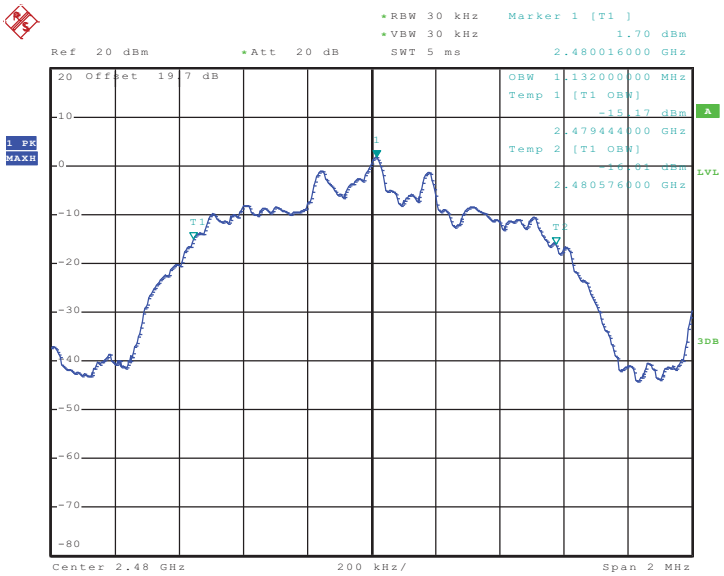
Date: 30.AUG.2010 11:32:33

99% Occupied Bandwidth Plot on Channel 39



Date: 30.AUG.2010 11:31:47

99% Occupied Bandwidth Plot on Channel 78



Date: 30.AUG.2010 11:31:16

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.

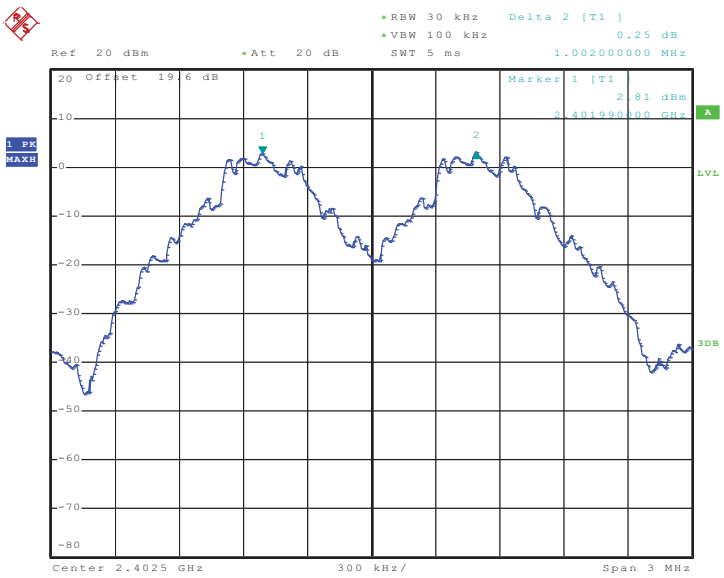
3.3.4 Test Setup

3.3.5 Test Result of Hopping Channel Separation

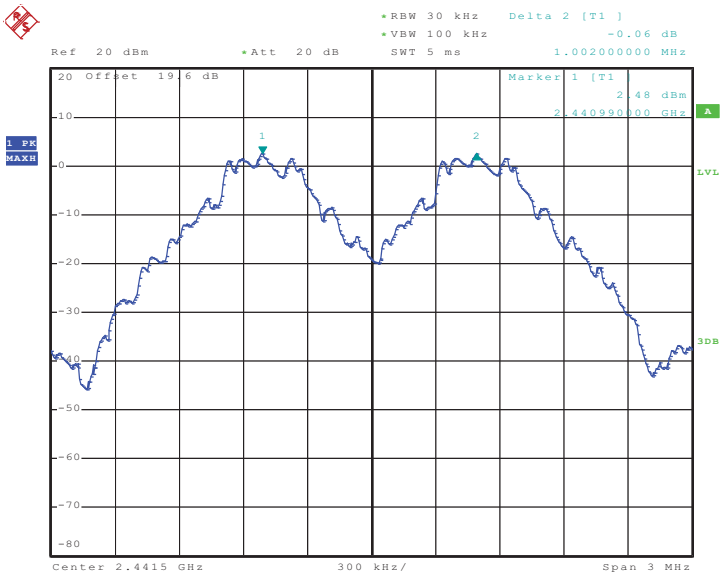
Test Mode :	Mode 1, 2, 3	Temperature :	27~29℃
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.576	Pass
39	2441	1.002	0.568	Pass
78	2480	1.002	0.595	Pass

Channel Separation Plot on Channel 00 - 01

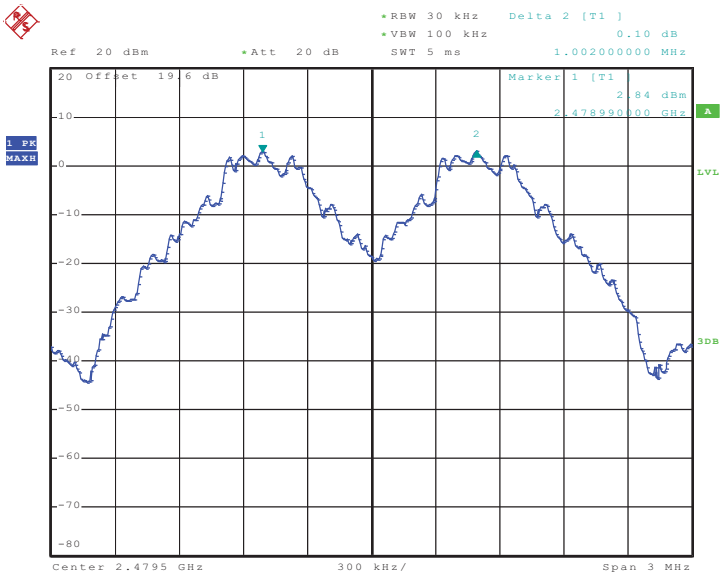


Channel Separation Plot on Channel 39 - 40



Date: 6.SEP.2010 20:33:49

Channel Separation Plot on Channel 77 - 78



Date: 6.SEP.2010 20:34:21

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.

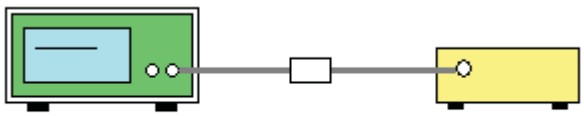
3.4.2 Measuring Instruments

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 :	27~29℃
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
DH5	3.40	2976.00	0.32	0.4	Pass

Remark:

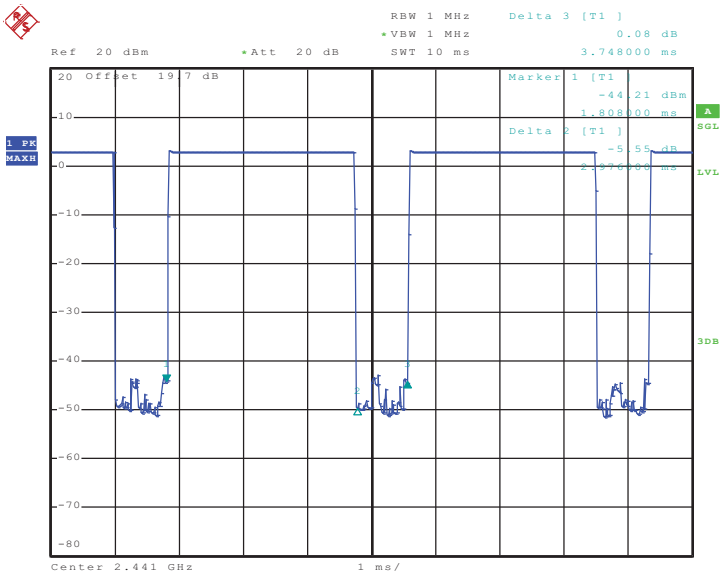
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time

2. 79 channels come from the Hopping Channel number.

3. Average Hopping Channel = hops/sweep time

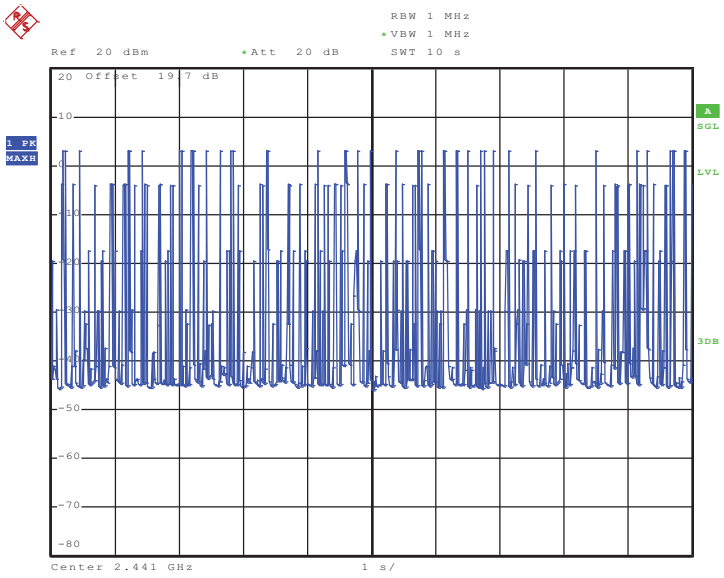
4. t: Package Transfer Time(us)

DH5 Dwell Time (One Pulse) Plot on Channel 39



Date: 30.AUG.2010 09:55:00

DH5 Dwell Time (Count Pulses) Plot on Channel 39



Date: 30.AUG.2010 10:03:08

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).

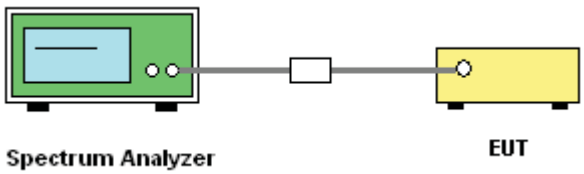
3.5.2 Measuring Instruments

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

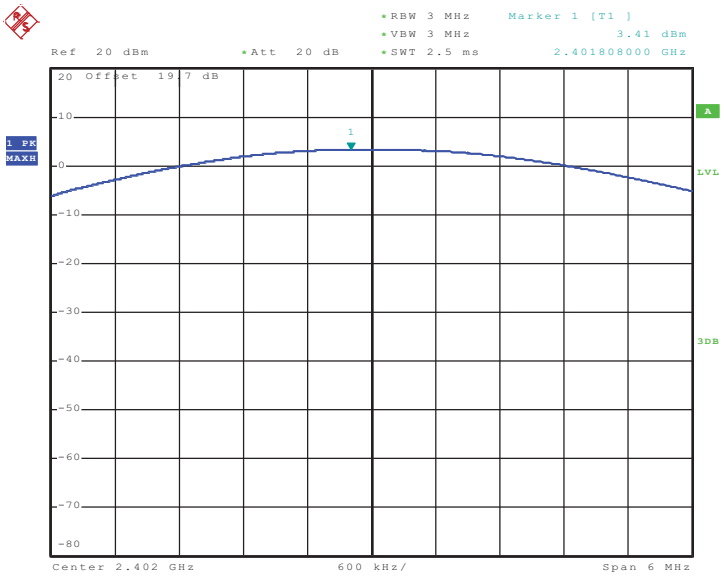


3.5.5 Test Result of Peak Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	27~29℃
Test Engineer :	Andy Yeh	Relative Humidity :	46~49%

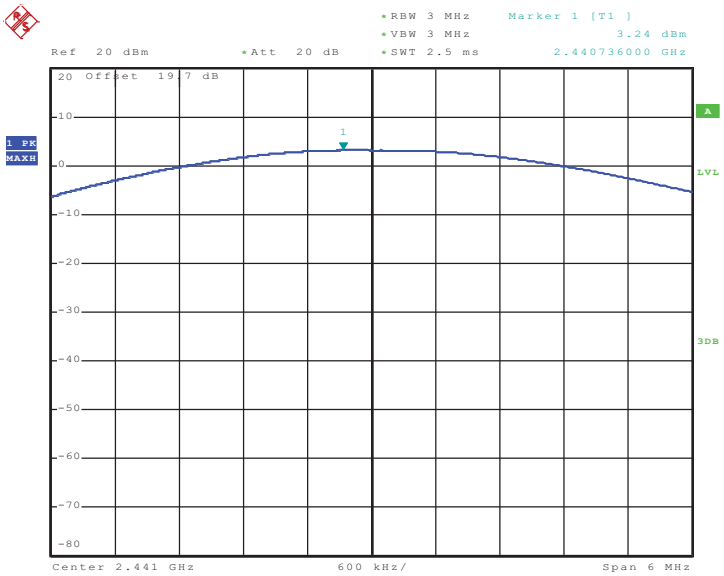
Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	3.41	30	Pass
39	2441	3.24	30	Pass
78	2480	3.05	30	Pass

Peak Output Power Plot on Channel 00



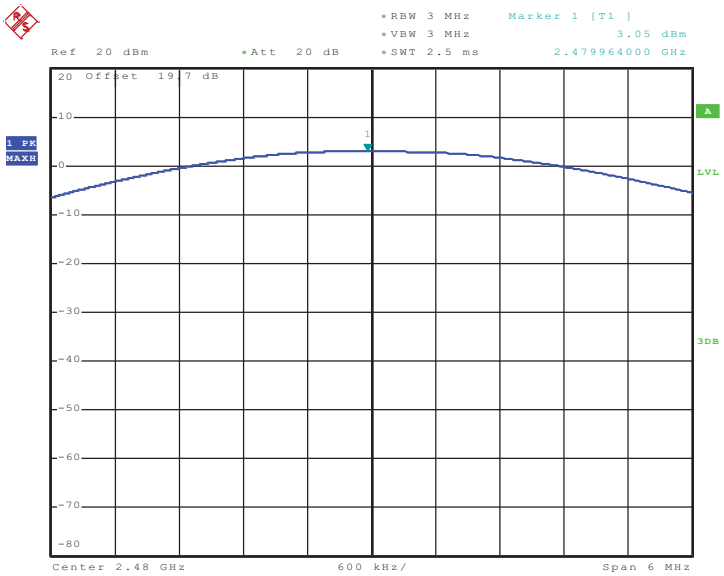
Date: 30.AUG.2010 08:55:41

Peak Output Power Plot on Channel 39



Date: 30.AUG.2010 08:55:15

Peak Output Power Plot on Channel 78



Date: 30.AUG.2010 08:54:46

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

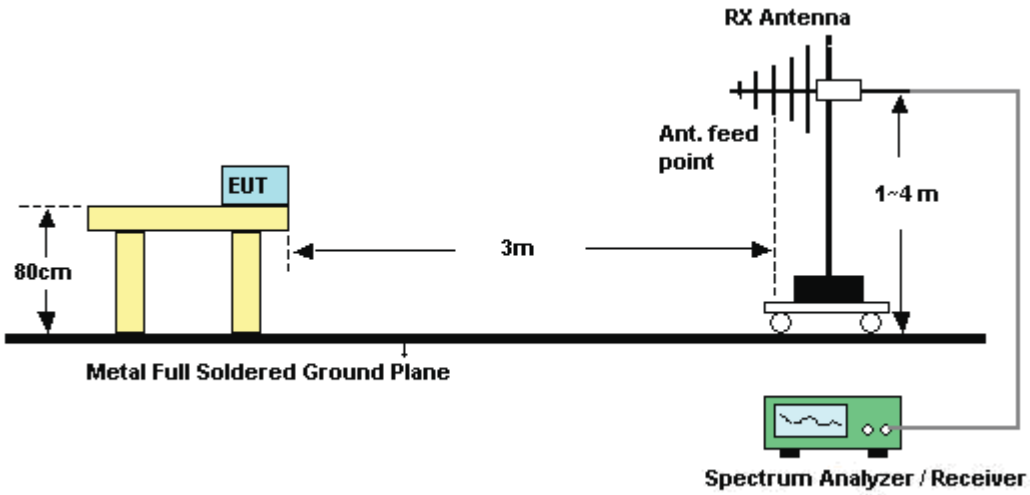
See list of measuring instruments of this test report.

3.6.3 Test Procedures

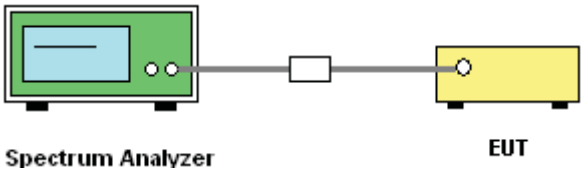
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC Public Notice DA 00-705 Measurement Guidelines.
2. RF antenna conducted test: Set RBW = 300kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured 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 :	24~25°C
Test Channel :	00	Relative Humidity :	45~46%
		Test Engineer :	David Yang

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
2337.74	46.95	-27.05	74	42.41	32.11	5.95	33.52	100	174	Peak
2337.74	35.67	-18.33	54	31.13	32.11	5.95	33.52	100	174	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
2385.81	47.94	-26.06	74	43.26	32.18	6.03	33.53	104	313	Peak
2385.81	36.48	-17.52	54	31.8	32.18	6.03	33.53	104	313	Average

Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	45~46%
		Test Engineer :	David Yang

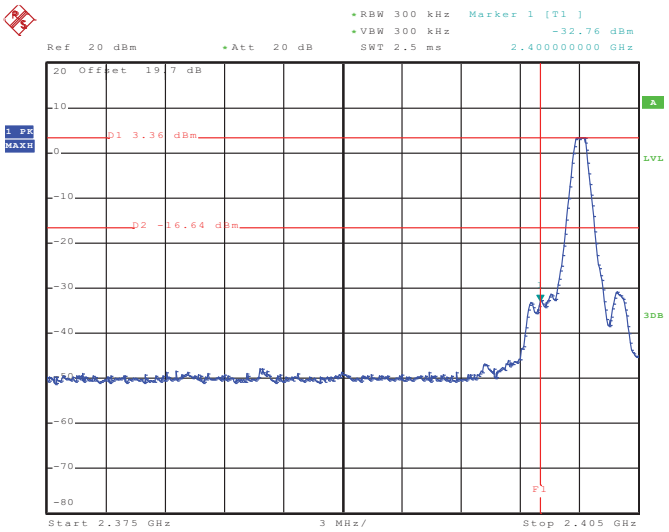
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	61.68	-12.32	74	56.78	32.28	6.18	33.56	100	323	Peak
2483.5	50.79	-3.21	54	45.89	32.28	6.18	33.56	100	323	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
2483.5	63.15	-10.85	74	58.25	32.28	6.18	33.56	100	195	Peak
2483.5	52.12	-1.88	54	47.22	32.28	6.18	33.56	100	195	Average

3.6.6 Test Result of Conducted Band Edges

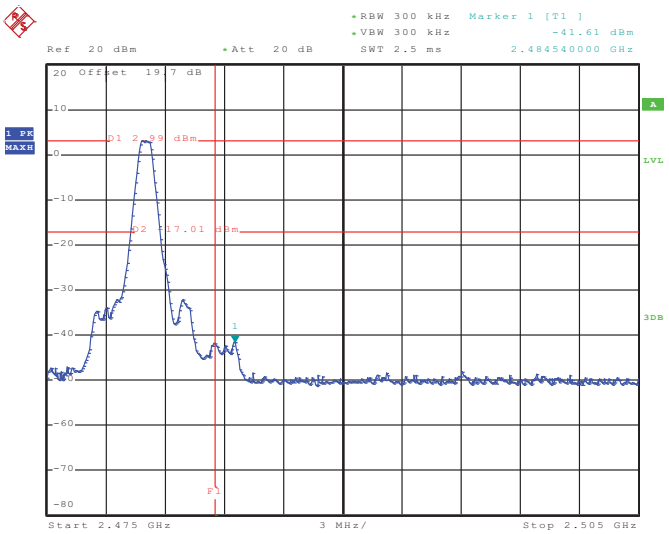
Test Mode :	Mode 1 and 3	**Temperature :**	27~29℃
Test Channel :	00 and 78	**Relative Humidity :**	46~49%
		Test Engineer :	Andy Yeh

Low Band Edge Plot on Channel 00



Date: 30.AUG.2010 09:39:16

High Band Edge Plot on Channel 78



Date: 30.AUG.2010 09:41:42

3.7 Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

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

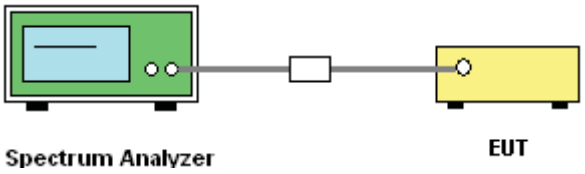
3.7.2 Measuring Instruments

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.

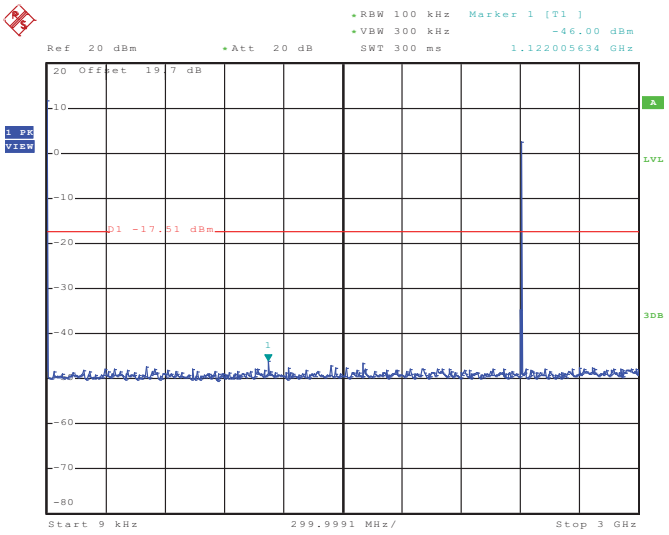
3.7.4 Test Setup



3.7.5 Test Result

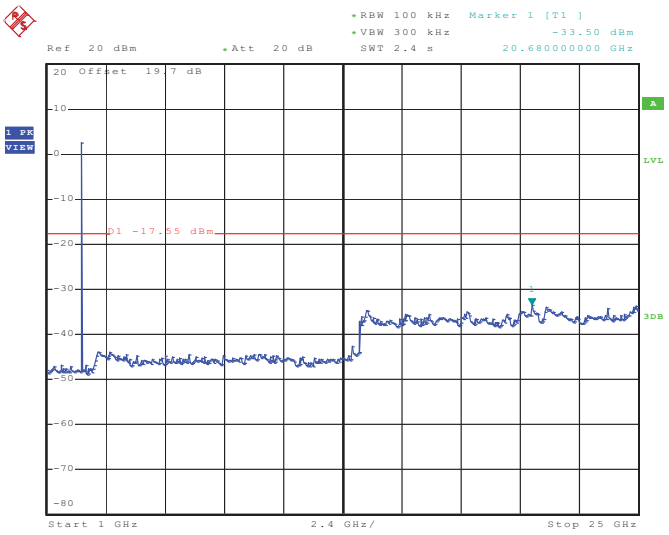
Test Mode :	Mode 1	Temperature :	27~29℃
Test Channel :	00	Relative Humidity :	46~49%
		Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 30.AUG.2010 11:42:59

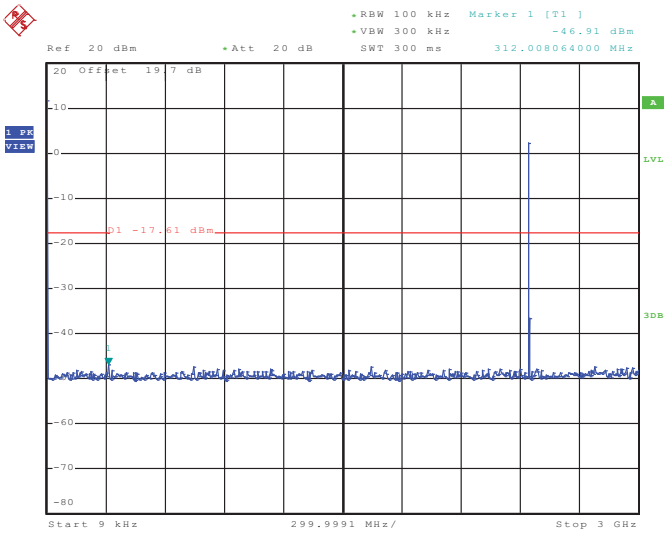
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 30.AUG.2010 17:30:41

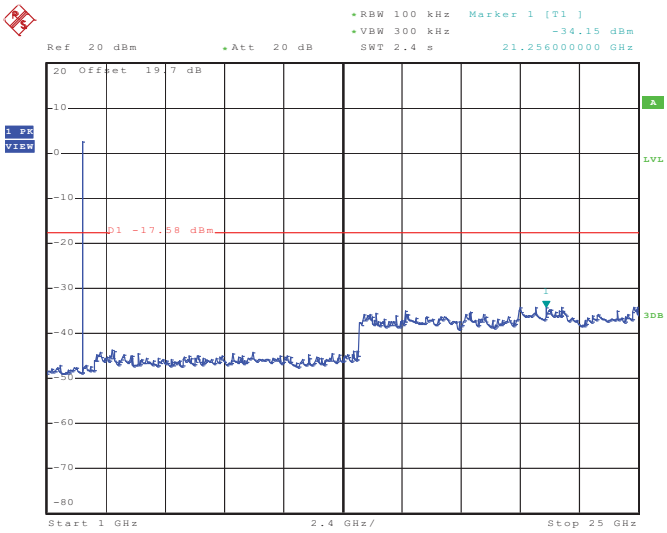
Test Mode :	Mode 2	**Temperature :**	27~29℃
Test Channel :	39	**Relative Humidity :**	46~49%
		Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 30.AUG.2010 11:44:15

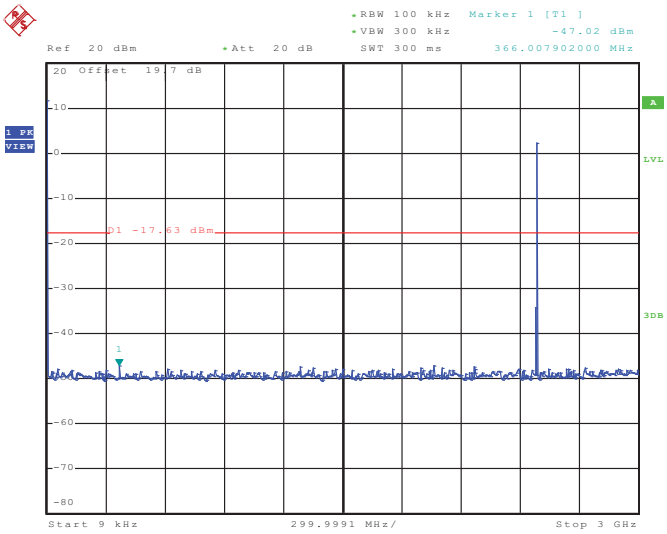
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 30.AUG.2010 17:31:35

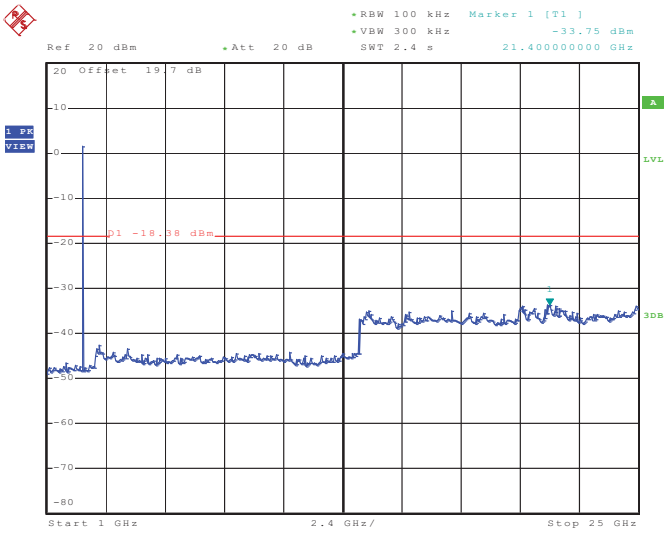
Test Mode :	Mode 3	**Temperature :**	27~29℃
Test Channel :	78	**Relative Humidity :**	46~49%
		Test Engineer :	Andy Yeh

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 30.AUG.2010 11:44:51

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 30.AUG.2010 17:32:44

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.

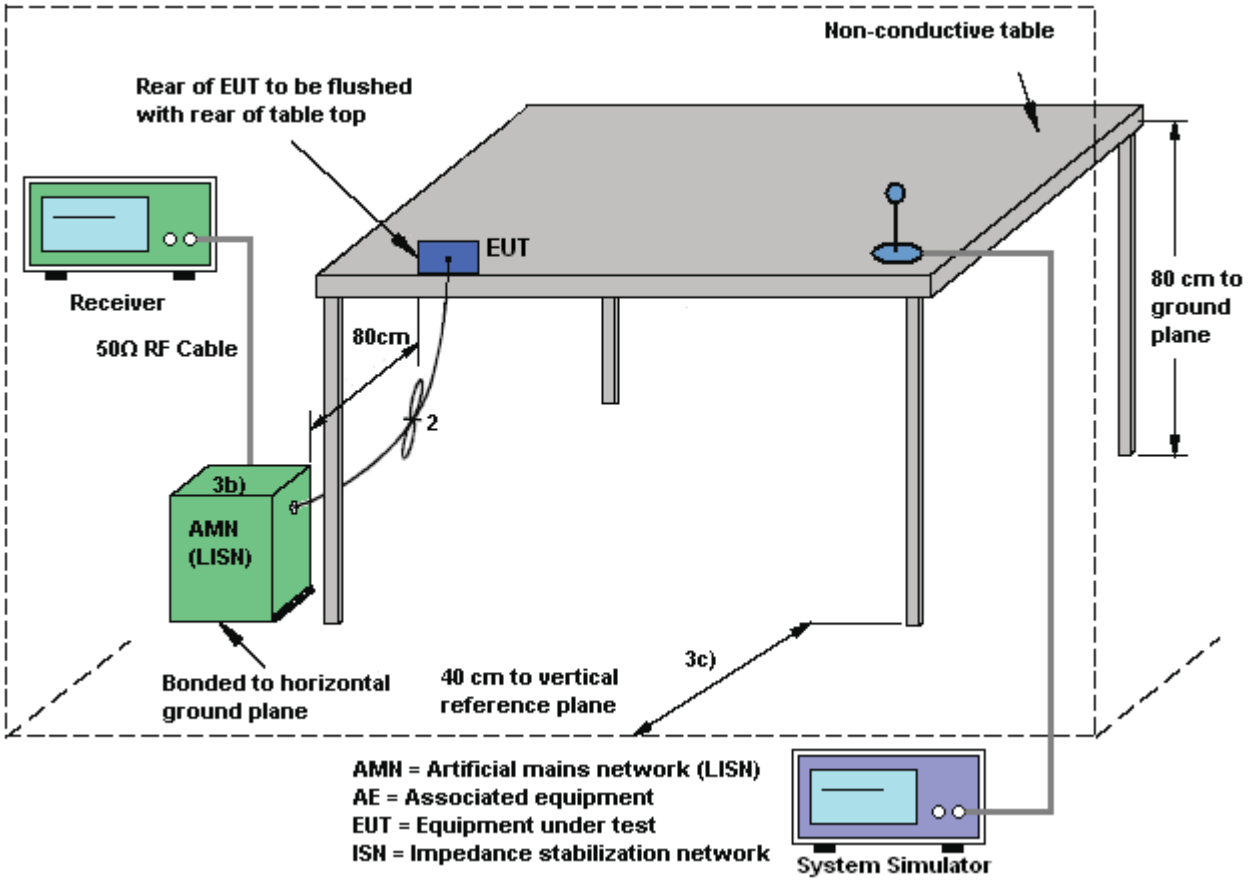
3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedures

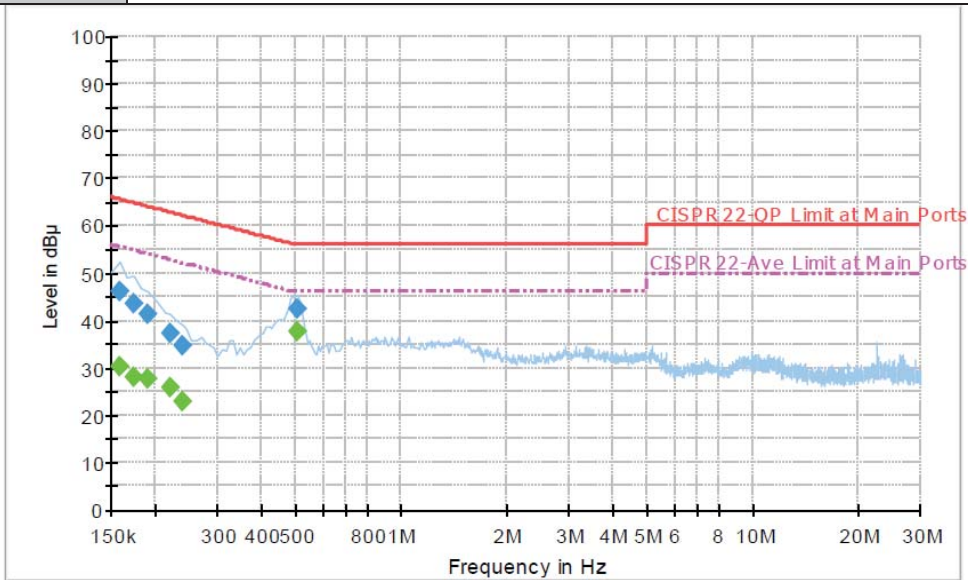
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All 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 :**	20~22℃
Test Engineer :	Novic Jiang	**Relative Humidity :**	42~44%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	GSM850 (GPRS 8) Idle + Bluetooth Link + GNSS Rx + Cradle with Battery + Adapter + USB Cable + USB Dongle + RS232 Cable		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



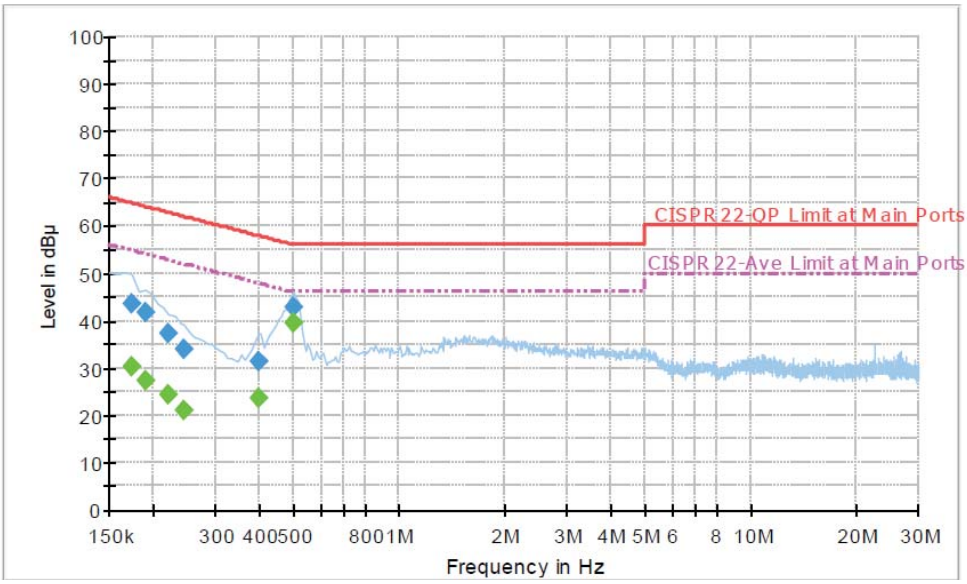
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	46.0	Off	L1	19.3	19.6	65.6
0.174000	43.7	Off	L1	19.3	21.1	64.8
0.190000	41.5	Off	L1	19.4	22.5	64.0
0.222000	37.3	Off	L1	19.3	25.4	62.7
0.238000	34.9	Off	L1	19.4	27.3	62.2
0.510000	42.5	Off	L1	19.3	13.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	30.2	Off	L1	19.3	25.4	55.6
0.174000	28.0	Off	L1	19.3	26.8	54.8
0.190000	27.7	Off	L1	19.4	26.3	54.0
0.222000	26.0	Off	L1	19.3	26.7	52.7
0.238000	22.9	Off	L1	19.4	29.3	52.2
0.510000	37.7	Off	L1	19.3	8.3	46.0

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Novic Jiang	Relative Humidity :	42~44%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 (GPRS 8) Idle + Bluetooth Link + GNSS Rx + Cradle with Battery + Adapter + USB Cable + USB Dongle + RS232 Cable		
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)
0.174000	43.7	Off	N	19.3	21.1	64.8
0.190000	41.5	Off	N	19.4	22.5	64.0
0.222000	37.4	Off	N	19.3	25.3	62.7
0.246000	34.0	Off	N	19.4	27.9	61.9
0.398000	31.4	Off	N	19.4	26.5	57.9
0.502000	42.9	Off	N	19.3	13.1	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	30.3	Off	N	19.3	24.5	54.8
0.190000	27.4	Off	N	19.4	26.6	54.0
0.222000	24.3	Off	N	19.3	28.4	52.7
0.246000	21.0	Off	N	19.4	30.9	51.9
0.398000	23.7	Off	N	19.4	24.2	47.9
0.502000	39.3	Off	N	19.3	6.7	46.0

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

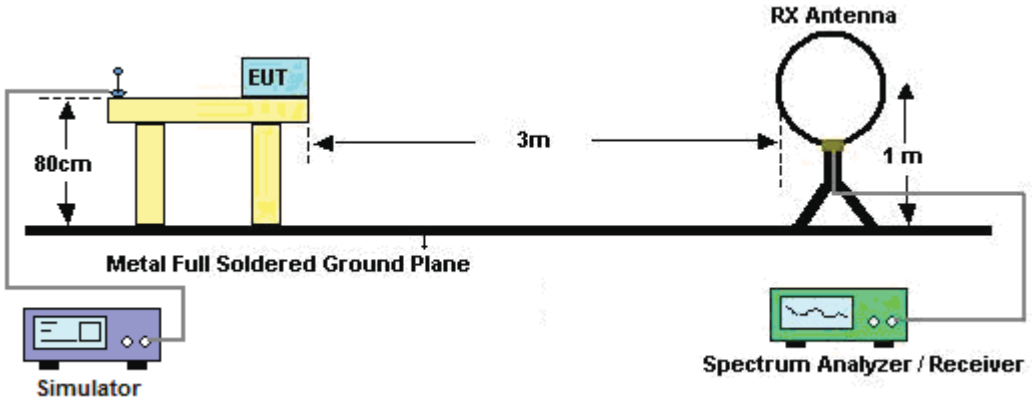
See list of measuring instruments of this test report.

3.9.3 Test Procedures

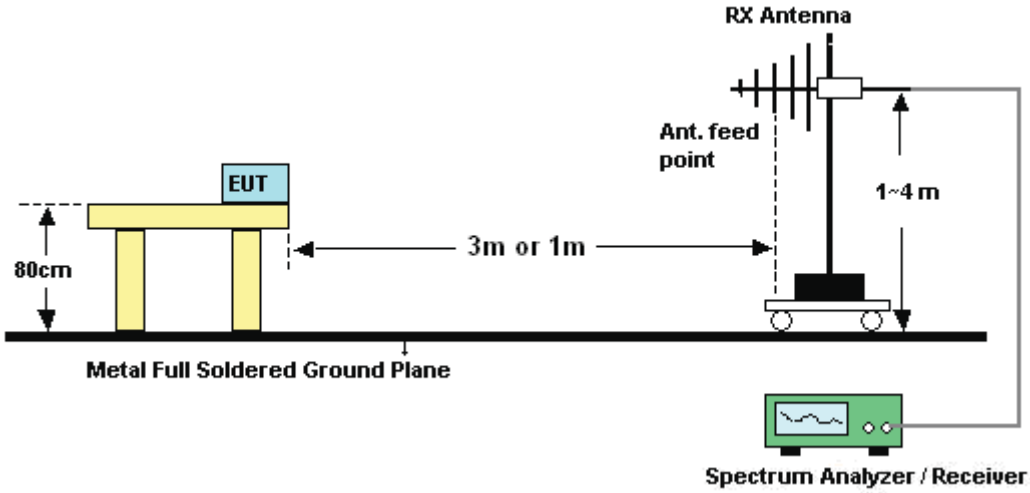
1. The testing follows the guidelines in FCC Public Notice DA 00-705 Measurement Guidelines.
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function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

3.9.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Test Engineer :	David Yang	Temperature :	24~25°C
		Relative Humidity :	45~46%

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 :	24~25°C
Test Channel :	00	Relative Humidity :	45~46%
Test Engineer :	David Yang	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
42.42	24.28	-15.72	40	42.96	12.18	0.64	31.5	-	-	Peak
101.82	17.48	-26.02	43.5	37.5	10.52	1	31.54	-	-	Peak
242.22	32	-14	46	50.05	11.84	1.53	31.42	122	240	Peak
331.5	21.67	-24.33	46	36.81	14.31	1.86	31.31	-	-	Peak
500.2	19.04	-26.96	46	29.48	18.18	2.45	31.07	-	-	Peak
769	23.71	-22.29	46	29.52	21.79	3.09	30.69	-	-	Peak
2337.74	46.95	-27.05	74	42.41	32.11	5.95	33.52	100	174	Peak
2337.74	35.67	-18.33	54	31.13	32.11	5.95	33.52	100	174	Average
2402	95.74	-	-	91.05	32.2	6.03	33.54	100	174	Peak
2402	83.72	-	-	79.04	32.18	6.03	33.53	100	174	Average
2494	33.79	-20.21	54	28.88	32.3	6.18	33.57	100	174	Average
2494	45.49	-28.51	74	40.58	32.3	6.18	33.57	100	174	Peak
8406	56.47	-17.53	74	44.01	35.58	10.97	34.09	100	336	Peak
8406	42.34	-11.66	54	29.88	35.58	10.97	34.09	100	336	Average

Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	00	Relative Humidity :	45~46%
Test Engineer :	David Yang	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
41.34	36.43	-3.57	40	54.51	12.8	0.63	31.51	100	355	Peak
51.06	34	-6	40	57.06	7.77	0.71	31.54	-	-	Peak
261.66	34.66	-11.34	46	51.54	12.93	1.6	31.41	-	-	Peak
363	24.54	-21.46	46	38.61	15.13	2.07	31.27	-	-	Peak
402.2	24.85	-21.15	46	37.71	16.17	2.15	31.18	-	-	Peak
755	23.7	-22.3	46	29.74	21.59	3.07	30.7	-	-	Peak
2385.81	47.94	-26.06	74	43.26	32.18	6.03	33.53	104	313	Peak
2385.81	36.48	-17.52	54	31.8	32.18	6.03	33.53	104	313	Average
2402	98.88	-	-	94.19	32.2	6.03	33.54	104	313	Peak
2402	85.9	-	-	81.22	32.18	6.03	33.53	104	313	Average
2500	33.78	-20.22	54	28.87	32.3	6.18	33.57	104	313	Average
2500	46.78	-27.22	74	41.87	32.3	6.18	33.57	104	313	Peak
8265	55.29	-18.71	74	42.92	35.55	10.92	34.1	110	261	Peak
8265	41.48	-12.52	54	29.11	35.55	10.92	34.1	110	261	Average

Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	45~46%
Test Engineer :	David Yang	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
53.22	24.17	-15.83	40	47.64	7.36	0.72	31.55	-	-	Peak
244.38	30.26	-15.74	46	48.08	12.07	1.53	31.42	-	-	Peak
268.14	35.48	-10.52	46	52.2	13.03	1.63	31.38	128	241	Peak
318.2	20.43	-25.57	46	35.99	13.95	1.81	31.32	-	-	Peak
497.4	19.46	-26.54	46	29.97	18.12	2.44	31.07	-	-	Peak
783.7	24.22	-21.78	46	29.81	21.99	3.11	30.69	-	-	Peak
2318	45.88	-28.12	74	41.38	32.09	5.92	33.51	102	325	Peak
2318	33.94	-20.06	54	29.44	32.09	5.92	33.51	102	325	Average
2441	83.49	-	-	78.69	32.24	6.11	33.55	102	325	Average
2441	95.53	-	-	90.73	32.24	6.11	33.55	102	325	Peak
2486	45.51	-28.49	74	40.61	32.28	6.18	33.56	102	325	Peak
2486	33.69	-20.31	54	28.79	32.28	6.18	33.56	102	325	Average
8358	55.37	-18.63	74	42.94	35.57	10.95	34.09	102	144	Peak
8358	41.71	-12.29	54	29.28	35.57	10.95	34.09	102	144	Average

Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	45~46%
Test Engineer :	David Yang	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
35.13	36.41	-3.59	40	50.57	16.73	0.58	31.47	103	360	Peak
40.53	34.18	-5.82	40	51.63	13.43	0.63	31.51	-	-	Peak
263.01	36.67	-9.33	46	53.52	12.95	1.61	31.41	-	-	Peak
329.4	28.25	-17.75	46	43.45	14.26	1.85	31.31	-	-	Peak
402.2	24.34	-21.66	46	37.2	16.17	2.15	31.18	-	-	Peak
621.3	22.45	-23.55	46	30.37	20.23	2.75	30.9	-	-	Peak
2356	34.17	-19.83	54	29.61	32.13	5.95	33.52	126	196	Average
2356	47.15	-26.85	74	42.59	32.13	5.95	33.52	126	196	Peak
2441	99.33	-	-	94.53	32.24	6.11	33.55	126	196	Peak
2441	87.04	-	-	82.24	32.24	6.11	33.55	126	196	Average
2484	46.36	-27.64	74	41.46	32.28	6.18	33.56	126	196	Peak
2484	33.8	-20.2	54	28.9	32.28	6.18	33.56	126	196	Average
8361	55.46	-18.54	74	43.03	35.57	10.95	34.09	122	318	Peak
8361	41.94	-12.06	54	29.51	35.57	10.95	34.09	122	318	Average

Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	45~46%
Test Engineer :	David Yang	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
49.17	23.6	-16.4	40	45.97	8.47	0.69	31.53	-	-	Peak
241.14	30.69	-15.31	46	48.86	11.72	1.53	31.42	-	-	Peak
275.7	36.4	-9.6	46	53	13.12	1.64	31.36	138	263	Peak
321.7	23.22	-22.78	46	38.67	14.05	1.82	31.32	-	-	Peak
363	22.69	-23.31	46	36.76	15.13	2.07	31.27	-	-	Peak
747.3	23.19	-22.81	46	29.37	21.48	3.05	30.71	-	-	Peak
2316	46.69	-27.31	74	42.21	32.07	5.92	33.51	100	323	Peak
2316	33.76	-20.24	54	29.28	32.07	5.92	33.51	100	323	Average
2480	83.84	-	-	78.94	32.28	6.18	33.56	100	323	Average
2480	96.28	-	-	91.38	32.28	6.18	33.56	100	323	Peak
2483.5	61.68	-12.32	74	56.78	32.28	6.18	33.56	100	323	Peak
2483.5	50.79	-3.21	54	45.89	32.28	6.18	33.56	100	323	Average
8286	55.45	-18.55	74	43.06	35.56	10.93	34.1	103	252	Peak
8286	42.25	-11.75	54	29.86	35.56	10.93	34.1	103	252	Average

Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	45~46%
Test Engineer :	David Yang	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
30	34.89	-5.11	40	46.31	19.51	0.53	31.46	100	352	Peak
94.53	29.24	-14.26	43.5	50.18	9.61	0.98	31.53	-	-	Peak
263.01	37.93	-8.07	46	54.78	12.95	1.61	31.41	-	-	Peak
321.7	26.85	-19.15	46	42.3	14.05	1.82	31.32	-	-	Peak
405.7	24.48	-21.52	46	37.26	16.23	2.16	31.17	-	-	Peak
621.3	22.93	-23.07	46	30.85	20.23	2.75	30.9	-	-	Peak
2332	45.76	-28.24	74	41.23	32.09	5.95	33.51	100	195	Peak
2332	34.27	-19.73	54	29.74	32.09	5.95	33.51	100	195	Average
2480	85.57	-	-	80.67	32.28	6.18	33.56	100	195	Average
2480	97.93	-	-	93.03	32.28	6.18	33.56	100	195	Peak
2483.5	63.15	-10.85	74	58.25	32.28	6.18	33.56	100	195	Peak
2483.5	52.12	-1.88	54	47.22	32.28	6.18	33.56	100	195	Average
8394	54.96	-19.04	74	42.51	35.58	10.96	34.09	125	327	Peak
8394	41.82	-12.18	54	29.37	35.58	10.96	34.09	125	327	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	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. 17, 2009	Sep. 16, 2010	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 10, 2009	Sep. 09, 2010	Conducted (TH02-HY)
EMI Test Receive	R&S	ESU	100211	9KHz – 2.75GHz	May 28, 2010	May 27, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 30, 2009	Nov. 29, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 23, 2009	Nov. 22, 2010	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	105934	N/A	Nov. 11, 2008	Nov. 10, 2010	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 04, 2009	Dec. 03, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2010	Aug. 18, 2011	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec.09,2009	Dec. 08, 2010	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 27, 2010	Mar. 26, 2011	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH07-HY)
Bluetooth Base Station	R&S	CBT32	100519	N/A	May 12, 2009	May 11, 2011	Radiation (03CH07-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**				