

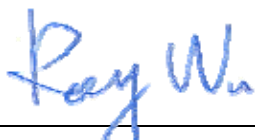
FCC Test Report

EQUIPMENT : Mobile Computer
BRAND NAME : Symbol
MODEL NAME : FR6876
FCC ID : H9PFR6876
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Spread Spectrum (DSS)
APPLICANT : Symbol Technologies, Inc., A Motorola Company
230 Victoria Street #12-06/10 Bugis Junction Office Tower
Singapore 188024

The product sample received on Oct. 31, 2008 and completely tested on Mar. 28, 2009. 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 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:



Roy Wu / Manager



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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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(b)(1)	A8.4(2)	Number of Channels	$\geq 15\text{Chs}$	Pass	
3.2	15.247(a)(1)	A8.1(a)	20dB Bandwidth	NA	Pass	-
3.3	15.247(a)(1)	A8.1(b)	Channel Separation	$\geq 2/3$ of 20dB BW	Pass	-
3.4	15.247(a)(1)	A8.1(d)	Dwell Time of Each Channel	$\leq 0.4\text{sec}$ in 31.6sec period	Pass	-
3.5	15.247(a)(1)	A8.1(b)	Peak Output Power	$\leq 1\text{W}$	Pass	-
3.6	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.7	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 13.3 dB at 0.742 MHz
3.8	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 6.02 dB at 4882.00 MHz
3.9	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR8O3106-01B	Rev. 01	Initial issue of report	Apr. 09, 2009

1 General Description

1.1 Applicant

Symbol Technologies, Inc., A Motorola Company

230 Victoria Street #12-06/10 Bugis Junction Office Tower Singapore 188024

1.2 Manufacturer

Inventec Appliances Corp.

No. 37, Wugong 5th Road, Wugu Industrial Park, Taipei Country 248, Taiwan, R.O.C.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Mobile Computer
Brand Name	Symbol
Model Name	FR6876
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 : 1.78 dBm (1Mbps) Bluetooth EDR : 1.43dBm (2Mbps) / 1.70dBm (3Mbps)
Antenna Type	Chip Antenna with gain -4 dBi
Antenna Connector Type	N/A
HW Version	DVT
SW Version	Modem: 0029-010709-M OS: EDA-DVT1-0.20.0039-011409-WWE-H
Type of Modulation	Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : $\pi/4$ -DQPSK Bluetooth EDR (3Mbps) : 8-DPSK
EUT Stage	Identical Prototype

Accessories List:

Specification of Accessory		
Cradle	Brand Name	Symbol
	Model Name	CRD7X00-1
	Power Rating	12Vdc, 3.33A
Cradle Adapter	Brand Name	HIPRO
	Model Name	HP-O2040D43
	Power Rating	I/P: 100-240Vac, 50-60Hz, 1.5A; O/P: 12Vdc, 3.33A
	Power Cord Type	1.8 meter shielded cable with ferrite core
Product Charging Adapter	Brand Name	MOTOROLA
	Model Name	EADP-16BB A
	Power Rating	I/P: 100-240Vac, 50-60Hz, 0.4A; O/P: 5.4Vdc, 3A
	Power Cord Type	1.83 meter shielded cable with ferrite core
Product Charging Cable 1	Brand Name	MOTOROLA
	Model Name	25-102775-01R
	Power Rating	I/P: 5.4V, 3A
	Type	1.35 meter non-shielded cable with ferrite core
Product Charging Cable 2	Brand Name	MOTOROLA
	Model Name	25-118703-01R
	Power Rating	I/P: 5.4V, 3A
	Type	1.35 meter non-shielded cable with ferrite core
Battery 1	Brand Name	MOTOROLA
	Part Number	82-71364-04
	Power Rating	3.7Vdc, 1950mAh
	Type	Li-ion
Battery 2	Brand Name	MOTOROLA
	Part Number	82-71364-05
	Power Rating	3.7Vdc, 3600mAh
	Type	Li-ion
Earphone	Brand Name	Symbol
	Part Number	90-17C28-001R
	Signal Line Type	1.24 meter non-shielded cable without ferrite core
USB Cable	Brand Name	MOTOROLA
	Part Number	25-68596-01R
	Type	1.69 meter shielded cable without ferrite core

Remark:

1. Product Charging Cable 1 (P/N: 25-102775-01R) and Product Charging Cable 2 (P/N: 25-118703-01R) are exactly the same which was declared by the manufacturer, and only Product Charging Cable 1 (P/N: 25-102775-01R) was performed on all the tests.
2. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
3. For accessories equipped with this EUT, please refer to the appendix of the external photo.
4. This test report recorded only product characteristics and test results of Digital Spread Spectrum (DSS).

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st 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

Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
System Simulator	R&S	CMU200	N/A	N/A	Unshielded, 1.8 m
WLAN AP	D-Link	DWL-7100AP	KA22003040018-1	N/A	Unshielded, 1.8 m
WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
BT Base Station	Anritsu	8852B	N/A	N/A	Unshielded, 1.8 m
GPS Station	SPIRENT	GSS4200	N/A	N/A	Unshielded, 1.8 m
Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
LCD Monitor	Lenovo	6135-AB1	FCC DoC	N/A	Unshielded, 1.8m
Bluetooth Earphone	Nokia	BH-100	PYA1YH	N/A	N/A
i-pod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

RF Output Power				
Channel	Frequency	Data Rate / Modulation		
		GFSK	$\pi/4$ -DQPSK	8-DPSK
		1Mbps	2Mbps	3Mbps
Ch00	2402MHz	1.06 dBm	0.81 dBm	1.14 dBm
Ch39	2441MHz	1.78 dBm	1.43 dBm	1.70 dBm
Ch78	2480MHz	0.87 dBm	0.25 dBm	0.65 dBm

Remark: The EUT is programmed to transmit signal continuously for all testing.

2.2 Test Mode

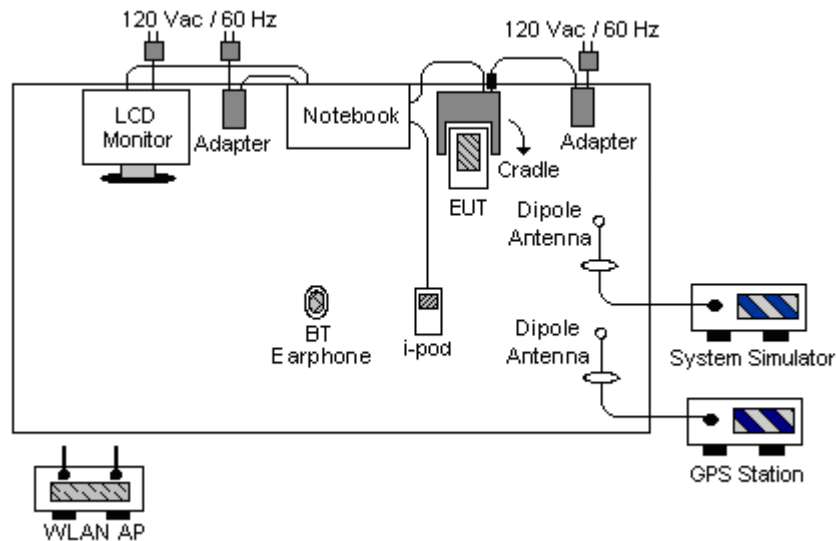
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest 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	Modulation		
	Bluetooth 1Mbps GFSK	Bluetooth EDR 2Mbps $\pi/4$ -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 + Battery 1 ■ Mode 2: CH39_2441 MHz + Battery 1 ■ Mode 3: CH78_2480 MHz + Battery 1 ■ Mode 4: CH39_2441 MHz + Battery 2	N/A	N/A
AC Conducted Emission	■ Mode 1: GSM 850 Idle + GPS Rx + BT Link + WLAN Link + Cradle + Adapter + USB Cable + Battery 1 ■ Mode 2: GSM 850 Idle + GPS Rx + BT Link + WLAN Link + Earphone + USB Charging Cable with AC Power + Battery 1 ■ Mode 3: WCDMA Band V Idle + GPS Rx + BT Link + WLAN Link + Cradle + Adapter + USB Cable + Battery 1 ■ Mode 4: WCDMA Band V Idle + GPS Rx + BT Link + WLAN Link + Cradle + Adapter + USB Cable + Battery 2		
Remark: The worst case of radiated emission was Bluetooth 1Mbps link mode; only the test data of this mode was reported.			

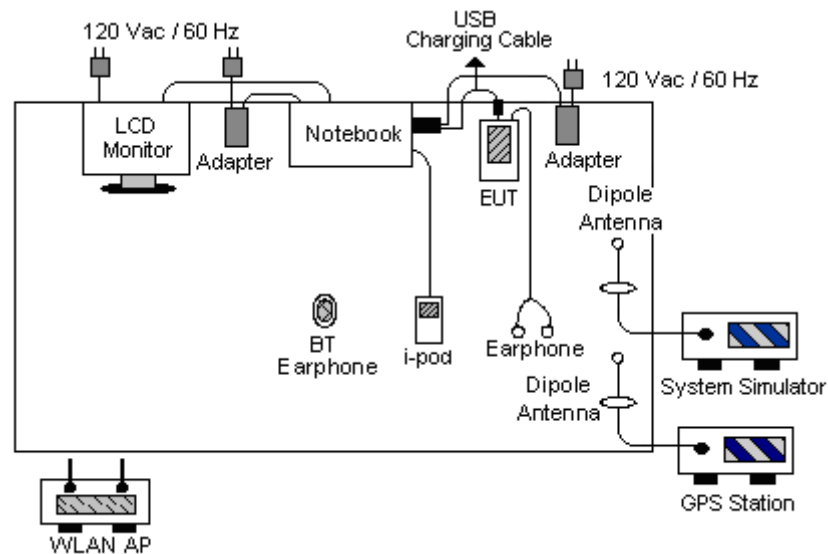
2.3 Connection Diagram of Test System

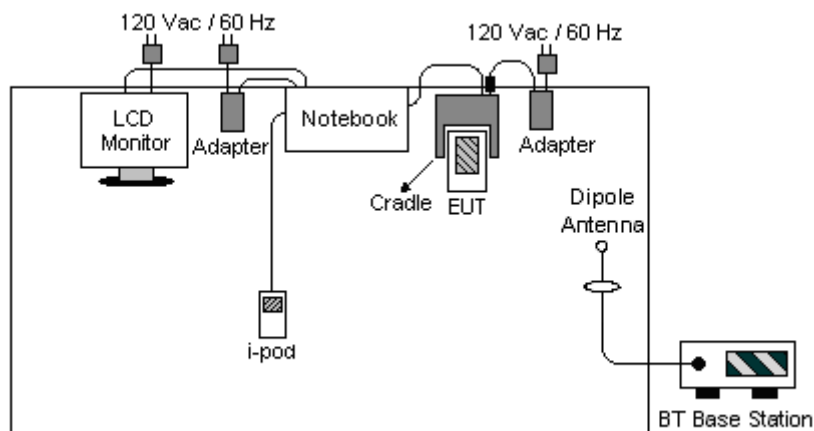
<Conducted Emission>

EUT with Cradle and Adapter Mode



EUT with USB Charging Cable with AC Power Mode



<Radiated Emission>


2.4 RF Utility

For Bluetooth function, the RF Utility, "BT Test ON" was installed in EUT which was programmed in order to make the EUT into the engineering modes to contact with BT 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.

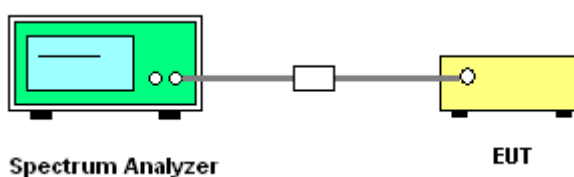
3.1.2 Measuring Instruments

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; $RBW \geq 1\%$ of the span; $VBW \geq RBW$; 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.

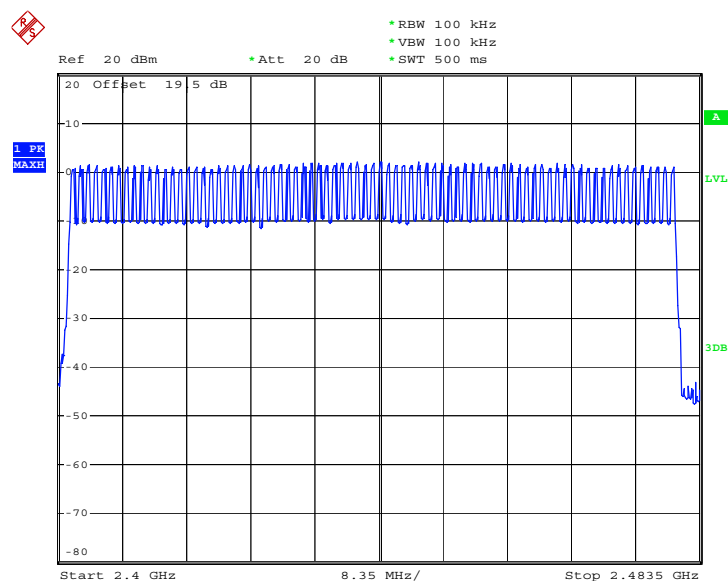
3.1.4 Test Setup



3.1.5 Test Result of Number of Hopping Frequency

Test Mode :	Mode 1, 2, 3	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%
Number of Hopping Channels (Channel)		Limits (Channel)	Pass/Fail
79		> 15	Pass

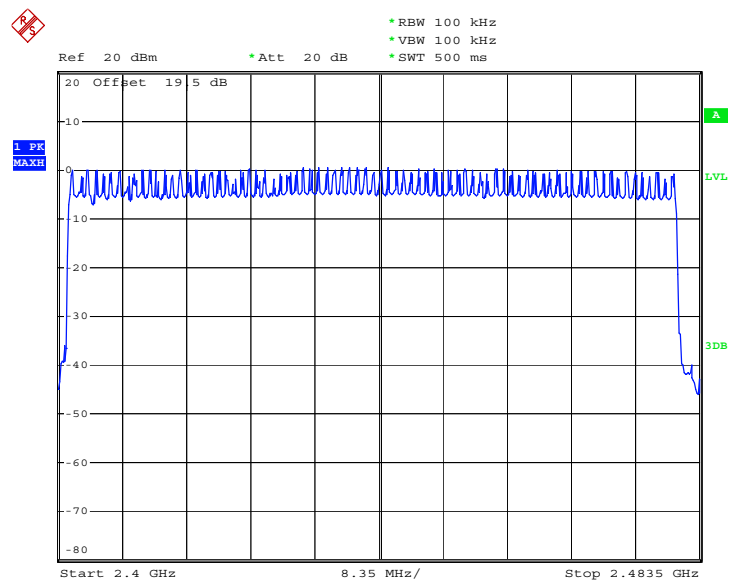
Number of Hopping Channel Plot on Channel 00 - 78



Date: 2.FEB.2009 13:54:55



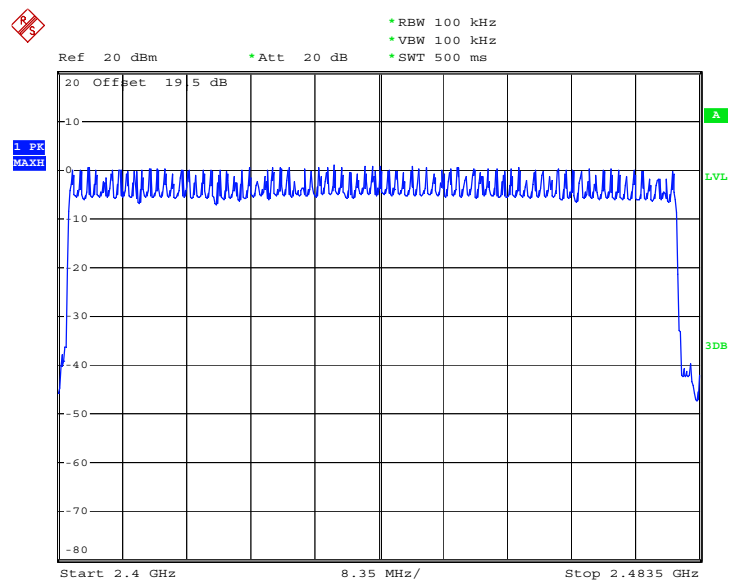
Test Mode :	Mode 4, 5, 6	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%
Number of Hopping Channels (Channel)		Limits (Channel)	Pass/Fail
79		> 15	Pass

Number of Hopping Channel Plot on Channel 00 - 78

Date: 2.FEB.2009 14:01:31



Test Mode :	Mode 7, 8, 9	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%
Number of Hopping Channels (Channel)		Limits (Channel)	Pass/Fail
79		> 15	Pass

Number of Hopping Channel Plot on Channel 00 - 78

Date: 2.FEB.2009 14:05:37

3.2 20dB Bandwidth Measurement

3.2.1 Limit of 20dB Bandwidth

N/A

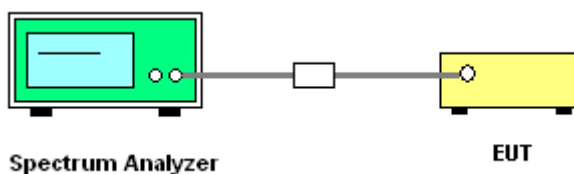
3.2.2 Measuring Instruments

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 $\geq$ 1% of the 20 dB bandwidth; VBW $\geq$ 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

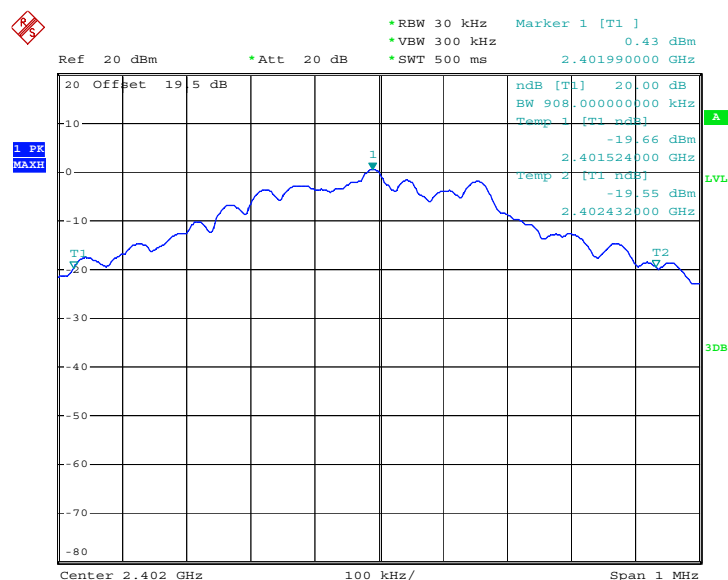


3.2.5 Test Result of 20dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.908
39	2441	0.908
78	2480	0.908

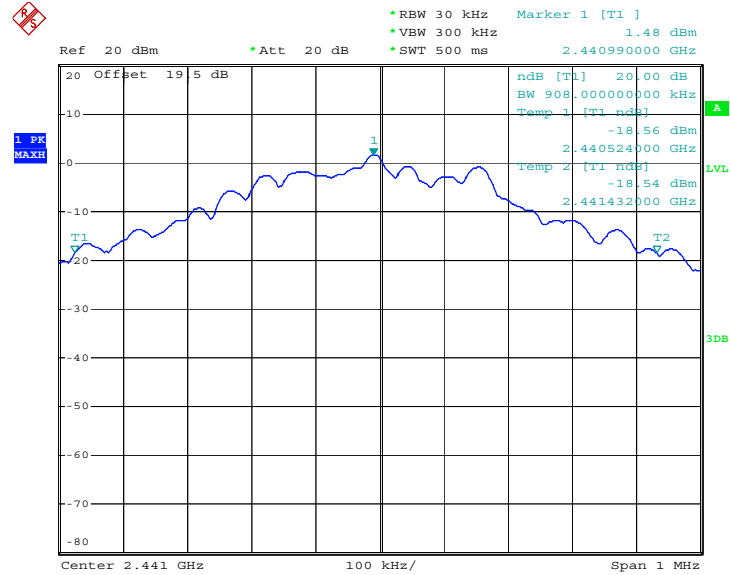
20 dB Bandwidth Plot on Channel 00



Date: 2.FEB.2009 13:01:14

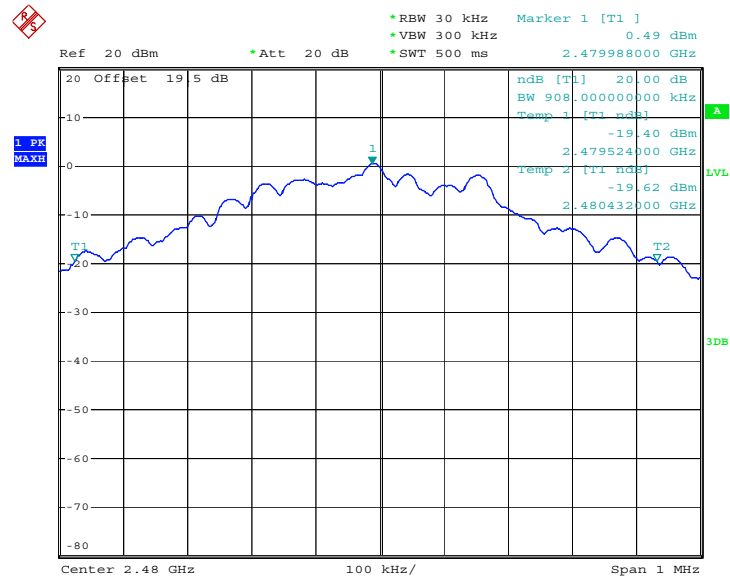


20 dB Bandwidth Plot on Channel 39



Date: 2.FEB.2009 13:02:16

20 dB Bandwidth Plot on Channel 78



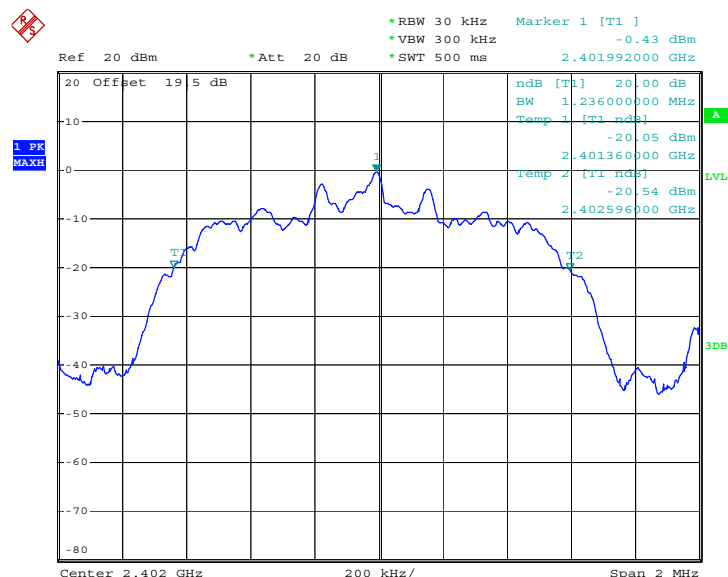
Date: 2.FEB.2009 13:03:32



Test Mode :	Mode 4, 5, 6	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.236
39	2441	1.240
78	2480	1.212

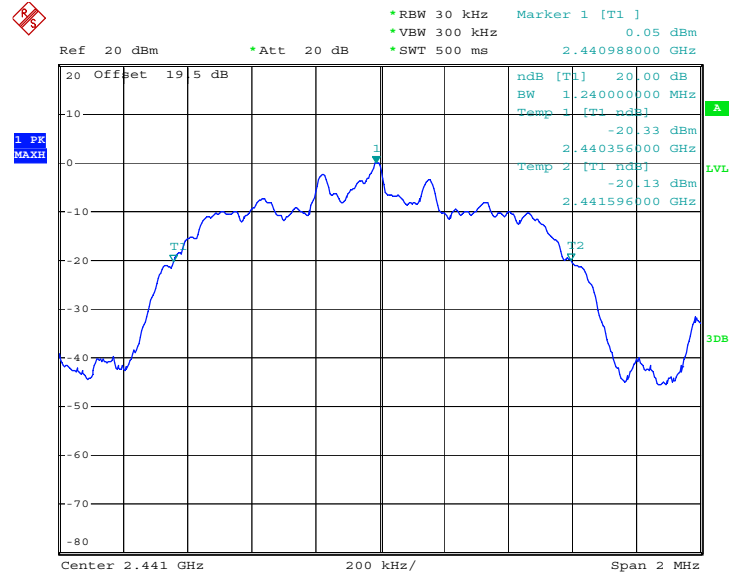
20 dB Bandwidth Plot on Channel 00



Date: 2.FEB.2009 13:12:28

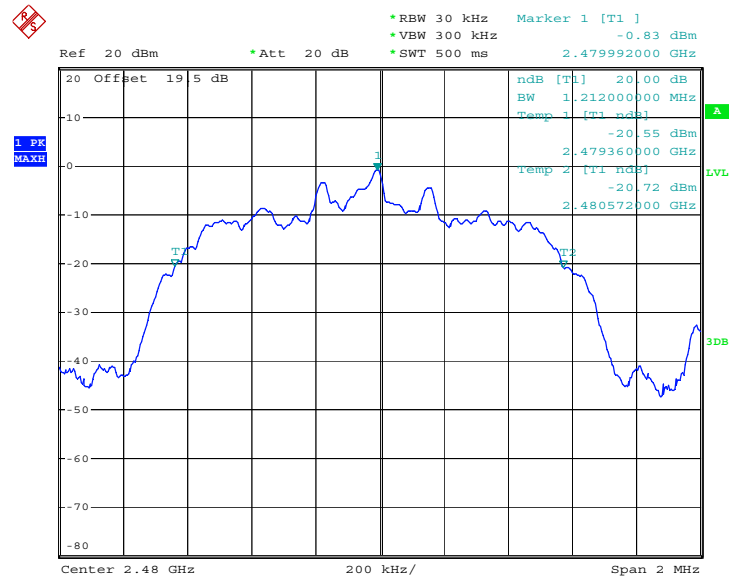


20 dB Bandwidth Plot on Channel 39



Date: 2.FEB.2009 13:13:41

20 dB Bandwidth Plot on Channel 78

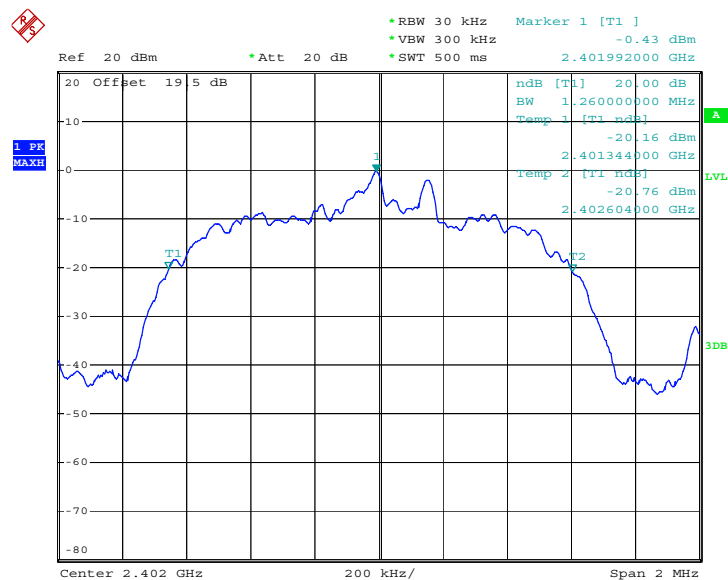


Date: 2.FEB.2009 13:14:57



Test Mode :	Mode 7, 8, 9	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

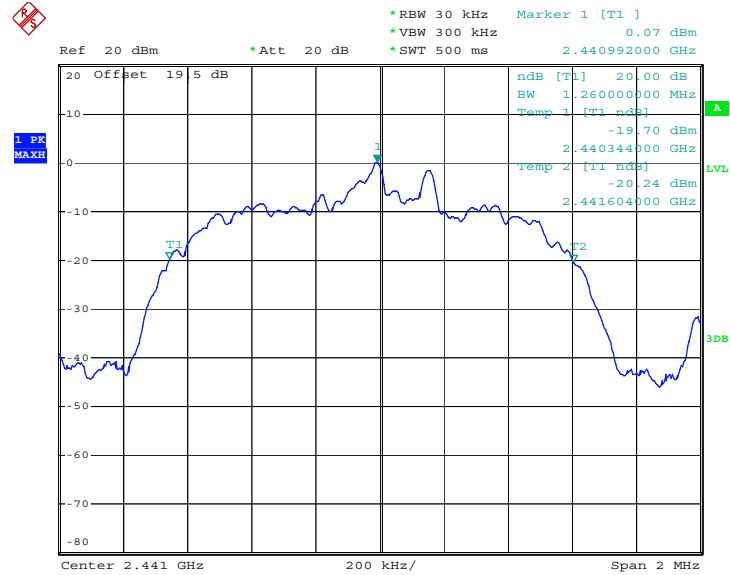
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.260
39	2441	1.260
78	2480	1.260

20 dB Bandwidth Plot on Channel 00

Date: 2.FEB.2009 13:15:56

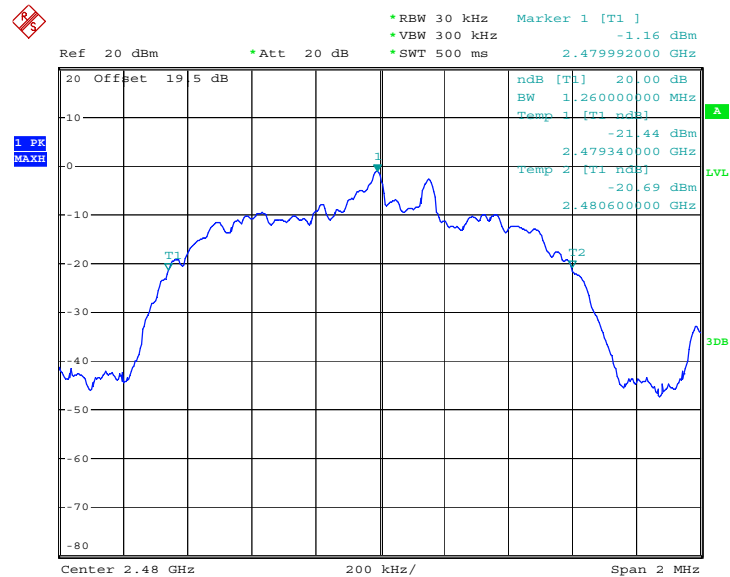


20 dB Bandwidth Plot on Channel 39



Date: 2.FEB.2009 13:16:19

20 dB Bandwidth Plot on Channel 78



Date: 2.FEB.2009 13:16:38

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.

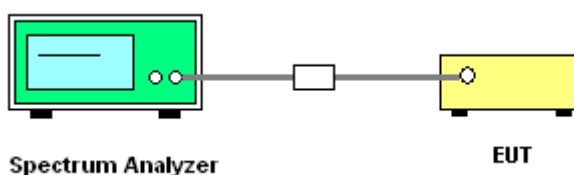
3.3.2 Measuring Instruments

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; $RBW \geq 1\%$ of the span;
 $VBW \geq RBW$; 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.

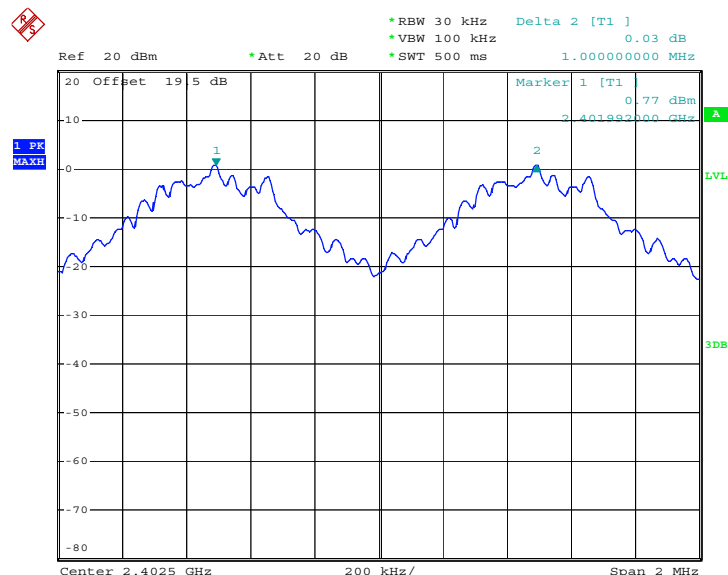
3.3.4 Test Setup



**3.3.5 Test Result of Hopping Channel Separation**

Test Mode :	Mode 1, 2, 3	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

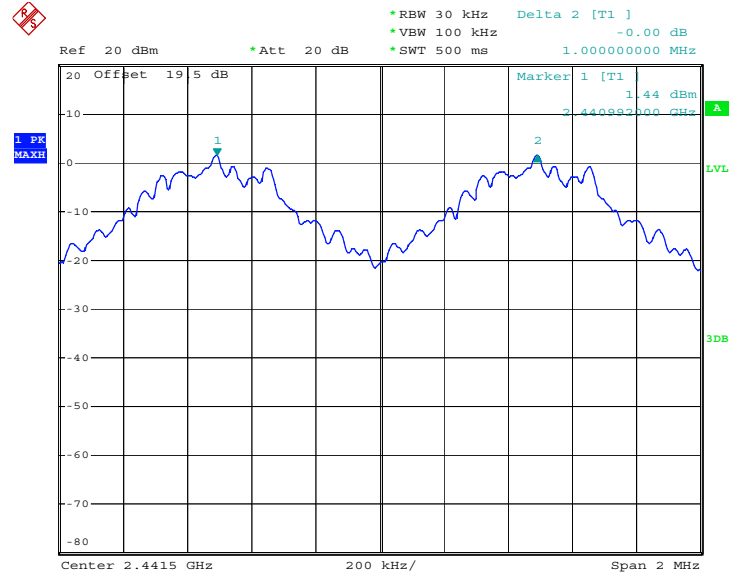
Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.000	0.605	Pass
39	2441	1.000	0.605	Pass
78	2480	1.000	0.605	Pass

Channel Separation Plot on Channel 00 - 01

Date: 2.FEB.2009 13:33:07

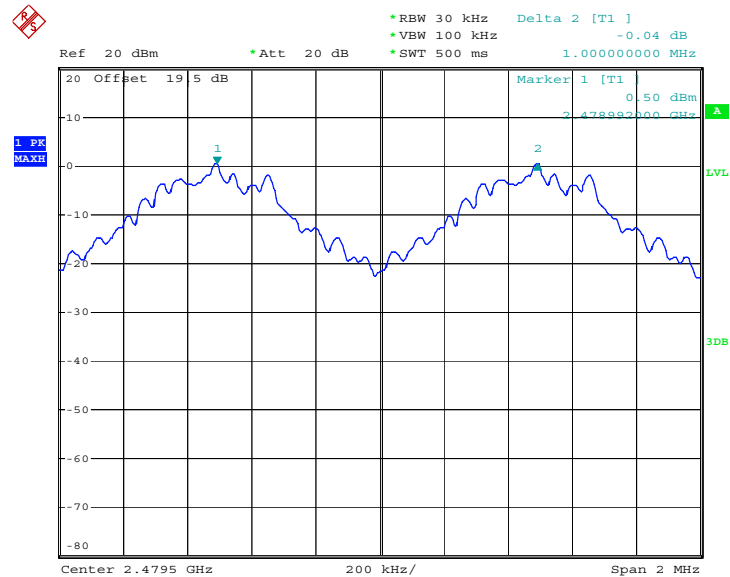


Channel Separation Plot on Channel 39 - 40



Date: 2.FEB.2009 13:32:42

Channel Separation Plot on Channel 77 - 78



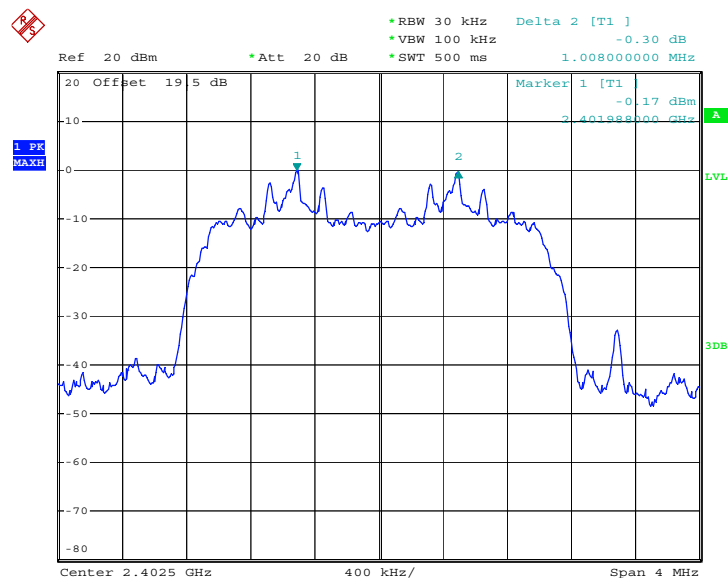
Date: 2.FEB.2009 13:32:14



Test Mode :	Mode 4, 5, 6	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.008	0.824	Pass
39	2441	1.008	0.827	Pass
78	2480	1.008	0.808	Pass

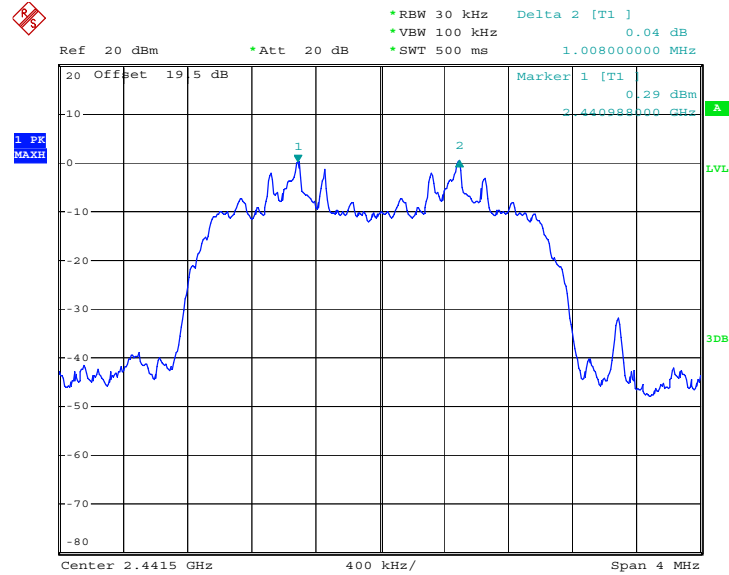
Channel Separation Plot on Channel 00 - 01



Date: 2.FEB.2009 13:28:44

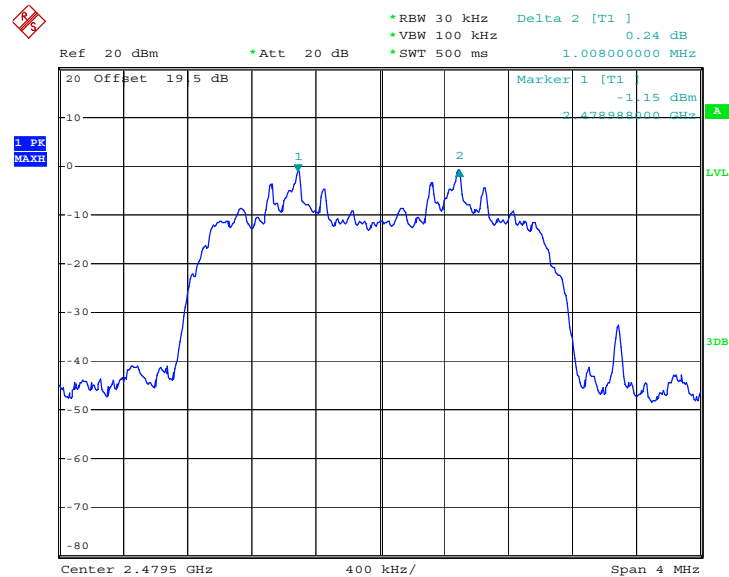


Channel Separation Plot on Channel 39 - 40



Date: 2.FEB.2009 13:30:07

Channel Separation Plot on Channel 77 - 78



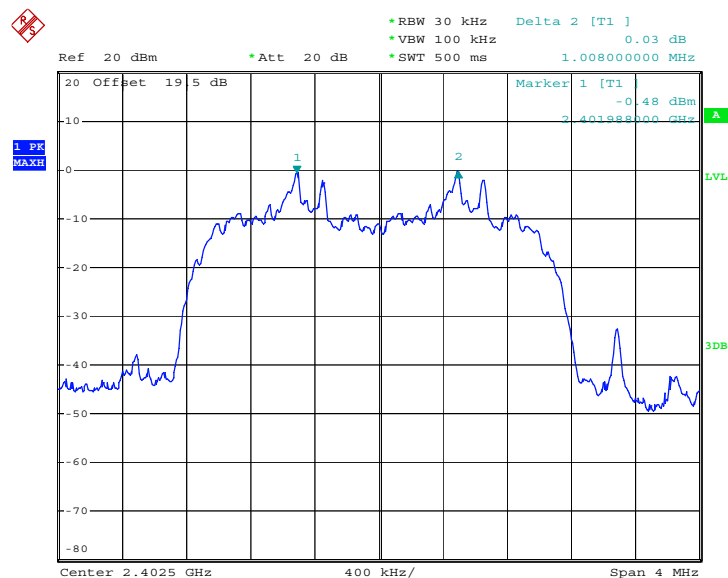
Date: 2.FEB.2009 13:31:03



Test Mode :	Mode 7, 8, 9	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

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

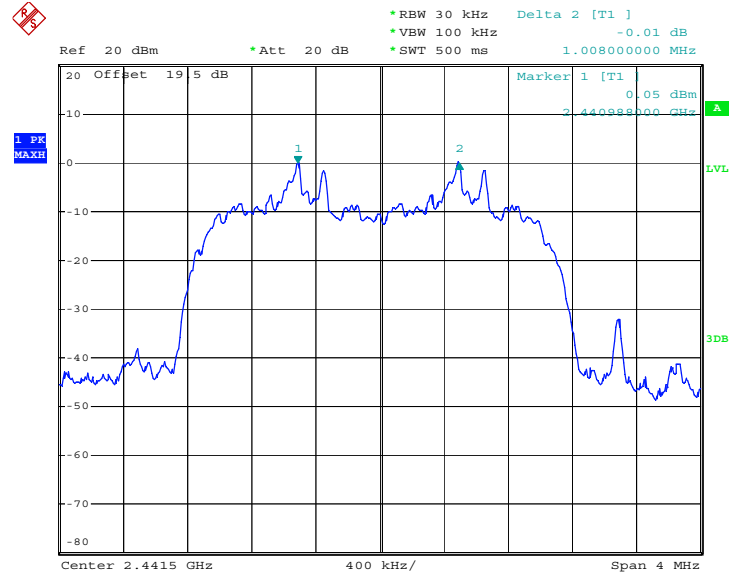
Channel Separation Plot on Channel 00 - 01



Date: 2.FEB.2009 13:26:22

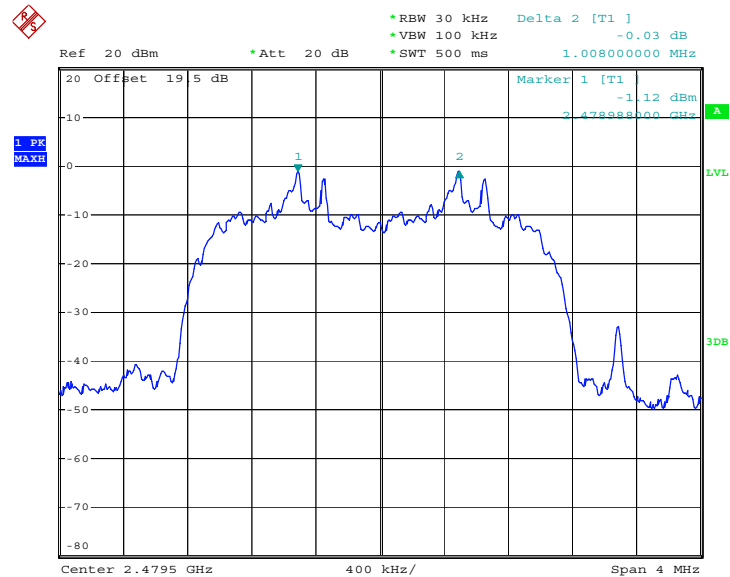


Channel Separation Plot on Channel 39 - 40



Date: 2.FEB.2009 13:27:58

Channel Separation Plot on Channel 77 - 78



Date: 2.FEB.2009 13:27:29

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.

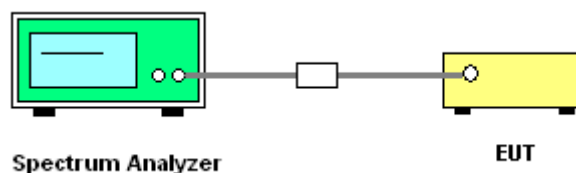
3.4.2 Measuring Instruments

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 $\geq$ 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



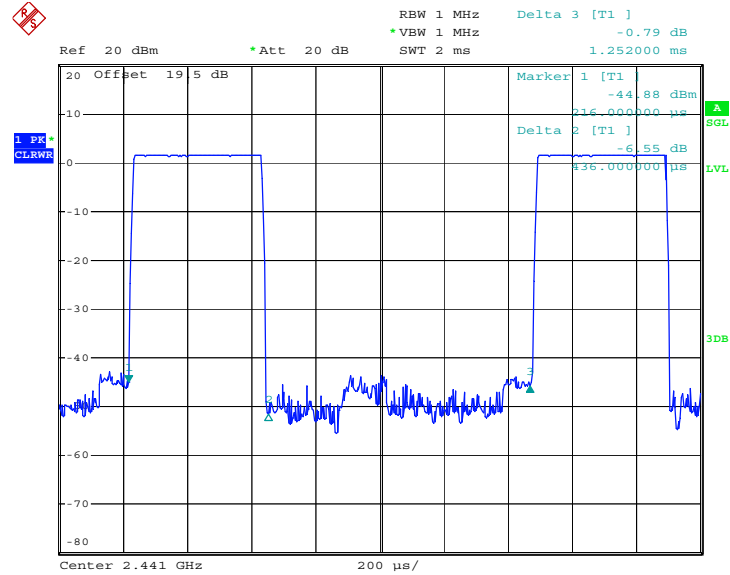
3.4.5 Test Result of Dwell Time

Test Mode :	Mode 2	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

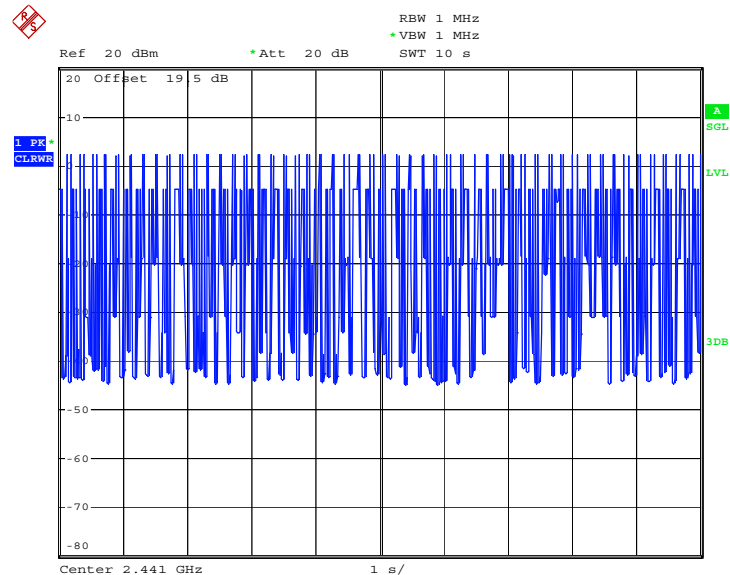
Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
DH1	8.50	436.00	0.12	0.4	Pass
DH3	4.40	1716.00	0.24	0.4	Pass
DH5	3.60	2976.00	0.34	0.4	Pass

Remark:

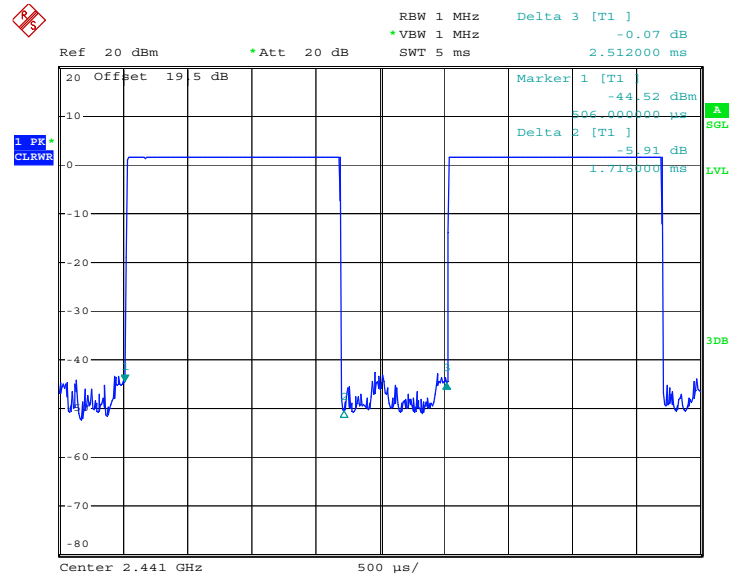
- 1.Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
- 2.79 channels come from the Hopping Channel number.
- 3.Average Hopping Channel = hops/sweep time
- 4.t: Package Transfer Time(us)

DH1 Dwell Time (One Pulse) Plot on Channel 39_1Mbps


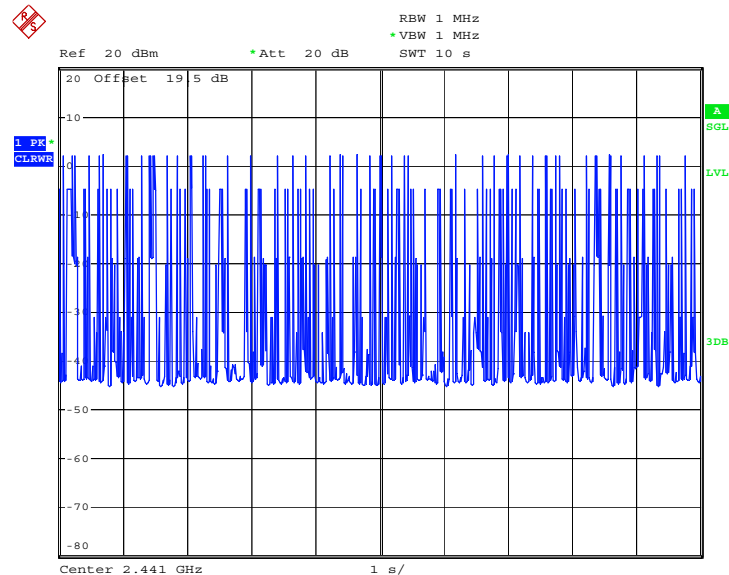
Date: 25.JAN.2009 15:47:23

DH1 Dwell Time (Count Pulses) Plot on Channel 39_1Mbps


Date: 2.FEB.2009 13:46:09

DH3 Dwell Time (One Pulse) Plot on Channel 39_1Mbps


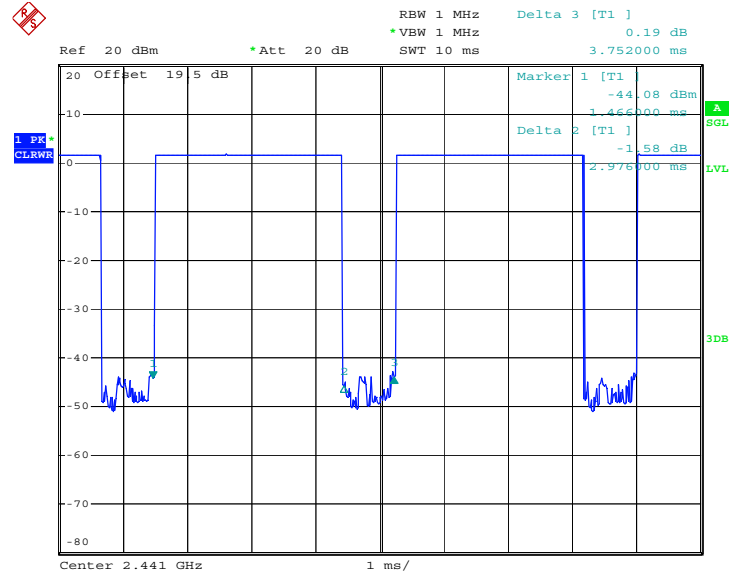
Date: 25.JAN.2009 15:48:08

DH3 Dwell Time (Count Pulses) Plot on Channel 39_1Mbps


Date: 2.FEB.2009 13:46:38

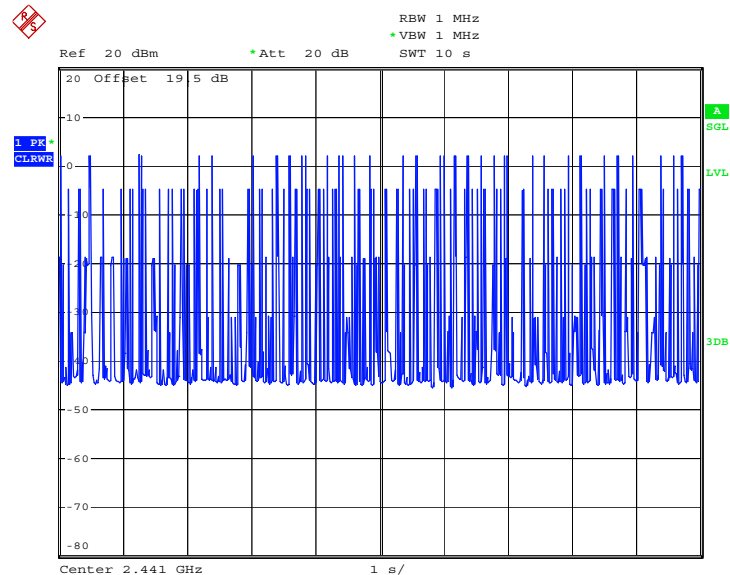


DH5 Dwell Time (One Pulse) Plot on Channel 39_1Mbps



Date: 25.JAN.2009 15:48:34

DH5 Dwell Time (Count Pulses) Plot on Channel 39_1Mbps



Date: 2.FEB.2009 13:47:36



Test Mode :	Mode 5	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

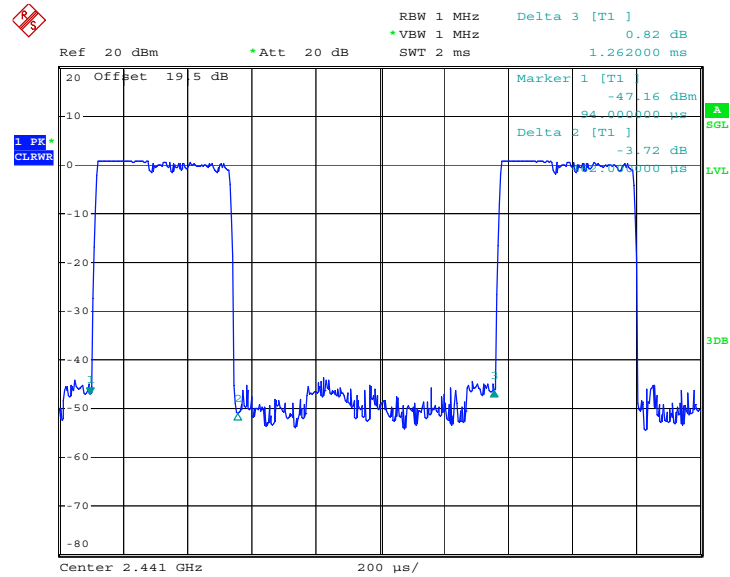
Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
DH1	8.70	462.00	0.13	0.4	Pass
DH3	4.20	1740.00	0.23	0.4	Pass
DH5	3.10	2980.00	0.29	0.4	Pass

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)

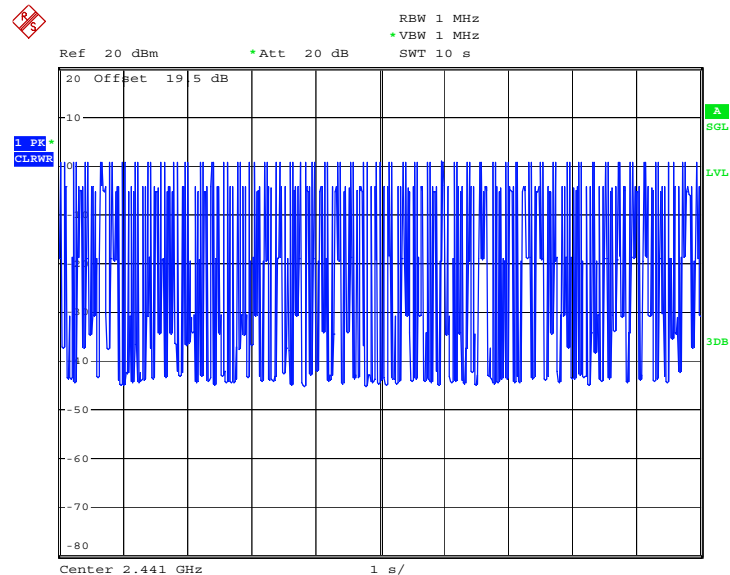


DH1 Dwell Time (One Pulse) Plot on Channel 39_2Mbps



Date: 25.JAN.2009 15:49:13

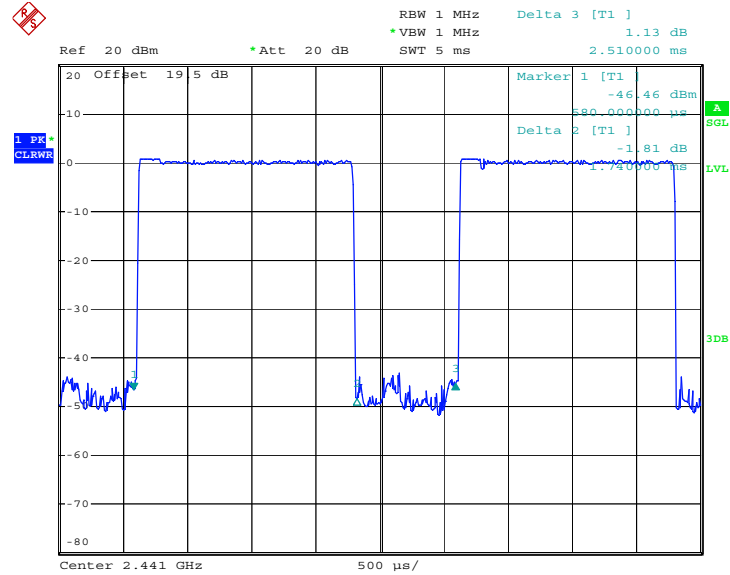
DH1 Dwell Time (Count Pulses) Plot on Channel 39_2Mbps



Date: 2.FEB.2009 13:44:54

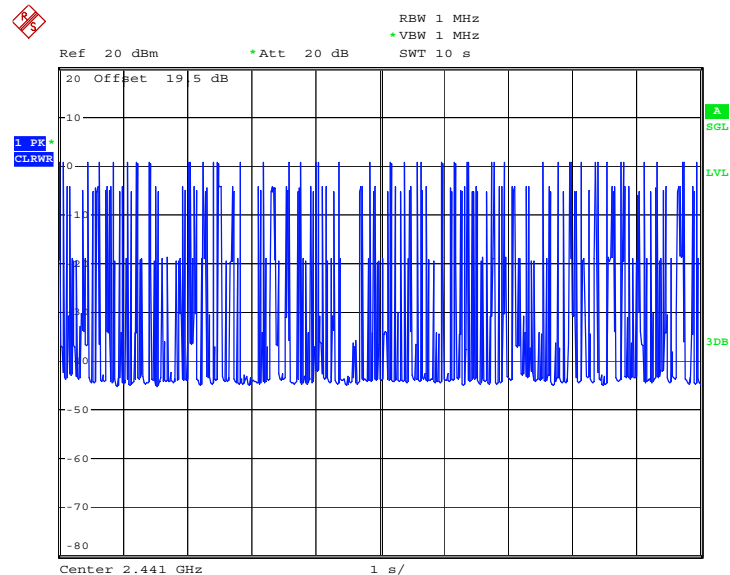


DH3 Dwell Time (One Pulse) Plot on Channel 39_2Mbps



Date: 25.JAN.2009 15:49:54

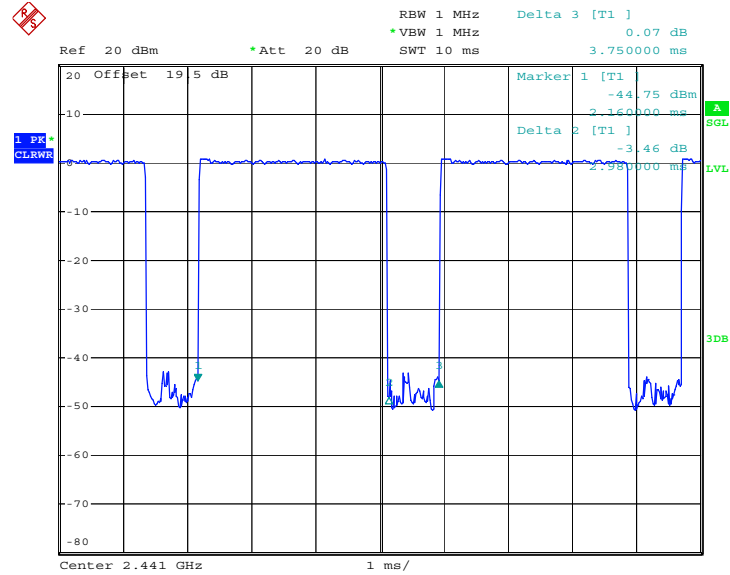
DH3 Dwell Time (Count Pulses) Plot on Channel 39_2Mbps



Date: 2.FEB.2009 13:45:17

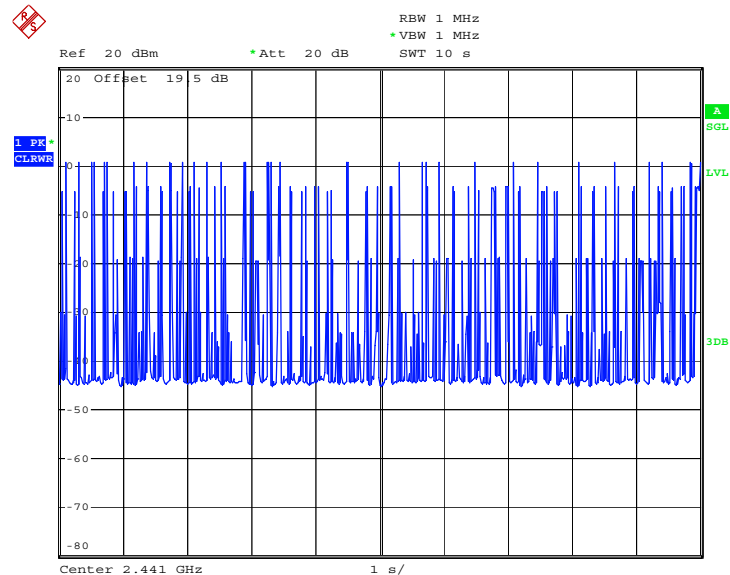


DH5 Dwell Time (One Pulse) Plot on Channel 39_2Mbps



Date: 25.JAN.2009 15:50:32

DH5 Dwell Time (Count Pulses) Plot on Channel 39_2Mbps



Date: 2.FEB.2009 13:45:41

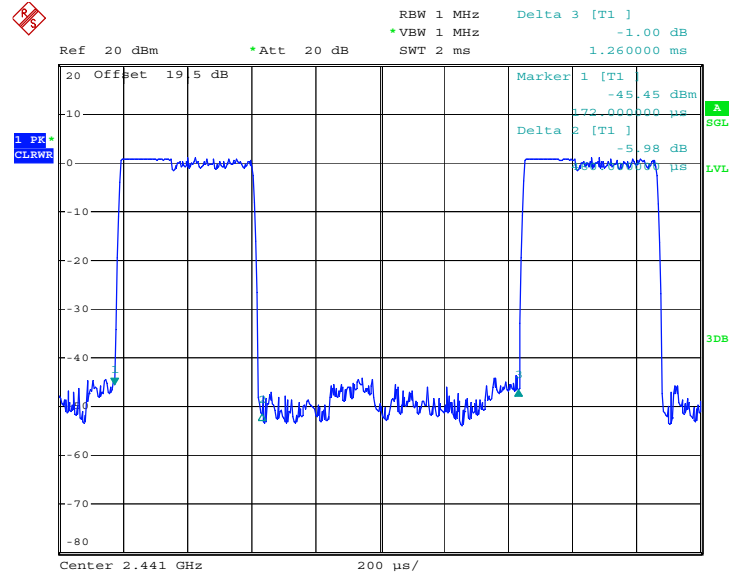


Test Mode :	Mode 8	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

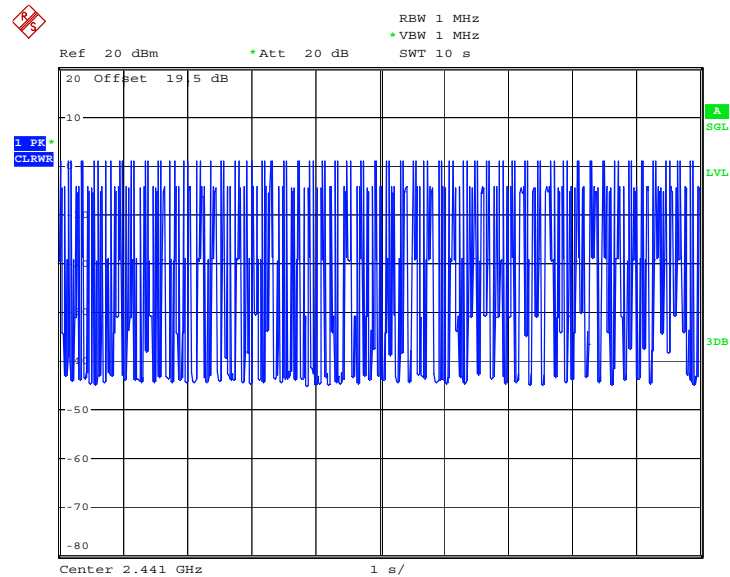
Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
DH1	8.90	460.00	0.13	0.4	Pass
DH3	4.90	1730.00	0.27	0.4	Pass
DH5	3.60	2970.00	0.34	0.4	Pass

Remark:

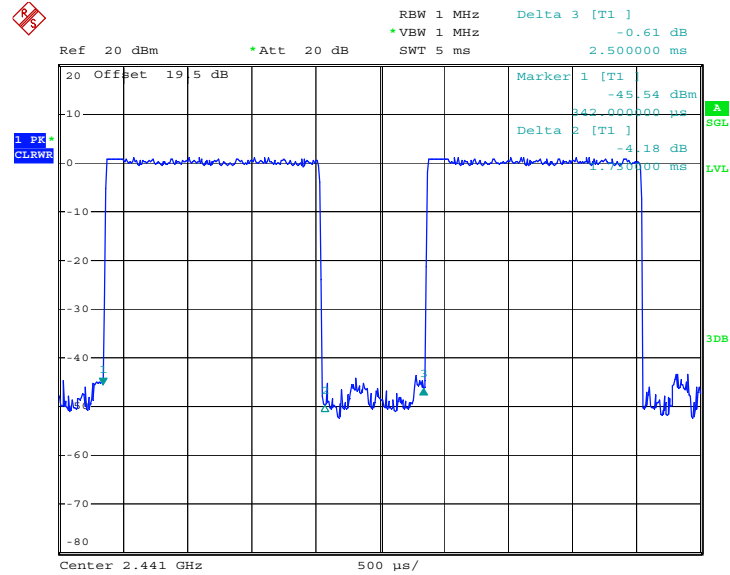
- 1.Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
- 2.79 channels come from the Hopping Channel number.
- 3.Average Hopping Channel = hops/sweep time
- 4.t: Package Transfer Time(us)

DH1 Dwell Time (One Pulse) Plot on Channel 39_3Mbps


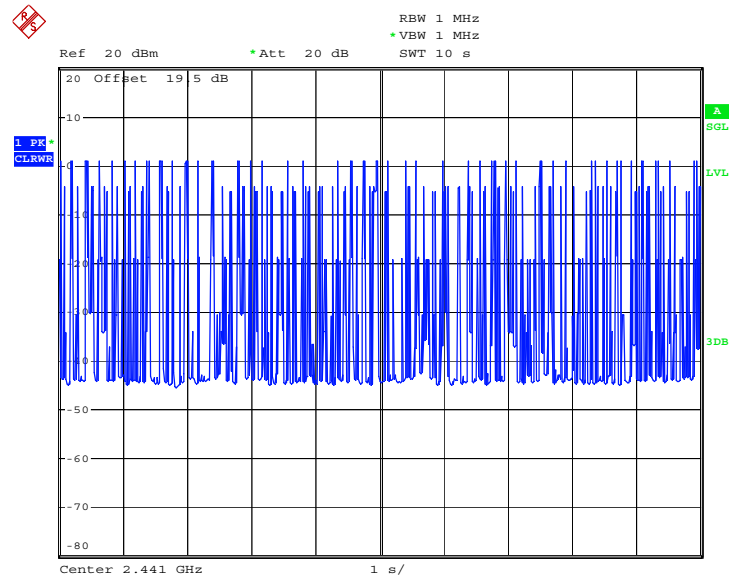
Date: 25.JAN.2009 15:51:20

DH1 Dwell Time (Count Pulses) Plot on Channel 39_3Mbps


Date: 2.FEB.2009 13:43:09

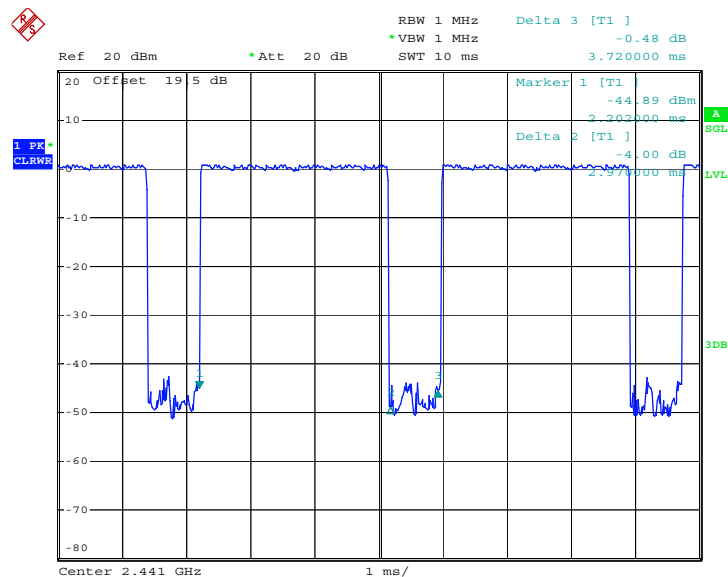
DH3 Dwell Time (One Pulse) Plot on Channel 39_3Mbps


Date: 25.JAN.2009 15:51:52

DH3 Dwell Time (Count Pulses) Plot on Channel 39_3Mbps


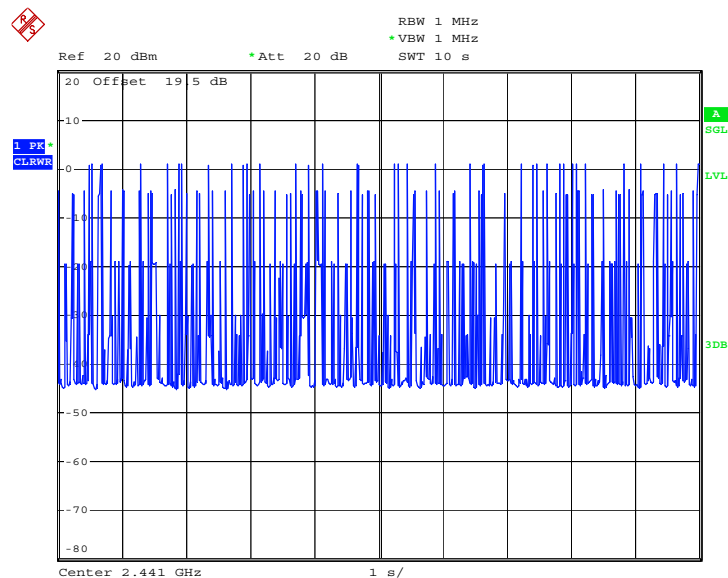
Date: 2.FEB.2009 13:43:36

DH5 Dwell Time (One Pulse) Plot on Channel 39_3Mbps



Date: 25.JAN.2009 15:52:29

DH5 Dwell Time (Count Pulses) Plot on Channel 39_3Mbps



Date: 2.FEB.2009 13:44:17

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).

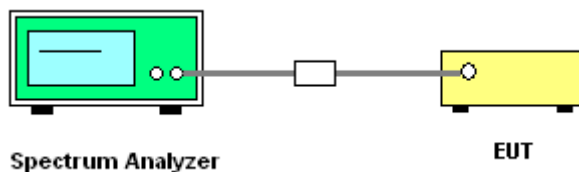
3.5.2 Measuring Instruments

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 peak power meter by a low loss cable.

3.5.4 Test Setup



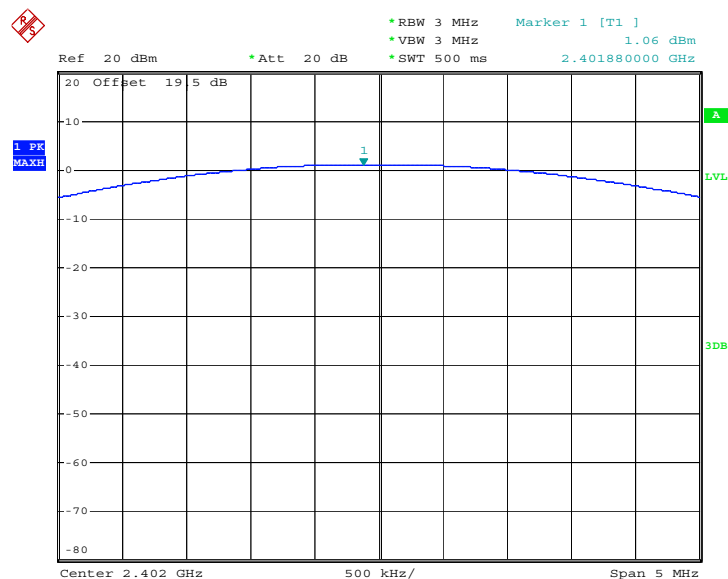


3.5.5 Test Result of Peak Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	1.06	30	Pass
39	2441	1.78	30	Pass
78	2480	0.87	30	Pass

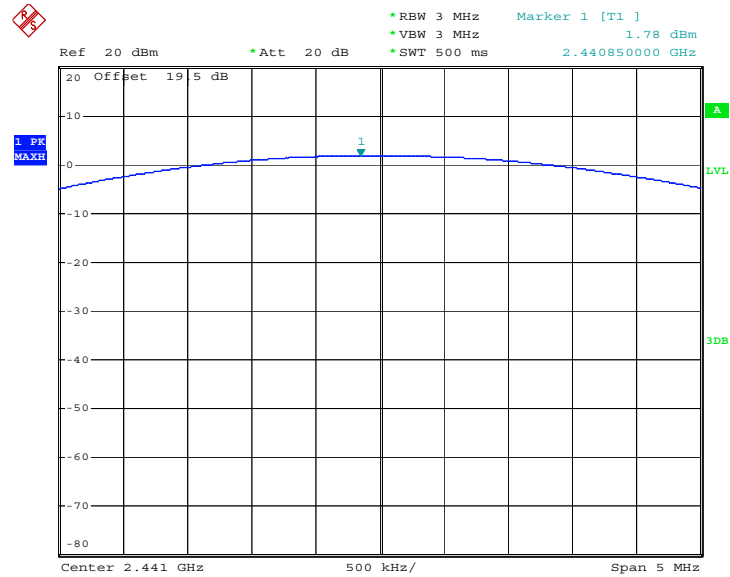
Peak Output Power Plot on Channel 00



Date: 25.JAN.2009 15:30:07

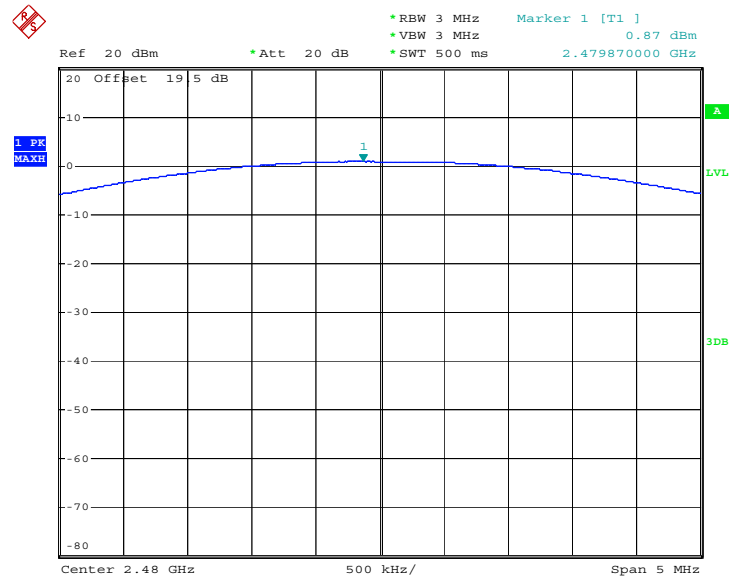


Peak Output Power Plot on Channel 39



Date: 25.JAN.2009 15:32:06

Peak Output Power Plot on Channel 78

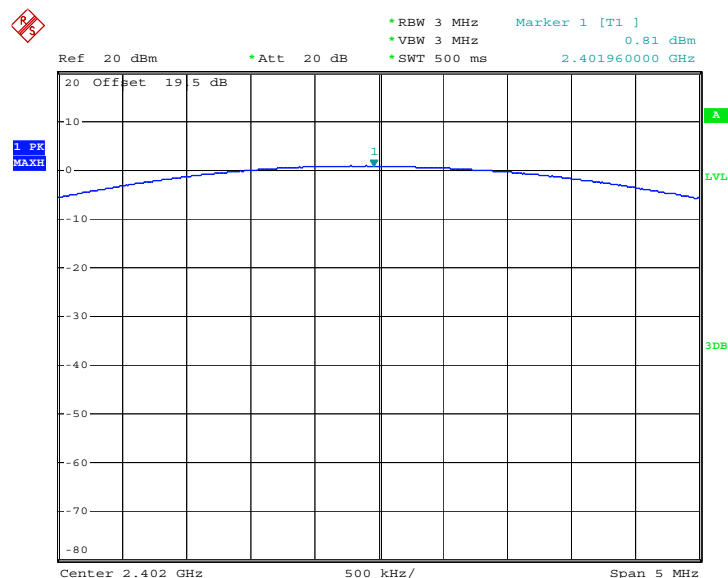


Date: 25.JAN.2009 15:34:02



Test Mode :	Mode 4, 5, 6	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

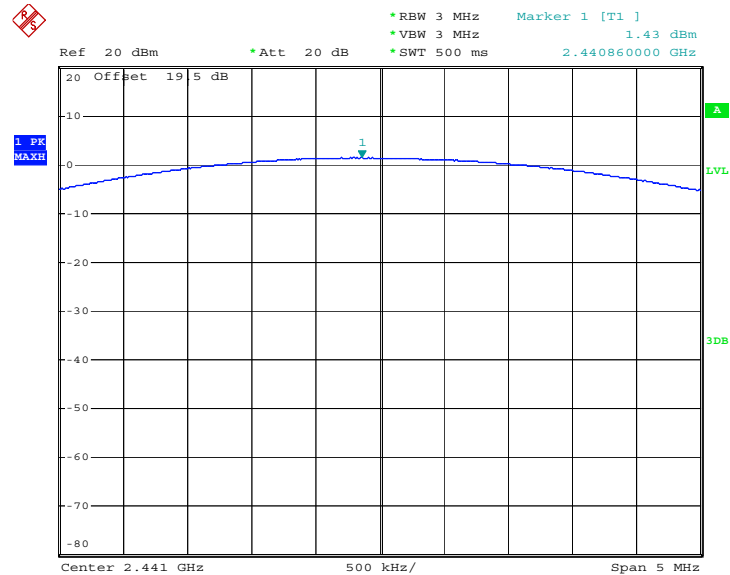
Channel	Frequency (MHz)	RF Power (dBm)		
		$\pi/4$ -DQPSK	Max. Limits (dBm)	Pass/Fail
		2 Mbps		
00	2402	0.81	30	Pass
39	2441	1.43	30	Pass
78	2480	0.25	30	Pass

Peak Output Power Plot on Channel 00

Date: 25.JAN.2009 15:30:50

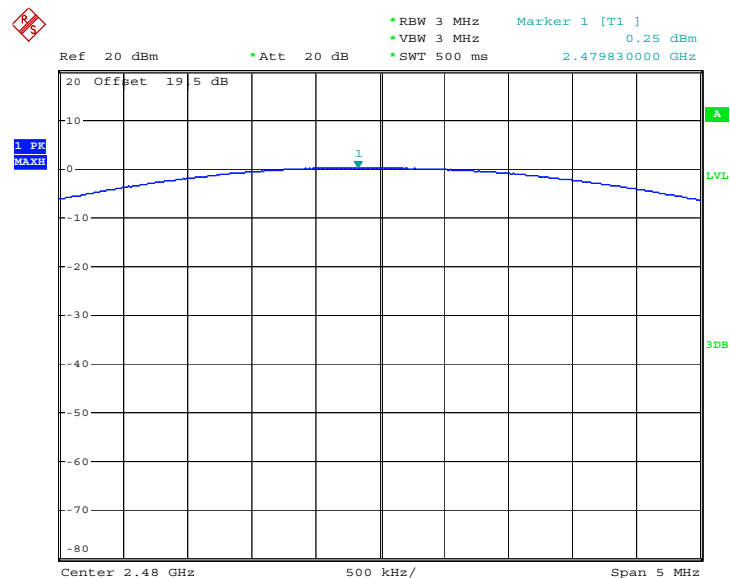


Peak Output Power Plot on Channel 39



Date: 25.JAN.2009 15:32:31

Peak Output Power Plot on Channel 78



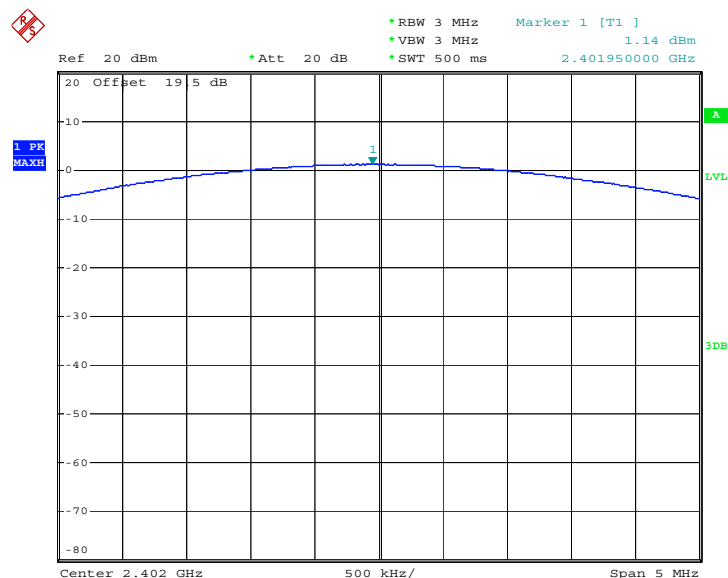
Date: 25.JAN.2009 15:34:24



Test Mode :	Mode 7, 8, 9	Temperature :	23~24
Test Engineer :	Eric Hum	Relative Humidity :	44~45%

Channel	Frequency (MHz)	RF Power (dBm)		
		8-DPSK	Max. Limits (dBm)	Pass/Fail
		3 Mbps		
00	2402	1.14	30	Pass
39	2441	1.70	30	Pass
78	2480	0.65	30	Pass

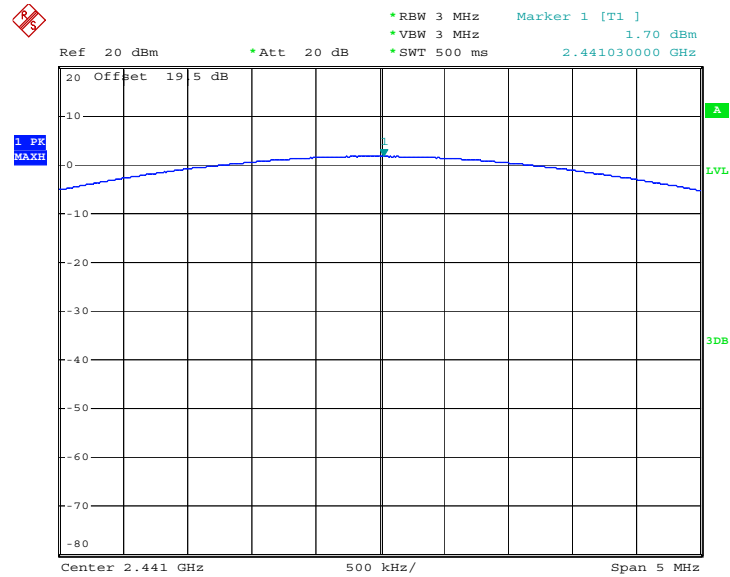
Peak Output Power Plot on Channel 00



Date: 25.JAN.2009 15:31:09

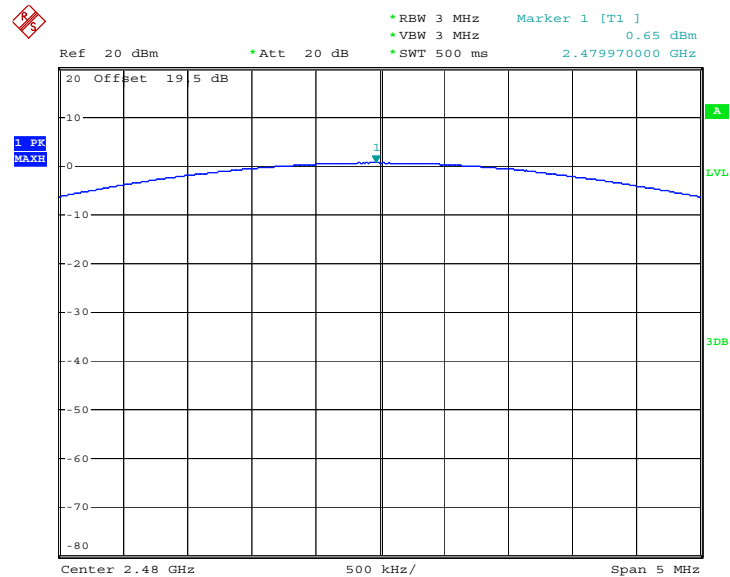


Peak Output Power Plot on Channel 39



Date: 25.JAN.2009 15:32:55

Peak Output Power Plot on Channel 78



Date: 25.JAN.2009 15:34:51

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.

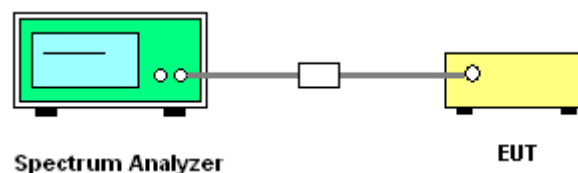
3.6.2 Measuring Instruments

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 = 100 kHz, Video bandwidth (VBW) > RBW, scan up through 10th harmonic. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz 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 = 10 Hz, Sweep: Auto. 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).

3.6.4 Test Setup



3.6.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	CH00_2402 MHz	Relative Humidity :	46~47%
Test Engineer :	Mac Lin, Kai Wang, and Elvis Chen		

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
2375.17	44.88	-29.12	74.00	42.76	32.32	5.47	35.68	198	350	Peak
2375.17	35.51	-18.49	54.00	33.39	32.32	5.47	35.68	198	350	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
2375.74	45.49	-28.51	74.00	43.39	32.30	5.47	35.68	100	95	Peak
2375.74	35.68	-18.32	54.00	33.58	32.30	5.47	35.68	100	95	Average

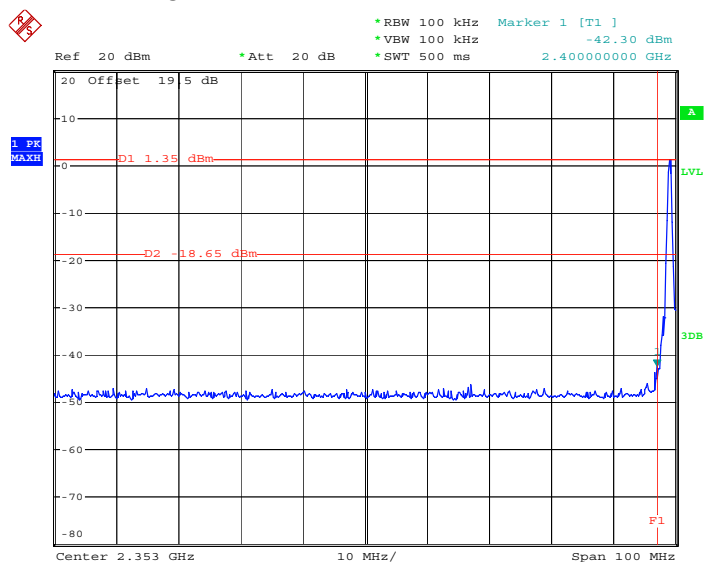
Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	CH78_2480 MHz	Relative Humidity :	46~47%
Test Engineer :	Mac Lin, Kai Wang, and Elvis Chen		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	59.48	-14.52	74.00	57.49	32.30	5.38	35.70	163	353	Peak
2483.50	45.56	-8.44	54.00	43.57	32.30	5.38	35.70	163	353	Average

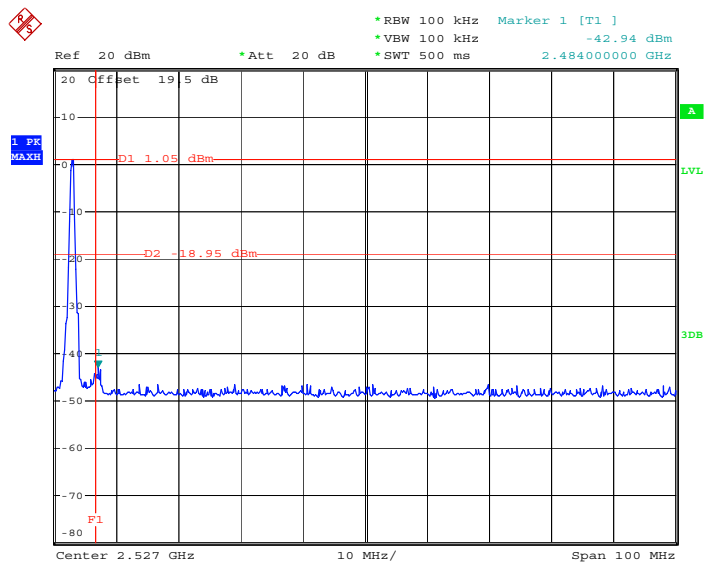
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	56.34	-17.66	74.00	54.35	32.30	5.38	35.70	100	0	Peak
2483.50	42.13	-11.87	54.00	40.14	32.30	5.38	35.70	100	0	Average

**3.6.6 Test Result of Conducted Band Edges**

Test Mode :	Mode 1, 3	Temperature :	23~24
Test Channel :	00, 78	Relative Humidity :	44~45%
Test Engineer :	Eric Hum		

Low Band Edge Plot on Channel 00

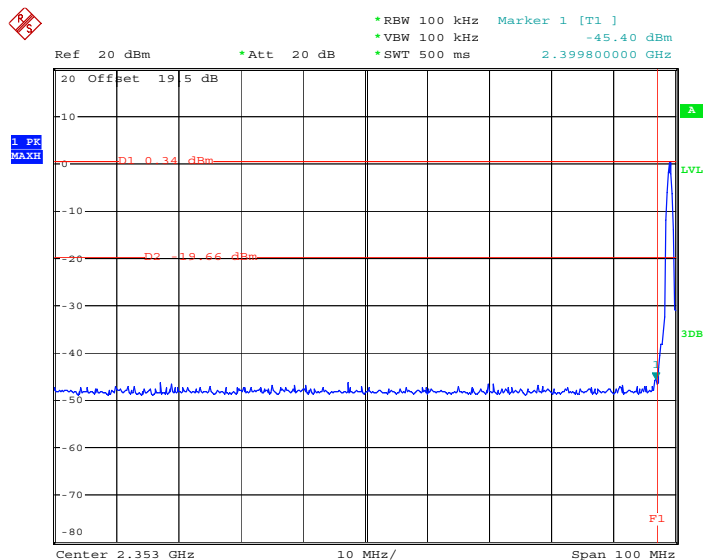
Date: 2.FEB.2009 14:06:58

High Band Edge Plot on Channel 78

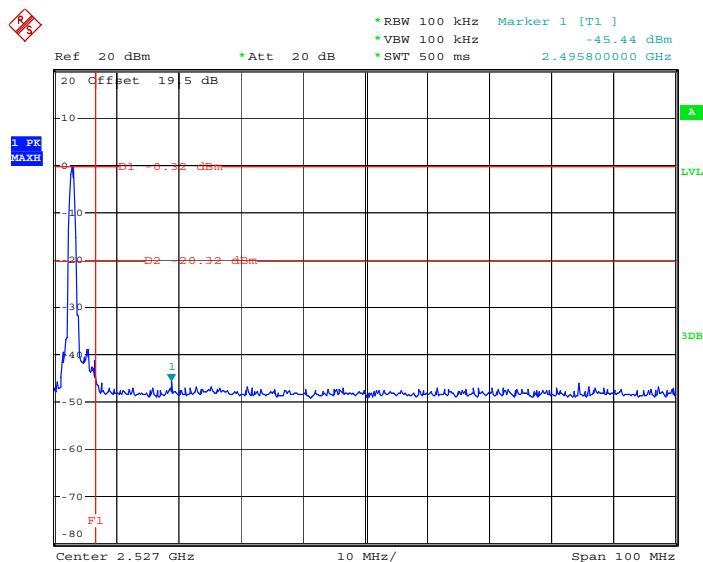
Date: 2.FEB.2009 13:06:50



Test Mode :	Mode 4, 6	Temperature :	23~24
Test Channel :	00, 78	Relative Humidity :	44~45%
Test Engineer :	Eric Hum		

Low Band Edge Plot on Channel 00

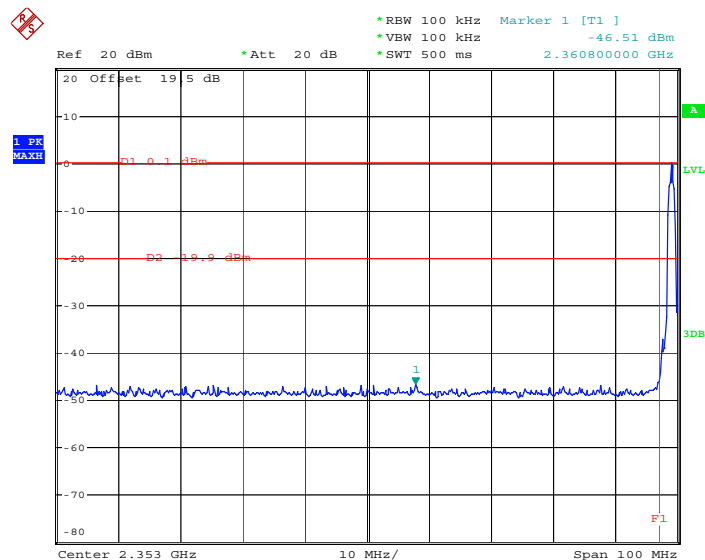
Date: 2.FEB.2009 13:22:28

High Band Edge Plot on Channel 78

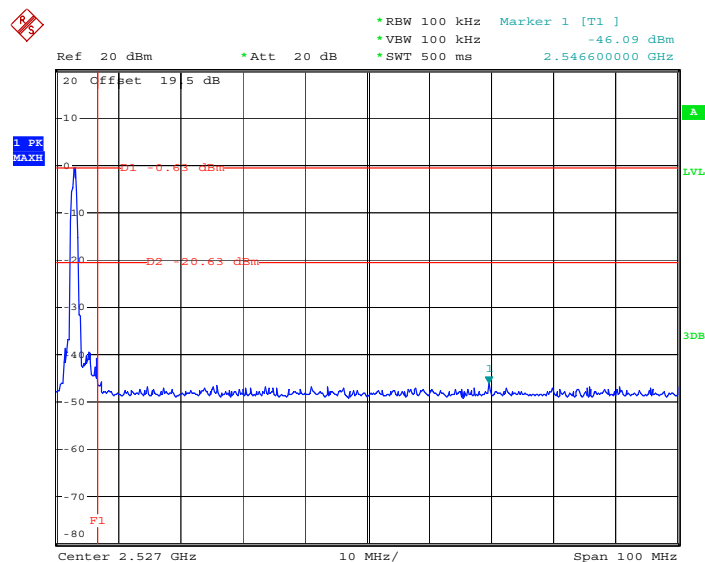
Date: 2.FEB.2009 13:20:44



Test Mode :	Mode 7, 9	Temperature :	23~24
Test Channel :	00, 78	Relative Humidity :	44~45%
Test Engineer :	Eric Hum		

Low Band Edge Plot on Channel 00

Date: 2.FEB.2009 13:23:23

High Band Edge Plot on Channel 78

Date: 2.FEB.2009 13:19:13

3.7 AC Conducted Emission Measurement

3.7.1 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.

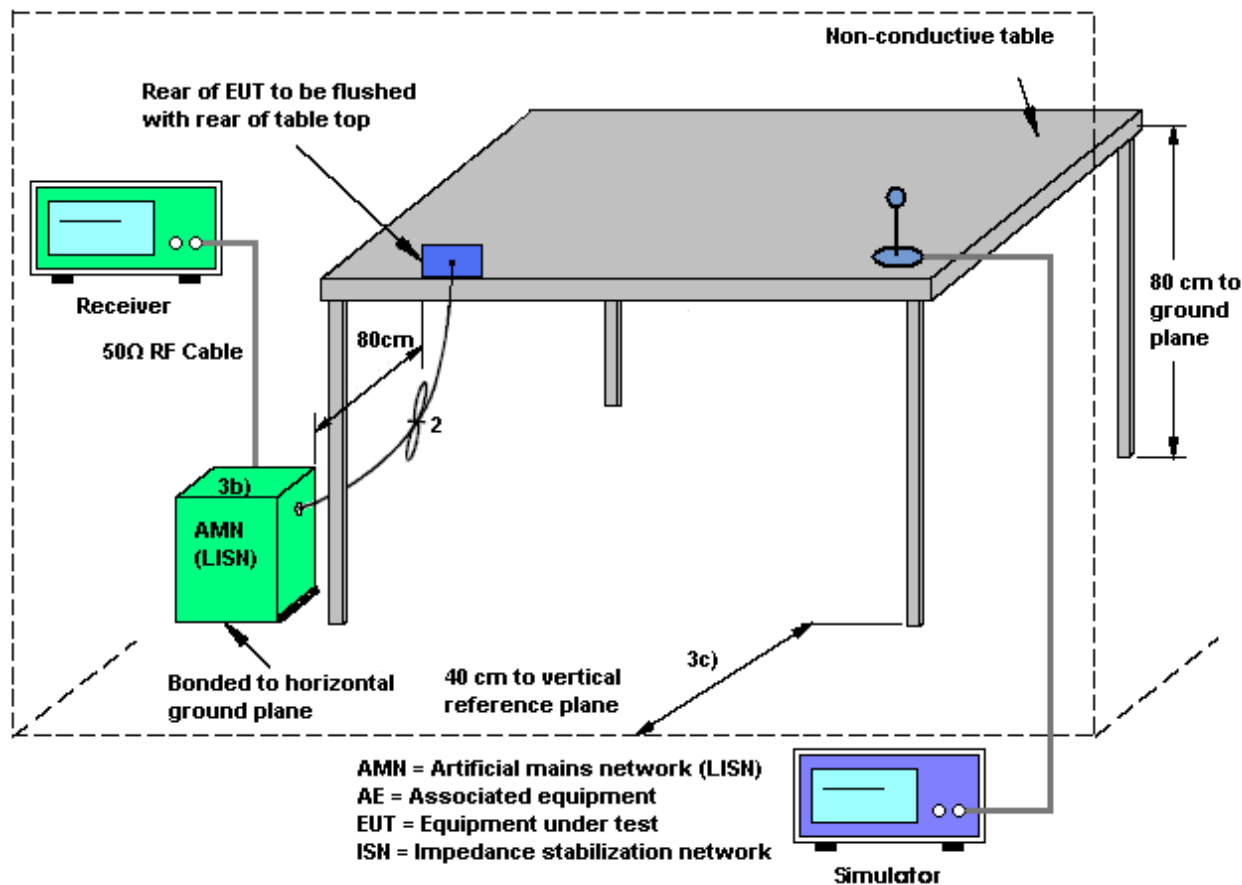
3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedures

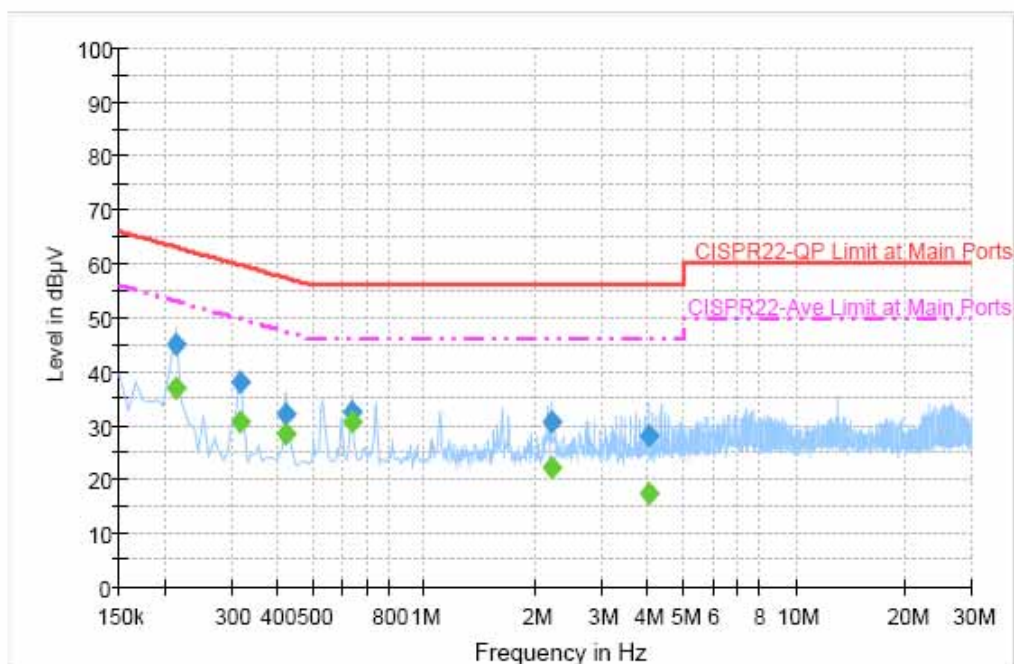
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All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

3.7.4 Test Setup



3.7.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	23~24
Test Engineer :	Cona Huang	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM 850 Idle + GPS Rx + BT Link + WLAN Link + Cradle + Adapter + USB Cable + Battery 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



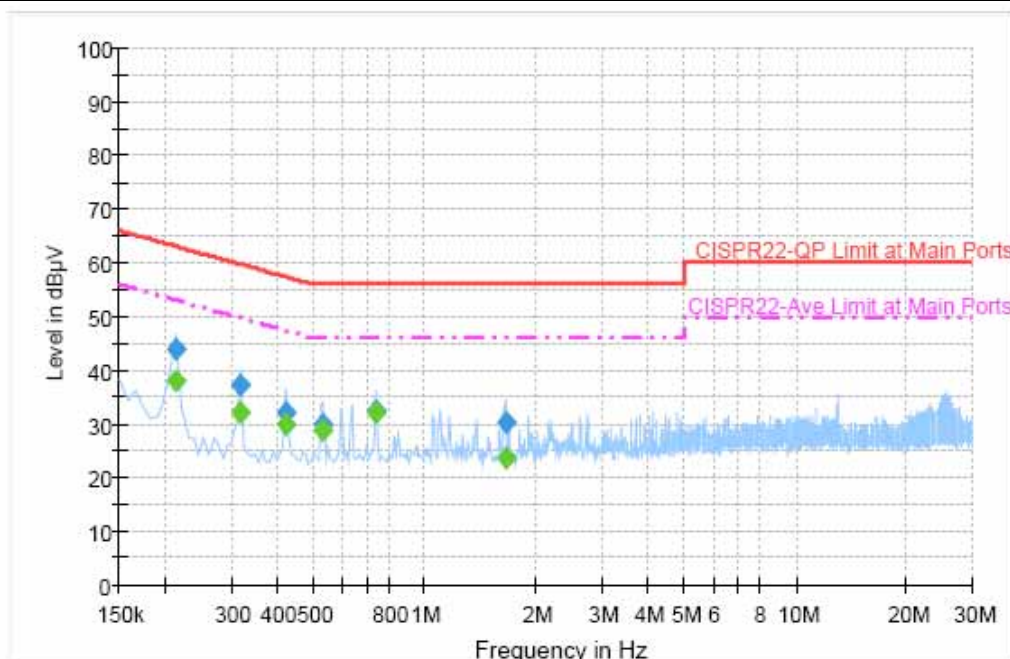
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	45.1	Off	L1	19.3	17.9	63.0
0.318000	37.9	Off	L1	19.3	21.9	59.8
0.422000	32.1	Off	L1	19.4	25.3	57.4
0.638000	32.5	Off	L1	19.4	23.5	56.0
2.198000	30.7	Off	L1	19.5	25.3	56.0
4.030000	27.9	Off	L1	19.5	28.1	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	36.8	Off	L1	19.3	16.2	53.0
0.318000	30.5	Off	L1	19.3	19.3	49.8
0.422000	28.3	Off	L1	19.4	19.1	47.4
0.638000	30.8	Off	L1	19.4	15.2	46.0
2.198000	22.1	Off	L1	19.5	23.9	46.0
4.030000	17.5	Off	L1	19.5	28.5	46.0

Test Mode :	Mode 1	Temperature :	23~24
Test Engineer :	Cona Huang	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM 850 Idle + GPS Rx + BT Link + WLAN Link + Cradle + Adapter + USB Cable + Battery 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

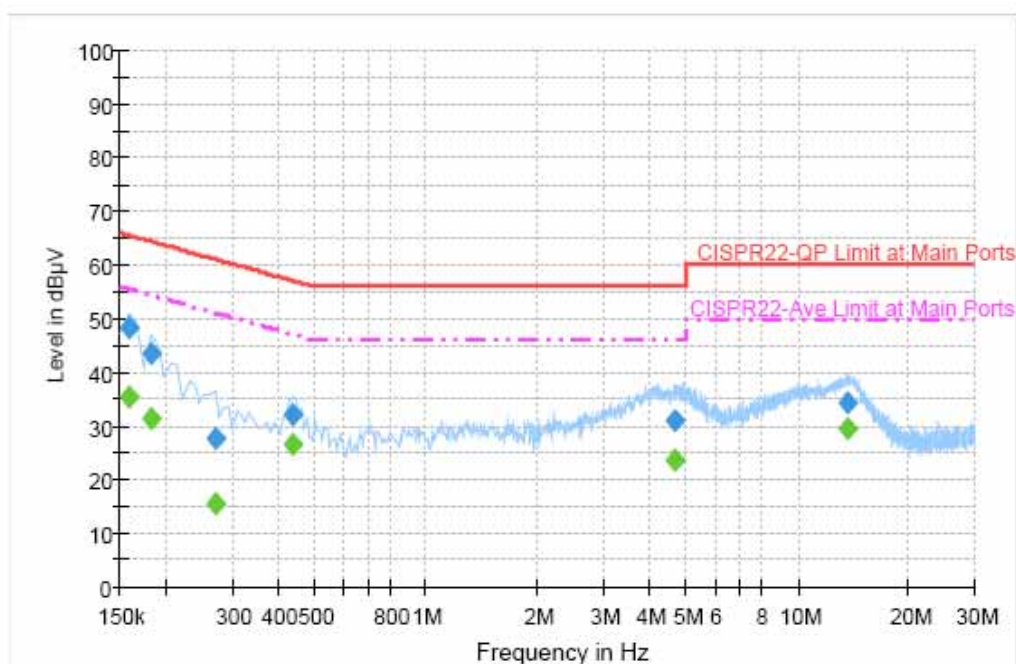

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	44.0	Off	N	19.4	19.0	63.0
0.318000	37.5	Off	N	19.3	22.3	59.8
0.422000	32.2	Off	N	19.4	25.2	57.4
0.534000	29.9	Off	N	19.3	26.1	56.0
0.742000	32.6	Off	N	19.4	23.4	56.0
1.654000	30.1	Off	N	19.5	25.9	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	37.9	Off	N	19.4	15.1	53.0
0.318000	32.3	Off	N	19.3	17.5	49.8
0.422000	29.8	Off	N	19.4	17.6	47.4
0.534000	28.6	Off	N	19.3	17.4	46.0
0.742000	32.0	Off	N	19.4	14.0	46.0
1.654000	23.6	Off	N	19.5	22.4	46.0

Test Mode :	Mode 2	Temperature :	23~24
Test Engineer :	Cona Huang	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM 850 Idle + GPS Rx + BT Link + WLAN Link + Earphone + USB Charging Cable with AC Power + Battery 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

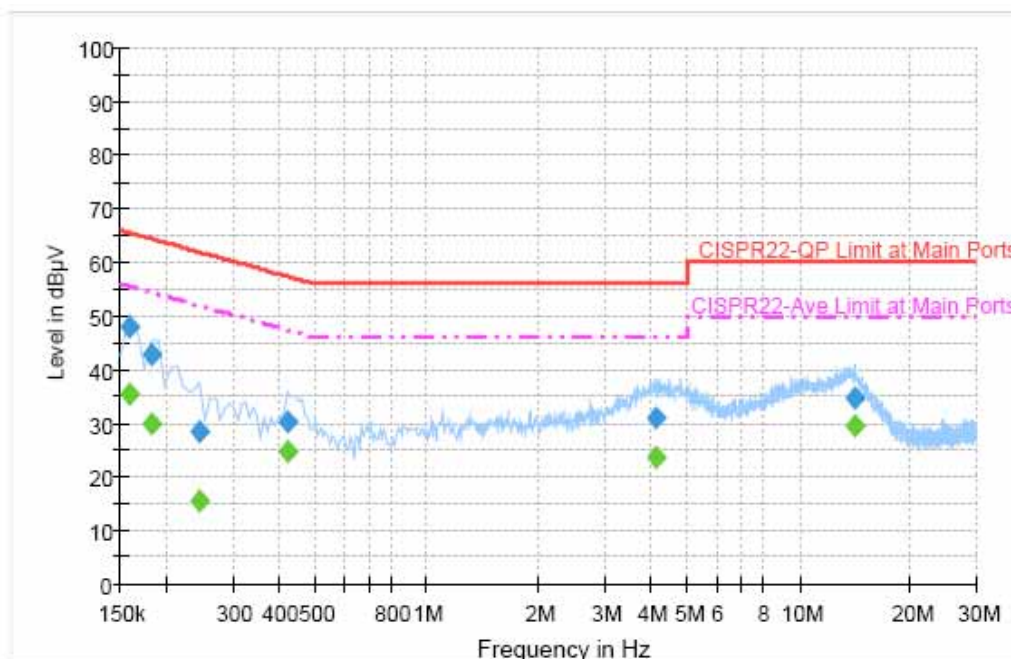

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	48.3	Off	L1	19.3	17.3	65.6
0.182000	43.4	Off	L1	19.4	21.0	64.4
0.270000	27.7	Off	L1	19.3	33.4	61.1
0.438000	32.2	Off	L1	19.4	24.9	57.1
4.686000	31.1	Off	L1	19.5	24.9	56.0
13.614000	34.4	Off	L1	19.7	25.6	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	35.3	Off	L1	19.3	20.3	55.6
0.182000	31.5	Off	L1	19.4	22.9	54.4
0.270000	15.7	Off	L1	19.3	35.4	51.1
0.438000	26.7	Off	L1	19.4	20.4	47.1
4.686000	23.7	Off	L1	19.5	22.3	46.0
13.614000	29.6	Off	L1	19.7	20.4	50.0

Test Mode :	Mode 2	Temperature :	23~24
Test Engineer :	Cona Huang	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM 850 Idle + GPS Rx + BT Link + WLAN Link + Earphone + USB Charging Cable with AC Power + Battery 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

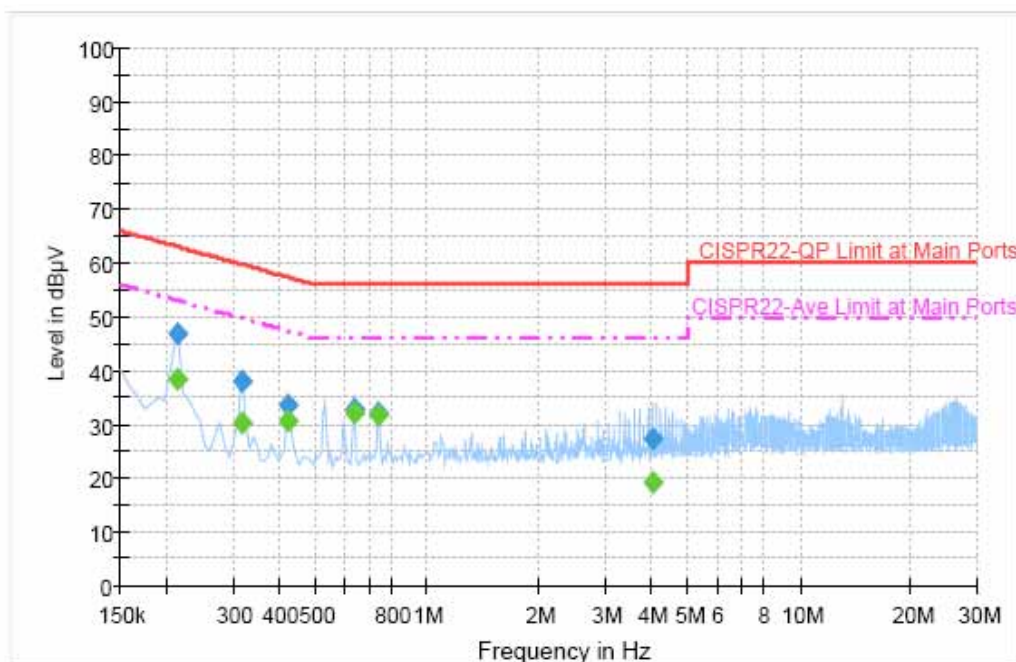

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	47.9	Off	N	19.4	17.7	65.6
0.182000	42.9	Off	N	19.4	21.5	64.4
0.246000	28.5	Off	N	19.4	33.4	61.9
0.422000	30.1	Off	N	19.4	27.3	57.4
4.134000	31.0	Off	N	19.5	25.0	56.0
14.070000	34.6	Off	N	19.7	25.4	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	35.6	Off	N	19.4	20.0	55.6
0.182000	30.0	Off	N	19.4	24.4	54.4
0.246000	15.4	Off	N	19.4	36.5	51.9
0.422000	24.7	Off	N	19.4	22.7	47.4
4.134000	23.7	Off	N	19.5	22.3	46.0
14.070000	29.7	Off	N	19.7	20.3	50.0

Test Mode :	Mode 3	Temperature :	23~24
Test Engineer :	Cona Huang	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + GPS Rx + BT Link + WLAN Link + Cradle + Adapter + USB Cable + Battery 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

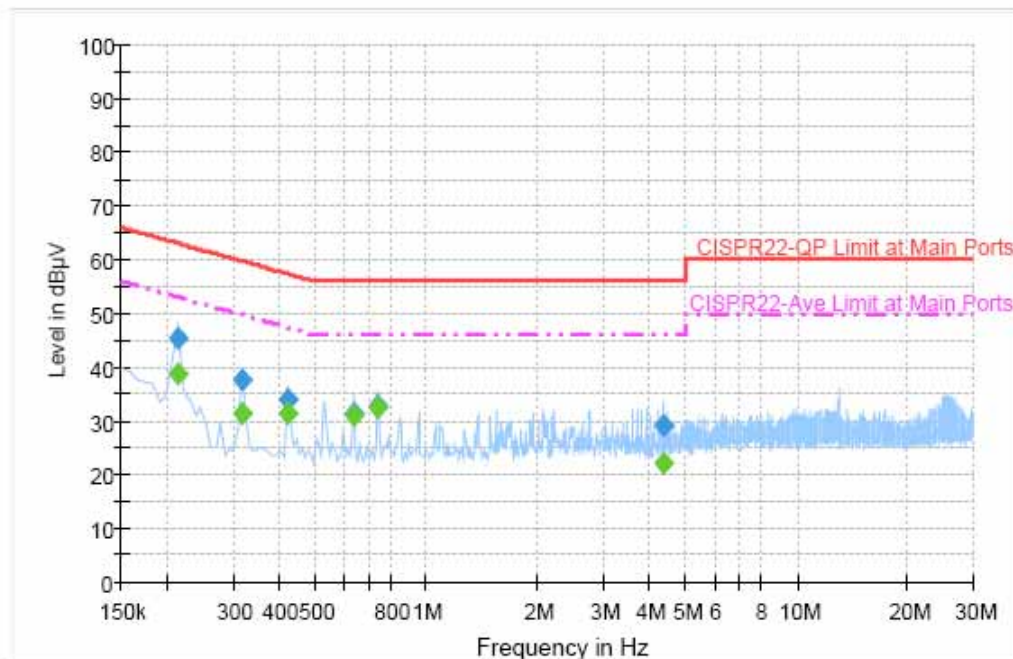

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	46.7	Off	L1	19.3	16.3	63.0
0.318000	38.2	Off	L1	19.3	21.6	59.8
0.422000	33.4	Off	L1	19.4	24.0	57.4
0.638000	33.0	Off	L1	19.4	23.0	56.0
0.742000	32.0	Off	L1	19.4	24.0	56.0
4.030000	27.5	Off	L1	19.5	28.5	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	38.4	Off	L1	19.3	14.6	53.0
0.318000	30.3	Off	L1	19.3	19.5	49.8
0.422000	30.6	Off	L1	19.4	16.8	47.4
0.638000	32.3	Off	L1	19.4	13.7	46.0
0.742000	31.7	Off	L1	19.4	14.3	46.0
4.030000	19.3	Off	L1	19.5	26.7	46.0

Test Mode :	Mode 3	Temperature :	23~24
Test Engineer :	Cona Huang	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + GPS Rx + BT Link + WLAN Link + Cradle + Adapter + USB Cable + Battery 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

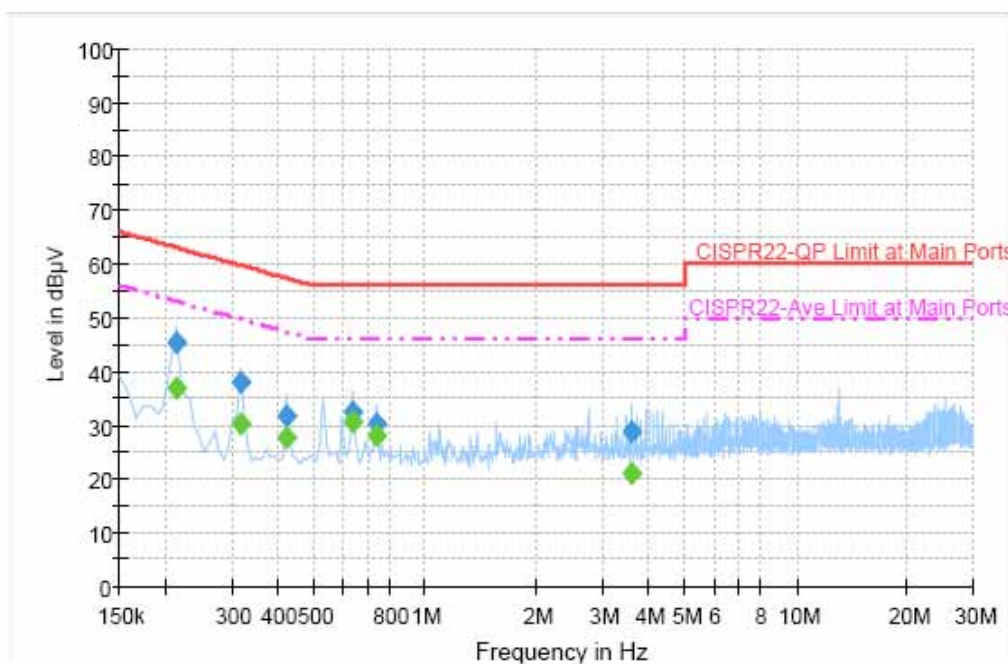

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	45.6	Off	N	19.4	17.4	63.0
0.318000	37.6	Off	N	19.3	22.2	59.8
0.422000	33.9	Off	N	19.4	23.5	57.4
0.638000	31.5	Off	N	19.4	24.5	56.0
0.742000	32.7	Off	N	19.4	23.3	56.0
4.350000	29.2	Off	N	19.5	26.8	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	38.8	Off	N	19.4	14.2	53.0
0.318000	31.4	Off	N	19.3	18.4	49.8
0.422000	31.5	Off	N	19.4	15.9	47.4
0.638000	31.0	Off	N	19.4	15.0	46.0
0.742000	32.7	Off	N	19.4	13.3	46.0
4.350000	22.3	Off	N	19.5	23.7	46.0

Test Mode :	Mode 4	Temperature :	23~24
Test Engineer :	Cona Huang	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + GPS Rx + BT Link + WLAN Link + Cradle + Adapter + USB Cable + Battery 2		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

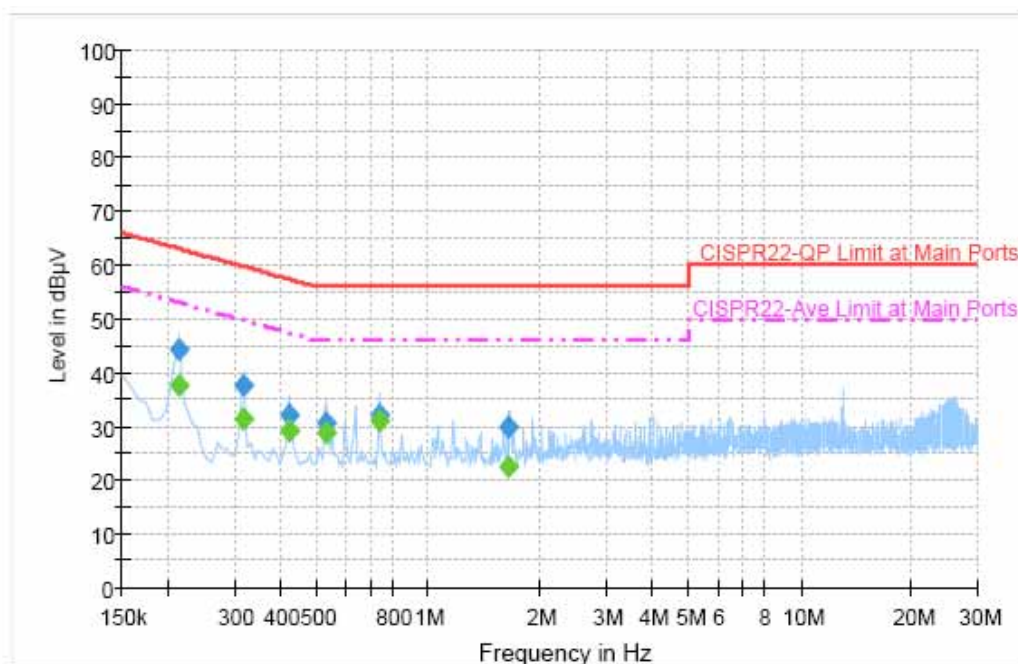

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	45.3	Off	L1	19.3	17.7	63.0
0.318000	38.1	Off	L1	19.3	21.7	59.8
0.422000	31.8	Off	L1	19.4	25.6	57.4
0.638000	32.5	Off	L1	19.4	23.5	56.0
0.742000	30.3	Off	L1	19.4	25.7	56.0
3.606000	28.6	Off	L1	19.5	27.4	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	36.8	Off	L1	19.3	16.2	53.0
0.318000	30.2	Off	L1	19.3	19.6	49.8
0.422000	27.8	Off	L1	19.4	19.6	47.4
0.638000	30.5	Off	L1	19.4	15.5	46.0
0.742000	28.2	Off	L1	19.4	17.8	46.0
3.606000	20.9	Off	L1	19.5	25.1	46.0

Test Mode :	Mode 4	Temperature :	23~24
Test Engineer :	Cona Huang	Relative Humidity :	40~41%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + GPS Rx + BT Link + WLAN Link + Cradle + Adapter + USB Cable + Battery 2		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	44.3	Off	N	19.4	18.7	63.0
0.318000	37.5	Off	N	19.3	22.3	59.8
0.422000	32.2	Off	N	19.4	25.2	57.4
0.534000	30.7	Off	N	19.3	25.3	56.0
0.742000	32.2	Off	N	19.4	23.8	56.0
1.646000	29.8	Off	N	19.5	26.2	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	37.7	Off	N	19.4	15.3	53.0
0.318000	31.2	Off	N	19.3	18.6	49.8
0.422000	29.1	Off	N	19.4	18.3	47.4
0.534000	28.7	Off	N	19.3	17.3	46.0
0.742000	30.9	Off	N	19.4	15.1	46.0
1.646000	22.4	Off	N	19.5	23.6	46.0

3.8 Radiated Emission Measurement

3.8.1 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

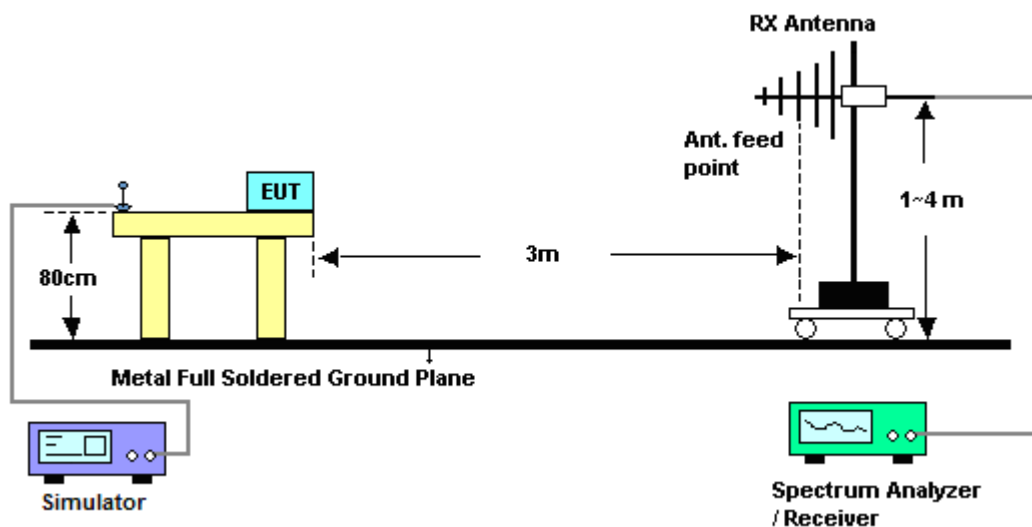
3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

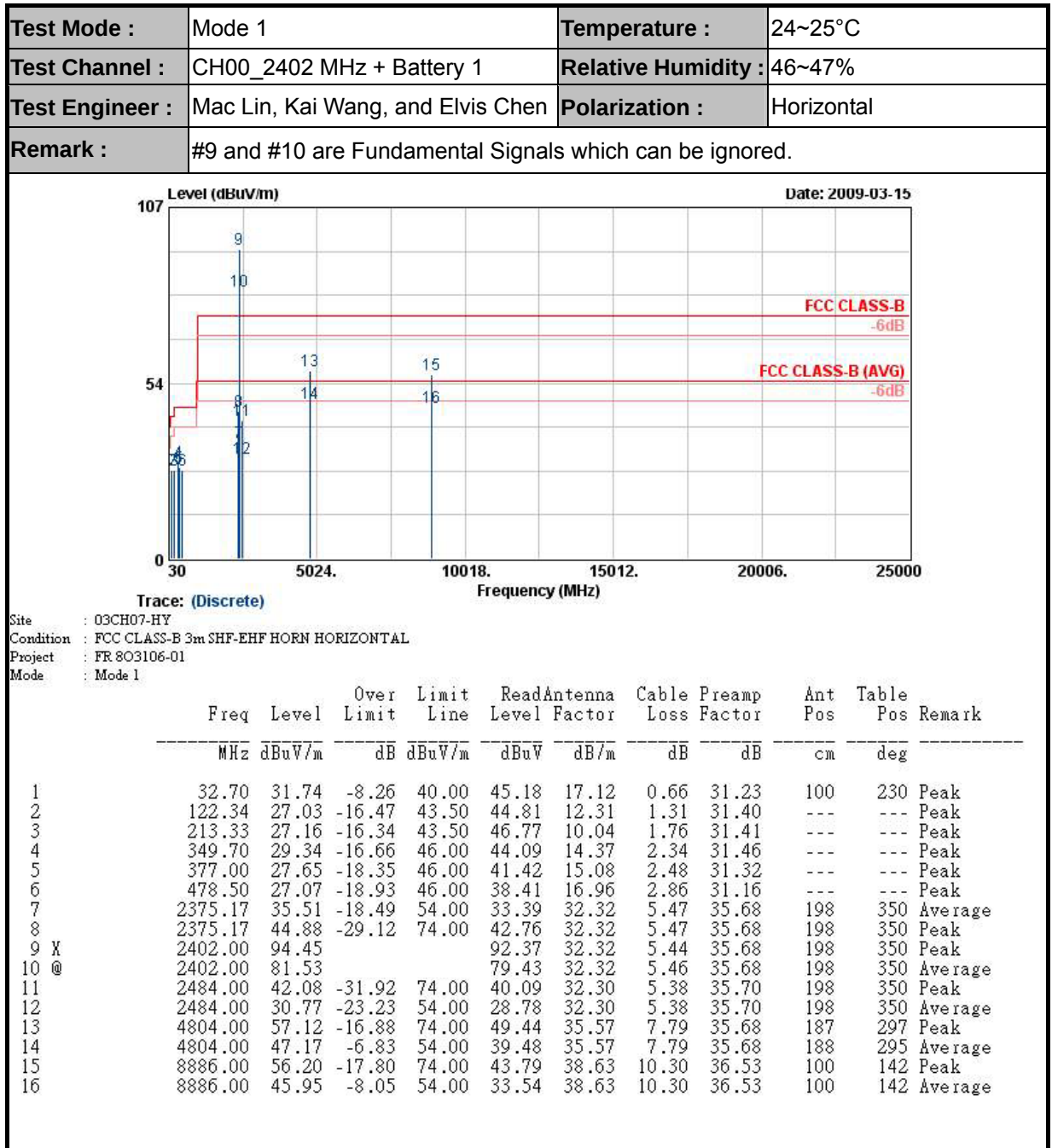
3.8.3 Test Procedures

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

3.8.4 Test Setup

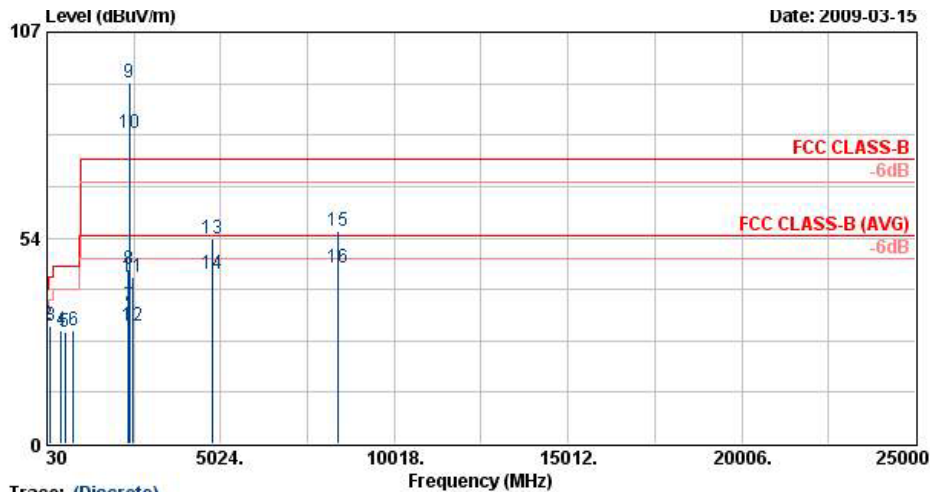


3.8.5 Test Result of Radiated Emission





Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	CH00_2402 MHz + Battery 1	Relative Humidity :	46~47%
Test Engineer :	Mac Lin, Kai Wang, and Elvis Chen	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 803106-01
Mode : Mode 1

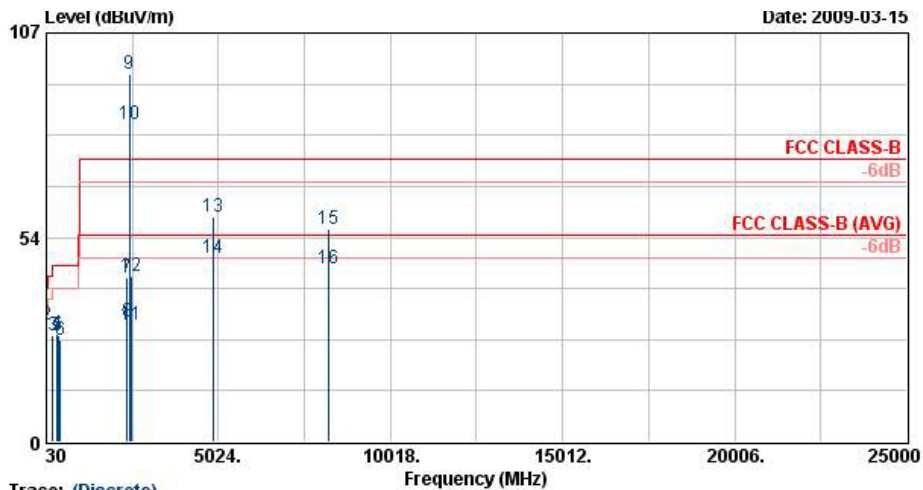
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1	30.00	30.25	-9.75	40.00	41.71	19.21	0.64	31.31	---	Peak
2	32.70	30.96	-9.04	40.00	44.40	17.12	0.66	31.23	100	110 Peak
3	126.93	30.54	-12.96	43.50	48.22	12.33	1.36	31.37	---	Peak
4	428.10	29.53	-16.47	46.00	42.00	16.13	2.71	31.31	---	Peak
5	539.40	28.95	-17.05	46.00	39.05	17.89	3.06	31.05	---	Peak
6	780.20	29.62	-16.38	46.00	36.68	19.92	3.79	30.76	---	Peak
7	2375.74	35.68	-18.32	54.00	33.58	32.30	5.47	35.68	100	95 Average
8	2375.74	45.49	-28.51	74.00	43.39	32.30	5.47	35.68	100	95 Peak
9 X	2402.00	93.96			91.90	32.30	5.44	35.68	100	95 Peak
10 @	2402.00	80.88			78.80	32.30	5.46	35.68	100	95 Average
11	2500.00	43.31	-30.69	74.00	41.34	32.30	5.37	35.70	100	95 Peak
12	2500.00	30.74	-23.26	54.00	28.77	32.30	5.37	35.70	100	95 Average
13	4804.00	53.45	-20.55	74.00	46.37	34.96	7.79	35.68	100	236 Peak
14	4804.00	44.03	-9.97	54.00	36.95	34.96	7.79	35.68	100	236 Average
15	8397.00	55.16	-18.84	74.00	44.11	37.24	10.11	36.30	100	195 Peak
16	8397.00	45.72	-8.28	54.00	34.67	37.24	10.11	36.30	100	195 Average



FCC Test Report

Report No. : FR803106-01B

Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	CH39_2441 MHz + Battery 1	Relative Humidity :	46~47%
Test Engineer :	Mac Lin, Kai Wang, and Elvis Chen	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 803106-01
Mode : Mode 2

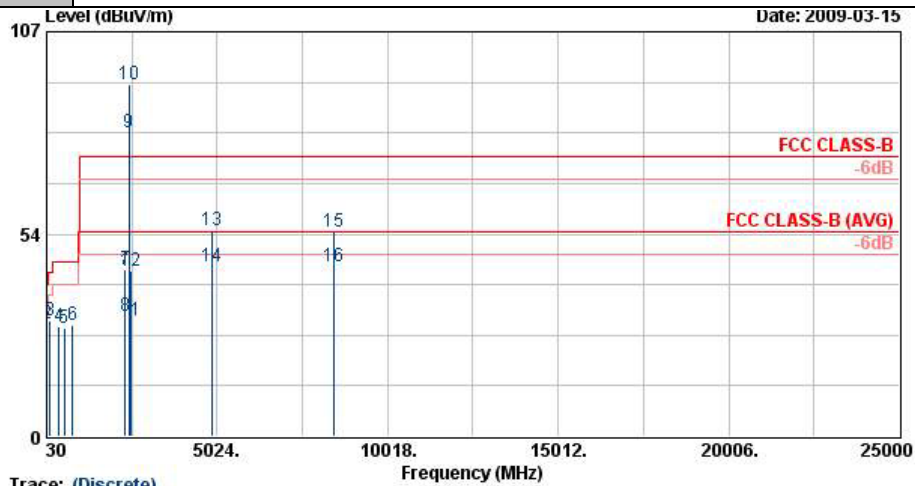
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	30.83	-9.17	40.00	42.29	19.21	0.64	31.31	100	188	Peak
2	32.70	30.44	-9.56	40.00	43.88	17.12	0.66	31.23	---	---	Peak
3	211.98	27.91	-15.59	43.50	47.59	9.96	1.76	31.40	---	---	Peak
4	341.30	28.30	-17.70	46.00	43.28	14.15	2.31	31.42	---	---	Peak
5	377.00	27.92	-18.08	46.00	41.69	15.08	2.48	31.32	---	---	Peak
6	428.10	26.81	-19.19	46.00	39.28	16.13	2.71	31.31	---	---	Peak
7	2380.00	42.99	-31.01	74.00	40.87	32.32	5.47	35.68	157	360	Peak
8	2380.00	31.60	-22.40	54.00	29.48	32.32	5.47	35.68	157	360	Average
9 X	2441.00	96.37			94.34	32.31	5.41	35.69	157	360	Peak
10 @	2441.00	82.96			80.93	32.31	5.41	35.69	157	360	Average
11	2500.00	30.82	-23.18	54.00	28.85	32.30	5.37	35.70	157	360	Average
12	2500.00	43.20	-30.80	74.00	41.23	32.30	5.37	35.70	175	360	Peak
13	4882.00	58.72	-15.28	74.00	50.86	35.66	7.85	35.65	162	300	Peak
14	4882.00	47.98	-6.02	54.00	40.12	35.66	7.85	35.65	162	300	Average
15	8241.00	55.71	-18.29	74.00	43.65	38.35	10.00	36.30	100	214	Peak
16	8241.00	45.50	-8.50	54.00	33.45	38.35	10.00	36.30	100	214	Average



FCC Test Report

Report No. : FR803106-01B

Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	CH39_2441 MHz + Battery 1	Relative Humidity :	46~47%
Test Engineer :	Mac Lin, Kai Wang, and Elvis Chen	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 803106-01
Mode : Mode 2

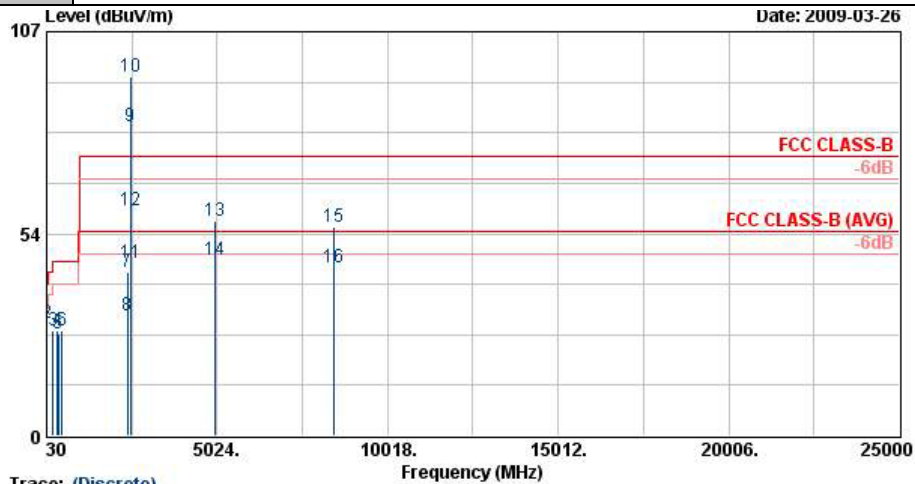
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	31.37	-8.63	40.00	42.83	19.21	0.64	31.31	100	164	Peak
2	35.94	29.76	-10.24	40.00	45.04	15.20	0.69	31.17	---	---	Peak
3	126.93	30.58	-12.92	43.50	48.26	12.33	1.36	31.37	---	---	Peak
4	399.40	28.88	-17.12	46.00	41.91	15.66	2.54	31.23	---	---	Peak
5	539.40	28.78	-17.22	46.00	38.88	17.89	3.06	31.05	---	---	Peak
6	780.20	29.33	-16.67	46.00	36.38	19.92	3.79	30.76	---	---	Peak
7	2340.00	44.23	-29.77	74.00	42.10	32.30	5.50	35.67	100	94	Peak
8	2340.00	31.92	-22.08	54.00	29.79	32.30	5.50	35.67	100	94	Average
9 @	2441.00	80.54			78.52	32.30	5.41	35.69	100	94	Average
10 X	2441.00	93.25			91.22	32.30	5.41	35.69	100	94	Peak
11	2500.00	30.71	-23.29	54.00	28.74	32.30	5.37	35.70	100	94	Average
12	2500.00	43.73	-30.27	74.00	41.76	32.30	5.37	35.70	100	94	Peak
13	4882.00	54.44	-19.56	74.00	47.26	34.98	7.85	35.65	119	22	Peak
14	4882.00	44.77	-9.23	54.00	37.59	34.98	7.85	35.65	119	22	Average
15	8433.00	54.19	-19.81	74.00	43.10	37.26	10.13	36.30	100	167	Peak
16	8433.00	45.06	-28.94	74.00	33.97	37.26	10.13	36.30	100	167	Peak



FCC Test Report

Report No. : FR803106-01B

Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	CH78_2480 MHz + Battery 1	Relative Humidity :	46~47%
Test Engineer :	Mac Lin, Kai Wang, and Elvis Chen	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 803106-01
Mode : Mode 3

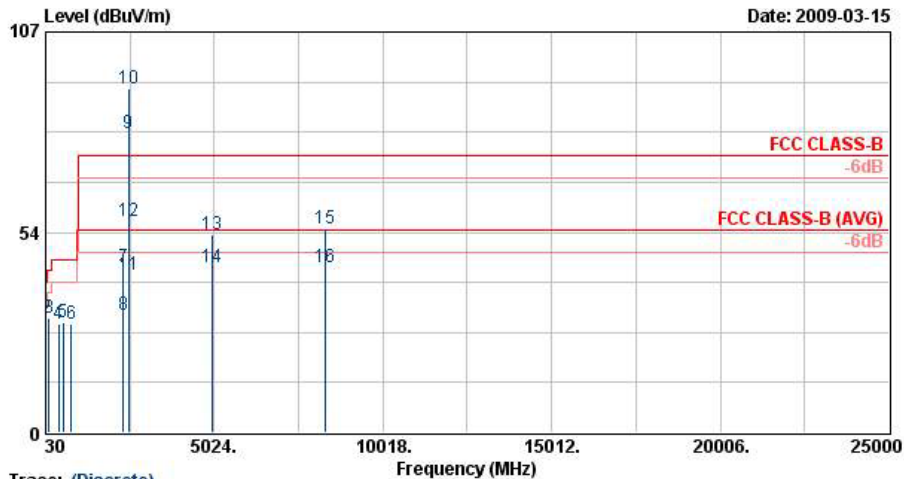
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	31.62	-8.38	40.00	43.08	19.21	0.64	31.31	100	102	Peak
2	31.89	29.97	-10.03	40.00	42.75	17.82	0.66	31.26	---	---	Peak
3	211.98	27.75	-15.75	43.50	47.43	9.96	1.76	31.40	---	---	Peak
4	346.90	27.70	-18.30	46.00	42.53	14.30	2.33	31.45	---	---	Peak
5	377.00	27.23	-18.77	46.00	40.99	15.08	2.48	31.32	---	---	Peak
6	478.50	27.72	-18.28	46.00	39.06	16.96	2.86	31.16	---	---	Peak
7	2390.00	43.35	-30.65	74.00	41.25	32.32	5.46	35.68	163	353	Peak
8	2390.00	31.82	-22.18	54.00	29.72	32.32	5.46	35.68	163	353	Average
9 @	2480.00	81.93			79.94	32.30	5.38	35.70	163	353	Average
10 X	2480.00	95.16			93.17	32.30	5.38	35.70	163	353	Peak
11	2483.50	45.56	-8.44	54.00	43.57	32.30	5.38	35.70	163	353	Average
12	2483.50	59.48	-14.52	74.00	57.49	32.30	5.38	35.70	163	353	Peak
13	4962.00	56.94	-17.06	74.00	48.88	35.76	7.92	35.62	159	299	Peak
14	4962.00	46.72	-7.28	54.00	39.81	33.79	7.92	34.80	188	295	Average
15	8454.00	55.19	-18.81	74.00	42.95	38.39	10.14	36.30	100	214	Peak
16	8454.00	44.68	-9.32	54.00	32.45	38.39	10.14	36.30	100	214	Average



FCC Test Report

Report No. : FR803106-01B

Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	CH78_2480 MHz + Battery 1	Relative Humidity :	46~47%
Test Engineer :	Mac Lin, Kai Wang, and Elvis Chen	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

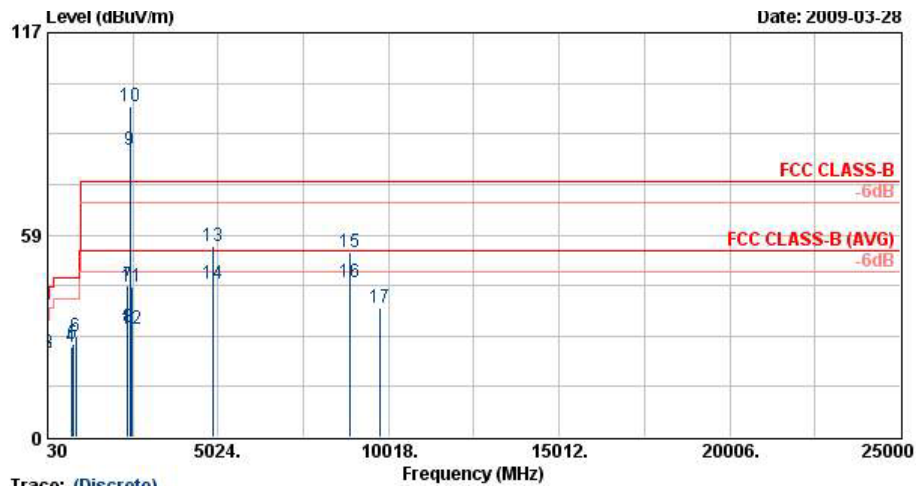


Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 803106-01
Mode : Mode 3

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor	Pos	Pos	
					dBuV	dB/m	dB	cm	deg	
1	30.00	32.03	-7.97	40.00	43.49	19.21	0.64	31.31	100	131 Peak
2	35.94	30.63	-9.37	40.00	45.92	15.20	0.69	31.17	---	Peak
3	126.93	30.57	-12.93	43.50	48.26	12.33	1.36	31.37	---	Peak
4	408.50	29.14	-16.86	46.00	42.00	15.80	2.60	31.26	---	Peak
5	539.40	29.43	-16.57	46.00	39.53	17.89	3.06	31.05	---	Peak
6	780.20	29.18	-16.82	46.00	36.23	19.92	3.79	30.76	---	Peak
7	2332.00	44.10	-29.90	74.00	41.95	32.30	5.51	35.67	100	0 Peak
8	2332.00	31.44	-22.56	54.00	29.29	32.30	5.51	35.67	100	0 Average
9 @	2480.00	79.78			77.79	32.30	5.38	35.70	100	0 Average
10 X	2480.00	91.89			89.90	32.30	5.38	35.70	100	0 Peak
11	2483.50	42.13	-11.87	54.00	40.14	32.30	5.38	35.70	100	0 Average
12	2483.50	56.34	-17.66	74.00	54.35	32.30	5.38	35.70	100	0 Peak
13	4962.00	53.05	-20.95	74.00	45.75	34.99	7.92	35.62	152	27 Peak
14	4962.00	44.12	-9.88	54.00	36.83	34.99	7.92	35.62	152	27 Average
15	8298.00	54.48	-19.52	74.00	43.57	37.18	10.04	36.30	100	241 Peak
16	8298.00	44.11	-9.89	54.00	33.19	37.18	10.04	36.30	100	241 Average



Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	CH39_2441 MHz + Battery 2	Relative Humidity :	46~47%
Test Engineer :	Mac Lin, Kai Wang, and Elvis Chen	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

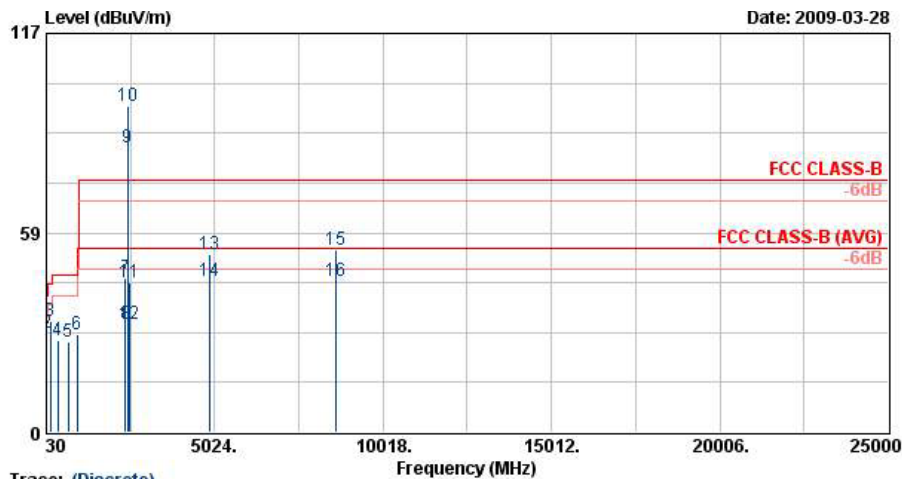


Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	28.28	-11.72	40.00	36.75	19.90	0.64	29.01	100	71	Peak
2	38.10	24.22	-15.78	40.00	37.06	15.46	0.71	29.01	---	---	Peak
3	45.93	24.52	-15.48	40.00	41.83	11.20	0.74	29.25	---	---	Peak
4	724.90	26.27	-19.73	46.00	30.24	21.34	3.62	28.93	---	---	Peak
5	761.30	26.78	-19.22	46.00	30.05	21.82	3.73	28.83	---	---	Peak
6	858.60	29.02	-16.98	46.00	31.19	22.98	3.99	29.15	---	---	Peak
7	2374.00	44.08	-29.92	74.00	40.98	32.00	5.47	34.38	198	21	Peak
8	2374.00	31.87	-22.13	54.00	28.77	32.00	5.47	34.38	198	21	Average
9 @	2441.00	83.24			80.16	32.06	5.41	34.39	198	21	Average
10 X	2441.00	95.89			92.81	32.06	5.41	34.39	198	21	Peak
11	2492.00	43.65	-30.35	74.00	40.58	32.10	5.37	34.40	198	21	Peak
12	2492.00	31.21	-22.79	54.00	28.14	32.10	5.37	34.40	198	21	Average
13	4881.00	55.10	-18.90	74.00	48.27	33.78	7.85	34.80	100	302	Peak
14	4881.00	44.52	-9.48	54.00	37.69	33.78	7.85	34.80	100	302	Average
15	8862.00	53.58	-20.42	74.00	42.67	35.98	10.29	35.37	100	37	Peak
16	8862.00	44.66	-9.34	54.00	33.76	35.98	10.29	35.37	100	37	Average
17	9762.00	37.33	-36.67	74.00	71.88	-9.83	10.82	35.55	100	0	Peak



Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	CH39_2441 MHz + Battery 2	Relative Humidity :	46~47%
Test Engineer :	Mac Lin, Kai Wang, and Elvis Chen	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1	30.00	28.83	-11.17	40.00	37.30	19.90	0.64	29.01	---	Peak
2	45.93	29.31	-10.69	40.00	46.62	11.20	0.74	29.25	100	143 Peak
3	152.85	32.63	-10.87	43.50	48.80	11.52	1.48	29.17	---	Peak
4	377.00	27.08	-18.92	46.00	37.95	15.86	2.48	29.20	---	Peak
5	676.60	26.52	-19.48	46.00	31.46	20.53	3.49	28.96	---	Peak
6	939.80	28.50	-17.50	46.00	29.35	24.11	4.24	29.20	---	Peak
7	2374.00	45.18	-28.82	74.00	42.08	32.00	5.47	34.38	125	49 Peak
8	2374.00	31.59	-22.41	54.00	28.49	32.00	5.47	34.38	125	49 Average
9 @	2441.00	83.53			80.45	32.06	5.41	34.39	125	49 Average
10 X	2441.00	95.49			92.41	32.06	5.41	34.39	125	49 Peak
11	2484.00	44.00	-30.00	74.00	40.93	32.09	5.38	34.40	125	49 Peak
12	2484.00	31.60	-22.40	54.00	28.53	32.09	5.38	34.40	125	49 Average
13	4881.00	52.13	-21.87	74.00	45.30	33.78	7.85	34.80	100	203 Peak
14	4881.00	44.23	-9.77	54.00	37.40	33.78	7.85	34.80	100	203 Average
15	8625.00	53.36	-20.64	74.00	42.66	35.81	10.22	35.33	100	84 Peak
16	8625.00	44.36	-9.64	54.00	33.66	35.81	10.22	35.33	100	84 Average

3.9 Antenna Requirements

3.9.1 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.

3.9.2 Antenna Connected Construction

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

3.9.3 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 Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 26, 2008	Jun. 25, 2009	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 19, 2009	Feb. 18, 2010	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 19, 2009	Feb. 18, 2010	Conducted (TH02-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 23, 2008	Oct. 22, 2009	Radiation (03CH07-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz~1GHz	Nov. 20, 2008	Nov. 19, 2009	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9kHz~30GHz	Dec. 02, 2008	Dec. 01, 2009	Radiation (03CH07-HY)
BT Base Station	R&S	CBT 2	100519	N/A	May 10, 2007	May 09, 2009	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15G - 40GHz	Oct. 16, 2008	Oct. 15, 2009	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1G~18GHz	Aug. 13, 2008	Aug. 12, 2009	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1G~26.5GHz	Dec. 17, 2008	Dec. 16, 2009	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10~1000MHz. 32dB.GAIN	Mar. 27, 2009	Mar. 26, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	66584	1G~18GHz	Aug. 06, 2008	Aug. 05, 2009	Radiation (03CH07-HY)
EMI Receiver	R&S	ESCS 30	100356	9kHz~2.75GHz	Aug. 01, 2008	Jul. 31, 2009	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 26, 2008	Nov. 25, 2009	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 26, 2008	Nov. 25, 2009	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

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 Spec	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 (30MHz ~ 1000MHz)

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-shaped	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 (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	C_i	$C_i * u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	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 $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20 \log(1 - \Gamma_1 * \Gamma_2)$	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty $U_c(y)$	2.36				
Measuring uncertainty for a level of confidence of 95% $U = 2U_c(y)$	4.72				

6 Certification of TAF Accreditation



Certificate No. : L1190-081212

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,
Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	: ISO/IEC 17025:2005
Accreditation Number	: 1190
Originally Accredited	: December 15, 2003
Effective Period	: January 10, 2007 to January 09, 2010
Accredited Scope	: Testing Field, see described in the Appendix
Specific Accreditation Program	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities



Jay-San Chen
President, Taiwan Accreditation Foundation
Date : December 12, 2008

P1, total 18 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix



Appendix A. Photographs of EUT

Please refer to Sporton report number EP8O3106-01 as below.