FCC Test Report

APPLICANT	:	DATALOGIC MOBILE s.r.l.
EQUIPMENT	:	Pocket-Sized Mobile Computer
BRAND NAME	:	Datalogic Memor™
MODEL NAME	:	DL-MEMOR P/N: 944201019 DL-Memor+802.11g+BT+1DGS+CE5
		DL-MEMOR P/N: 944201022 DL-Memor+802.11g+BT+2D+CE5
		DL-MEMOR P/N: 944201014 DL-Memor+802.11g+BT+1DGS+WM6.1
		DL-MEMOR P/N: 944201015 DL-Memor+802.11g+BT+2D+WM6.1
FCC ID	:	U4G0030
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	Digital Spread Spectrum (DSS)

The product sample received on Apr. 01, 2009 and completely tested on Apr. 20, 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

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
FR940109A	Rev. 01	Initial issue of report	Jun. 05, 2009

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	≥ 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(a)(1)	A8.1(b)	Peak Output Power	≤ 1W	Pass	-
3.6	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.7	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 11.8 dB at 1.27 MHz
3.8	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.69 dB at 49.17 MHz
3.9	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

DATALOGIC MOBILE s.r.l.
Via S. Vitalino, 13 40012 Lippo di Caiderara di Reno Bologna -Italy

1.2 Manufacturer

DATALOGIC MOBILE s.r.l.
Via S. Vitalino, 13 40012 Lippo di Caiderara di Reno Bologna -Italy

1.3 Feature of Equipment under Test

Product Feature & Specification	
Equipment	Pocket-Sized Mobile Computer
Brand Name	Datalogic Memor™
Model Name	DL-MEMOR P/N: 944201019 DL-Memor+802.11g+BT+1DGS+CE5 DL-MEMOR P/N: 944201022 DL-Memor+802.11g+BT+2D+CE5 DL-MEMOR P/N: 944201014 DL-Memor+802.11g+BT+1DGS+WM6.1 DL-MEMOR P/N: 944201015 DL-Memor+802.11g+BT+2D+WM6.1
FCC ID	U4G0030
Sample A	DL-MEMOR P/N: 944201015 DL-Memor+802.11g+BT+2D+WM6.1
Sample B	DL-MEMOR P/N: 944201014 DL-Memor+802.11g+BT+1DGS+WM6.1
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) : 0.64 dBm (1.16 mW) Bluetooth EDR (2Mbps) : 1.87dBm (1.54 mW) Bluetooth EDR (3Mbps) : 2.23dBm (1.67 mW)
Antenna Type	Sample A : PCB Antenna with gain 3.888 dBi Sample B : PCB Antenna with gain 4.205 dBi
Antenna Connector Type	N/A
HW Version	R2
SW Version	4.0
Type of Modulation	Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : π/4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK
EUT Stage	Identical Prototype

Remark: This product has two kinds of software version, WM6.1 and CE5. The model with WM6.1 means that Window Mobile OS includes much more application programs than CE5. CE5 is the same kind of OS as WM6.1, but it just includes some basic application programs. The difference of software can't relate any RF effect, so only WM6.1 is used for test.

List of Accessory:

Specification of Accessory		
AC Adapter	**Brand Name**	AKII
	Model Name	A15P2-05MP
	Power Rating	I/P: 100-240Vac, 47-63Hz, 0.5A; O/P: 5Vdc, 3.0A
	AC Power Cord Type	1.5 meter shielded cable without ferrite core
Battery	**Brand Name**	ETICA
	Model Name	BP08-000600
	Power Rating	3.7Vdc, 1100mAh
	Type	Li-ion
Earphone	**Brand Name**	AATCC
	Model Name	AEP-HA36D-04
	Signal Line Type	1.3 meter non-shielded cable without ferrite core
USB Cable	**Brand Name**	CHIN SHONG
	Model Name	S081219201
	Signal Line Type	1.2 meter non-shielded cable without ferrite core
RS232 Cable	**Signal Line Type**	1.6 meter non-shielded cable without ferrite core
LCD Panel	**Brand Name**	DATAIMGE
	Model Name	FX020240DWSWCGT1
1D Scan Module	**Brand Name**	Motorola
	Model Name	SE950
2D Scan Module	**Brand Name**	Motorola
	Model Name	SE4500

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. For accessories equipped with this EUT, please refer to the appendix of the external photo.
3. For other wireless features of this EUT, test report will be issued separately.
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 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.	WLAN AP	D-Link	DIR-628	KADIR628A2	N/A	Unshielded, 1.8 m
2.	PC	DELL	T3400	FCC DoC	N/A	Unshielded, 1.8 m
3.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
4.	(PS2) Keyboard	Acer	KB-2971	FCC DoC	Shielded, 1.3 m	N/A
5.	(PS2) Mouse	detrois	CM-201	FCC DoC	Shielded, 1.4 m	N/A
6.	i-pod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A
7.	Printer	HP	LaserJet1300	FCC DoC	Unshielded, 1.8 m	Unshielded, 1.8 m
8.	Bluetooth Earphone	Nokia	BH-100	PYA1YH	N/A	N/A
9.	Bluetooth Dongle	Ergotech	ET-BD201	PQY-4710874203662	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Output Power

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

Channel	Frequency	Bluetooth RF Output Power		
		Data Rate / Modulation		
		GFSK	π/4-DQPSK	8-DPSK
		1Mbps	2Mbps	3Mbps
Ch00	2402MHz	0.64 dBm	1.87 dBm	**2.23** dBm
Ch39	2441MHz	0.55 dBm	1.21 dBm	1.60 dBm
Ch78	2480MHz	-0.12 dBm	-0.13 dBm	0.24 dBm

Remark:

1. The data rate 3Mbps was set for all the test cases, due to the highest RF output power.
2. 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.

Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations, laptop / tablet modes.

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

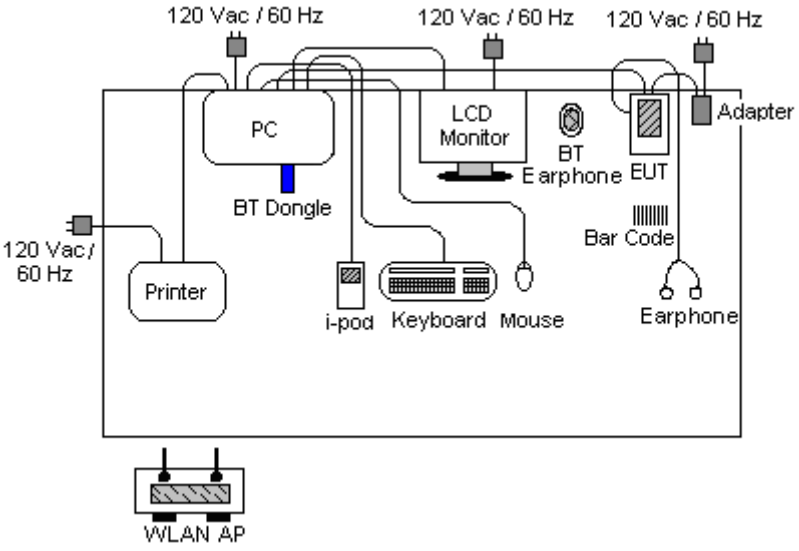
Test Cases			
Test Item	**Data Rate / Modulation**		
	Bluetooth 1Mbps GFSK	**Bluetooth EDR 2Mbps π/4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
Conducted TCs	■ Mode 1: CH00_2402 MHz ■ Mode 2: CH39_2441 MHz ■ Mode 3: CH78_2480 MHz	■ Mode 4: CH00_2402 MHz ■ Mode 5: CH39_2441 MHz ■ Mode 6: CH78_2480 MHz	■ Mode 7: CH00_2402 MHz ■ Mode 8: CH39_2441 MHz ■ Mode 9: CH78_2480 MHz
Radiated TCs	N/A	N/A	■ Mode 1: Sample B in CH00 ■ Mode 2: Sample B in CH39 ■ Mode 3: Sample B in CH78
AC Conducted Emission	**Mode 1 : Sample A + WLAN Link + BT Link + 2D Scanner + Earphone + Adapter + USB Link + Mini SD Card + MP3** Mode 2 : Sample B + WLAN Link + BT Link + 1D Scanner + Earphone + Adapter + USB Link + Mini SD Card + MP3		

Remark:

1. The worst case of conducted TCs is Bluetooth 3Mbps, only the test data of these modes was reported.
2. The worst case of radiated emission was Bluetooth 3Mbps mode; only the test data of this mode was reported.
3. The worst case of conducted emission is mode 1; only the test data of this mode was reported.
4. The sample B was used for RSE test only due to higher antenna gain.

2.3 Connection Diagram of Test System

<Conducted Emission>



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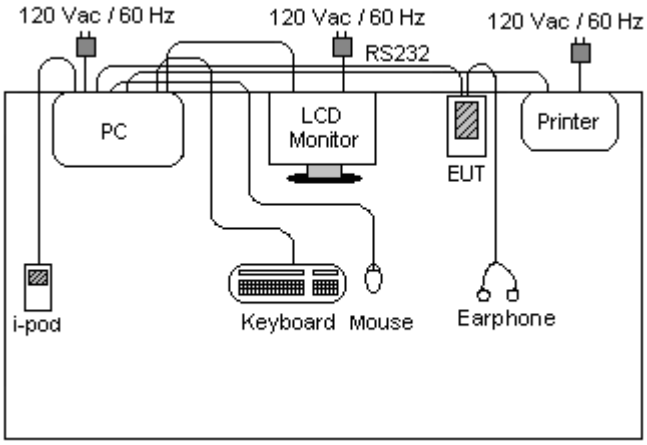


2.4 RF Utility

For Bluetooth function, executed “BlueTest.exe” to make the EUT transmitting and receiving signals continuously.

3 Test Result

3.1 Number of Channel Measurement

3.1.1 Limits of Number of Hopping Frequency

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

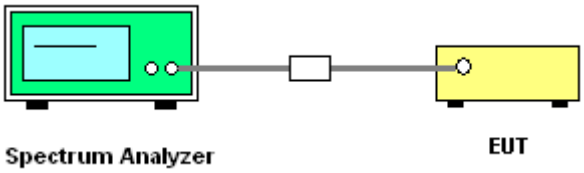
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

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

3.1.4 Test Setup

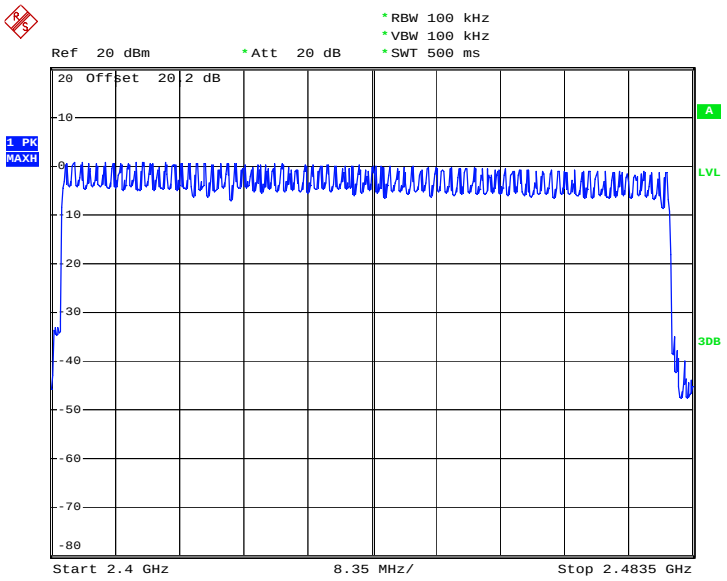


3.1.5 Test Result of Number of Hopping Frequency

Test Mode :	Mode 7~9	Temperature :	23~24℃
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

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

Number of Hopping Channel Plot on Channel 00 - 78



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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.

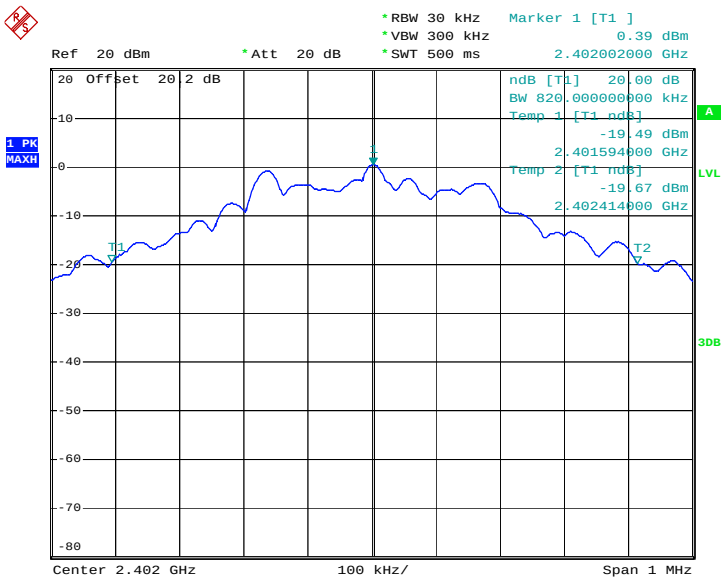
3.2.4 Test Setup

3.2.5 Test Result of 20dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	23~24℃
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.820
39	2441	0.820
78	2480	0.820

20 dB Bandwidth Plot on Channel 00



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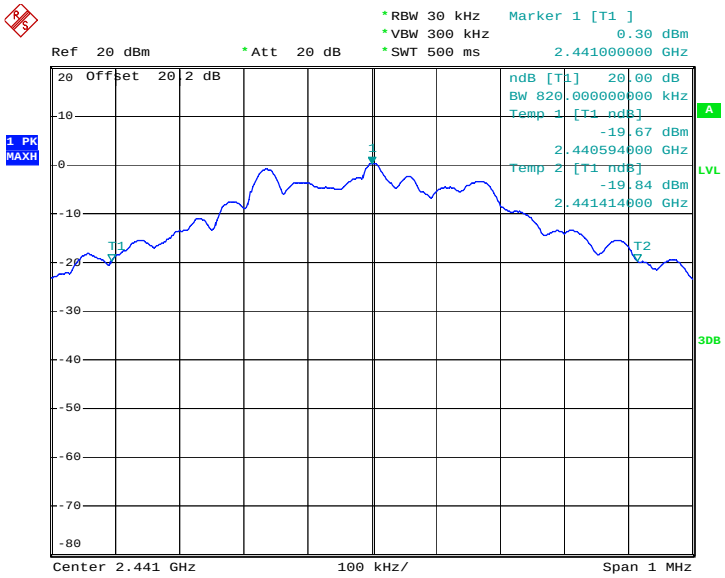
20 dB Bandwidth Plot on Channel 39



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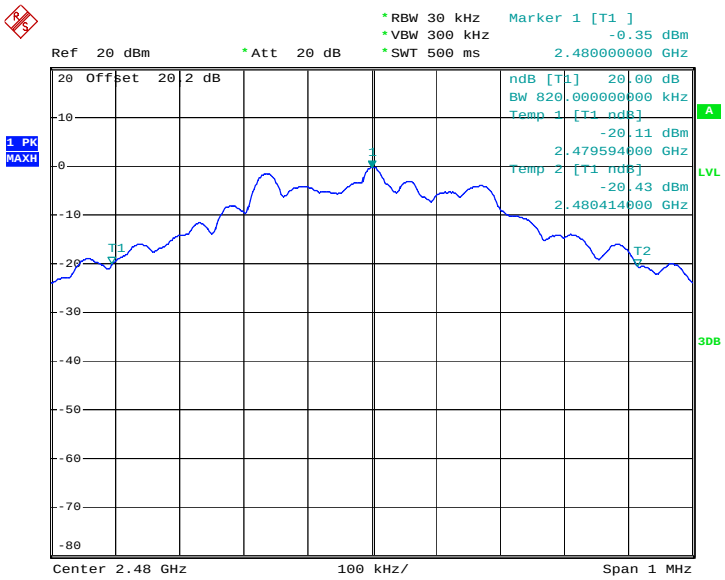
20 dB Bandwidth Plot on Channel 78



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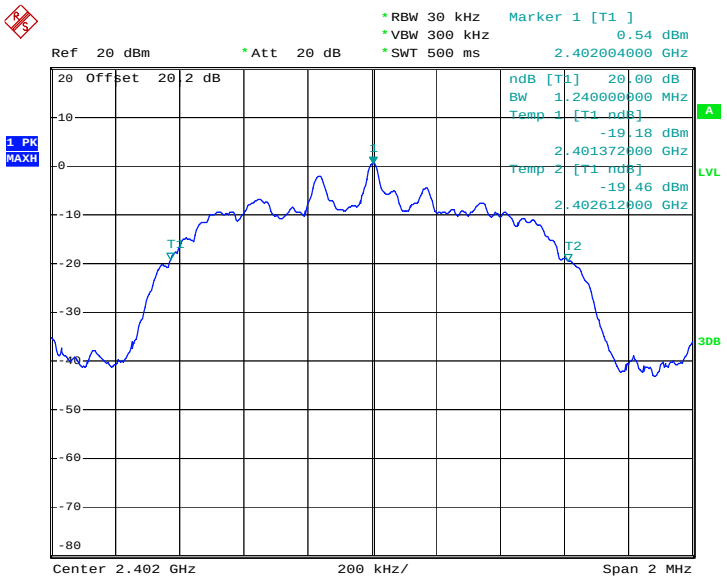
Test Mode :	Mode 4, 5, 6	Temperature :	23~24℃
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.240
39	2441	1.220
78	2480	1.240

20 dB Bandwidth Plot on Channel 00



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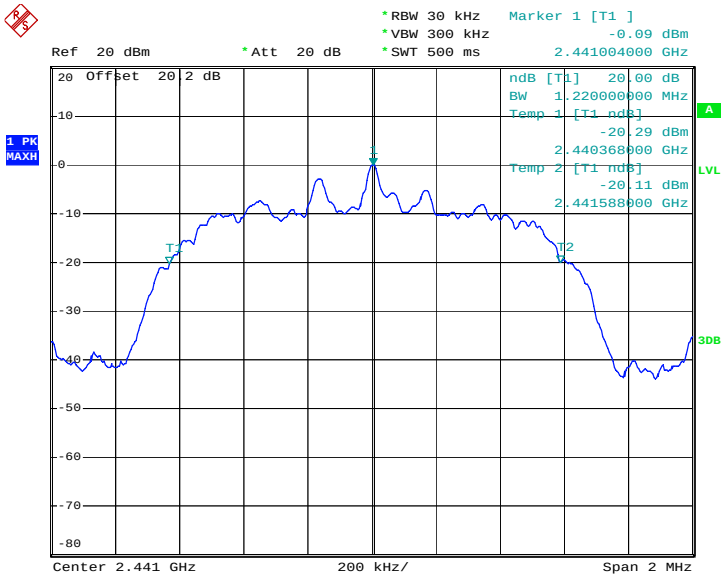
20 dB Bandwidth Plot on Channel 39



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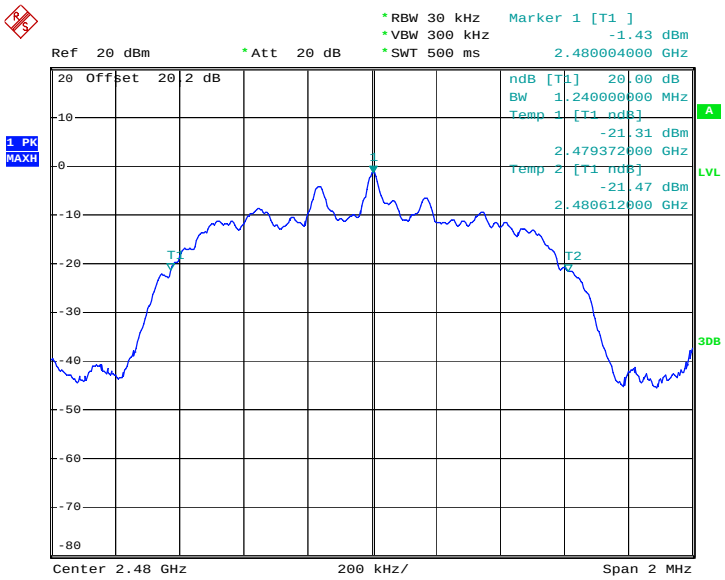
20 dB Bandwidth Plot on Channel 78



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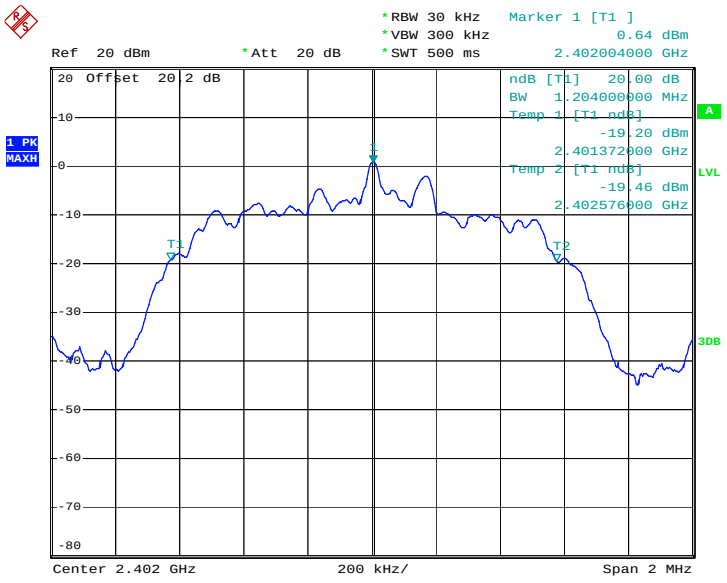
Test Mode :	Mode 7, 8, 9	Temperature :	23~24℃
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.204
39	2441	1.204
78	2480	1.204

20 dB Bandwidth Plot on Channel 00



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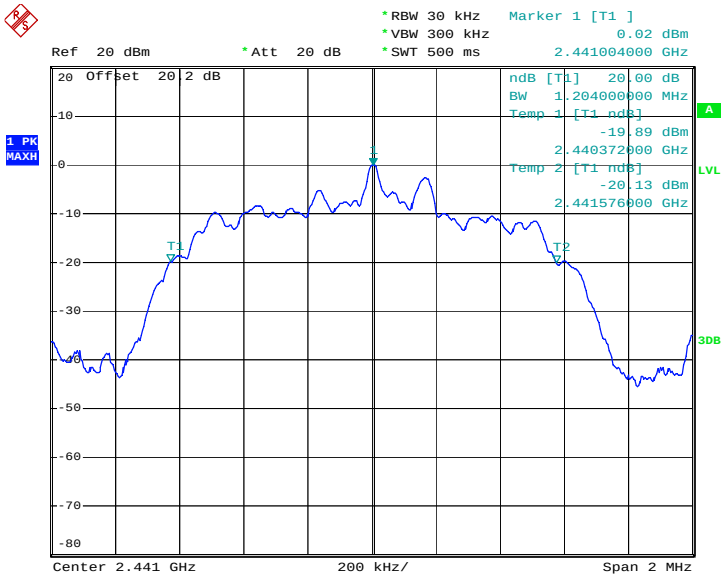
20 dB Bandwidth Plot on Channel 39



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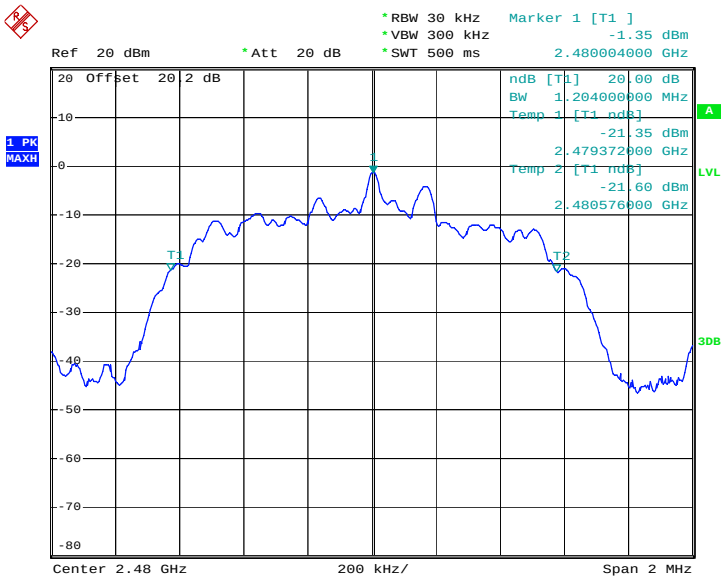
20 dB Bandwidth Plot on Channel 78



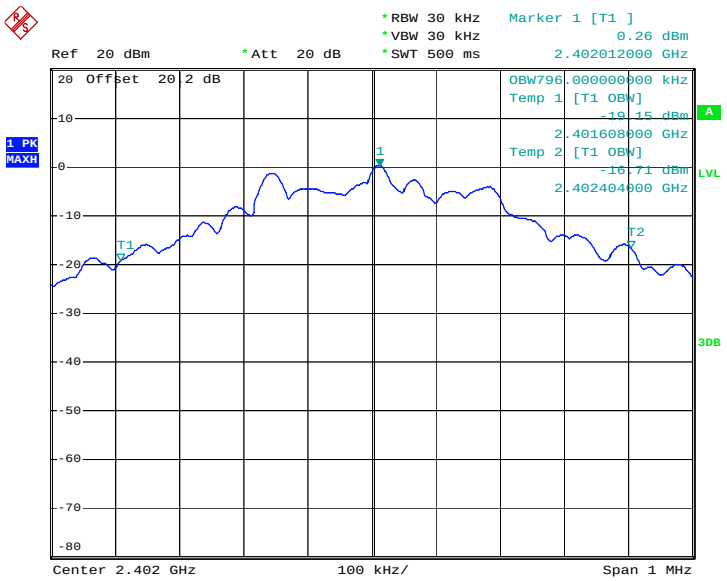
Date: 13.APR.2009 20:02:03

3.2.6 Test Result of 99% Occupied Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	23~24℃
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	0.796
39	2441	0.796
78	2480	0.796

99% Bandwidth Plot on Channel 00



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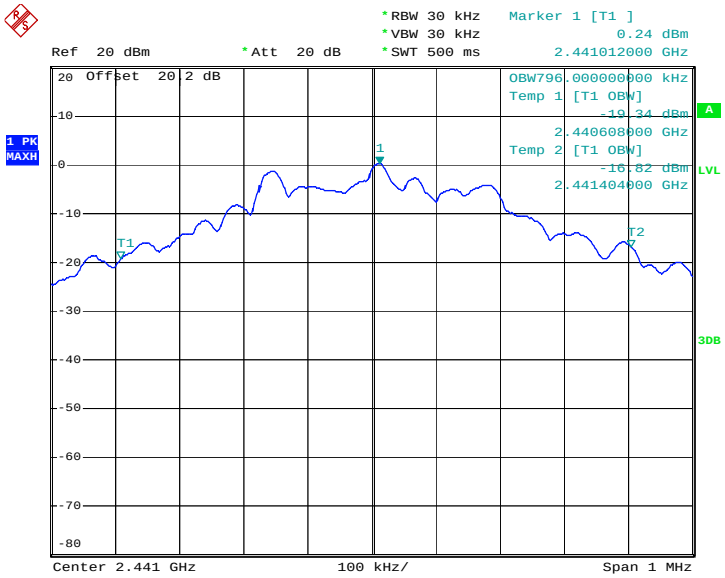
99% Occupied Bandwidth Plot on Channel 39



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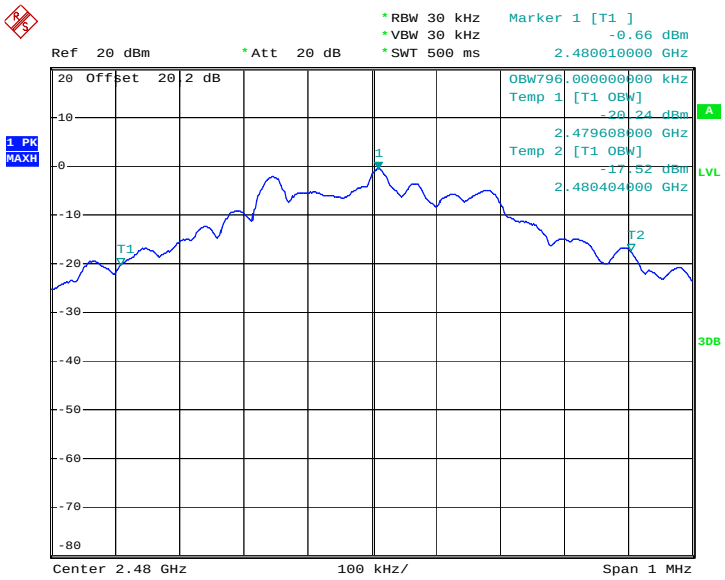
99% Occupied Bandwidth Plot on Channel 78

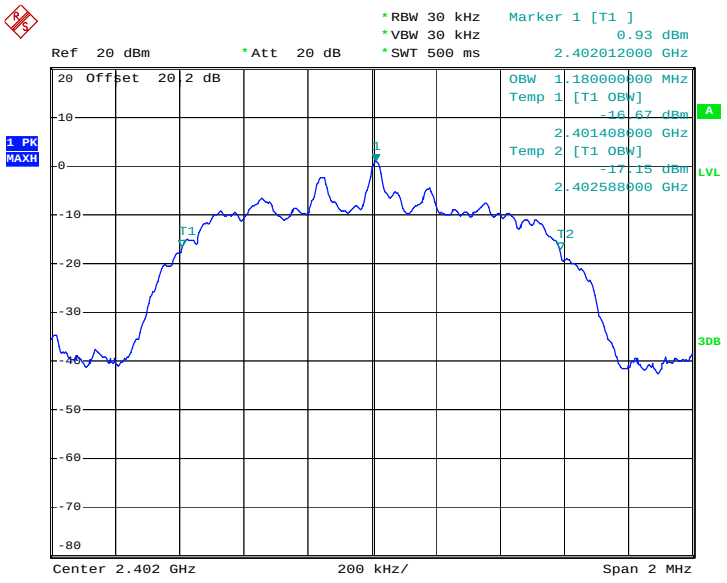


Date: 13.APR.2009 21:05:51

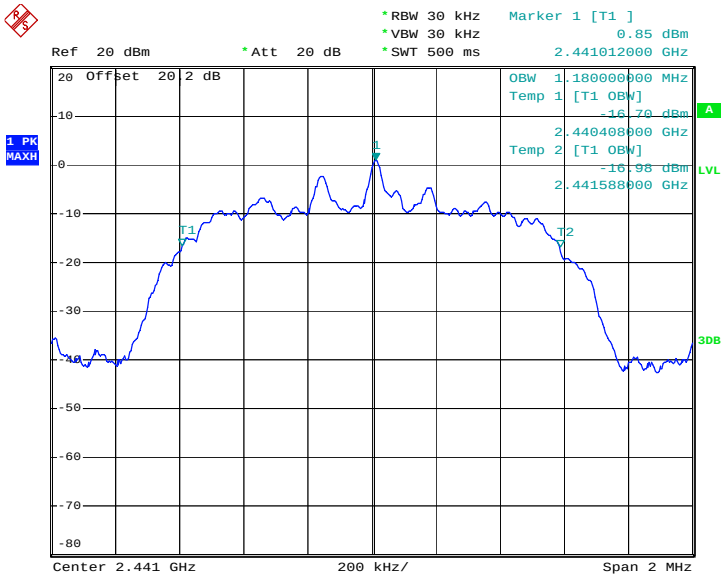
Test Mode :	Mode 4, 5, 6	Temperature :	23~24℃
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	1.180
39	2441	1.180
78	2480	1.152

99% Bandwidth Plot on Channel 00



99% Occupied Bandwidth Plot on Channel 39



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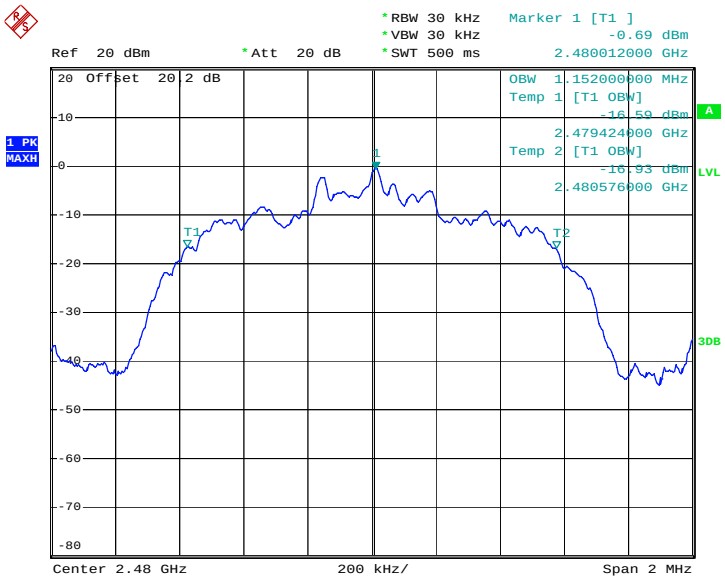
99% Occupied Bandwidth Plot on Channel 78



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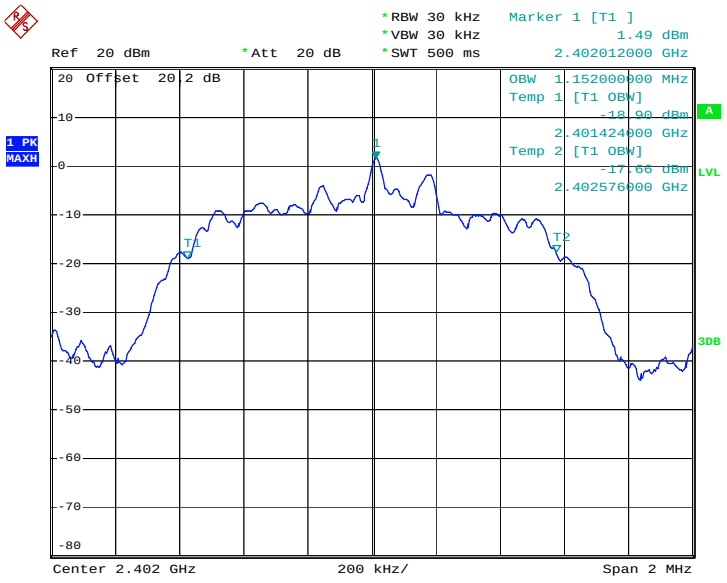
Test Mode :	Mode 7, 8, 9	Temperature :	23~24℃
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
00	2402	1.152
39	2441	1.152
78	2480	1.156

99% Bandwidth Plot on Channel 00



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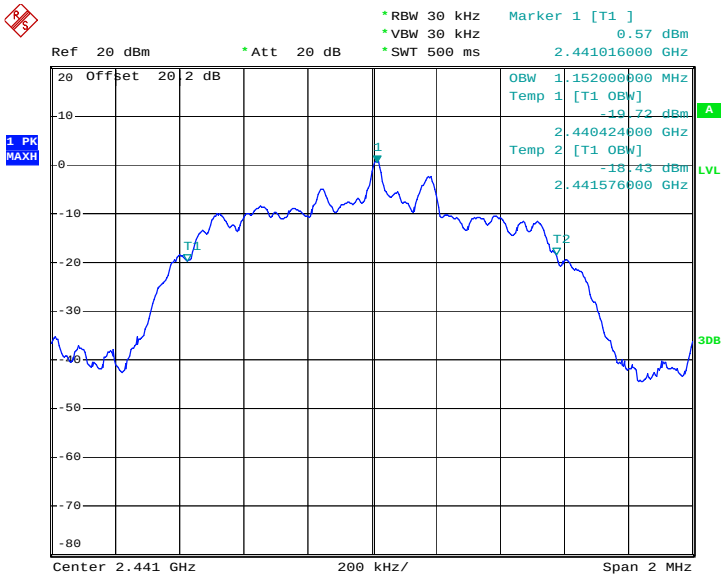
99% Occupied Bandwidth Plot on Channel 39



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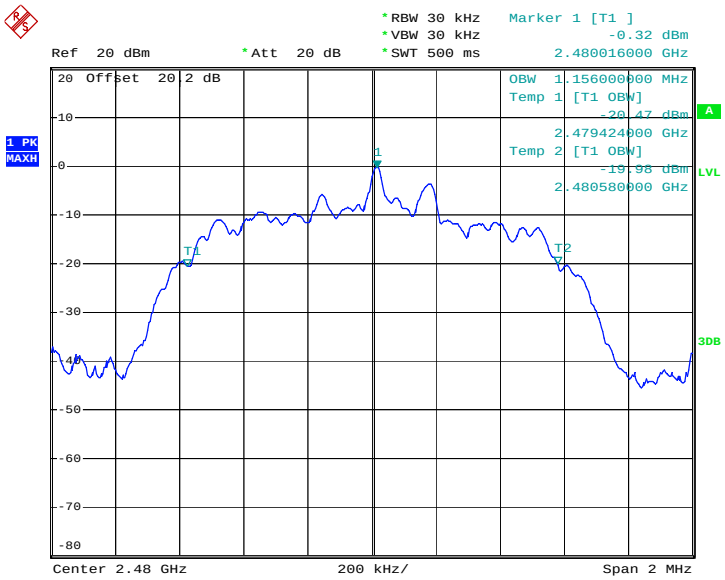
99% Occupied Bandwidth Plot on Channel 78



Date: 13.APR.2009 21:08:21

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.

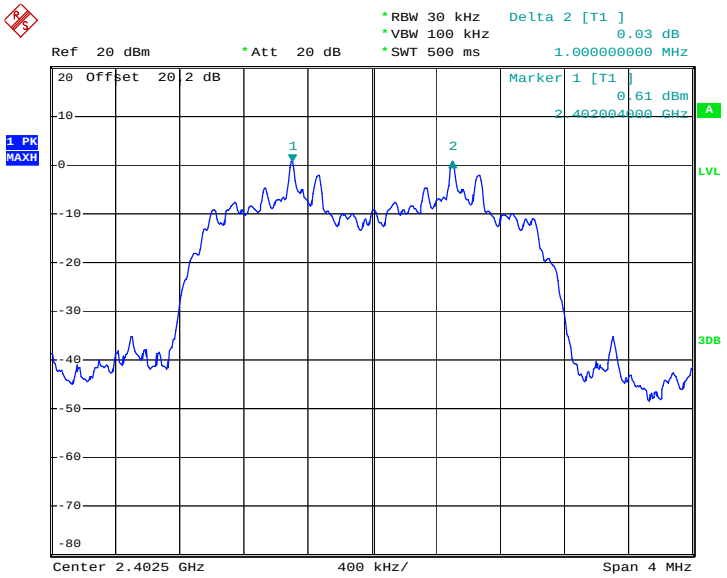
3.3.4 Test Setup

3.3.5 Test Result of Hopping Channel Separation

Test Mode :	Mode 7, 8, 9	Temperature :	23~24℃
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

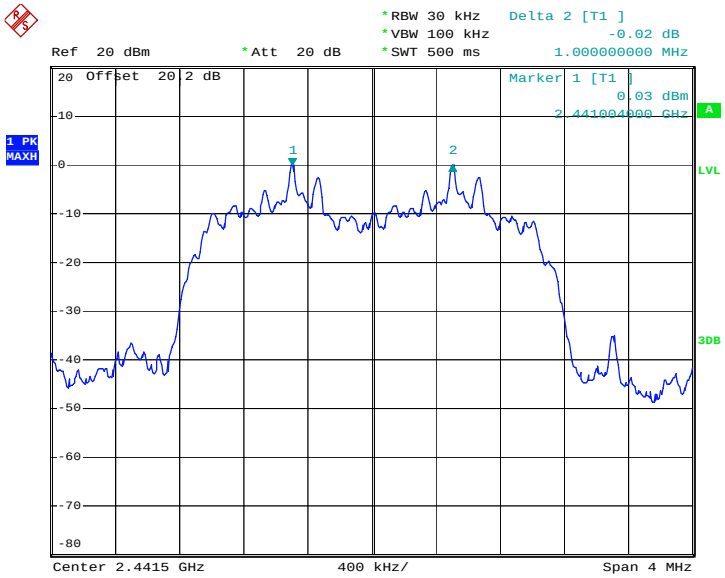
Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.000	0.803	Pass
39	2441	1.000	0.803	Pass
78	2480	1.000	0.803	Pass

Channel Separation Plot on Channel 00 - 01



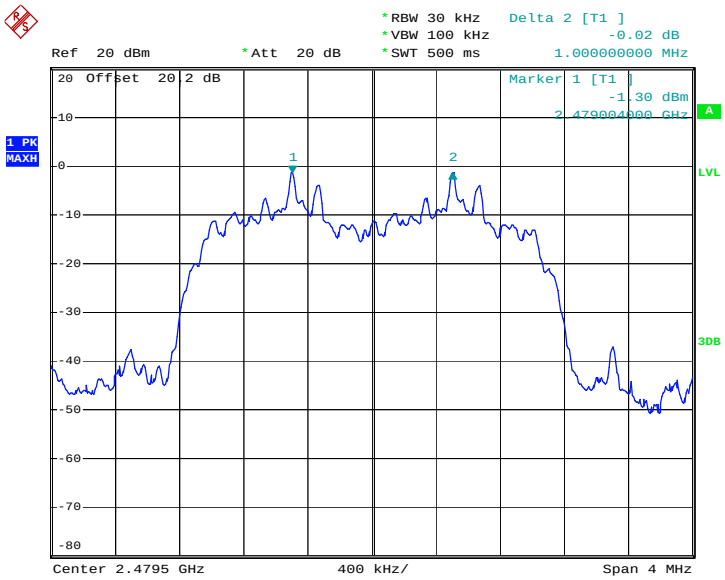
Date: 13.APR.2009 20:22:51

Channel Separation Plot on Channel 39 - 40



Date: 13.APR.2009 20:23:23

Channel Separation Plot on Channel 77 - 78



Date: 13.APR.2009 20:23:51

3.4 Dwell Time Measurement

3.4.1 Limit of Dwell Time

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

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

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

3.4.4 Test Setup

3.4.5 Test Result of Dwell Time

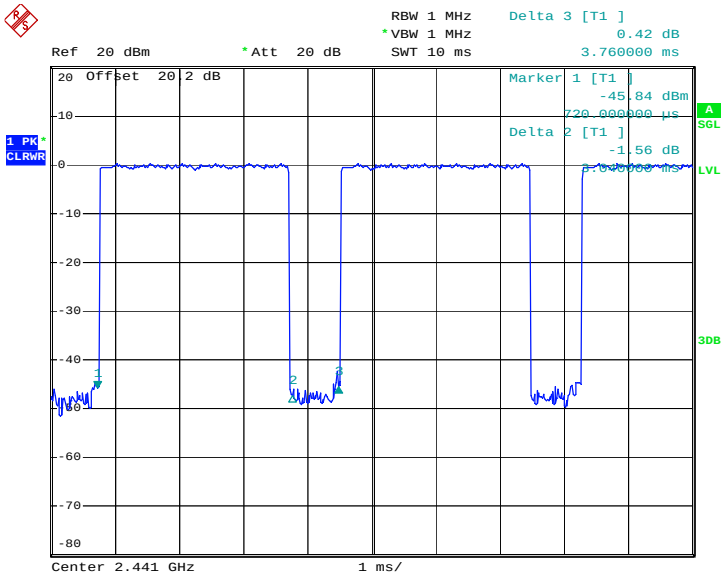
Test Mode :	Mode 8	Temperature :	23~24℃
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
3DH5	3.400	3040.000	0.327	0.4	Pass

Remark:

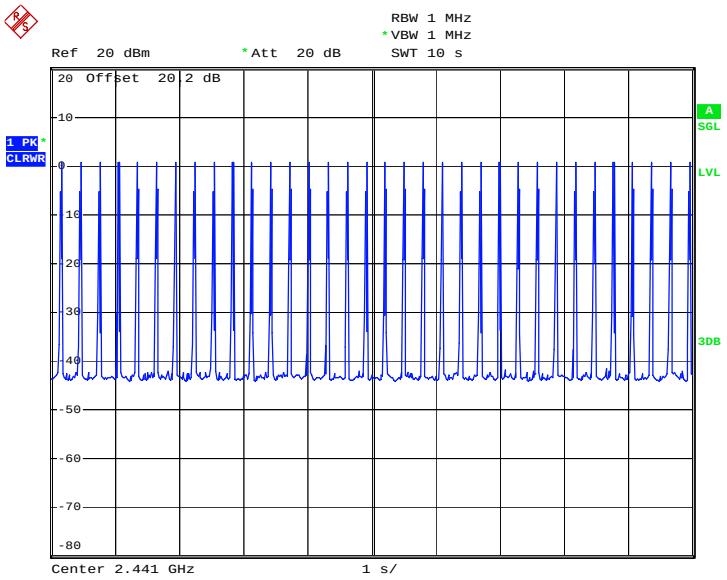
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
2. 79 channels come from the Hopping Channel number.
3. Average Hopping Channel = hops/sweep time
4. t: Package Transfer Time(us)

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



Date: 1.APR.2009 18:36:51

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



Date: 13.APR.2009 20:27:32

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).

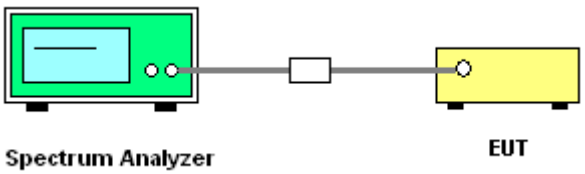
3.5.2 Measuring Instruments

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

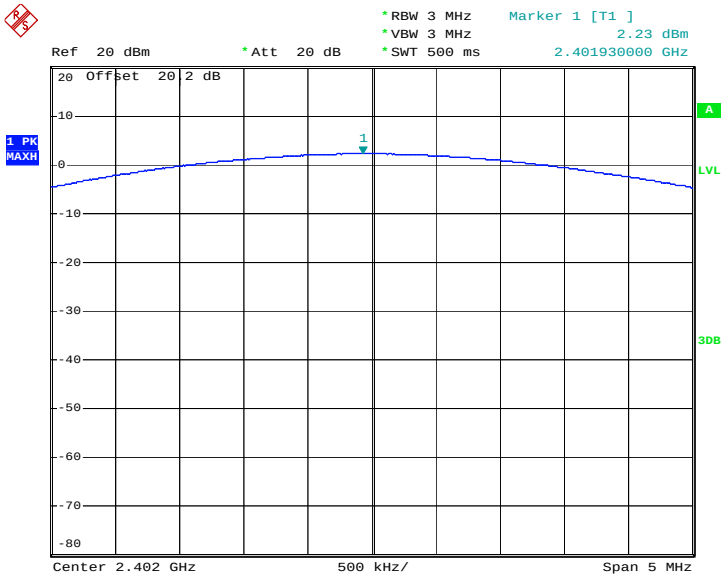


3.5.5 Test Result of Peak Output Power

Test Mode :	Mode 7, 8, 9	Temperature :	23~24℃
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

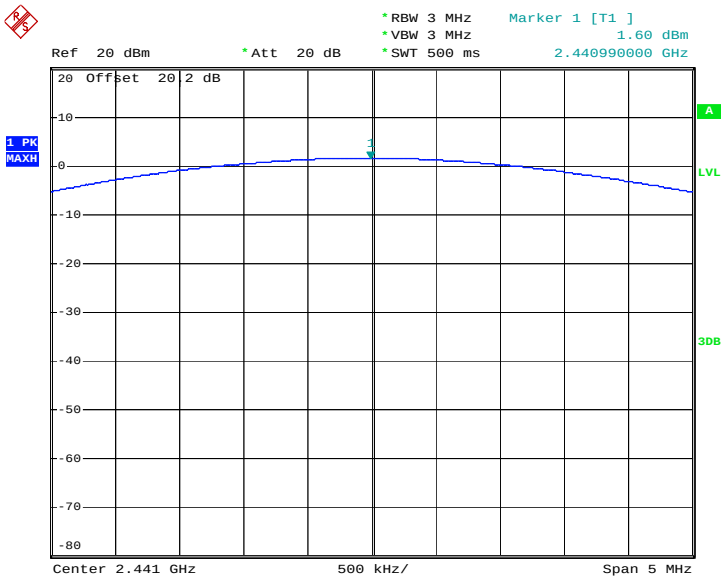
Channel	Frequency (MHz)	RF Power (dBm)		
		8-DPSK	Max. Limits	Pass/Fail
		3 Mbps	(dBm)	
00	2402	2.23	30	Pass
39	2441	1.60	30	Pass
78	2480	0.24	30	Pass

Peak Output Power Plot on Channel 00



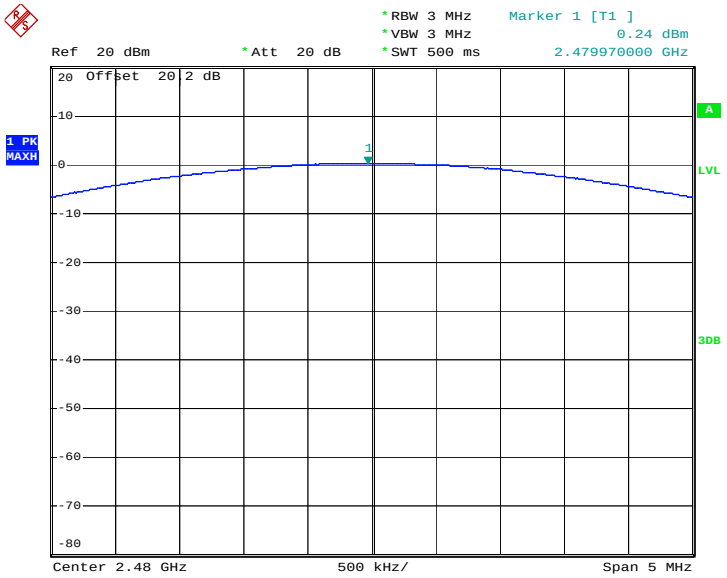
Date: 13.APR.2009 19:31:25

Peak Output Power Plot on Channel 39



Date: 13.APR.2009 19:31:47

Peak Output Power Plot on Channel 78



Date: 13.APR.2009 19:32:04

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.

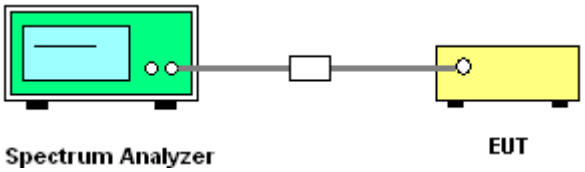
3.6.2 Measuring Instruments

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 :**	23~26°C
Test Channel :	00	**Relative Humidity :**	43~46%
		Test Engineer :	Kai Wang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBuV/m)**	**Over Limit (dB)**	**Limit Line (dBuV/m)**	**Read Level (dBuV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2375.93	49.89	-24.11	74.00	46.80	32.02	5.46	34.38	160	10	Peak
2375.93	30.18	-23.82	54.00	27.08	32.00	5.47	34.38	160	10	Average

Remark:

<Delta Marker>

Delta marker at 1% RBW of span = 45.67 + 0.66 = 46.33 dB (can be referred to section 3.6.6)

Peak band edge at 2375.93 MHz (RBW = VBW = 1MHz) = 96.22 dBuV/m – 46.33 dB = 49.89 dBuV/m

Duty factor = 20 x log ((Package Transfer Times(ms) x Avg Hopping Channel) / 100 ms)

= 20 x log ((3.04 x 3.4) / 100) = -19.71

Average band edge = Peak band edge + Duty factor = 49.89 dBuV/m + (-19.71) = 30.18 dBuV/m

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBuV/m)**	**Over Limit (dB)**	**Limit Line (dBuV/m)**	**Read Level (dBuV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2372.13	42.54	-31.46	74.00	39.42	31.95	5.53	34.36	100	46	Peak
2372.13	22.83	-31.17	54.00	19.73	32.00	5.47	34.38	100	46	Average

<Delta Marker>

Delta marker at 1% RBW of span = 45.67 + 0.66 = 46.33 dB (can be referred to section 3.6.6)

Peak band edge at 2372.13 MHz (RBW = VBW = 1MHz) = 88.87 dBuV/m – 46.33 dB = 42.54 dBuV/m

Duty factor = 20 x log ((Package Transfer Times(ms) x Avg Hopping Channel) / 100 ms)

= 20 x log ((3.04 x 3.4) / 100) = -19.71

Average band edge = Peak band edge + Duty factor = 42.54 dBuV/m + (-19.71) = 22.83 dBuV/m

Test Mode :	Mode 3	Temperature :	23~26°C
Test Channel :	78	Relative Humidity :	43~46%
		Test Engineer :	Kai Wang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	55.63	-18.37	74.00	52.56	32.09	5.38	34.40	100	331	Peak
2483.50	35.92	-18.08	54.00	32.85	32.09	5.38	34.40	100	331	Average

<Delta Marker>

Delta marker at 1% RBW of span = 45.66 - 1.31 = 44.35 dB (can be referred to section 3.6.6)

Peak band edge at 2483.50 MHz (RBW = VBW = 1MHz) = 99.98 dBuV/m – 44.35 dB = 55.63 dBuV/m

Duty factor = 20 x log ((Package Transfer Times(ms) x Avg Hopping Channel) / 100 ms)

= 20 x log ((3.04 x 3.4) / 100) = -19.71

Average band edge = Peak band edge + Duty factor = 55.63 dBuV/m + (-19.71) = 35.92 dBuV/m

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	47.76	-26.24	74.00	44.69	32.09	5.38	34.40	161	234	Peak
2483.50	28.05	-25.95	54.00	24.98	32.09	5.38	34.40	161	234	Average

<Delta Marker>

Delta marker at 1% RBW of span = 45.66 - 1.31 = 44.35 dB (can be referred to section 3.6.6)

Peak band edge at 2483.50 MHz (RBW = VBW = 1MHz) = 92.11 dBuV/m – 44.35 dB = 47.76 dBuV/m

Duty factor = 20 x log ((Package Transfer Times(ms) x Avg Hopping Channel) / 100 ms)

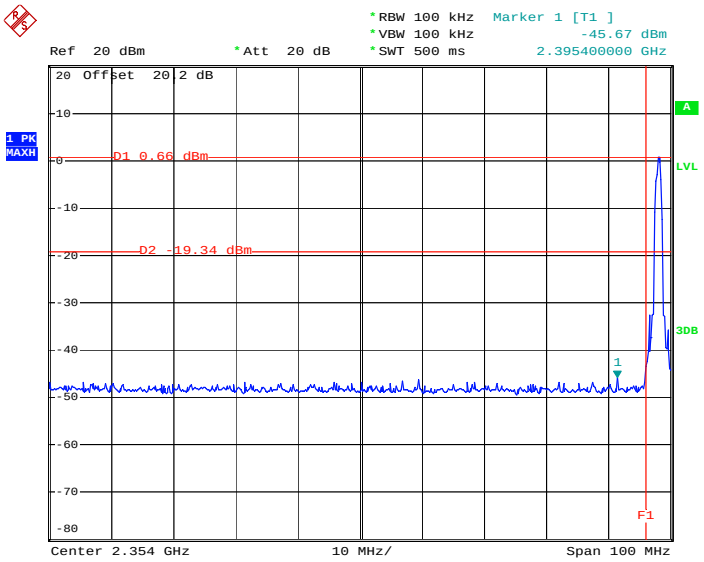
= 20 x log ((3.04 x 3.4) / 100) = -19.71

Average band edge = Peak band edge + Duty factor = 47.76 dBuV/m + (-19.71) = 28.05 dBuV/m

3.6.6 Test Result of Conducted Band Edges

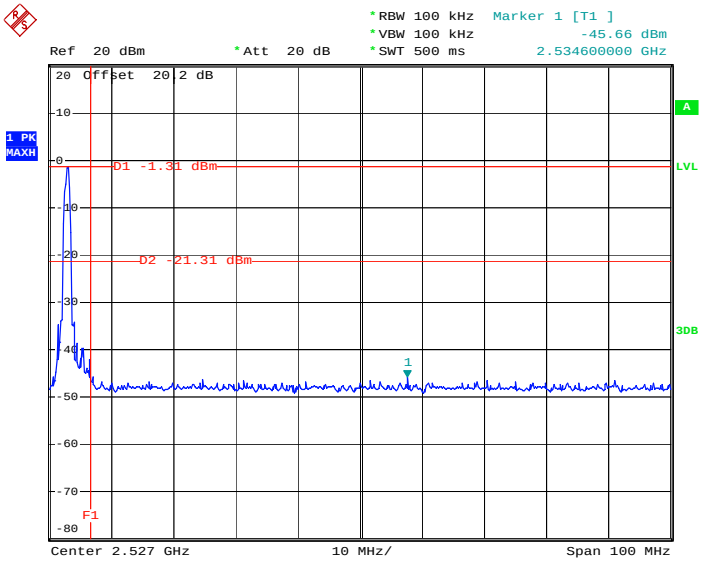
Test Mode :	Mode 7 and 9	Temperature :	23~24℃
Test Channel :	00 and 78	Relative Humidity :	43~44%
		Test Engineer :	Eric Huang

Low Band Edge Plot on Channel 00



Date: 13.APR.2009 20:06:17

High Band Edge Plot on Channel 78



Date: 13.APR.2009 20:08:06

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.

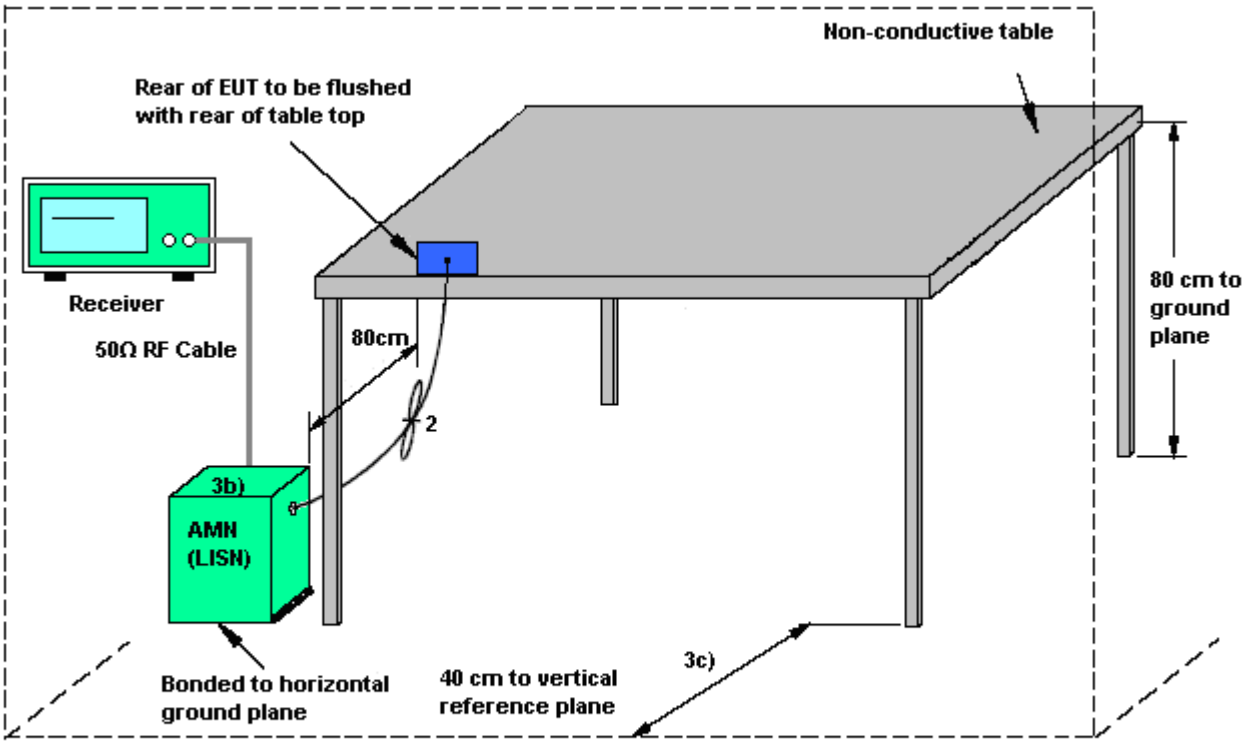
3.7.2 Measuring Instruments

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.

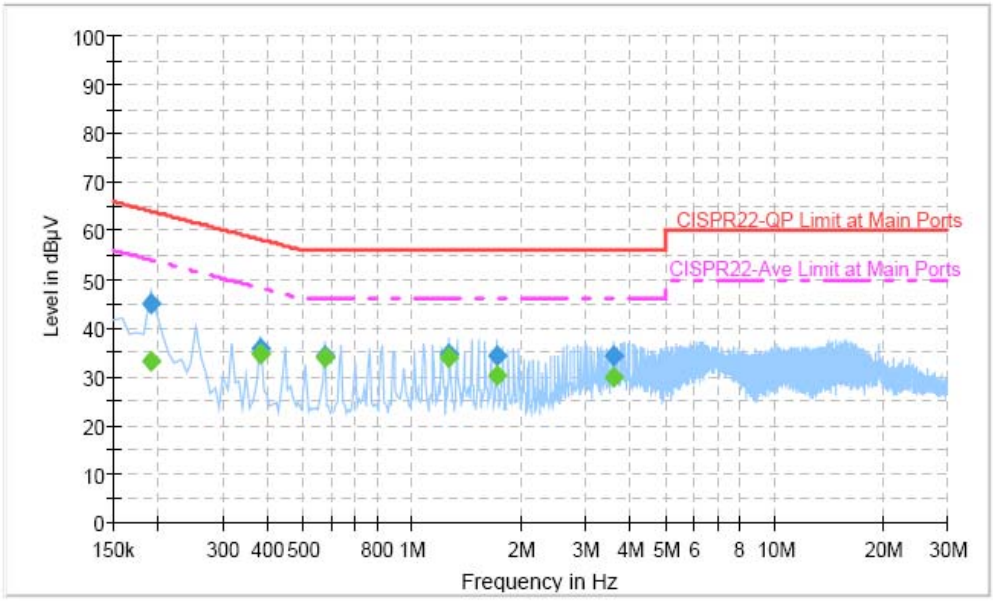
3.7.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.7.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	**Temperature :**	23~24℃
Test Engineer :	Cona Huang	**Relative Humidity :**	43~44%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	Sample A + WLAN Link + BT Link + 2D Scanner + Earphone + Adapter + USB Link + Mini SD Card + MP3		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



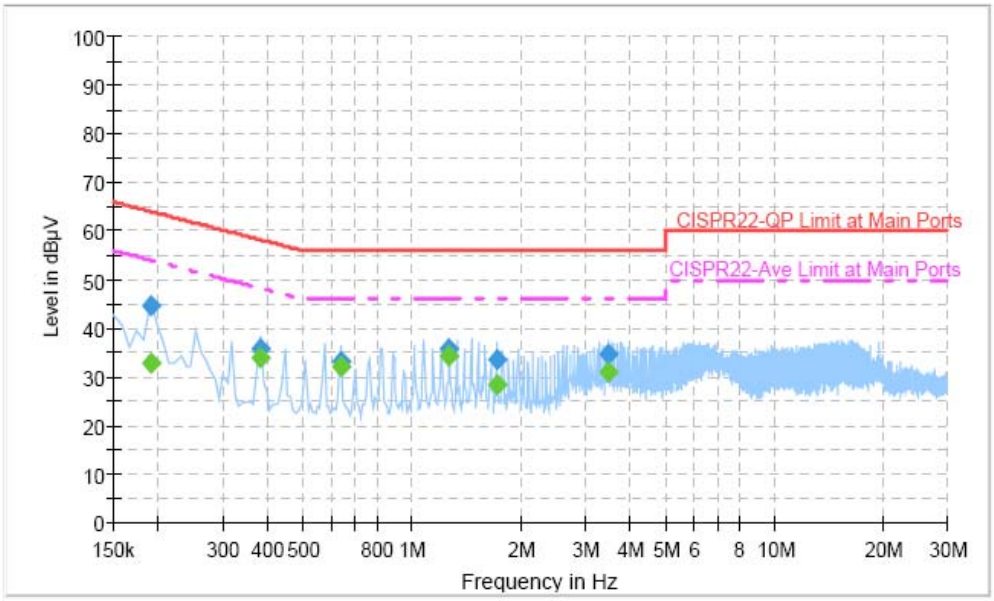
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	44.9	Off	L1	19.4	19.1	64.0
0.382000	35.9	Off	L1	19.4	22.3	58.2
0.574000	34.3	Off	L1	19.3	21.7	56.0
1.270000	34.7	Off	L1	19.5	21.3	56.0
1.718000	34.2	Off	L1	19.5	21.8	56.0
3.622000	34.5	Off	L1	19.5	21.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	33.3	Off	L1	19.4	20.7	54.0
0.382000	34.7	Off	L1	19.4	13.5	48.2
0.574000	34.0	Off	L1	19.3	12.0	46.0
1.270000	34.1	Off	L1	19.5	11.9	46.0
1.718000	30.1	Off	L1	19.5	15.9	46.0
3.622000	30.1	Off	L1	19.5	15.9	46.0

Test Mode :	Mode 1	Temperature :	23~24℃
Test Engineer :	Cona Huang	Relative Humidity :	43~44%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Sample A + WLAN Link + BT Link + 2D Scanner + Earphone + Adapter + USB Link + Mini SD Card + MP3		
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)
0.190000	44.5	Off	N	19.4	19.5	64.0
0.382000	35.8	Off	N	19.4	22.4	58.2
0.638000	33.1	Off	N	19.4	22.9	56.0
1.270000	35.7	Off	N	19.5	20.3	56.0
1.718000	33.6	Off	N	19.5	22.4	56.0
3.494000	34.8	Off	N	19.5	21.2	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	32.7	Off	N	19.4	21.3	54.0
0.382000	34.0	Off	N	19.4	14.2	48.2
0.638000	32.1	Off	N	19.4	13.9	46.0
1.270000	34.2	Off	N	19.5	11.8	46.0
1.718000	28.6	Off	N	19.5	17.4	46.0
3.494000	31.0	Off	N	19.5	15.0	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

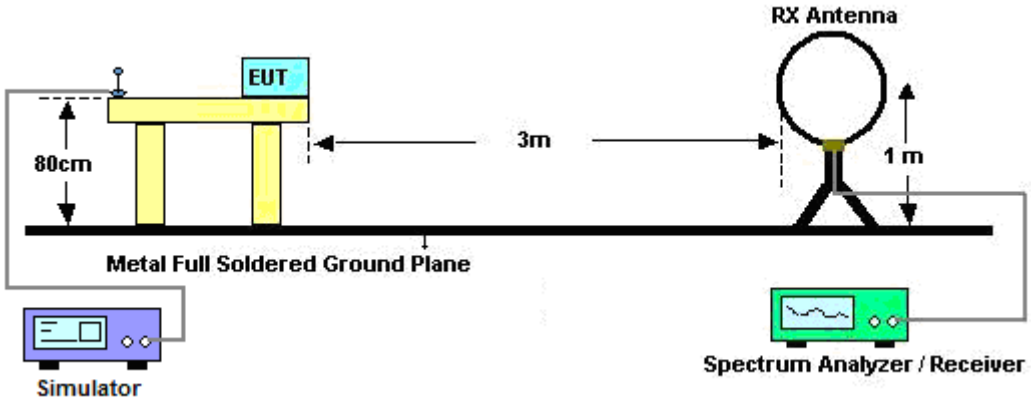
See list of measuring instruments of this test report.

3.8.3 Test Procedures

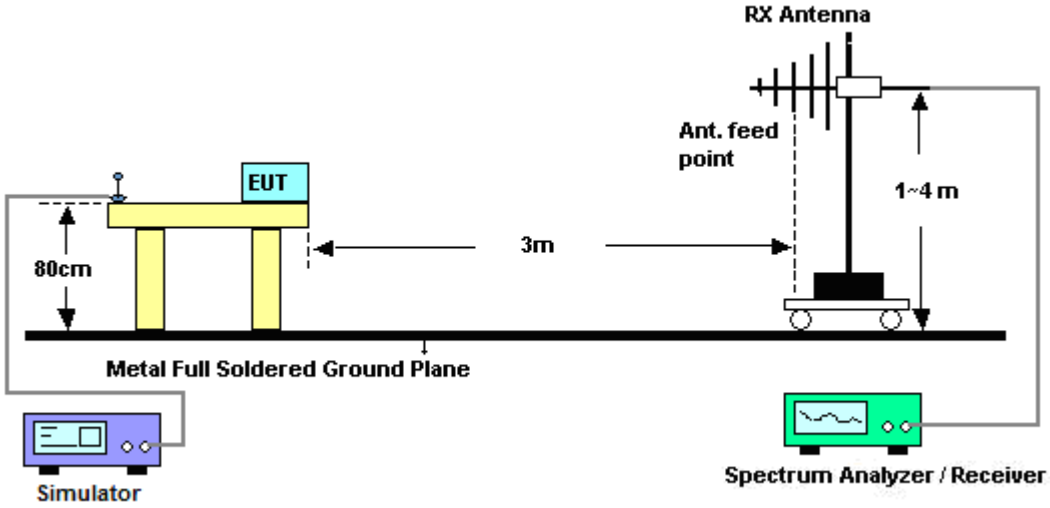
1. The testing follows the guidelines in FCC Public Notice DA 00-705 Measurement Guidelines.
2. Use the following spectrum analyzer settings:
   Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function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

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Temperature	23~26°	Humidity	43~46%
Test Engineer	Kai Wang		

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

Note:

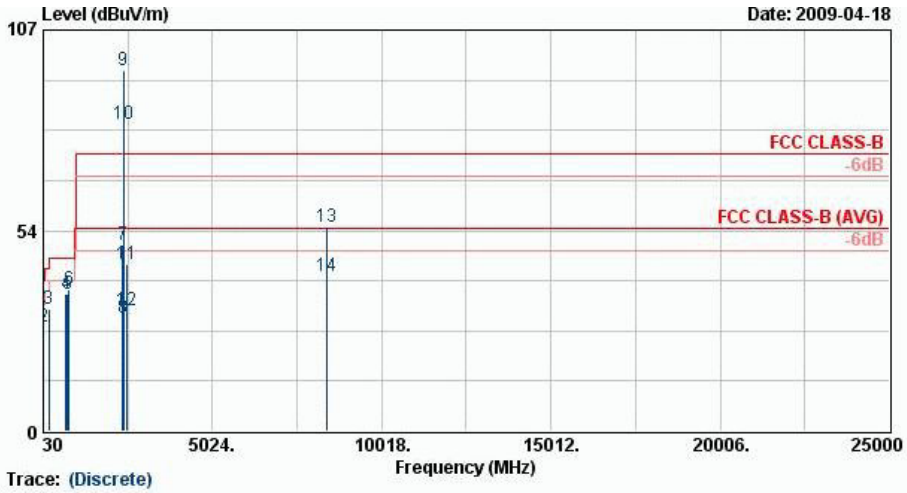
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

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

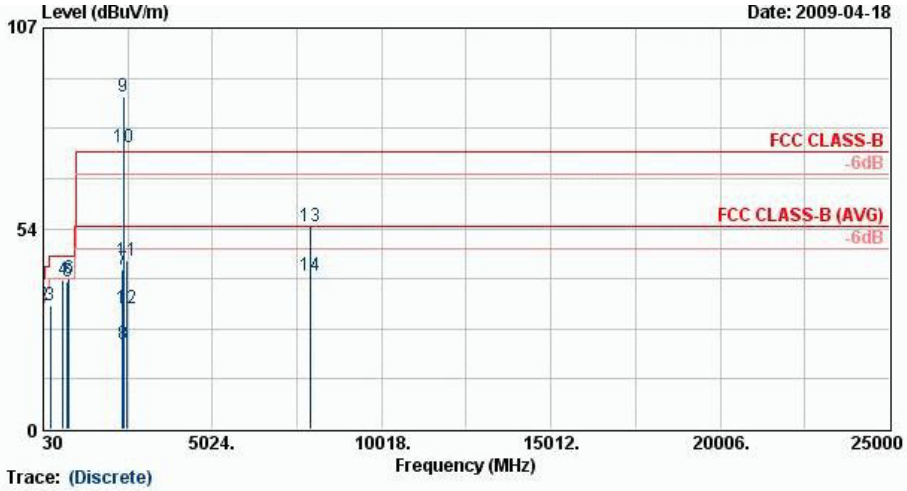
Test Mode :	Mode 1	Temperature :	23~26°C
Test Channel :	00	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Power : Real Battery 3.7V
Project : FR 940109
Memo : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.81	28.84	-11.16	40.00	40.53	19.36	0.65	31.70	---	---	Peak
2	50.25	27.87	-12.13	40.00	49.54	9.20	0.83	31.70	---	---	Peak
3	187.41	32.60	-10.90	43.50	53.17	9.40	1.65	31.61	---	---	Peak
4	701.80	36.57	-9.43	46.00	42.98	20.94	3.56	30.90	---	---	Peak
5	741.00	36.72	-9.28	46.00	42.22	21.64	3.67	30.82	---	---	Peak
6	780.20	37.88	-8.12	46.00	42.97	21.86	3.79	30.74	100	128	Peak
7	2375.93	49.89	-24.11	74.00	46.80	32.02	5.46	34.38	160	10	Peak
8	2375.93	30.18	-23.82	54.00	27.08	32.00	5.47	34.38	160	10	Average
9 @	2402.00	96.22			93.13	32.03	5.44	34.38	160	10	Peak
10 @	2402.00	81.92			78.83	32.02	5.46	34.38	160	10	Average
11	2500.00	44.55	-29.45	74.00	41.48	32.10	5.37	34.40	160	10	Peak
12	2500.00	32.08	-21.92	54.00	29.01	32.10	5.37	34.40	160	10	Average
13	8397.00	54.67	-19.33	74.00	44.18	35.68	10.11	35.30	100	106	Peak
14	8397.00	41.23	-12.77	54.00	30.74	35.68	10.11	35.30	100	106	Average

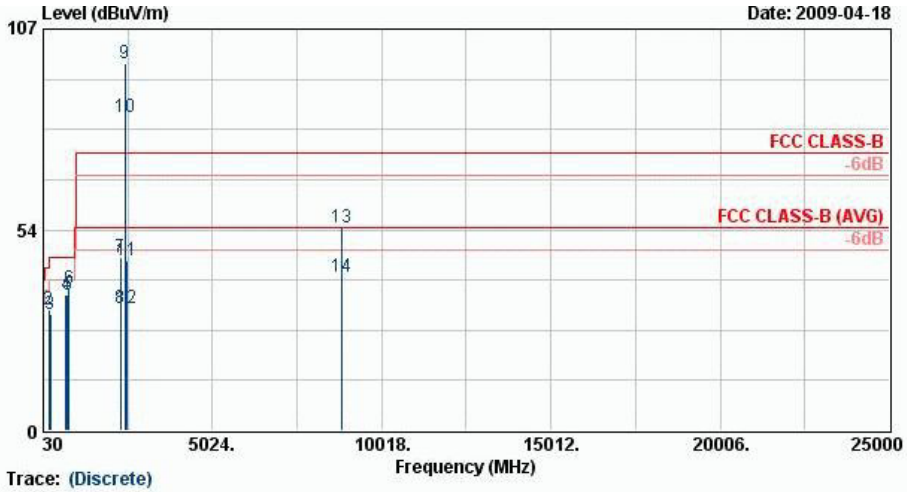
Test Mode :	Mode 1	Temperature :	23~26°C
Test Channel :	00	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Power : Real Battery 3.7V
Project : FR 940109
Memo : Mode 1

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		30.54	29.49	-10.51	40.00	41.18	19.36	0.65	31.70	---	---	Peak
2		50.25	33.14	-6.86	40.00	54.81	9.20	0.83	31.70	---	---	Peak
3		243.30	32.86	-13.14	46.00	50.26	12.23	1.89	31.51	---	---	Peak
4		623.40	39.77	-6.23	46.00	47.64	19.78	3.33	30.98	---	---	Peak
5		741.00	39.33	-6.67	46.00	44.84	21.64	3.67	30.82	---	---	Peak
6	!	780.20	40.29	-5.71	46.00	45.38	21.86	3.79	30.74	100	294	Peak
7		2372.13	42.54	-31.46	74.00	39.42	31.95	5.53	34.36	100	46	Peak
8		2372.13	22.83	-31.17	54.00	19.73	32.00	5.47	34.38	100	46	Average
9	X	2402.00	88.87			85.78	32.03	5.44	34.38	100	46	Peak
10	@	2402.00	75.33			72.24	32.02	5.46	34.38	100	46	Average
11		2494.00	44.83	-29.17	74.00	41.76	32.10	5.37	34.40	100	46	Peak
12		2494.00	32.10	-21.90	54.00	29.03	32.10	5.37	34.40	100	46	Average
13		7926.00	54.24	-19.76	74.00	44.14	35.58	9.81	35.28	100	215	Peak
14		7926.00	41.03	-12.97	54.00	30.93	35.58	9.81	35.28	100	215	Average

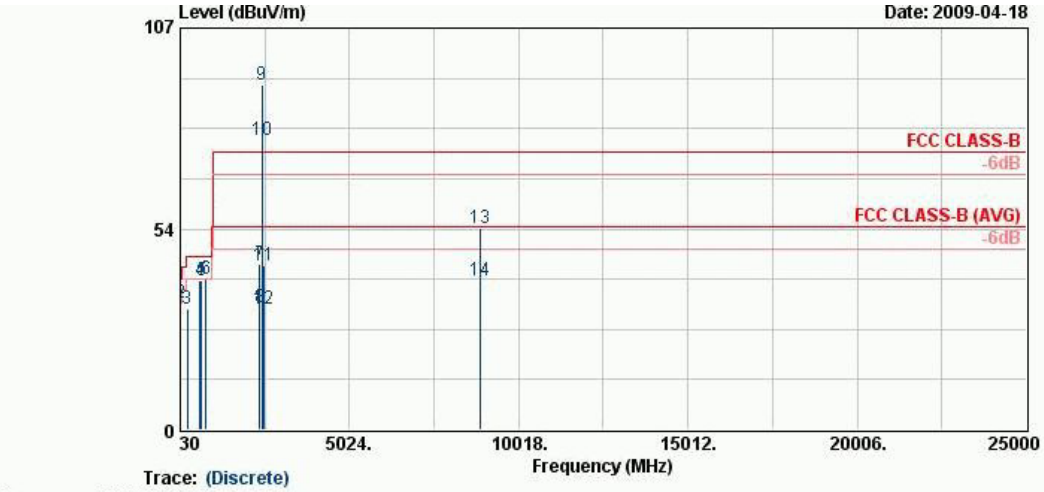
Test Mode :	Mode 2	Temperature :	23~26°C
Test Channel :	39	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Power : Real Battery 3.7V
Project : FR 940109
Memo : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.54	27.60	-12.40	40.00	39.29	19.36	0.65	31.70	---	---	Peak
2	189.30	32.42	-11.08	43.50	52.97	9.40	1.66	31.61	---	---	Peak
3	242.49	30.98	-15.02	46.00	48.46	12.15	1.89	31.51	---	---	Peak
4	701.80	36.25	-9.75	46.00	42.65	20.94	3.56	30.90	---	---	Peak
5	741.00	36.36	-9.64	46.00	41.86	21.64	3.67	30.82	---	---	Peak
6	780.20	37.97	-8.03	46.00	43.06	21.86	3.79	30.74	100	281	Peak
7	2318.00	46.11	-27.89	74.00	43.00	31.96	5.51	34.37	100	339	Peak
8	2318.00	32.61	-21.39	54.00	29.50	31.96	5.51	34.37	100	339	Average
9 @	2441.00	97.88			94.80	32.06	5.41	34.39	100	339	Peak
10 @	2441.00	83.69			80.61	32.06	5.41	34.39	100	339	Average
11	2484.00	45.28	-28.72	74.00	42.21	32.09	5.38	34.40	100	339	Peak
12	2484.00	32.59	-21.41	54.00	29.52	32.09	5.38	34.40	100	339	Average
13	8853.00	54.19	-19.81	74.00	43.29	35.98	10.29	35.37	100	239	Peak
14	8853.00	41.06	-12.94	54.00	30.16	35.98	10.29	35.37	100	239	Average

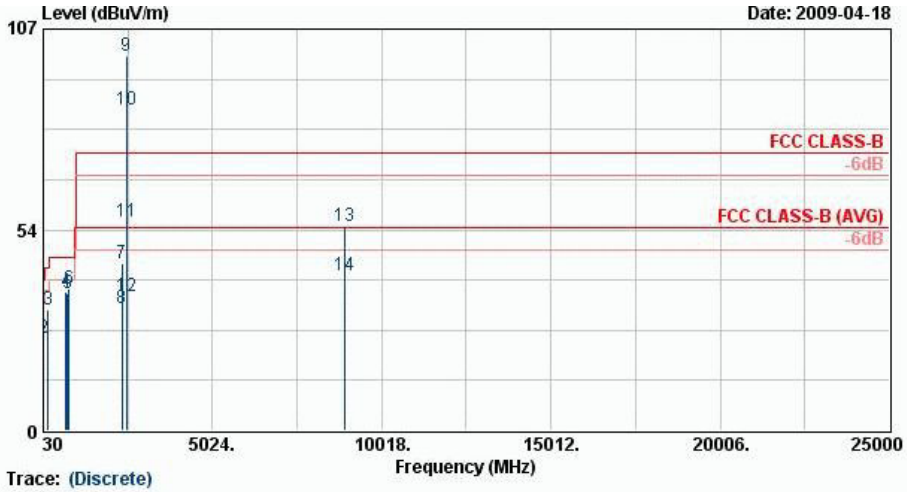
Test Mode :	Mode 2	Temperature :	23~26°C
Test Channel :	39	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Power : Real Battery 3.7V
Project : FR 940109
Memo : Mode 2

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		31.62	26.41	-13.59	40.00	38.63	18.82	0.66	31.70	---	---	Peak
2	!	50.25	34.00	-6.00	40.00	55.67	9.20	0.83	31.70	---	---	Peak
3		242.49	32.24	-13.76	46.00	49.72	12.15	1.89	31.51	---	---	Peak
4		623.40	39.66	-6.34	46.00	47.53	19.78	3.33	30.98	---	---	Peak
5		662.60	39.73	-6.27	46.00	46.92	20.30	3.45	30.94	---	---	Peak
6	!	780.20	40.13	-5.87	46.00	45.22	21.86	3.79	30.74	100	108	Peak
7		2372.00	44.35	-29.65	74.00	41.25	32.00	5.47	34.38	117	312	Peak
8		2372.00	32.42	-21.58	54.00	29.32	32.00	5.47	34.38	117	312	Average
9	X	2441.00	91.87			88.79	32.06	5.41	34.39	117	312	Peak
10	@	2441.00	77.12			74.04	32.06	5.41	34.39	117	312	Average
11		2484.00	43.76	-30.24	74.00	40.69	32.09	5.38	34.40	117	312	Peak
12		2484.00	32.22	-21.78	54.00	29.15	32.09	5.38	34.40	117	312	Average
13		8877.00	53.87	-20.13	74.00	42.95	35.99	10.30	35.37	100	145	Peak
14		8877.00	39.78	-14.22	54.00	28.86	35.99	10.30	35.37	100	145	Average

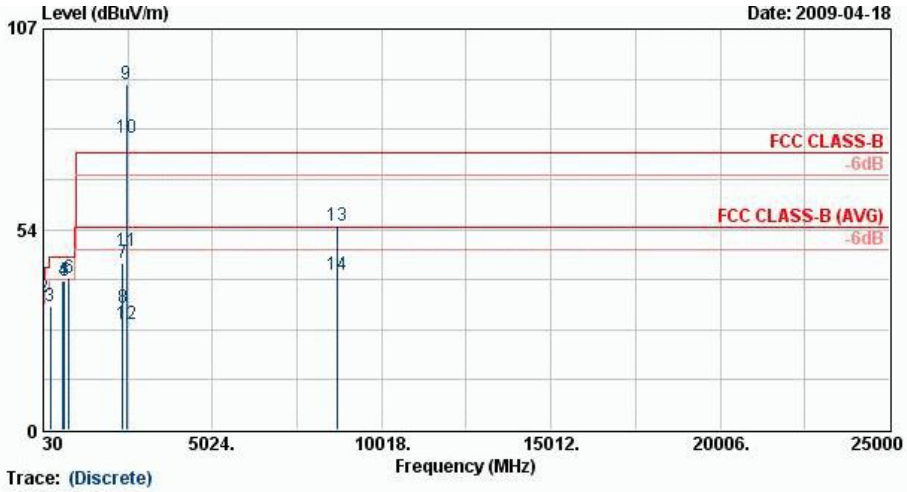
Test Mode :	Mode 3	Temperature :	23~26°C
Test Channel :	78	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Power : Real Battery 3.7V
Project : FR 940109
Memo : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	30.81	26.60	-13.40	40.00	38.29	19.36	0.65	31.70	---	---	Peak
2 @	50.25	24.63	-15.37	40.00	46.30	9.20	0.83	31.70	---	---	Peak
3 @	182.82	32.15	-11.35	43.50	52.74	9.40	1.63	31.62	---	---	Peak
4 @	701.80	36.81	-9.19	46.00	43.22	20.94	3.56	30.90	---	---	Peak
5 @	741.00	36.43	-9.57	46.00	41.93	21.64	3.67	30.82	---	---	Peak
6 @	780.20	37.86	-8.14	46.00	42.95	21.86	3.79	30.74	100	215	Peak
7 @	2356.00	44.67	-29.33	74.00	41.57	31.99	5.49	34.37	100	331	Peak
8 @	2356.00	32.43	-21.57	54.00	29.33	31.99	5.49	34.37	100	331	Average
9 @	2480.00	99.98			96.90	32.09	5.38	34.40	100	331	Peak
10 @	2480.00	85.54			82.47	32.09	5.38	34.40	100	331	Average
11 @	2483.50	55.63	-18.37	74.00	52.56	32.09	5.38	34.40	100	331	Peak
12 @	2483.50	35.92	-18.08	54.00	32.85	32.09	5.38	34.40	100	331	Average
13 @	8946.00	54.61	-19.39	74.00	43.63	36.05	10.32	35.39	100	217	Peak
14 @	8946.00	41.32	-12.68	54.00	30.34	36.05	10.32	35.39	100	217	Average

Test Mode :	Mode 3	Temperature :	23~26°C
Test Channel :	78	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	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
Power : Real Battery 3.7V
Project : FR 940109
Memo : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	30.81	27.38	-12.62	40.00	39.07	19.36	0.65	31.70	---	---	Peak
2 @	49.17	35.31	-4.69	40.00	56.60	9.60	0.81	31.70	---	---	Peak
3 @	242.49	32.94	-13.06	46.00	50.42	12.15	1.89	31.51	---	---	Peak
4 @	623.40	39.89	-6.11	46.00	47.76	19.78	3.33	30.98	---	---	Peak
5 @	662.60	39.70	-6.30	46.00	46.90	20.30	3.45	30.94	---	---	Peak
6 @	780.20	40.55	-5.45	46.00	45.64	21.86	3.79	30.74	100	281	Peak
7 @	2380.00	44.46	-29.54	74.00	41.36	32.00	5.47	34.38	161	234	Peak
8 @	2380.00	32.45	-21.55	54.00	29.35	32.00	5.47	34.38	161	234	Average
9 @	2480.00	92.11			89.03	32.09	5.38	34.40	161	234	Peak
10 @	2480.00	77.92			74.85	32.09	5.38	34.40	161	234	Average
11 @	2483.50	47.76	-26.24	74.00	44.69	32.09	5.38	34.40	161	234	Peak
12 @	2483.50	28.05	-25.95	54.00	24.98	32.09	5.38	34.40	161	234	Average
13 @	8718.00	54.65	-19.35	74.00	43.87	35.87	10.25	35.34	100	281	Peak
14 @	8718.00	41.32	-12.68	54.00	30.54	35.87	10.25	35.34	100	281	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 PCB 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 Equipment

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)
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)
System Simulator	R&S	CMU200	106656	N/A	May 06, 2008	May 05, 2009	Conduction (CO05-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)
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)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	BBHA9170251	15G - 40GHz	Oct. 16, 2008	Oct. 15, 2009	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH07-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		$u(x_i)$	Ci	$Ci*u(x_i)$
	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 Γ1= 0.197 Antenna VSWR Γ2= 0.194 Uncertainty=20log(1-Γ1*Γ2)	+0.34/-0.35	U-shaped	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**				

6 Certification of TAF Accreditation

Certificate No. : L1190-090417

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 Arrangment with Foreign Authorities

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : April 17, 2009

P1, total 20 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 EP940109 as below.