

FCC Test Report

APPLICANT : DATALOGIC MOBILE s.r.l.
EQUIPMENT : Pocket-Sized Mobile Computer
BRAND NAME : Datalogic Memor™
MODEL NAMEZ : 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 Transmission System (DTS)

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 the compliance with the applicable technical standards.

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

Reviewed by:



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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APPENDIX A. PHOTOGRAPHS OF EUT

APPENDIX B. SETUP PHOTOGRAPHS



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR940109B	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(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	Gen 4.4.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.5	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 11.8 dB at 1.27 MHz
3.6	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.05 dB at 780.20 MHz
3.7	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	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 17.83 dBm (60.67 mW) 802.11g : 16.37 dBm (43.35 mW)
Antenna Type	Sample A : PCB Antenna with gain -1.011 dBi Sample B : PCB Antenna with gain -0.495 dBi
Type of Antenna Connector	N/A
HW Version	R2
SW Version	4.0
Type of Modulation	802.11b : DSSS 802.11g : OFDM
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 Transmission System (DTS).

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 KDB Publication No. 558074 (Measurement Guidelines of DTS)
- 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	detroit	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 Pre-Scanned RF Power

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

802.11b

2.4GHz 802.11b Pre-Scanned RF Power (dBm)					
Channel	Frequency (MHz)	Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	15.90	15.99	17.78	17.47
CH 06	2437 MHz	16.03	16.65	17.45	17.83
CH 11	2462 MHz	15.93	16.62	17.30	16.98

802.11g

2.4GHz 802.11g Pre-Scanned RF Power (dBm)									
Channel	Frequency (MHz)	Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	16.12	15.32	15.32	14.89	15.50	15.31	15.30	14.81
CH 06	2437 MHz	16.37	15.19	16.18	14.63	15.40	14.93	14.69	14.89
CH 11	2462 MHz	16.11	15.26	14.76	15.95	16.08	15.54	14.47	15.61

Remark:

1. For WLAN RF power, the pre-scanned RF power was measured by spectrum analyzer.
2. The 802.11b data rates were set in 11 Mbps and 802.11g data rates were set in 6 Mbps for all the test cases, due to the highest RF output power.
3. The EUT is programmed to transmit signal continuously for all testing.

2.2 Test Mode

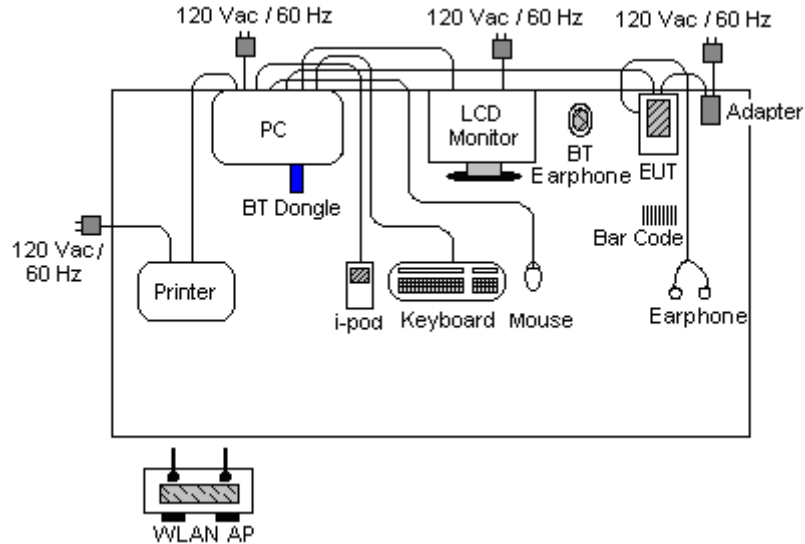
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic 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.

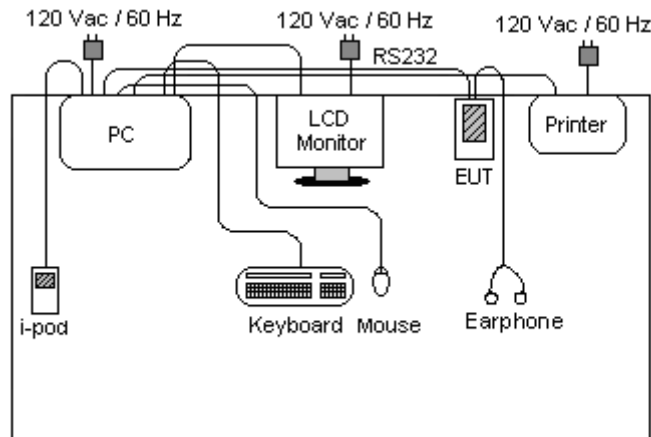
Test Cases		
Test Item	802.11b Modulation : DSSS	802.11g Modulation : OFDM
Conducted TCs	<ul style="list-style-type: none"> ■ Mode 1: CH01_2412 MHz ■ Mode 2: CH06_2437 MHz ■ Mode 3: CH11_2462 MHz 	<ul style="list-style-type: none"> ■ Mode 4: CH01_2412 MHz ■ Mode 5: CH06_2437 MHz ■ Mode 6: CH11_2462 MHz
Radiated TCs	<ul style="list-style-type: none"> ■ Mode 1: Sample B in CH01_2412 MHz ■ Mode 2: Sample B in CH06_2437 MHz ■ Mode 3: Sample B in CH11_2462 MHz 	<ul style="list-style-type: none"> ■ Mode 4: Sample B in CH01_2412 MHz ■ Mode 5: Sample B in CH06_2437 MHz ■ Mode 6: Sample B in CH11_2462 MHz
AC Conducted Emission	<p>Mode 1 : Sample A + WLAN Link + BT Link + 2D Scanner + Earphone + Adapter + USB Link + Mini SD Card + MP3</p> <p>Mode 2 : Sample B + WLAN Link + BT Link + 1D Scanner + Earphone + Adapter + USB Link + Mini SD Card + MP3</p>	
<p>Remark:</p> <ol style="list-style-type: none"> 1. The worst case of conducted emission is mode 1; only the test data of it was reported. 2. The sample B was used for RSE test only due to higher antenna gain. 		

2.3 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



2.4 RF Utility

The programmed RF utility, "SRU v2.1.44.SD.exe" is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

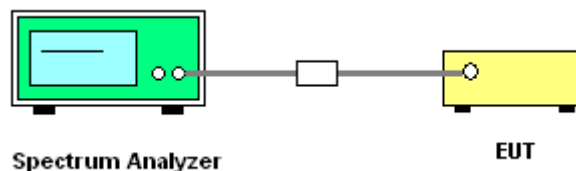
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz.
In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 kHz.
4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

3.1.4 Test Setup





3.1.5 Test Result of 6dB Bandwidth

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

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.12	0.5	Pass
06	2437	10.00	0.5	Pass
11	2462	10.00	0.5	Pass

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

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.36	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	16.40	0.5	Pass



3.1.6 Test Result of 99% Occupied Bandwidth

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

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	12.48	Pass
06	2437	12.48	Pass
11	2462	12.44	Pass

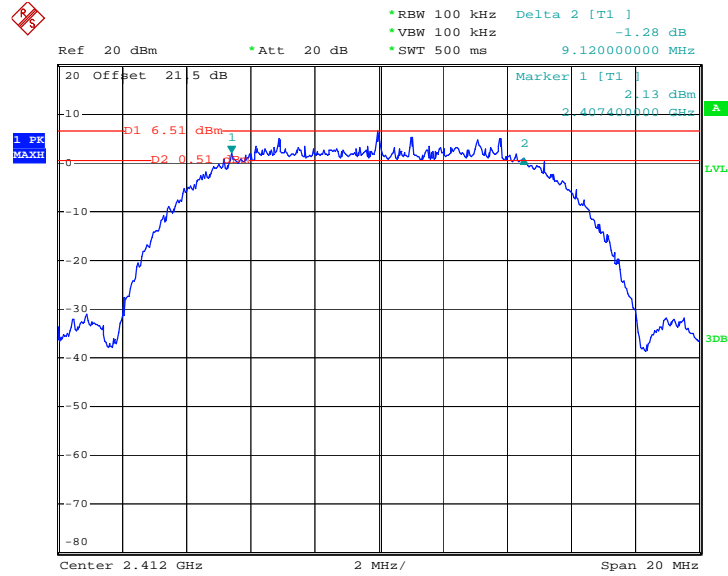
Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	16.72	Pass
06	2437	16.72	Pass
11	2462	16.76	Pass



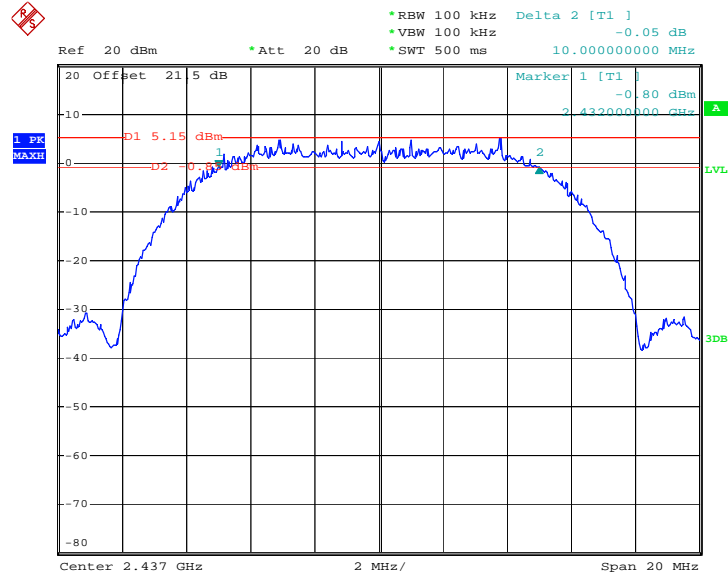
3.1.7 Test Plots of 6dB Bandwidth

Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



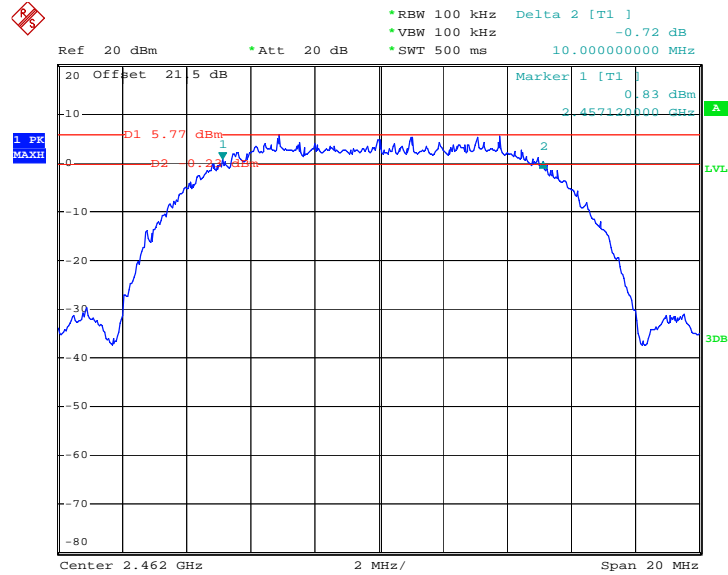
Date: 9.APR.2009 14:24:42

Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



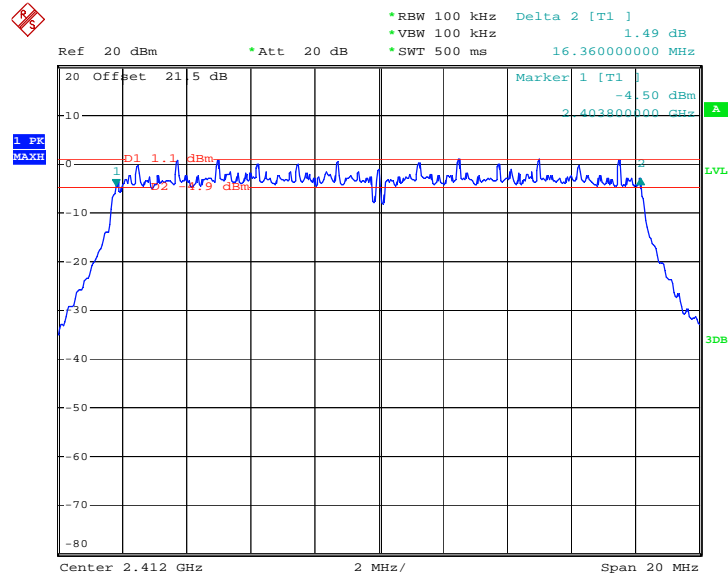
Date: 9.APR.2009 14:29:59

Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



Date: 9.APR.2009 14:37:39

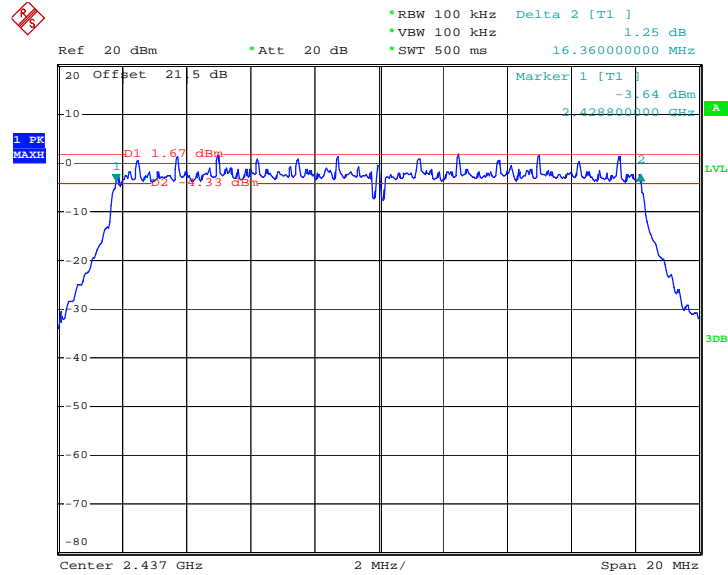
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 9.APR.2009 14:52:05

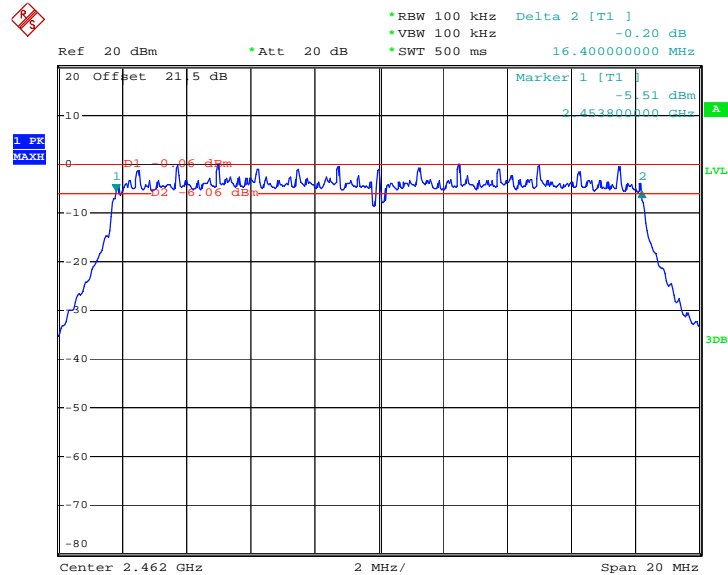


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 9.APR.2009 14:56:58

Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11

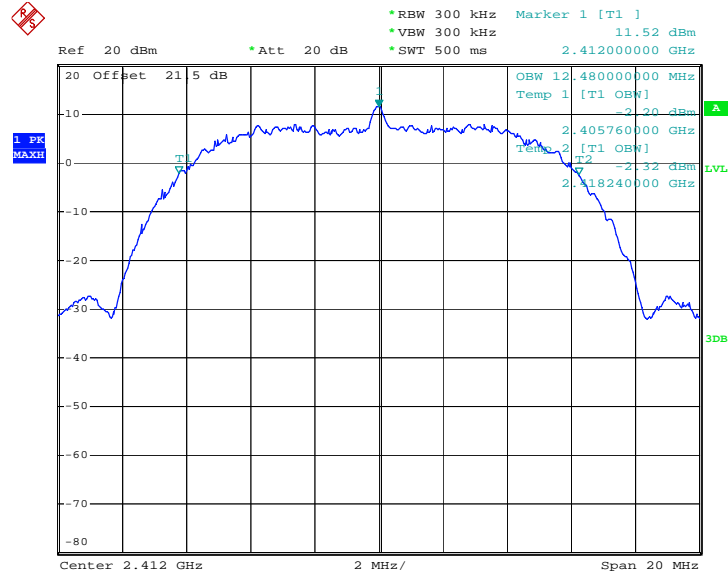


Date: 9.APR.2009 15:32:04



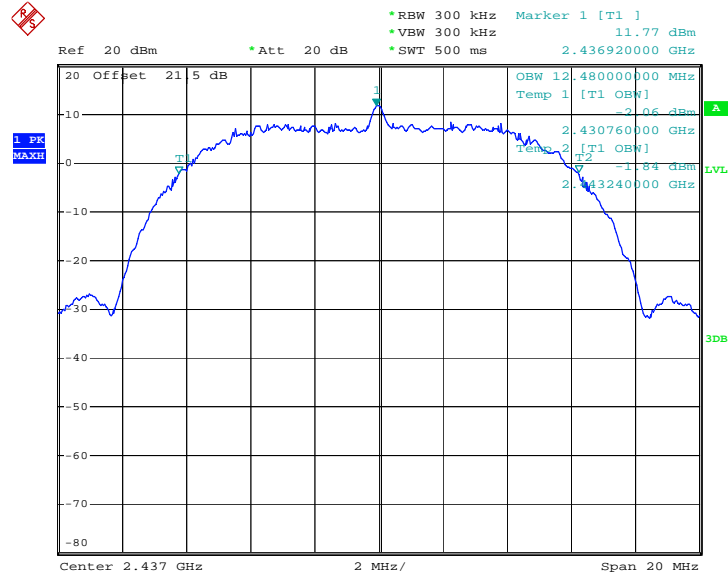
3.1.8 Test Plots of 99% Bandwidth

Mode 1 : 99% Occupied Bandwidth Plot on 802.11b Channel 01



Date: 10.APR.2009 09:33:33

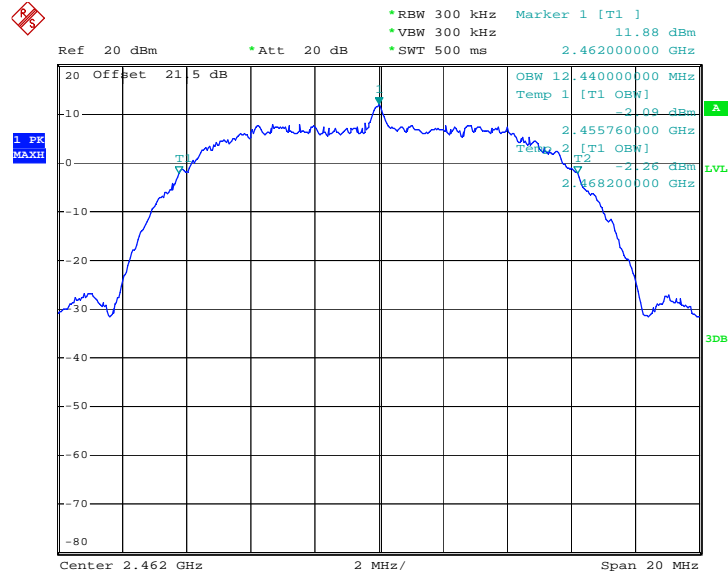
Mode 2 : 99% Occupied Bandwidth Plot on 802.11b Channel 06



Date: 10.APR.2009 09:33:59

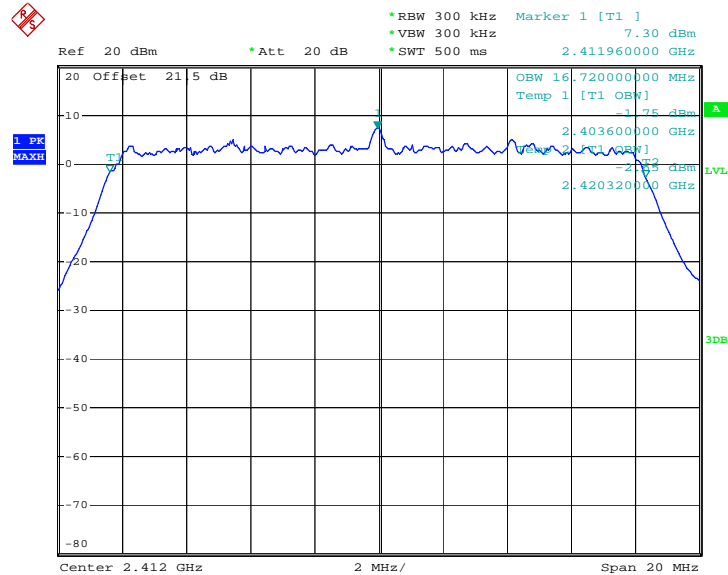


Mode 3 : 99% Occupied Bandwidth Plot on 802.11b Channel 11



Date: 10.APR.2009 09:34:16

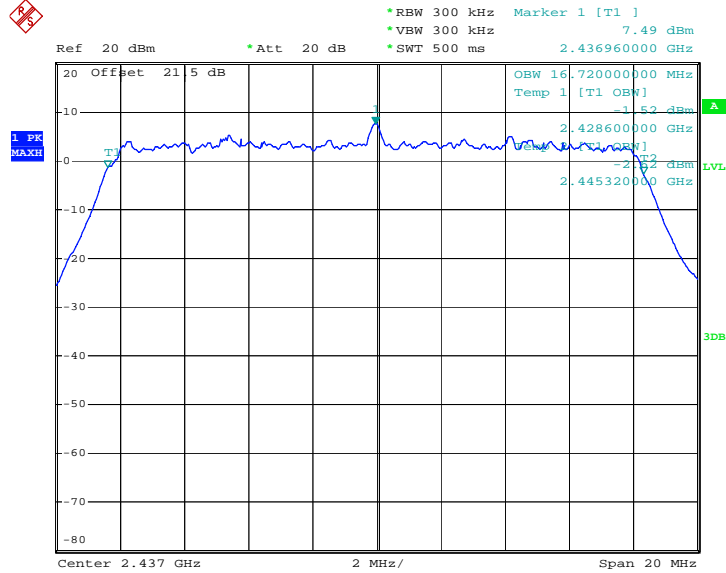
Mode 4 : 99% Occupied Bandwidth Plot on 802.11g Channel 01



Date: 10.APR.2009 09:33:16

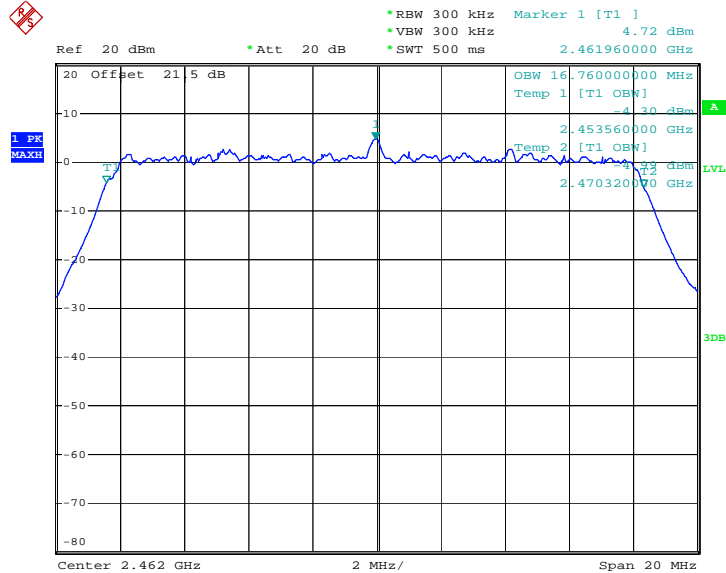


Mode 5 : 99% Occupied Bandwidth Plot on 802.11g Channel 06



Date: 10.APR.2009 09:33:00

Mode 6 : 99% Occupied Bandwidth Plot on 802.11g Channel 11



Date: 10.APR.2009 09:32:38

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

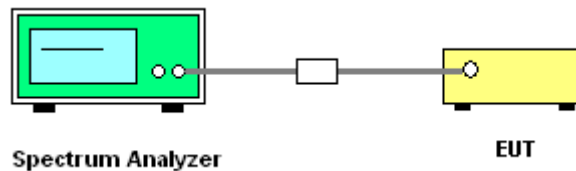
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Measure the power by spectrum analyzer.

3.2.4 Test Setup





3.2.5 Test Result of Output Power

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

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.47	30	Pass
06	2437	17.83	30	Pass
11	2462	16.98	30	Pass

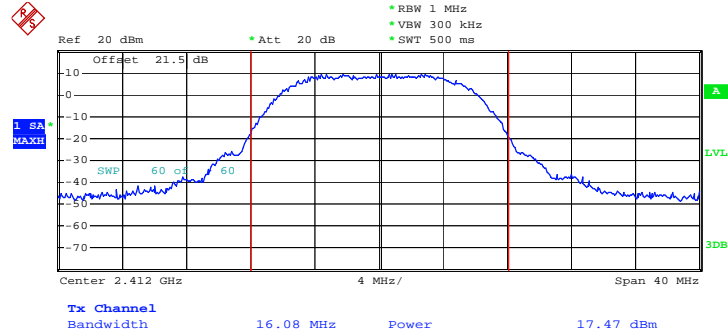
Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.12	30	Pass
06	2437	16.37	30	Pass
11	2462	16.11	30	Pass



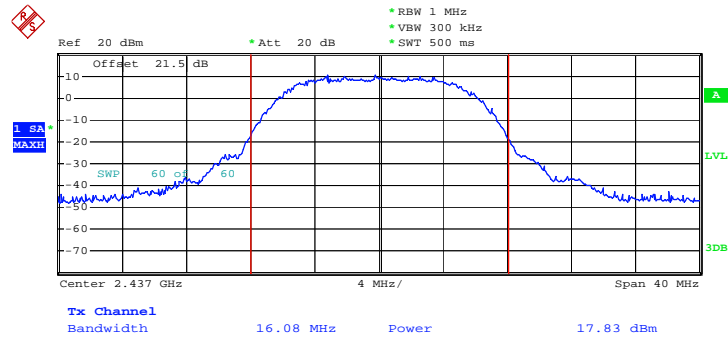
3.2.6 Test Plots of Output Power

Mode 1 : Output Power Plot on 802.11b Channel 01



Date: 8.APR.2009 11:01:13

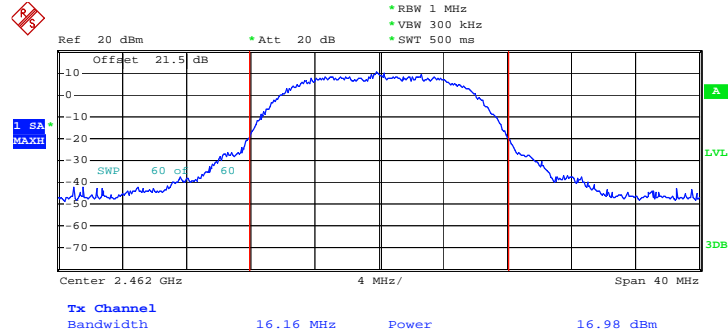
Mode 2 : Output Power Plot on 802.11b Channel 06



Date: 8.APR.2009 11:04:02

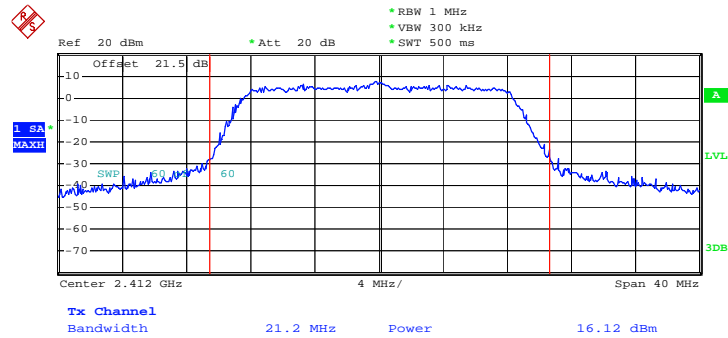


Mode 3 : Output Power Plot on 802.11b Channel 11



Date: 8.APR.2009 11:07:20

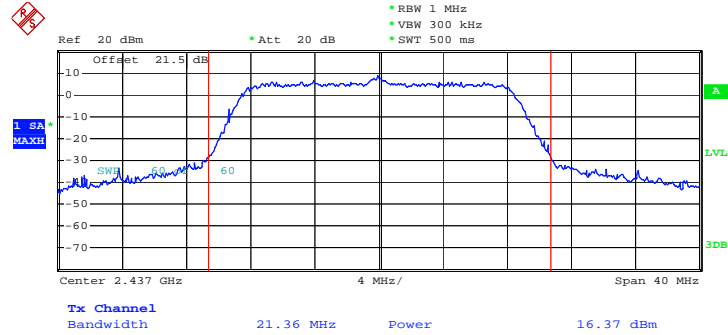
Mode 4 : Output Power Plot on 802.11g Channel 01



Date: 8.APR.2009 11:16:51

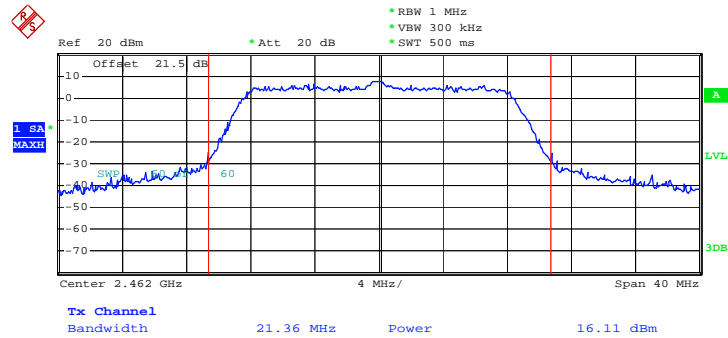


Mode 5 : Output Power Plot on 802.11g Channel 06



Date: 8.APR.2009 11:18:58

Mode 6 : Output Power Plot on 802.11g Channel 11



Date: 8.APR.2009 11:22:02

3.3 Band Edges Measurement

3.3.1 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. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB.

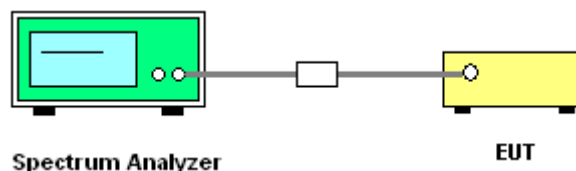
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) > RBW, scan up through 10th harmonic. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band as measured with a 100 kHz RBW. Note: If the output power of this device was measured by power meter, the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Apply 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 as in FCC Section 15.35(b) and (c).

3.3.4 Test Setup





3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	23~26°C
Test Band :	802.11b	Relative Humidity :	43~46%
Test Channel :	01	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
2388.66	54.20	-19.80	74.00	51.11	32.02	5.46	34.38	107	301	Peak
2388.66	35.54	-18.46	54.00	32.45	32.02	5.46	34.38	107	301	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2384.86	48.25	-25.75	74.00	45.15	32.00	5.47	34.38	100	270	Peak
2384.86	33.10	-20.90	54.00	30.00	32.00	5.47	34.38	100	270	Average

Test Mode :	Mode 3	Temperature :	23~26°C
Test Band :	802.11b	Relative Humidity :	43~46%
Test Channel :	11	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	53.94	-20.06	74.00	50.87	32.09	5.38	34.40	105	36	Peak
2483.50	35.84	-18.16	54.00	32.77	32.09	5.38	34.40	105	36	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	48.64	-25.36	74.00	45.57	32.09	5.38	34.40	117	311	Peak
2483.50	33.82	-20.18	54.00	30.75	32.09	5.38	34.40	117	311	Average



Test Mode :	Mode 4	Temperature :	23~26°C
Test Band :	802.11g	Relative Humidity :	43~46%
Test Channel :	01	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
2389.99	49.37	-24.63	74.00	46.28	32.02	5.46	34.38	173	300	Peak
2389.99	35.31	-18.69	54.00	32.22	32.02	5.46	34.38	173	300	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
2389.61	46.19	-27.81	74.00	43.10	32.02	5.46	34.38	121	270	Peak
2389.61	33.10	-20.90	54.00	30.01	32.02	5.46	34.38	121	270	Average

Test Mode :	Mode 6	Temperature :	23~26°C
Test Band :	802.11g	Relative Humidity :	43~46%
Test Channel :	11	Test Engineer :	Kai Wang

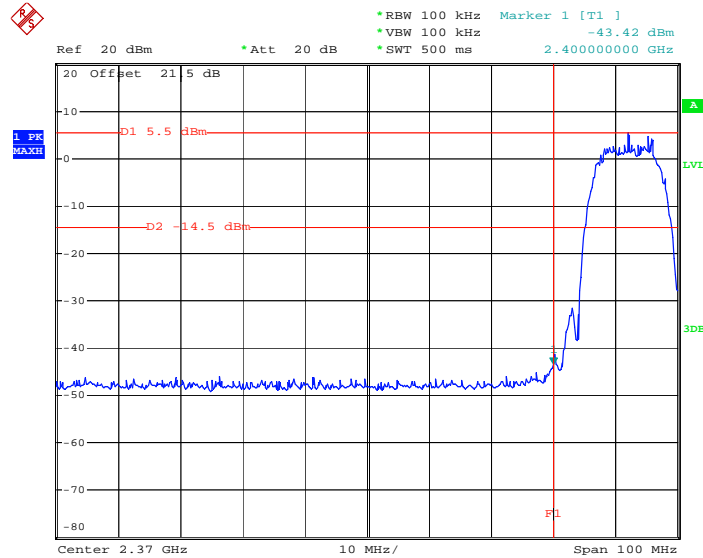
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	49.39	-24.61	74.00	46.32	32.09	5.38	34.40	104	35	Peak
2483.66	35.10	-18.90	54.00	32.03	32.09	5.38	34.40	104	35	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
2486.70	46.32	-27.68	74.00	43.25	32.09	5.38	34.40	115	327	Peak
2486.70	33.43	-20.57	54.00	30.36	32.09	5.38	34.40	115	327	Average

3.3.6 Test Plots of Conducted Band Edges

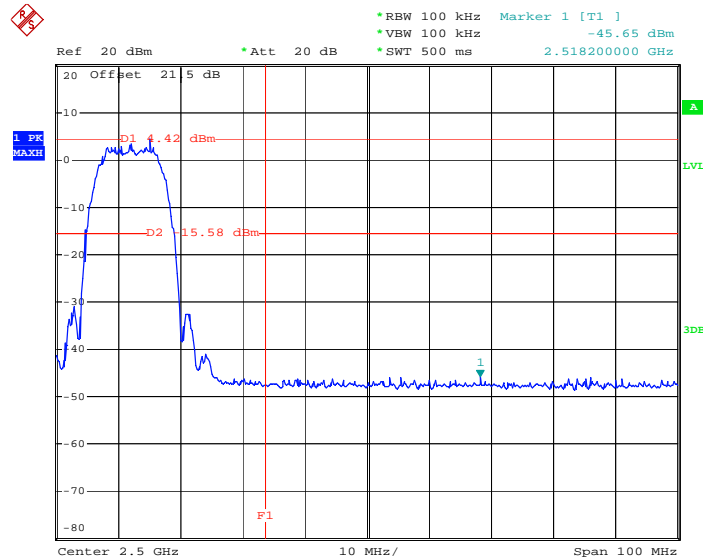
Test Mode :	Mode 1 and 3	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	43~44%
Test Channel :	01 and 11	Test Engineer :	Eric Huang

Low Band Edge Plot on 802.11b Channel 01



Date: 9.APR.2009 14:25:25

High Band Edge Plot on 802.11b Channel 11

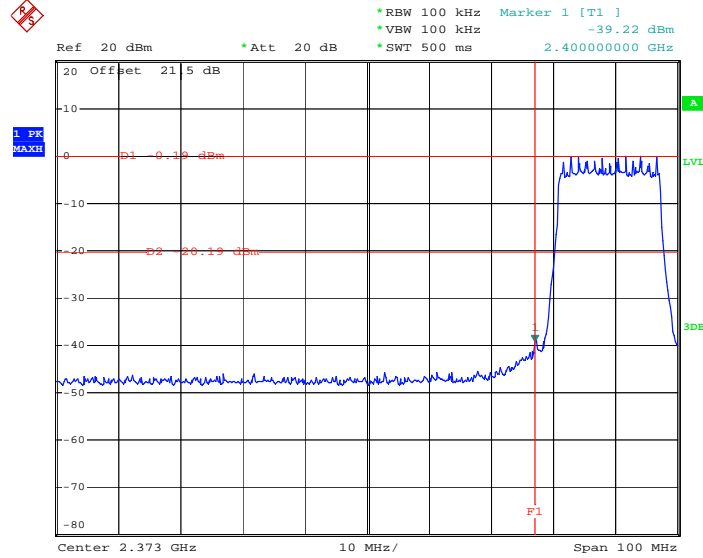


Date: 9.APR.2009 14:39:32



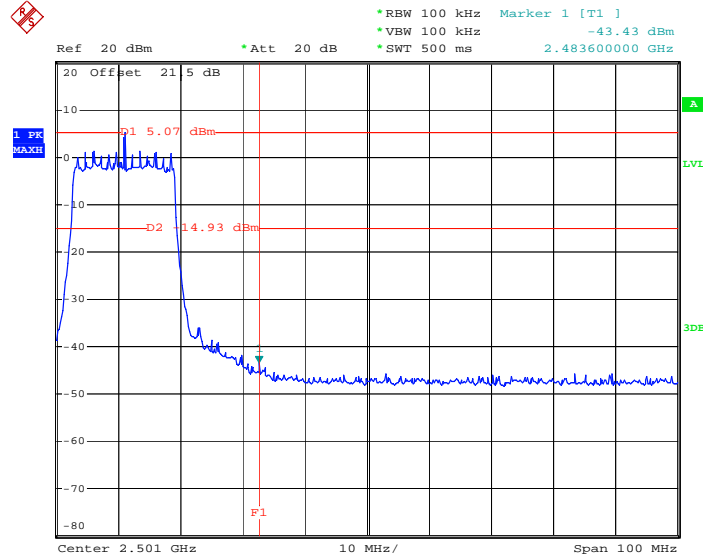
Test Mode :	Mode 4 and 6	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	43~44%
Test Channel :	01 and 11	Test Engineer :	Eric Huang

Low Band Edge Plot on 802.11g Channel 01



Date: 9.APR.2009 14:53:58

High Band Edge Plot on 802.11g Channel 11



Date: 9.APR.2009 15:51:55

3.4 Power Spectral Density Measurement

3.4.1 Limit of Power Spectral Density

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

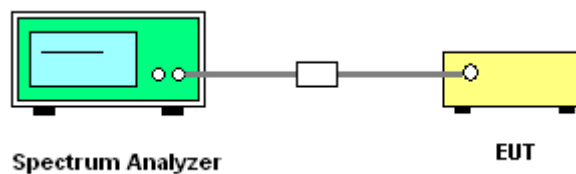
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The test follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Take the measured data from spectrum analyzer.

3.4.4 Test Setup





3.4.5 Test Result of Power Spectral Density

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

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	2.43	8	Pass
06	2437	3.34	8	Pass
11	2462	5.69	8	Pass

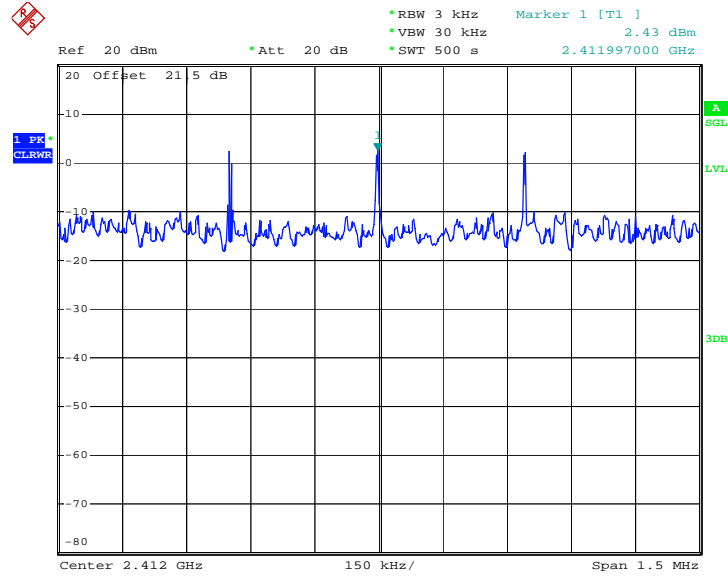
Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Eric Huang	Relative Humidity :	43~44%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	3.27	8	Pass
06	2437	-2.93	8	Pass
11	2462	1.33	8	Pass



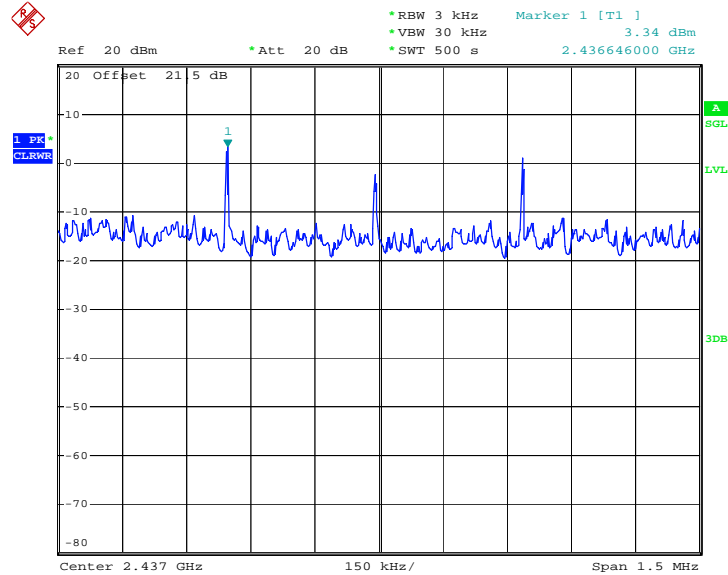
3.4.6 Test Plots of Power Spectral Density

Mode 1 : PSD Plot on 802.11b Channel 01



Date: 9.APR.2009 16:24:46

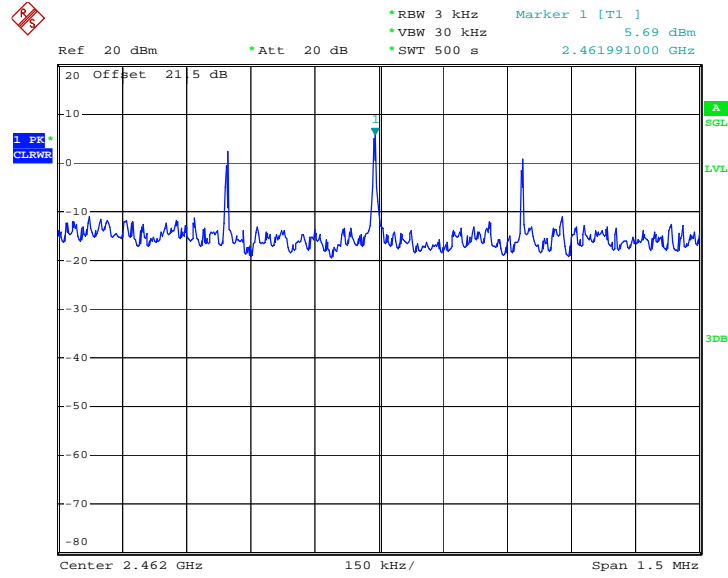
Mode 2 : PSD Plot on 802.11b Channel 06



Date: 9.APR.2009 16:41:59

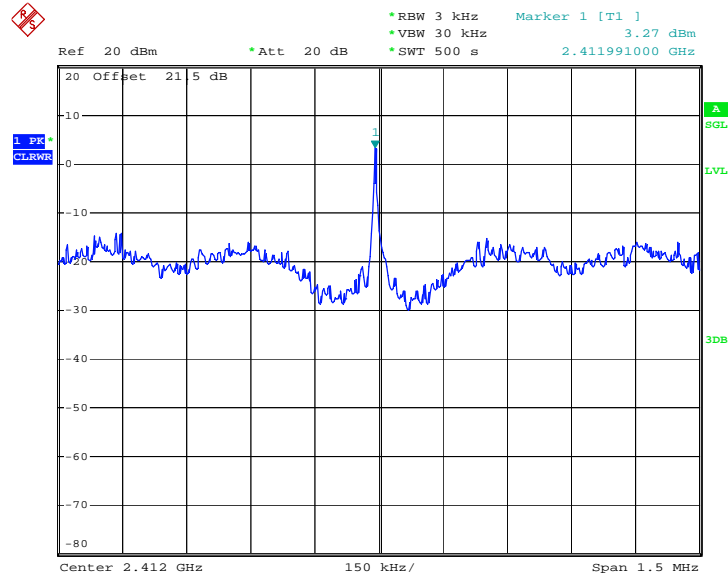


Mode 3 : PSD Plot on 802.11b Channel 11



Date: 9.APR.2009 17:28:07

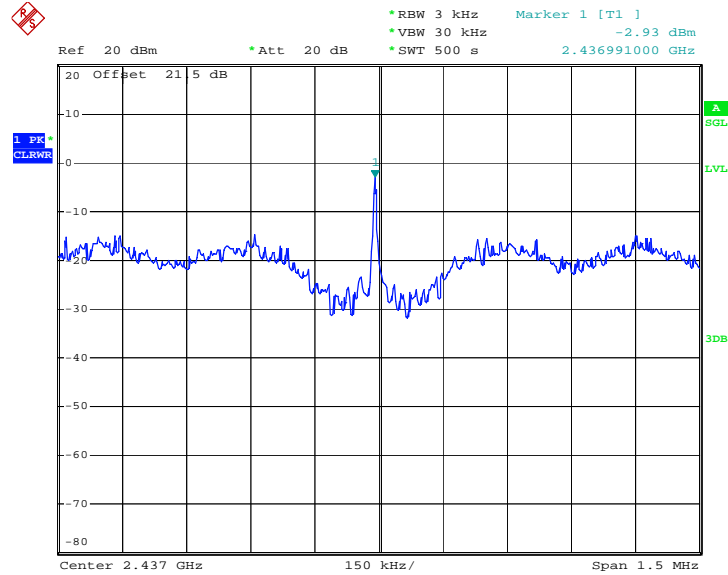
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 9.APR.2009 16:05:33

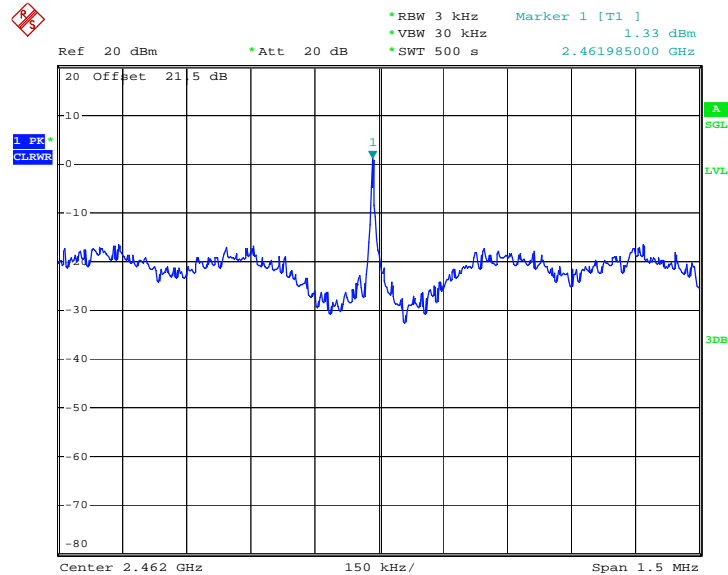


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 9.APR.2009 15:08:03

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 10.APR.2009 09:22:47

3.5 AC Conducted Emission Measurement

3.5.1 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.

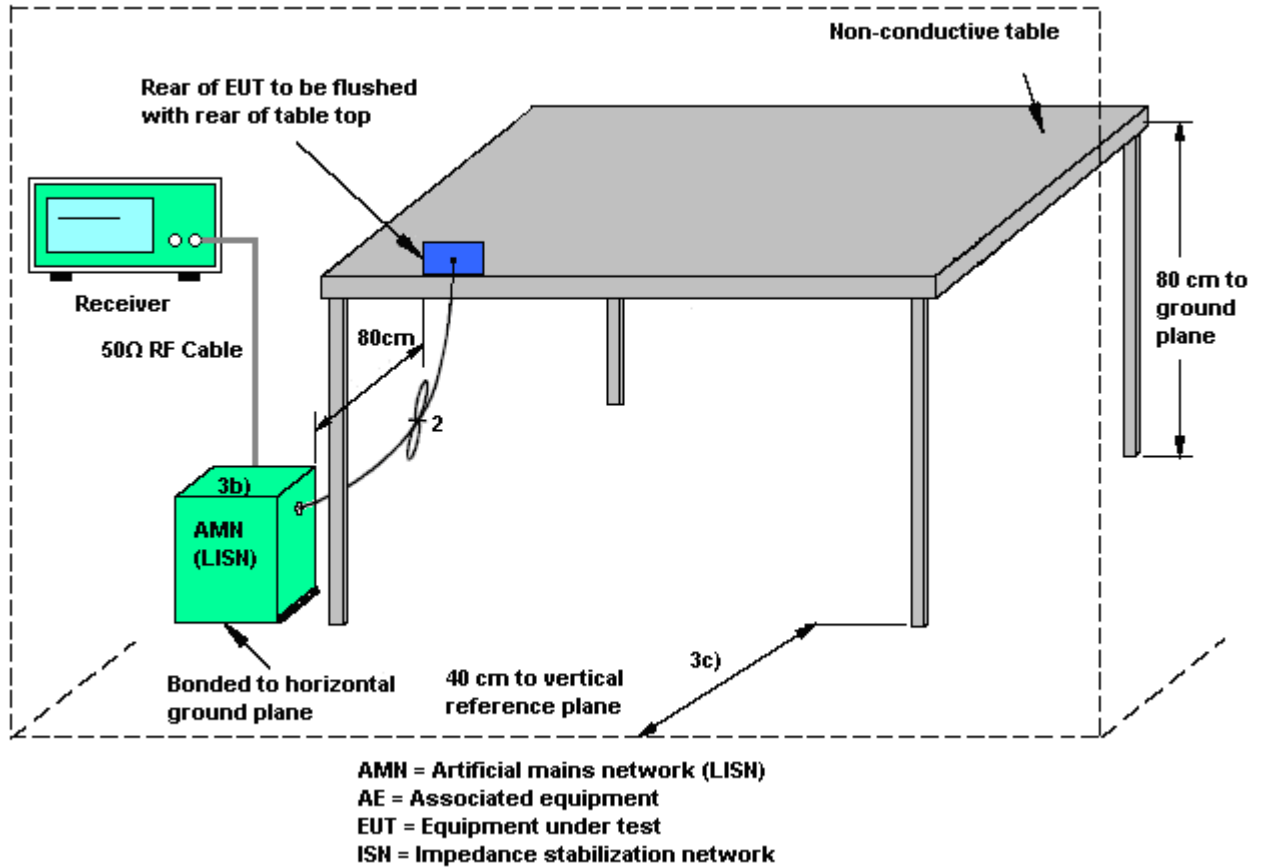
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

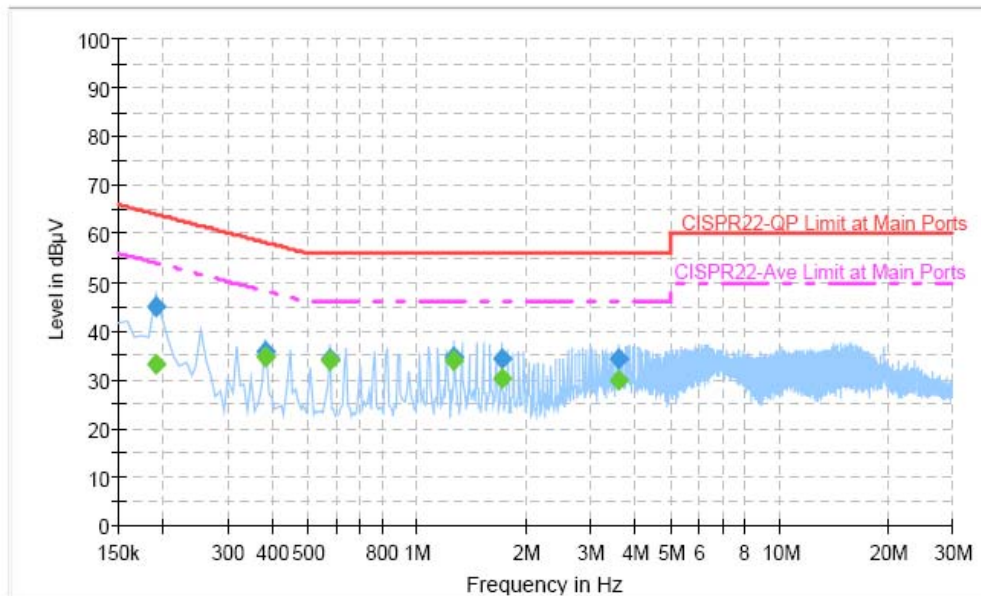
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	23~24°C
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.		



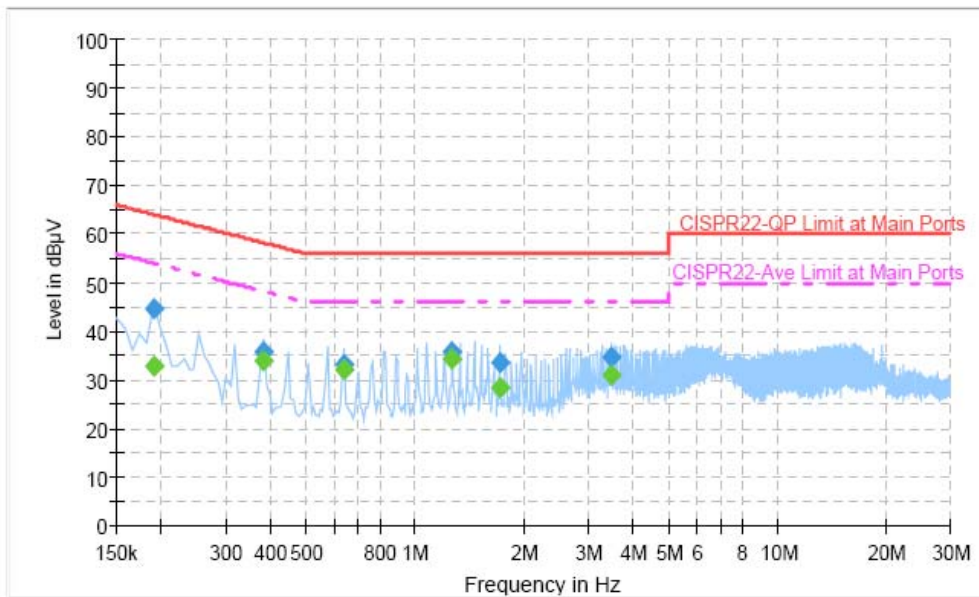
Final Result 1

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°C
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

3.6 Radiated Emission Measurement

3.6.1 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. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. 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

3.6.2 Measuring Instruments

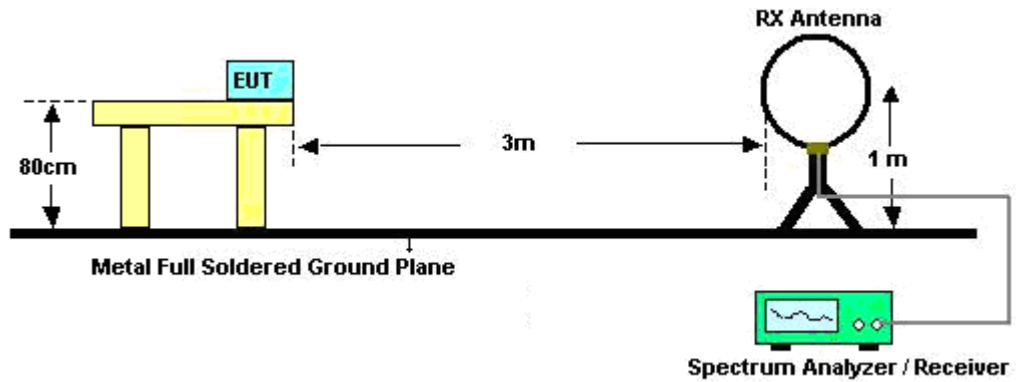
See list of measuring instruments of this test report.

3.6.3 Test Procedures

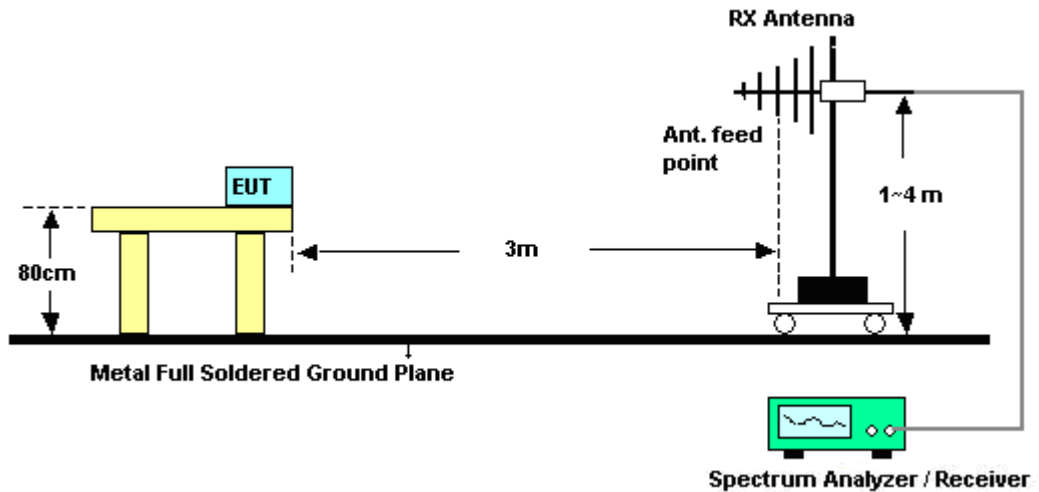
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; 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.

3.6.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz





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

Test Engineer :	Kai Wang	Temperature :	23~26°C	
		Relative Humidity :	43~46%	
Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

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

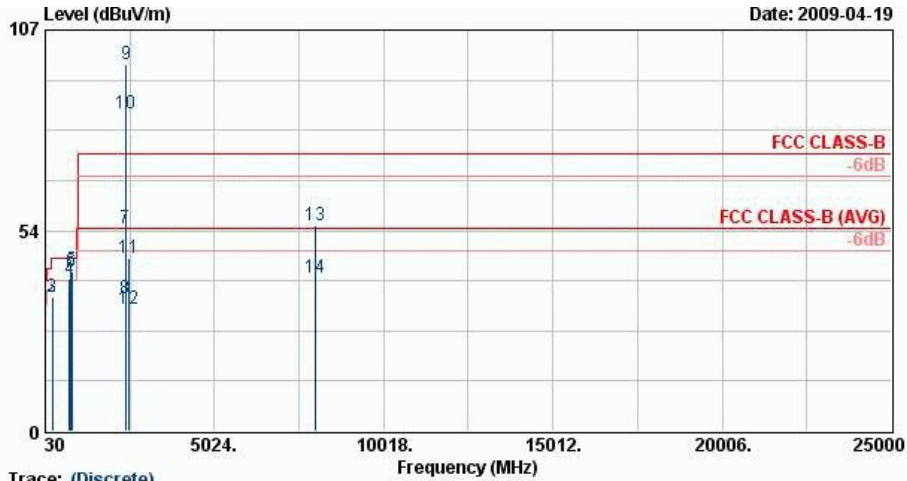
Distance extrapolation factor = $40 \log(\text{specific distance} / \text{test distance})$ (dB);

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



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

Test Mode :	Mode 1	Temperature :	23~26°C
Test Channel :	01	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

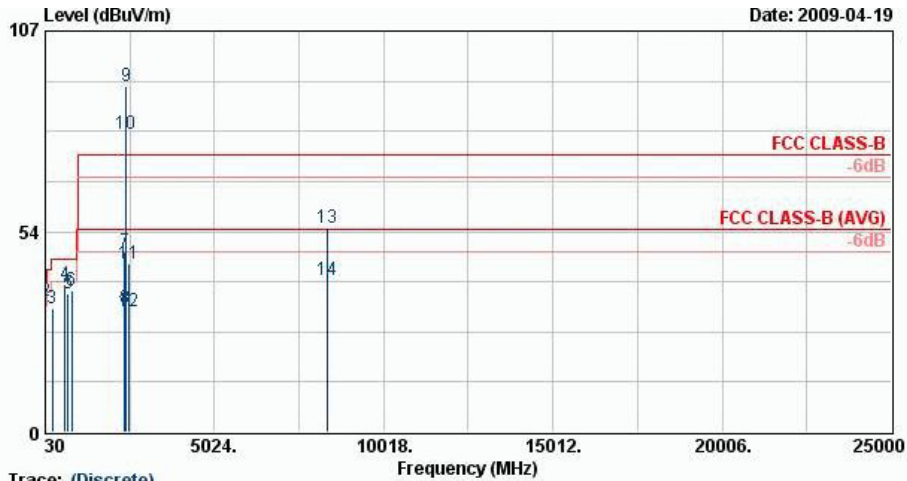


Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Power : Real Battery 3.7V
 Project : FR 940109

	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	30.00	30.67	-9.33	40.00	41.83	19.90	0.64	31.70	---	---	Peak
2	243.30	35.82	-10.18	46.00	53.21	12.23	1.89	31.51	---	---	Peak
3	243.30	35.82	-10.18	46.00	53.21	12.23	1.89	31.51	---	---	Peak
4 !	741.00	40.49	-5.51	46.00	45.99	21.64	3.67	30.82	---	---	Peak
5 !	780.20	42.95	-3.05	46.00	48.04	21.86	3.79	30.74	100	85	Peak
6 !	819.40	42.42	-3.58	46.00	46.90	22.33	3.89	30.70	---	---	Peak
7	2388.66	54.20	-19.80	74.00	51.11	32.02	5.46	34.38	107	301	Peak
8	2388.66	35.54	-18.46	54.00	32.45	32.02	5.46	34.38	107	301	Average
9 X	2412.00	97.89			94.80	32.03	5.44	34.38	107	301	Peak
10 @	2412.00	84.62			81.53	32.03	5.44	34.38	107	301	Average
11	2484.00	46.00	-28.00	74.00	42.93	32.09	5.38	34.40	107	301	Peak
12	2484.00	32.62	-21.38	54.00	29.55	32.09	5.38	34.40	107	301	Average
13	8013.00	54.75	-19.25	74.00	44.60	35.60	9.85	35.30	100	283	Peak
14	8013.00	40.89	-13.11	54.00	30.73	35.60	9.85	35.30	100	283	Average



Test Mode :	Mode 1	Temperature :	23~26°C
Test Channel :	01	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

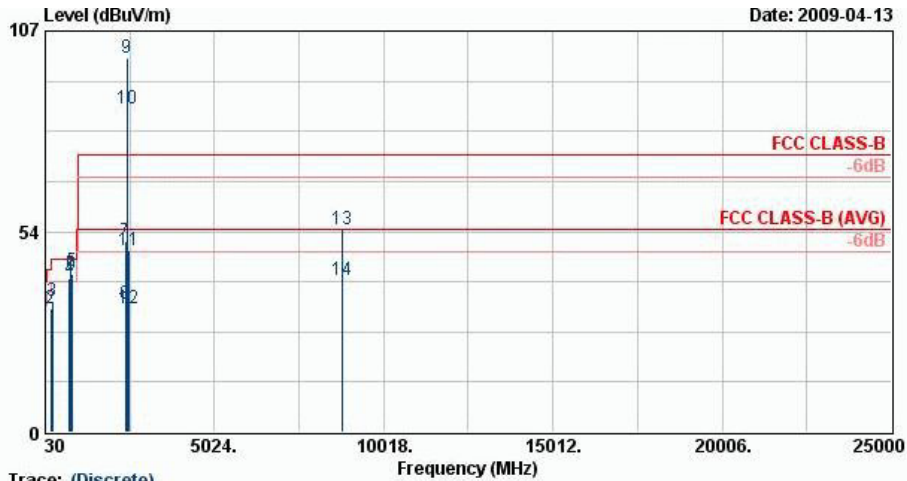


Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Power : Real Battery 3.7V
 Project : FR 940109

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 !	30.00	35.01	-4.99	40.00	46.17	19.90	0.64	31.70	100	112	Peak
2 !	50.25	34.88	-5.12	40.00	56.55	9.20	0.83	31.70	---	---	Peak
3	243.30	33.04	-12.96	46.00	50.43	12.23	1.89	31.51	---	---	Peak
4	623.40	39.56	-6.44	46.00	47.43	19.78	3.33	30.98	---	---	Peak
5	701.80	37.01	-8.99	46.00	43.42	20.94	3.56	30.90	---	---	Peak
6	819.40	37.82	-8.18	46.00	42.29	22.33	3.89	30.70	---	---	Peak
7	2384.86	48.25	-25.75	74.00	45.15	32.00	5.47	34.38	100	270	Peak
8	2384.86	33.10	-20.90	54.00	30.00	32.00	5.47	34.38	100	270	Average
9 X	2412.00	92.17			89.08	32.03	5.44	34.38	100	270	Peak
10 @	2412.00	79.61			76.52	32.03	5.44	34.38	100	270	Average
11	2500.00	44.93	-29.07	74.00	41.86	32.10	5.37	34.40	100	270	Peak
12	2500.00	32.08	-21.92	54.00	29.01	32.10	5.37	34.40	100	270	Average
13	8361.00	54.46	-19.54	74.00	44.00	35.67	10.09	35.30	100	147	Peak
14	8361.00	40.45	-13.55	54.00	29.99	35.67	10.09	35.30	100	147	Average



Test Mode :	Mode 2	Temperature :	23~26°C
Test Channel :	06	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

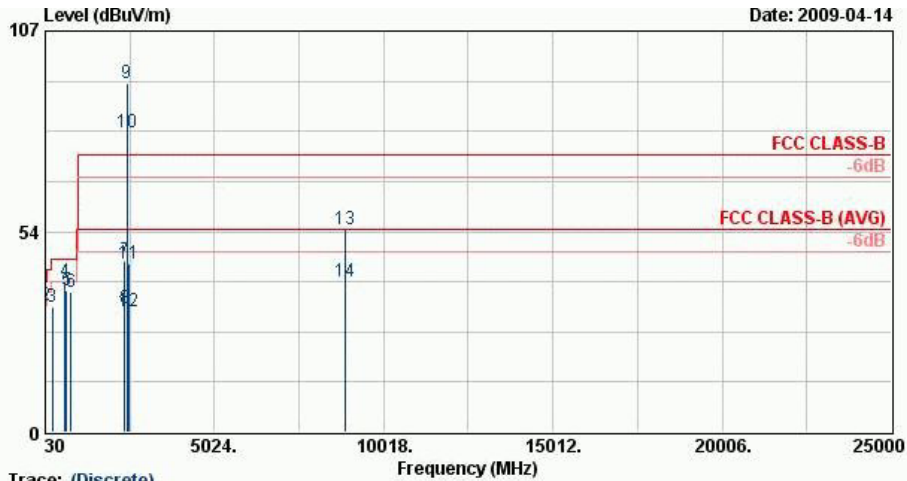


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Power : Real Battery 3.7V
 Project : FR 940109

	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	29.39	-10.61	40.00	40.55	19.90	0.64	31.70	---	---	Peak
2	193.89	33.12	-10.38	43.50	53.33	9.72	1.68	31.61	---	---	Peak
3	243.30	34.89	-11.11	46.00	52.29	12.23	1.89	31.51	---	---	Peak
4 !	741.00	40.88	-5.12	46.00	46.38	21.64	3.67	30.82	---	---	Peak
5 !	780.20	42.77	-3.23	46.00	47.86	21.86	3.79	30.74	100	271	Peak
6 !	819.40	42.35	-3.65	46.00	46.82	22.33	3.89	30.70	---	---	Peak
7	2390.00	51.07	-22.93	74.00	47.97	32.02	5.46	34.38	137	40	Peak
8	2390.00	34.29	-19.71	54.00	31.20	32.02	5.46	34.38	137	40	Average
9 X	2437.00	99.75			96.67	32.06	5.41	34.39	137	40	Peak
10 @	2437.00	86.51			83.43	32.06	5.41	34.39	137	40	Average
11	2484.00	48.40	-25.60	74.00	45.33	32.09	5.38	34.40	137	40	Peak
12	2484.00	32.87	-21.13	54.00	29.80	32.09	5.38	34.40	137	40	Average
13	8805.00	54.21	-19.79	74.00	43.35	35.94	10.28	35.36	100	183	Peak
14	8805.00	40.39	-13.61	54.00	29.53	35.94	10.28	35.36	100	183	Average



Test Mode :	Mode 2	Temperature :	23~26°C
Test Channel :	06	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

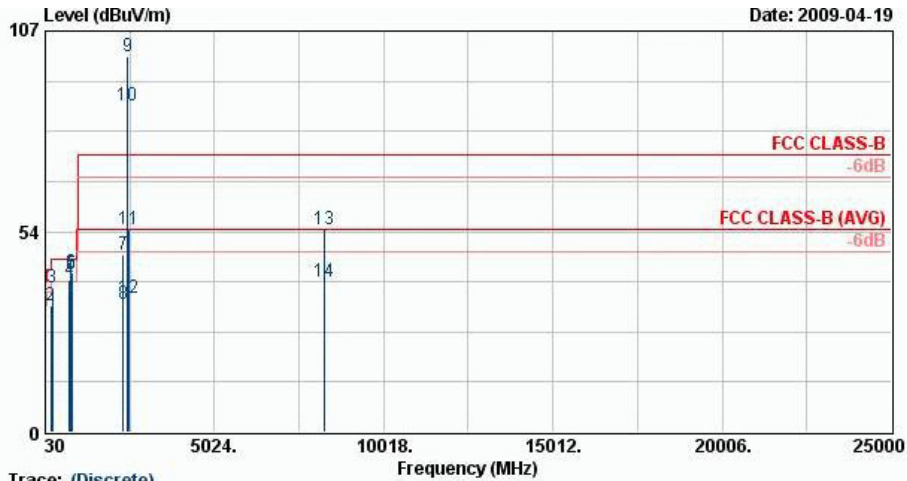


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Power : Real Battery 3.7V
 Project : FR 940109

	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	35.53	-4.47	40.00	46.69	19.90	0.64	31.70	100	38	Peak
2	51.33	33.76	-6.24	40.00	55.75	8.87	0.84	31.70	---	---	Peak
3	248.70	33.58	-12.42	46.00	50.53	12.64	1.91	31.50	---	---	Peak
4	623.40	40.33	-5.67	46.00	48.20	19.78	3.33	30.98	---	---	Peak
5	662.60	37.79	-8.21	46.00	44.99	20.30	3.45	30.94	---	---	Peak
6	780.20	37.51	-8.49	46.00	42.60	21.86	3.79	30.74	---	---	Peak
7	2374.00	45.68	-28.32	74.00	42.59	32.00	5.47	34.38	119	312	Peak
8	2374.00	33.03	-20.97	54.00	29.93	32.00	5.47	34.38	119	312	Average
9 X	2437.00	92.88			89.80	32.06	5.41	34.39	119	312	Peak
10 @	2437.00	80.07			76.99	32.06	5.41	34.39	119	312	Average
11	2494.00	45.13	-28.87	74.00	42.06	32.10	5.37	34.40	119	312	Peak
12	2494.00	32.37	-21.63	54.00	29.30	32.10	5.37	34.40	119	312	Average
13	8865.00	54.18	-19.82	74.00	43.26	35.99	10.30	35.37	100	218	Peak
14	8865.00	40.32	-13.68	54.00	29.40	35.99	10.30	35.37	100	218	Average



Test Mode :	Mode 3	Temperature :	23~26°C
Test Channel :	11	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

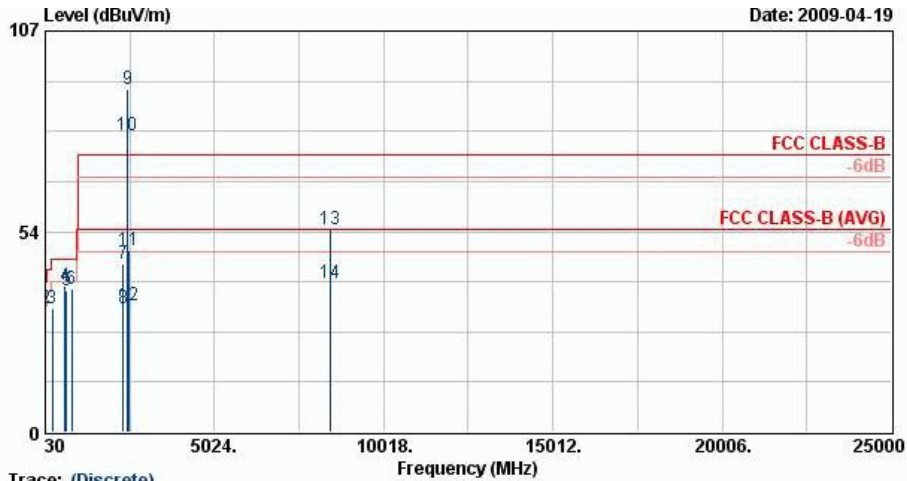


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Power : Real Battery 3.7V
 Project : FR 940109

	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	31.50	-8.50	40.00	42.66	19.90	0.64	31.70	---	---	Peak
2	188.49	34.00	-9.50	43.50	54.56	9.40	1.65	31.61	---	---	Peak
3	248.97	38.45	-7.55	46.00	55.32	12.72	1.92	31.50	---	---	Peak
4 !	741.00	40.58	-5.42	46.00	46.08	21.64	3.67	30.82	---	---	Peak
5 !	780.20	42.34	-3.66	46.00	47.43	21.86	3.79	30.74	---	---	Peak
6 !	819.40	42.56	-3.44	46.00	47.03	22.33	3.89	30.70	100	153	Peak
7	2342.00	47.40	-26.60	74.00	44.29	31.98	5.50	34.37	105	36	Peak
8	2342.00	34.21	-19.79	54.00	31.10	31.98	5.50	34.37	105	36	Average
9 @	2462.00	100.11			97.03	32.07	5.40	34.39	105	36	Peak
10 @	2462.00	87.09			84.01	32.07	5.40	34.39	105	36	Average
11	2483.50	53.94	-20.06	74.00	50.87	32.09	5.38	34.40	105	36	Peak
12	2483.50	35.84	-18.16	54.00	32.77	32.09	5.38	34.40	105	36	Average
13	8274.00	54.18	-19.82	74.00	43.80	35.66	10.03	35.30	100	246	Peak
14	8274.00	40.02	-13.98	54.00	29.64	35.66	10.03	35.30	100	246	Average



Test Mode :	Mode 3	Temperature :	23~26°C
Test Channel :	11	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

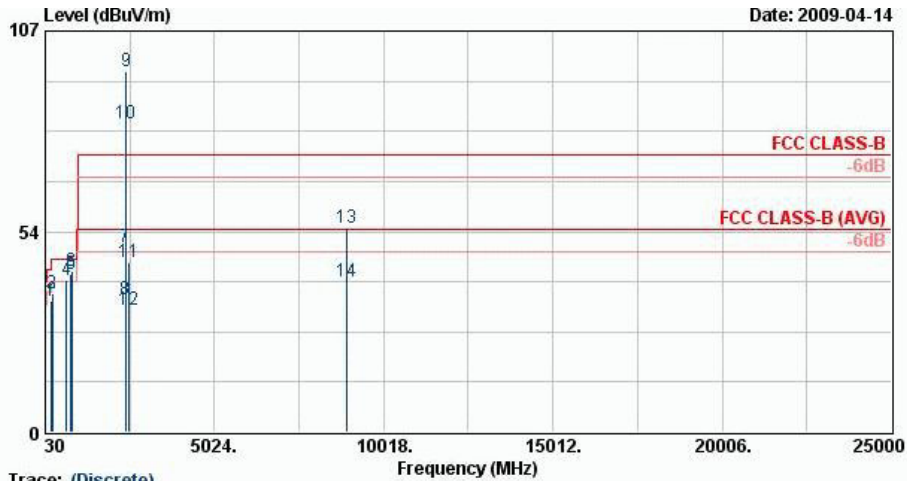


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Power : Real Battery 3.7V
 Project : FR 940109

	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	34.27	-5.73	40.00	45.43	19.90	0.64	31.70	100	92	Peak
2	49.98	33.10	-6.90	40.00	54.77	9.20	0.83	31.70	---	---	Peak
3	243.30	33.03	-12.97	46.00	50.42	12.23	1.89	31.51	---	---	Peak
4	623.40	38.96	-7.04	46.00	46.83	19.78	3.33	30.98	---	---	Peak
5	662.60	37.73	-8.27	46.00	44.92	20.30	3.45	30.94	---	---	Peak
6	819.40	38.25	-7.75	46.00	42.73	22.33	3.89	30.70	---	---	Peak
7	2332.00	44.89	-29.11	74.00	41.78	31.96	5.51	34.37	117	311	Peak
8	2332.00	33.15	-20.85	54.00	30.04	31.96	5.51	34.37	117	311	Average
9 X	2462.00	91.65			88.58	32.07	5.40	34.39	117	311	Peak
10 @	2462.00	79.11			76.03	32.07	5.40	34.39	117	311	Average
11	2483.50	48.64	-25.36	74.00	45.57	32.09	5.38	34.40	117	311	Peak
12	2483.50	33.82	-20.18	54.00	30.75	32.09	5.38	34.40	117	311	Average
13	8430.00	53.97	-20.03	74.00	43.45	35.69	10.13	35.30	100	187	Peak
14	8430.00	39.86	-14.14	54.00	29.34	35.69	10.13	35.30	100	187	Average



Test Mode :	Mode 4	Temperature :	23~26°C
Test Channel :	01	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

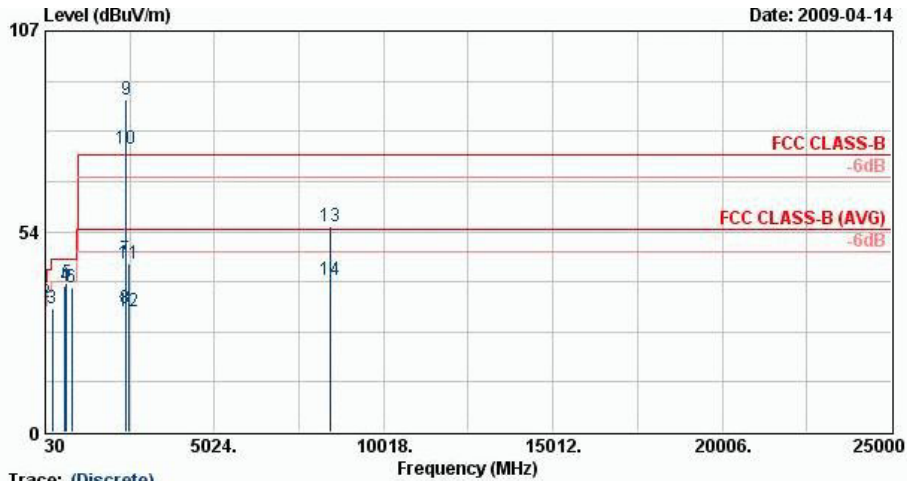


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Power : Real Battery 3.7V
 Project : FR 940109

	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	188.49	34.90	-8.60	43.50	55.46	9.40	1.65	31.61	---	---	Peak
2	238.17	36.86	-9.14	46.00	54.70	11.81	1.87	31.52	---	---	Peak
3	243.57	37.06	-8.94	46.00	54.46	12.23	1.89	31.51	---	---	Peak
4 !	662.60	40.77	-5.23	46.00	47.96	20.30	3.45	30.94	---	---	Peak
5 !	780.20	42.35	-3.65	46.00	47.44	21.86	3.79	30.74	---	---	Peak
6 !	819.40	42.82	-3.18	46.00	47.29	22.33	3.89	30.70	100	109	Peak
7	2389.99	49.37	-24.63	74.00	46.28	32.02	5.46	34.38	173	300	Peak
8	2389.99	35.31	-18.69	54.00	32.22	32.02	5.46	34.38	173	300	Average
9 X	2412.00	96.14			93.05	32.03	5.44	34.38	173	300	Peak
10 @	2412.00	82.36			79.27	32.03	5.44	34.38	173	300	Average
11	2484.00	45.50	-28.50	74.00	42.43	32.09	5.38	34.40	173	300	Peak
12	2484.00	32.62	-21.38	54.00	29.55	32.09	5.38	34.40	173	300	Average
13	8937.00	54.44	-19.56	74.00	43.46	36.05	10.32	35.39	100	178	Peak
14	8937.00	40.28	-13.72	54.00	29.30	36.05	10.32	35.39	100	178	Average



Test Mode :	Mode 4	Temperature :	23~26°C
Test Channel :	01	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

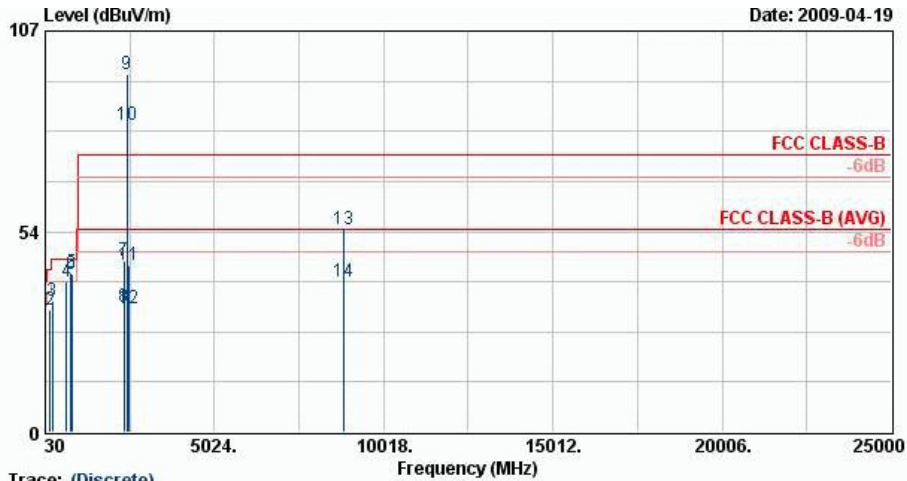


Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Power : Real Battery 3.7V
 Project : FR 940109

	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	34.28	-5.72	40.00	45.44	19.90	0.64	31.70	---	---	Peak
2	49.98	34.43	-5.57	40.00	56.10	9.20	0.83	31.70	100	198	Peak
3	243.57	33.04	-12.96	46.00	50.44	12.23	1.89	31.51	---	---	Peak
4	623.40	39.05	-6.95	46.00	46.92	19.78	3.33	30.98	---	---	Peak
5	662.60	39.75	-6.25	46.00	46.94	20.30	3.45	30.94	---	---	Peak
6	819.40	38.48	-7.52	46.00	42.95	22.33	3.89	30.70	---	---	Peak
7	2389.61	46.19	-27.81	74.00	43.10	32.02	5.46	34.38	121	270	Peak
8	2389.61	33.10	-20.90	54.00	30.01	32.02	5.46	34.38	121	270	Average
9	2412.00	88.74			85.64	32.03	5.44	34.38	121	270	Peak
10	2412.00	75.71			72.62	32.03	5.44	34.38	121	270	Average
11	2484.00	44.90	-29.10	74.00	41.83	32.09	5.38	34.40	121	270	Peak
12	2484.00	32.14	-21.86	54.00	29.07	32.09	5.38	34.40	121	270	Average
13	8442.00	54.91	-19.09	74.00	44.37	35.69	10.14	35.30	100	281	Peak
14	8442.00	40.68	-13.32	54.00	30.15	35.69	10.14	35.30	100	281	Average



Test Mode :	Mode 5	Temperature :	23~26°C
Test Channel :	06	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

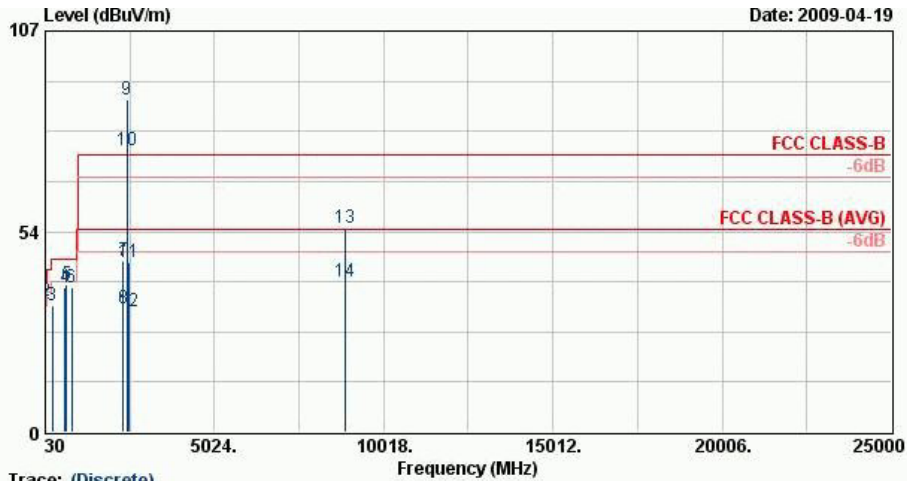


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Power : Real Battery 3.7V
 Project : FR 940109

	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	29.73	-10.27	40.00	40.89	19.90	0.64	31.70	---	---	Peak
2	182.82	32.52	-10.98	43.50	53.10	9.40	1.63	31.62	---	---	Peak
3	244.38	35.11	-10.89	46.00	52.41	12.31	1.90	31.51	---	---	Peak
4 !	662.60	40.14	-5.86	46.00	47.33	20.30	3.45	30.94	---	---	Peak
5 !	780.20	42.47	-3.53	46.00	47.56	21.86	3.79	30.74	100	105	Peak
6 !	819.40	42.31	-3.69	46.00	46.78	22.33	3.89	30.70	---	---	Peak
7	2356.00	45.70	-28.30	74.00	42.59	31.99	5.49	34.37	102	17	Peak
8	2356.00	33.33	-20.67	54.00	30.23	31.99	5.49	34.37	102	17	Average
9 X	2437.00	95.37			92.29	32.06	5.41	34.39	102	17	Peak
10 @	2437.00	82.04			78.96	32.06	5.41	34.39	102	17	Average
11	2486.00	44.59	-29.41	74.00	41.51	32.09	5.38	34.40	102	17	Peak
12	2486.00	32.84	-21.16	54.00	29.77	32.09	5.38	34.40	102	17	Average
13	8853.00	54.20	-19.80	74.00	43.30	35.98	10.29	35.37	100	209	Peak
14	8853.00	40.12	-13.88	54.00	29.22	35.98	10.29	35.37	100	209	Average



Test Mode :	Mode 5	Temperature :	23~26°C
Test Channel :	06	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

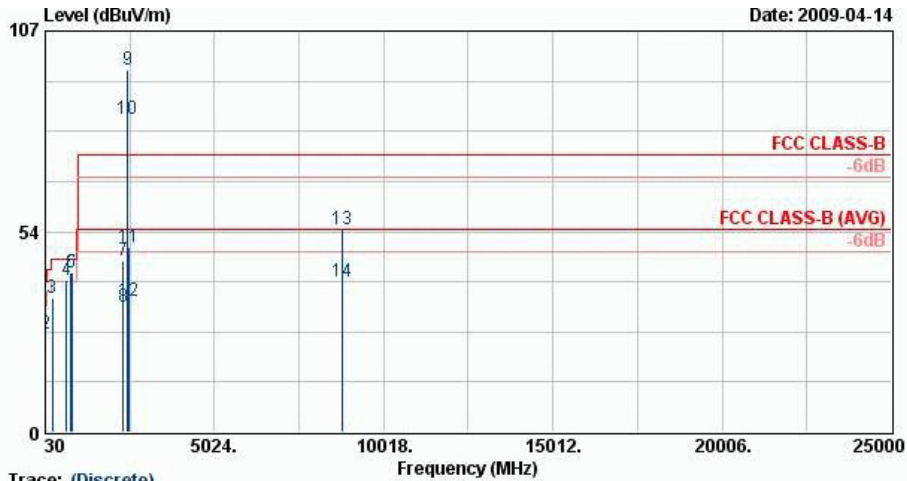


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Power : Real Battery 3.7V
 Project : FR 940109

	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	35.55	-4.45	40.00	46.71	19.90	0.64	31.70	100	132	Peak
2 !	51.33	35.11	-4.89	40.00	57.10	8.87	0.84	31.70	---	---	Peak
3	243.30	34.00	-12.00	46.00	51.40	12.23	1.89	31.51	---	---	Peak
4	623.40	38.55	-7.45	46.00	46.42	19.78	3.33	30.98	---	---	Peak
5	662.60	39.25	-6.75	46.00	46.44	20.30	3.45	30.94	---	---	Peak
6	819.40	38.73	-7.27	46.00	43.21	22.33	3.89	30.70	---	---	Peak
7	2334.00	45.73	-28.27	74.00	42.62	31.96	5.51	34.37	170	356	Peak
8	2334.00	32.83	-21.17	54.00	29.72	31.96	5.51	34.37	170	356	Average
9 X	2437.00	88.86			85.78	32.04	5.43	34.39	170	356	Peak
10 X	2437.00	75.10			72.02	32.06	5.41	34.39	170	356	Average
11	2484.00	45.35	-28.65	74.00	42.27	32.09	5.38	34.40	170	356	Peak
12	2484.00	32.15	-21.85	54.00	29.08	32.09	5.38	34.40	170	356	Average
13	8874.00	54.36	-19.64	74.00	43.45	35.99	10.30	35.37	100	308	Peak
14	8874.00	40.15	-13.85	54.00	29.23	35.99	10.30	35.37	100	308	Average



Test Mode :	Mode 6	Temperature :	23~26°C
Test Channel :	11	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

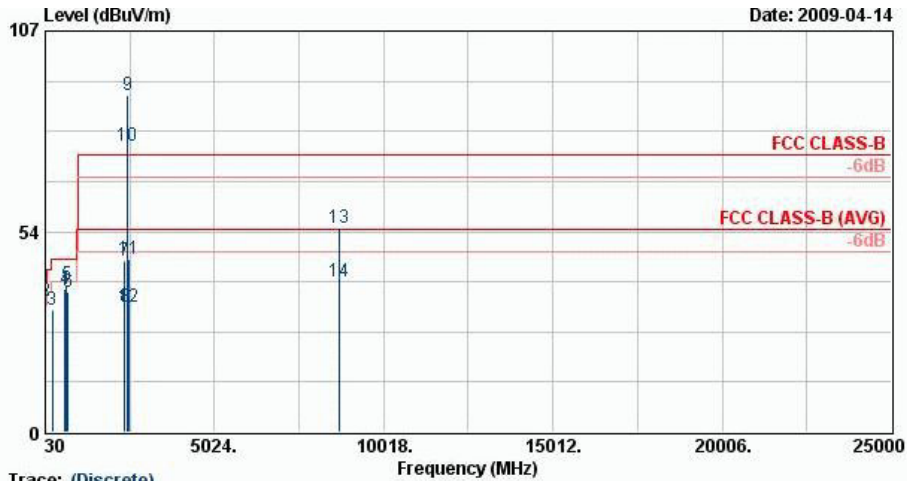


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Power : Real Battery 3.7V
 Project : FR 940109

	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	29.71	-10.29	40.00	40.87	19.90	0.64	31.70	---	---	Peak
2	49.17	26.36	-13.64	40.00	47.64	9.60	0.81	31.70	---	---	Peak
3	243.57	35.72	-10.28	46.00	53.11	12.23	1.89	31.51	---	---	Peak
4 !	662.60	40.69	-5.31	46.00	47.88	20.30	3.45	30.94	---	---	Peak
5 !	780.20	42.41	-3.59	46.00	47.50	21.86	3.79	30.74	100	192	Peak
6 !	819.40	42.38	-3.62	46.00	46.85	22.33	3.89	30.70	---	---	Peak
7	2326.00	45.80	-28.20	74.00	42.69	31.96	5.51	34.37	104	35	Peak
8	2326.00	33.60	-20.40	54.00	30.49	31.96	5.51	34.37	104	35	Average
9 @	2462.00	96.55			93.47	32.07	5.40	34.39	104	35	Peak
10 @	2462.00	83.40			80.32	32.07	5.40	34.39	104	35	Average
11	2483.66	49.39	-24.61	74.00	46.32	32.09	5.38	34.40	104	35	Peak
12	2483.66	35.10	-18.90	54.00	32.03	32.09	5.38	34.40	104	35	Average
13	8793.00	54.21	-19.79	74.00	43.37	35.93	10.27	35.36	100	296	Peak
14	8793.00	40.05	-13.95	54.00	29.21	35.93	10.27	35.36	100	296	Average



Test Mode :	Mode 6	Temperature :	23~26°C
Test Channel :	11	Relative Humidity :	43~46%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Power : Real Battery 3.7V
 Project : FR 940109

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	35.11	-4.89	40.00	46.27	19.90	0.64	31.70	100	175	Peak
2	49.98	34.93	-5.07	40.00	56.60	9.20	0.83	31.70	---	---	Peak
3	243.57	32.72	-13.28	46.00	50.12	12.23	1.89	31.51	---	---	Peak
4	623.40	38.07	-7.93	46.00	45.94	19.78	3.33	30.98	---	---	Peak
5	662.60	39.57	-6.43	46.00	46.77	20.30	3.45	30.94	---	---	Peak
6	701.80	37.42	-8.58	46.00	43.82	20.94	3.56	30.90	---	---	Peak
7	2366.00	45.91	-28.09	74.00	42.81	31.99	5.49	34.37	115	327	Peak
8	2366.00	33.31	-20.69	54.00	30.21	31.99	5.49	34.37	115	327	Average
9 X	2462.00	89.79			86.71	32.07	5.40	34.39	115	327	Peak
10 @	2462.00	76.50			73.42	32.07	5.40	34.39	115	327	Average
11	2486.70	46.32	-27.68	74.00	43.25	32.09	5.38	34.40	115	327	Peak
12	2486.70	33.43	-20.57	54.00	30.36	32.09	5.38	34.40	115	327	Average
13	8706.00	54.33	-19.67	74.00	43.57	35.86	10.24	35.34	100	169	Peak
14	8706.00	40.11	-13.89	54.00	29.35	35.86	10.24	35.34	100	169	Average



3.7 Antenna Requirements

3.7.1 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. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

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.

3.7.2 Antenna Connected Construction

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

3.7.3 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	GB412923 44	N/A	Feb. 19, 2009	Feb. 18, 2010	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US404415 48	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	3008A023 62	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	SCHWARZBE CK	BBHA 9170	BBHA9170 251	15G - 40GHz	Oct. 16, 2008	Oct. 15, 2009	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/00 1	9 kHz~30 MHz	May 22, 2008	May 21, 2010	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)

5 Uncertainty of Evaluation

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

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver 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 (30 MHz ~ 1000 MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch	+0.39/-0.41	U-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 (1 GHz ~ 40 GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	C_i	$C_i * u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=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. : L1190-090417

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 Arrangement with Foreign Authorities

Jay-San Chen

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

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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.