



FCC RF Test Report

APPLICANT : Getac Technology Corporation
EQUIPMENT : PDA
BRAND NAME : Getac
MODEL NAME : PS236
FCC ID : QYLPS236
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Jul. 13, 2009 and completely tested on Jul. 31, 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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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR971335-01A	Rev. 01	Initial issue of report	Aug. 18, 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	-
3.2	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(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 13.0 dB at 0.454 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.75 dB at 2390.00 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Getac Technology Corporation

5F., Building A, No. 209, Sec.1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan, R.O.C.

1.2 Manufacturer

GeTAC Technology(Kunshan) LTD.

No. 269, 2nd Road, Export Processing Zone, Changjiang South Road, Kunshan, Jiangsu, P.R.C.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	PDA
Brand Name	Getac
Model Name	PS236
FCC ID	QYLPS236
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 : 14.19 dBm (26.24 mW) 802.11g : 15.52 dBm (35.65 mW)
Antenna Type	Chip Antenna with gain -3.7 dBi
HW Version	R0C
SW Version	005
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).



List of Accessory:

Specification of Accessory		
AC Adapter	Brand Name	FSP
	Model Name	FSP050-1AD101C
	Power Rating	I/P:100-240Vac, 50-60Hz, 1.3A; O/P: 12Vdc, 4.16A, 50W
	DC Power Cord Type	1.05 meter shielded cable with ferrite core
Battery	Brand Name	Sanyo
	Model Name	PS236
	Power Rating	3.7Vdc, 5600mAh, 21Wh
	Type	Li-ion
USB Cable	Brand Name	ncare
	Model Name	KYCPDX00051
	Signal Line Type	1.0 meter shielded cable without ferrite core

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.



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.	GPS Base Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	PC	DELL	T3400	FCC DoC	N/A	Unshielded, 1.8 m
5.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
6.	Bluetooth Earphone	Nokia	BH-100	PYA1YH	N/A	N/A
7.	iPod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A
8.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
9.	(PS2) Mouse	detroit	CM-201	FCC DoC	Shielded, 1.4 m	N/A
10.	(PS2) Keyboard	HP	KB-0133	R31310	Shielded, 1.8 m	N/A
11.	Modem	ACCEEX	DM1414	IFAXDM1414	Shielded, 3.6 m	N/A
12.	RS-232 Cable	N/A	N/A	N/A	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 Pre-Scanned RF Power (dBm)					
Channel	Frequency (MHz)	Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	12.89	12.58	12.61	12.64
CH 06	2437 MHz	12.81	12.54	12.51	12.52
CH 11	2462 MHz	12.79	12.47	12.49	12.49

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	12.80	12.77	12.68	13.36	12.83	13.24	12.71	13.16
CH 06	2437 MHz	11.84	12.13	12.19	12.27	11.89	12.45	12.08	12.49
CH 11	2462 MHz	11.16	12.00	12.52	12.59	11.65	12.42	12.46	12.51

Remark:

1. For WLAN RF power, the pre-scanned RF power was measured by power meter.
2. The 802.11b data rates were set in 1 Mbps and 802.11g data rates were set in 18 Mbps for all the test cases, due to the highest RF output power.
3. The EUT is programmed to transmit signals continuously for all testing.



2.2 Test Mode

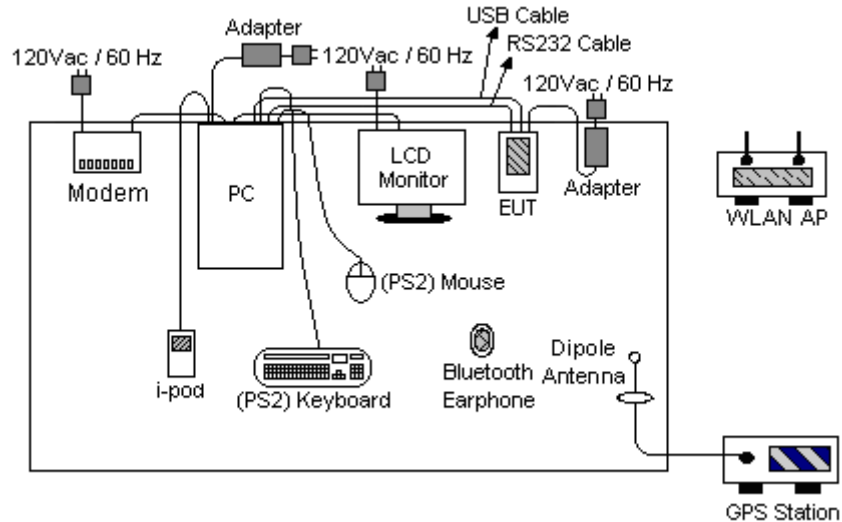
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). Pre-scanned tests, 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.

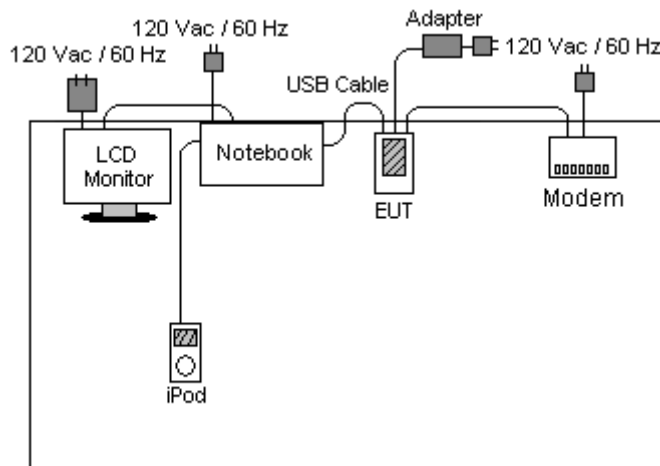
Test Cases		
Test Item	802.11b	802.11g
Conducted TCs	Mode 1 : CH01_2412 MHz Mode 2 : CH06_2437 MHz Mode 3 : CH11_2462 MHz	Mode 4 : CH01_2412 MHz Mode 5 : CH06_2437 MHz Mode 6 : CH11_2462 MHz
Radiated TCs	Mode 1 : CH01_2412 MHz Mode 2 : CH06_2437 MHz Mode 3 : CH11_2462 MHz	Mode 4 : CH01_2412 MHz Mode 5 : CH06_2437 MHz Mode 6 : CH11_2462 MHz
AC Conducted Emission	Mode 1 : WLAN Link + Bluetooth Link + GPS Rx + Adapter + Camera + USB Cable (Link with PC) + RS-232 Cable (Link with PC) Mode 2 : WLAN Link + Bluetooth Link + GPS Rx + Adapter + MPEG4 + USB Cable (Link with PC) + RS232 Cable (Link with PC)	
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.		

2.3 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



2.4 RF Utility

The programmed RF utility, "WLAN_FCC" is installed in EUT to provide channel selection, power level, data rate and the application type. The 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 Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

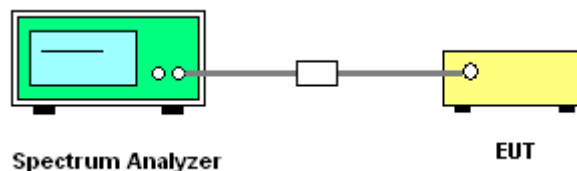
3.1.2 Measuring Instruments

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



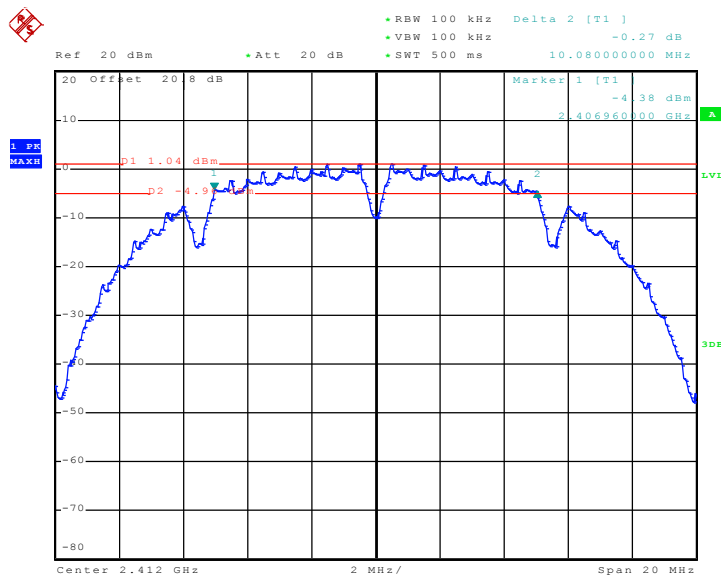


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.08	0.5	Pass
06	2437	10.08	0.5	Pass
11	2462	10.08	0.5	Pass

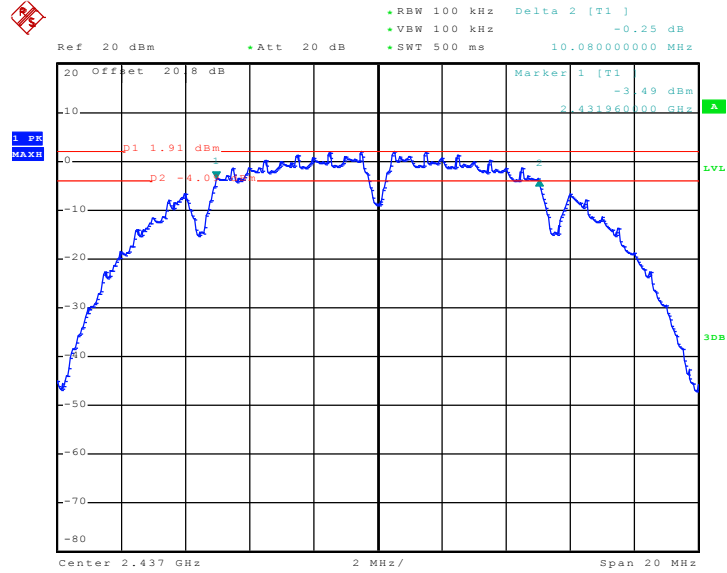
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 21..JUL..2009 11:28:07

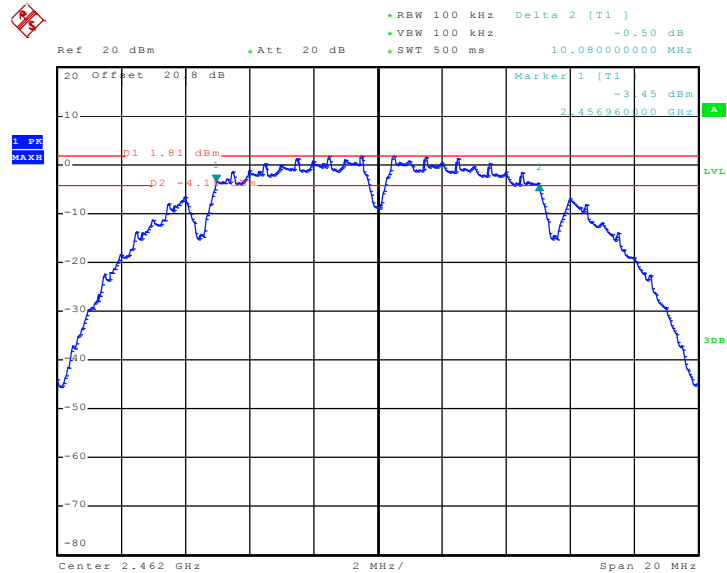


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 21.JUL.2009 11:29:14

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



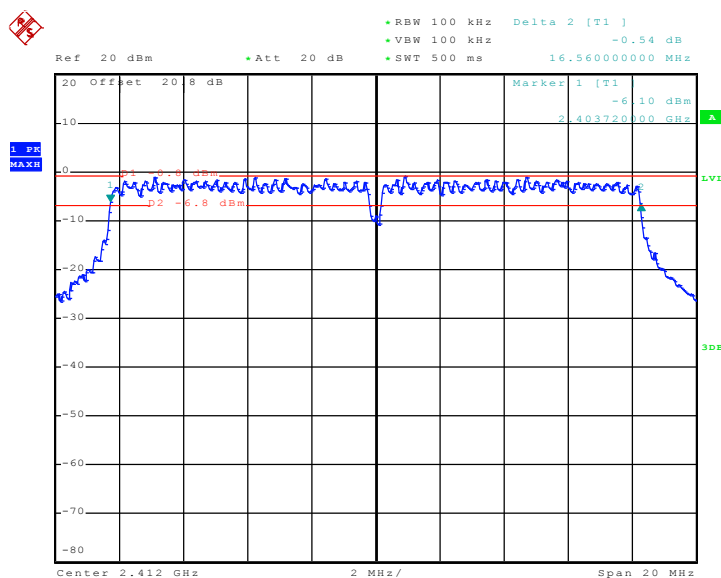
Date: 21.JUL.2009 11:30:57



Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.56	0.5	Pass
06	2437	16.56	0.5	Pass
11	2462	16.52	0.5	Pass

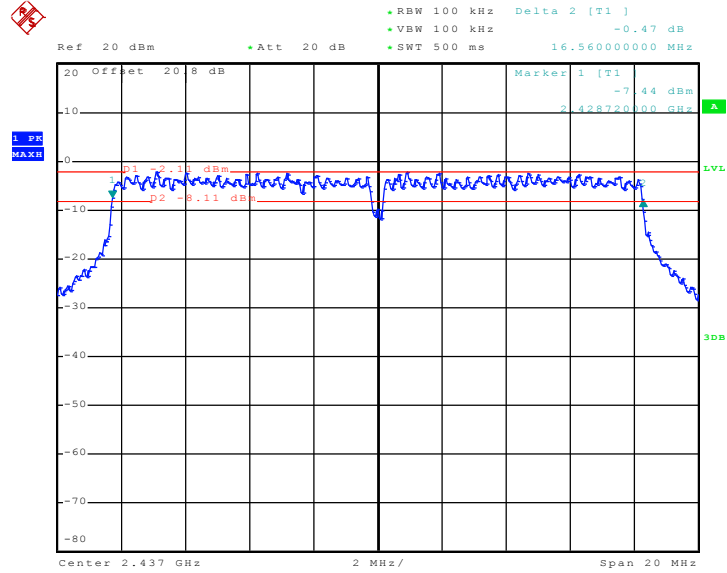
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 21..JUL..2009 11:35:34

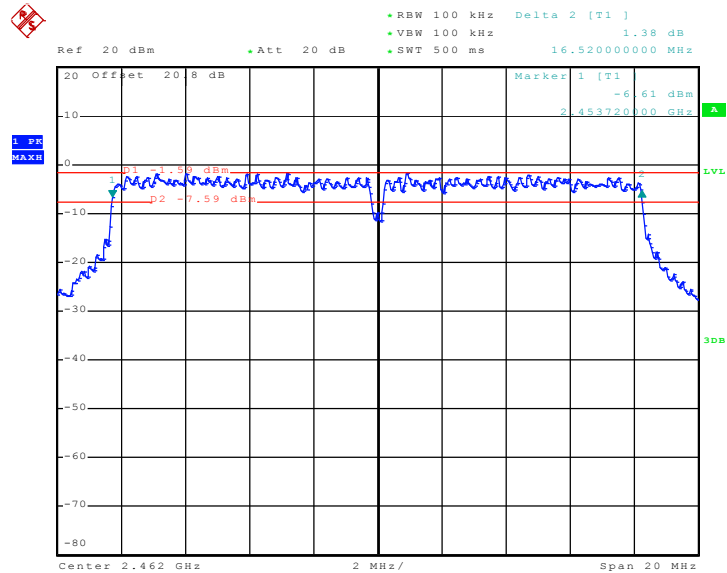


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 21.JUL.2009 11:34:36

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



Date: 21.JUL.2009 11:33:40

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.

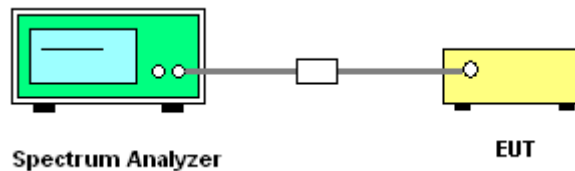
3.2.2 Measuring Instruments

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



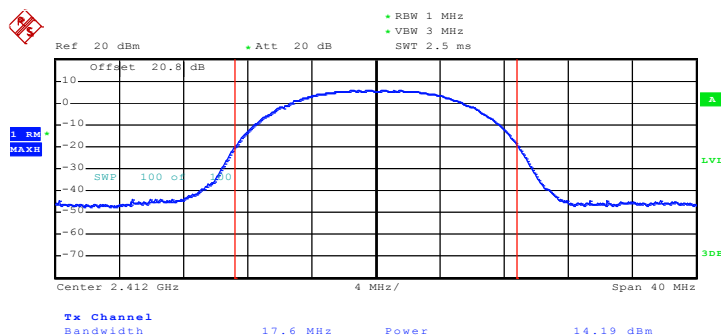


3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	14.19	30	Pass
06	2437	13.02	30	Pass
11	2462	12.88	30	Pass

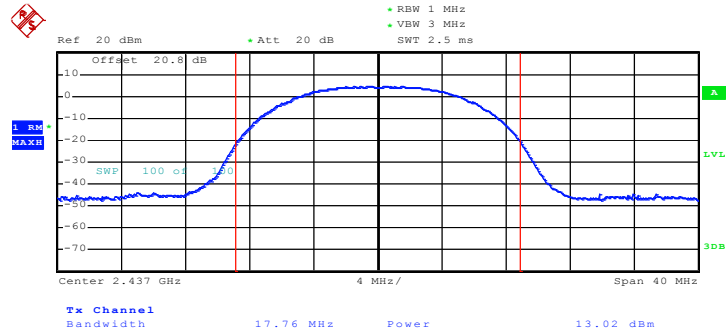
Mode 1 : Output Power Plot on 802.11b Channel 01



Date: 21..JUL..2009 10:09:49

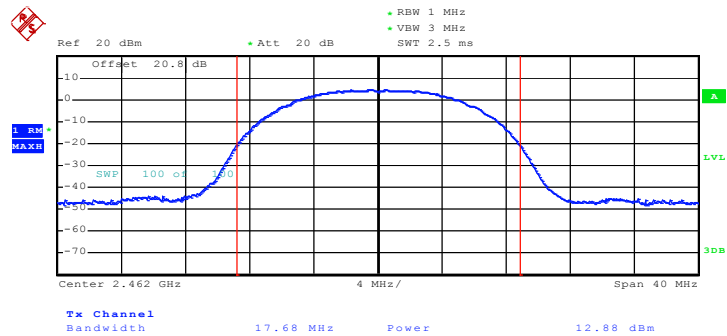


Mode 2 : Output Power Plot on 802.11b Channel 06



Date: 21.JUL.2009 10:11:08

Mode 3 : Output Power Plot on 802.11b Channel 11



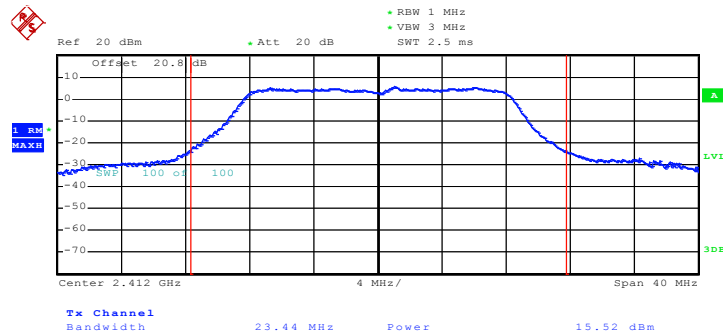
Date: 21.JUL.2009 10:11:49



Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	15.52	30	Pass
06	2437	14.23	30	Pass
11	2462	14.21	30	Pass

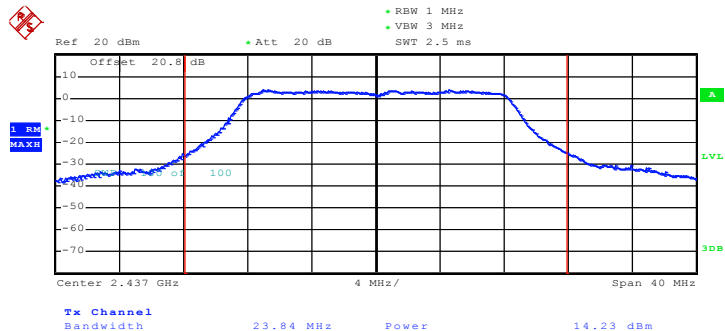
Mode 4 : Output Power Plot on 802.11g Channel 01



Date: 21..JUL..2009 10:12:33

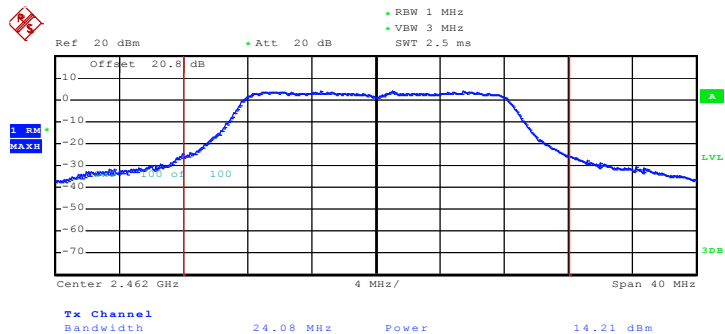


Mode 5 : Output Power Plot on 802.11g Channel 06



Date: 21.JUL.2009 10:13:12

Mode 6 : Output Power Plot on 802.11g Channel 11



Date: 21.JUL.2009 10:13:57

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.

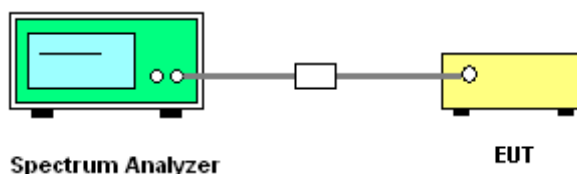
3.3.2 Measuring Instruments

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 :	29~30°C
Test Band :	802.11b	Relative Humidity :	39~40%
Test Channel :	01	Test Engineer :	Kay 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
2385.62	57.01	-16.99	74.00	53.92	32.02	5.46	34.38	197	127	Peak
2385.62	44.10	-9.90	54.00	41.01	32.02	5.46	34.38	197	127	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
2387.9	49.79	-24.21	74.00	46.70	32.02	5.46	34.38	101	184	Peak
2387.9	37.22	-16.78	54.00	34.13	32.02	5.46	34.38	101	184	Average

Test Mode :	Mode 3	Temperature :	29~30°C
Test Band :	802.11b	Relative Humidity :	39~40%
Test Channel :	11	Test Engineer :	Kay 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	56.78	-17.22	74.00	53.71	32.09	5.38	34.40	193	131	Peak
2483.50	44.89	-9.11	54.00	41.82	32.09	5.38	34.40	193	131	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	48.41	-25.59	74.00	45.34	32.09	5.38	34.40	100	204	Peak
2483.50	36.96	-17.04	54.00	33.89	32.09	5.38	34.40	100	204	Average



Test Mode :	Mode 4	Temperature :	29~30°C
Test Band :	802.11g	Relative Humidity :	39~40%
Test Channel :	01	Test Engineer :	Kay 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
2390.00	69.78	-4.22	74.00	66.69	32.02	5.46	34.38	196	127	Peak
2390.00	50.25	-3.75	54.00	47.16	32.02	5.46	34.38	196	127	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
2390.00	62.73	-11.27	74.00	59.64	32.02	5.46	34.38	172	195	Peak
2390.00	44.57	-9.43	54.00	41.48	32.02	5.46	34.38	172	195	Average

Test Mode :	Mode 6	Temperature :	29~30°C
Test Band :	802.11g	Relative Humidity :	39~40%
Test Channel :	11	Test Engineer :	Kay 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	65.07	-8.93	74.00	62.00	32.09	5.38	34.40	198	12	Peak
2483.50	46.39	-7.61	54.00	43.32	32.09	5.38	34.40	198	12	Average

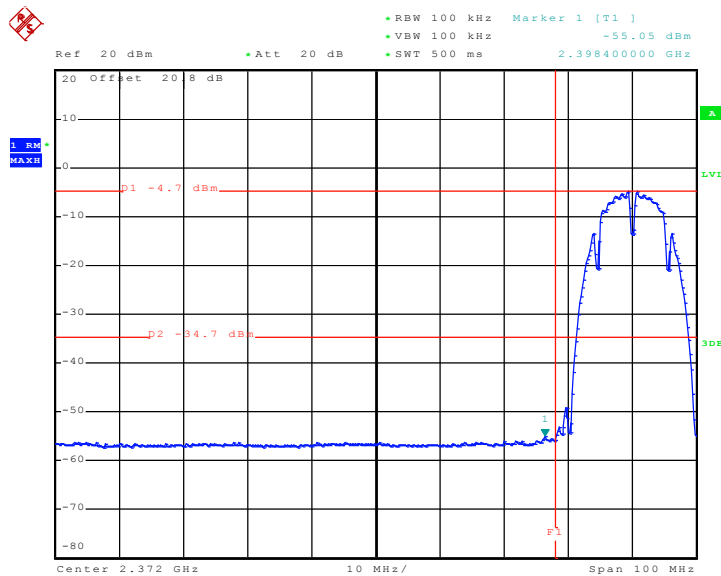
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	62.55	-11.45	74.00	59.48	32.09	5.38	34.40	100	203	Peak
2483.50	44.30	-9.70	54.00	41.23	32.09	5.38	34.40	100	203	Average



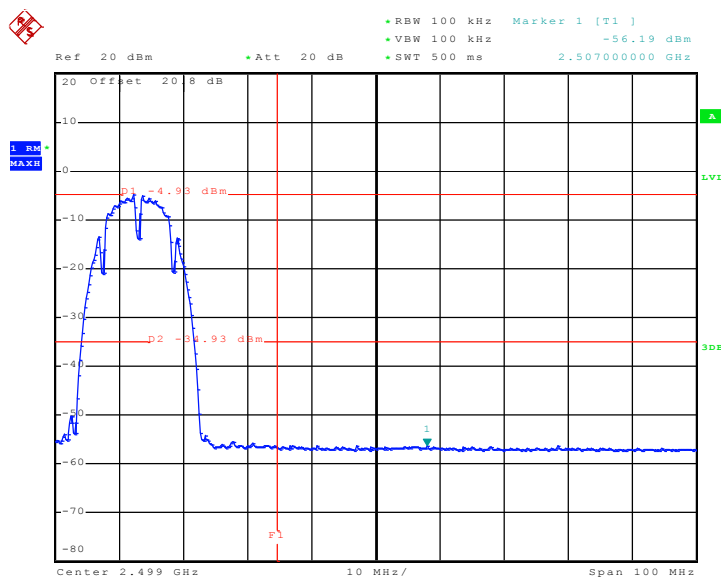
3.3.6 Test Plots of Conducted Band Edges

Test Mode :	Mode 1 and 3	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	42~43%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11b Channel 01



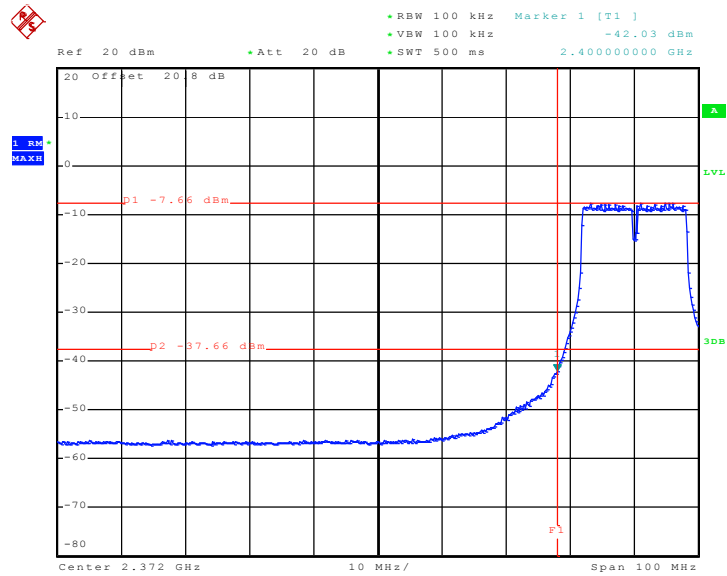
High Band Edge Plot on 802.11b Channel 11



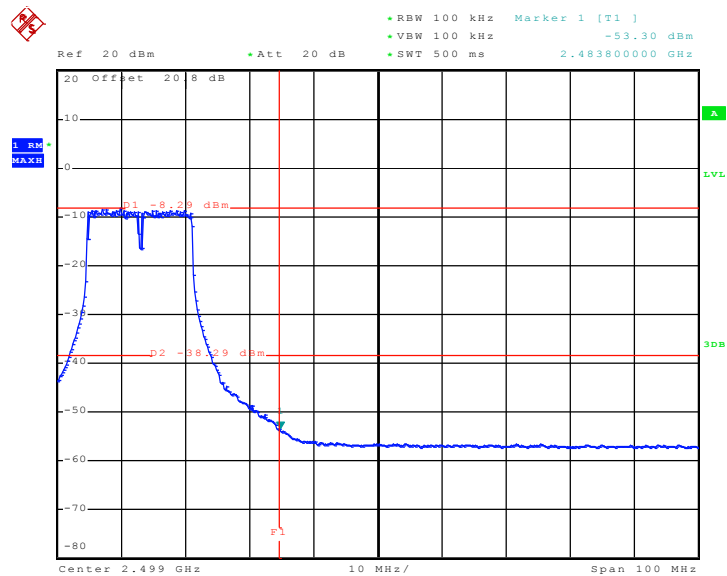


Test Mode :	Mode 4 and 6	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	42~43%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11g Channel 01



High Band Edge Plot on 802.11g Channel 11



3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

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

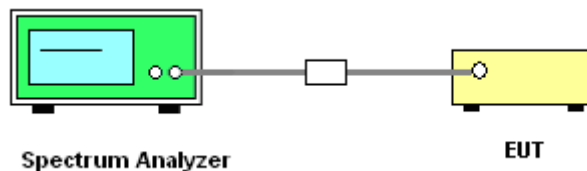
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW) \geq RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

3.4.4 Test Setup

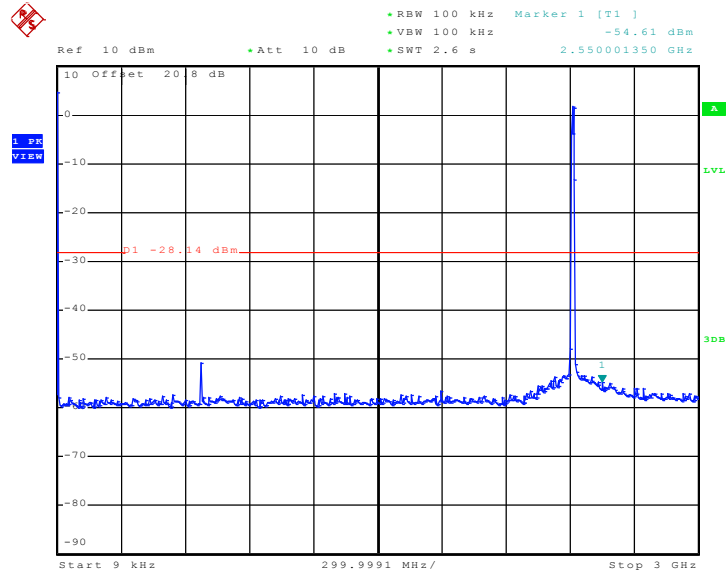




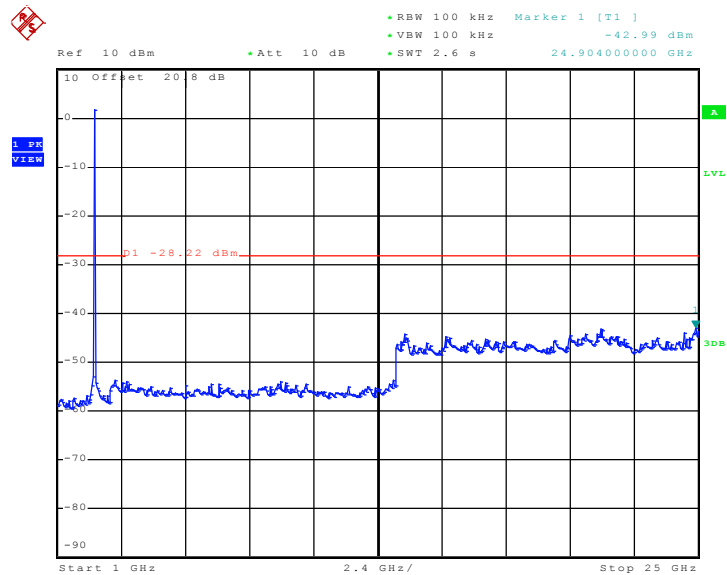
3.4.5 Test Plots of Spurious Emission

Test Mode :	Mode 1	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	42~43%
		Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



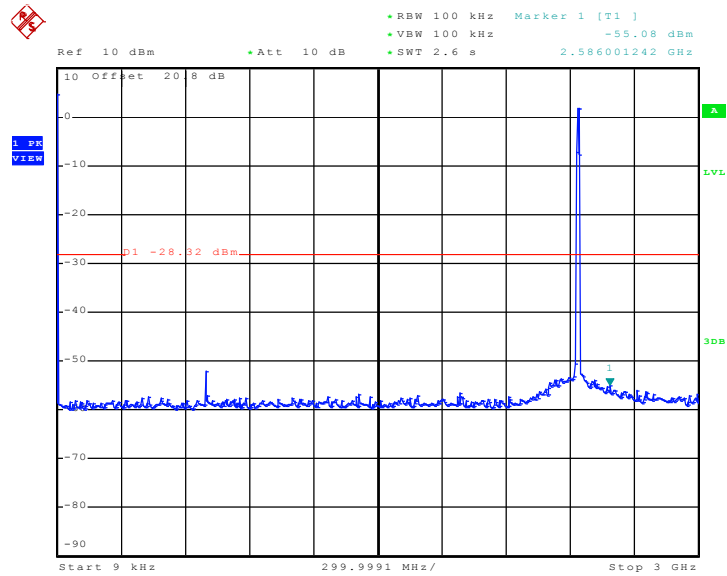
Conducted Spurious Emission Plot between 1GHz ~ 25 GHz



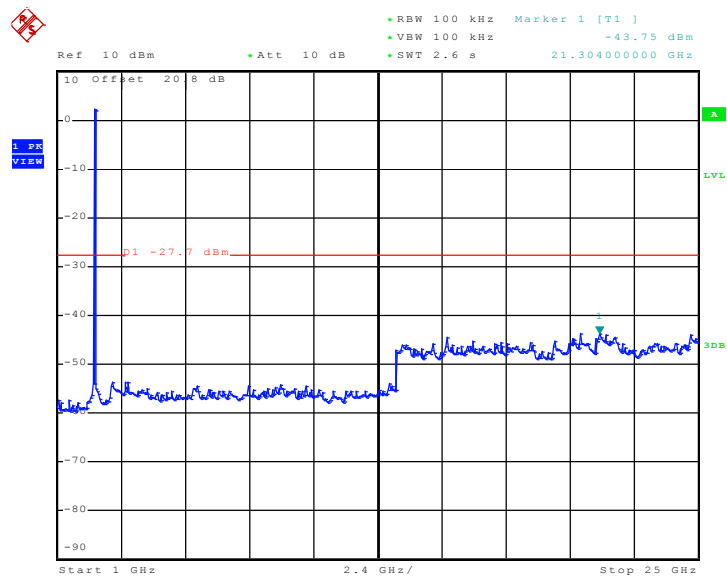


Test Mode :	Mode 2	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	42~43%
		Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Conducted Spurious Emission Plot between 1GHz ~ 25 GHz

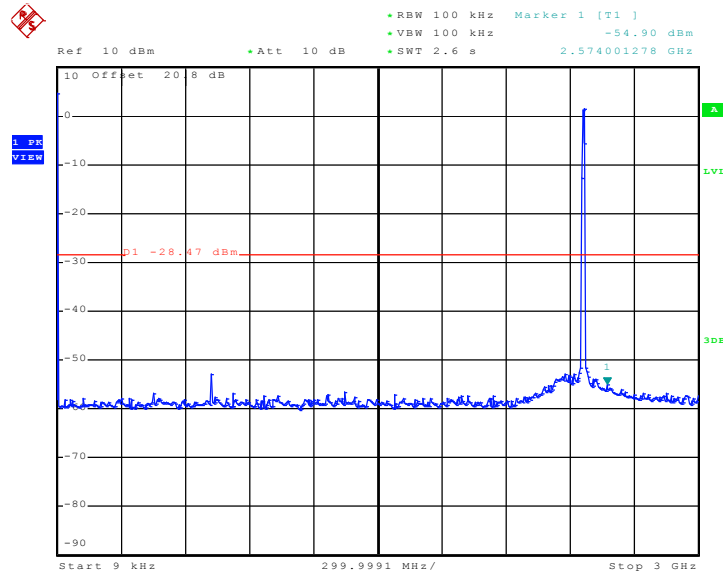


Date: 21..III..2009 11:55:43



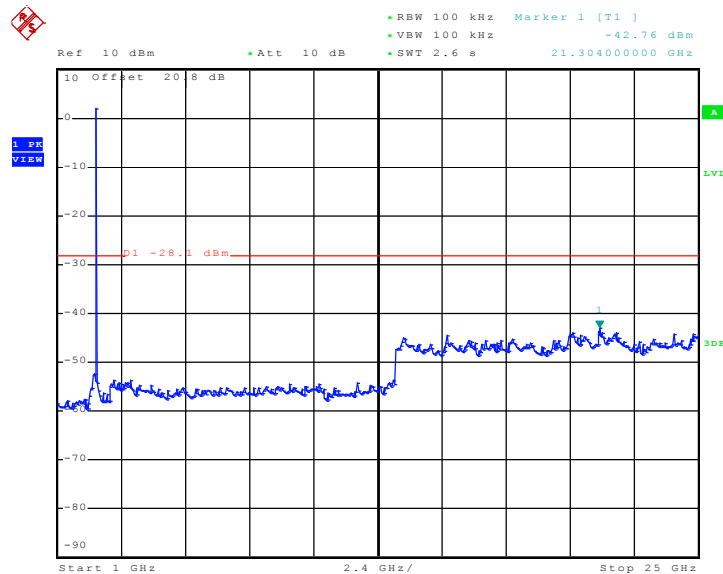
Test Mode :	Mode 3	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	42~43%
		Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 21.JUL.2009 11:56:20

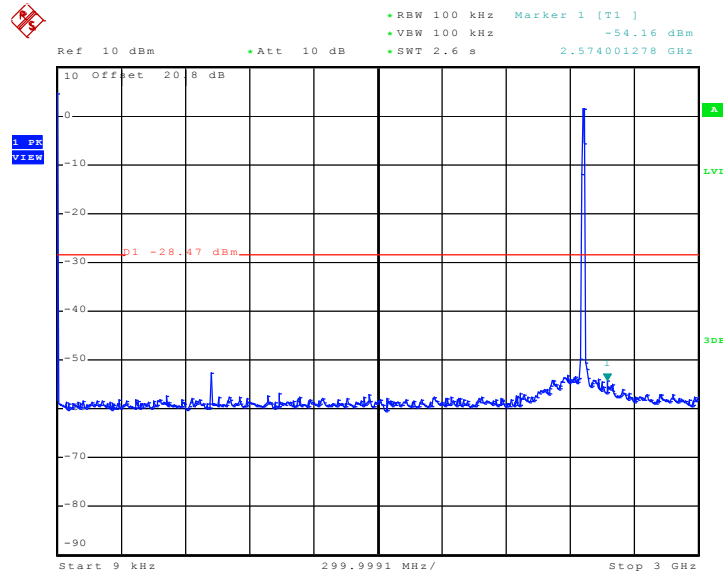
Conducted Spurious Emission Plot between 1GHz ~ 25 GHz





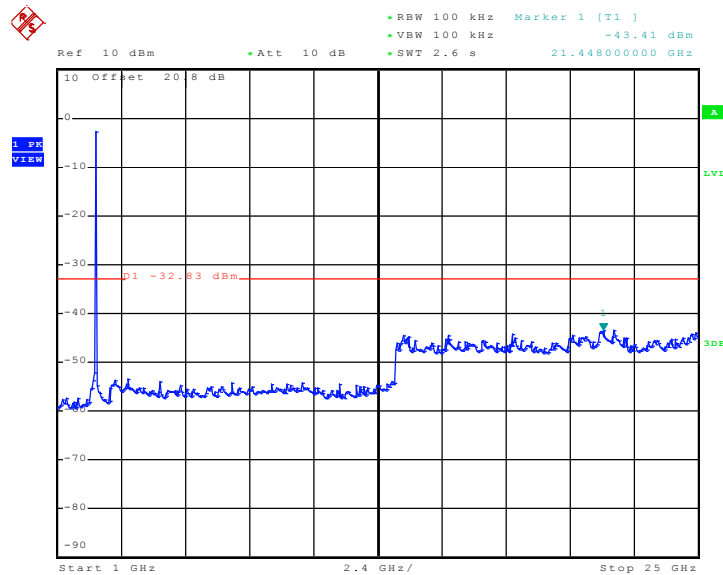
Test Mode :	Mode 4	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	42~43%
		Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 21.JUL.2009 11:57:14

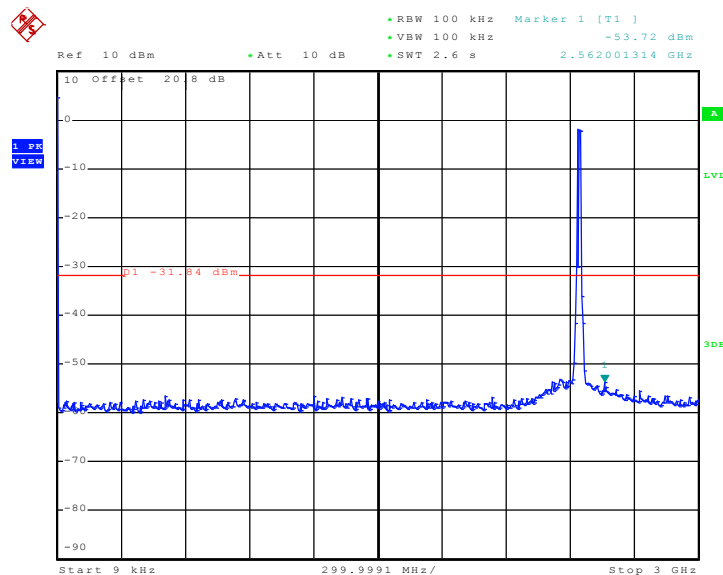
Conducted Spurious Emission Plot between 1GHz ~ 25 GHz



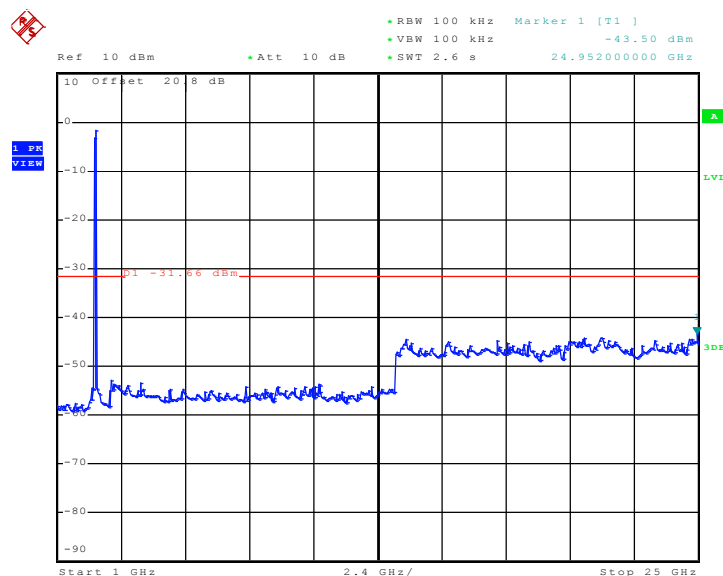


Test Mode :	Mode 5	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	42~43%
		Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Conducted Spurious Emission Plot between 1GHz ~ 25 GHz

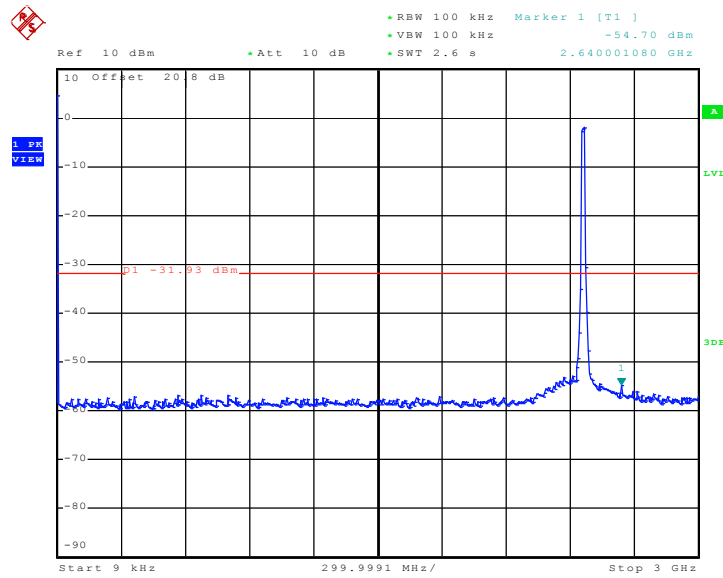


Date: 21..III..2009 12:00:24

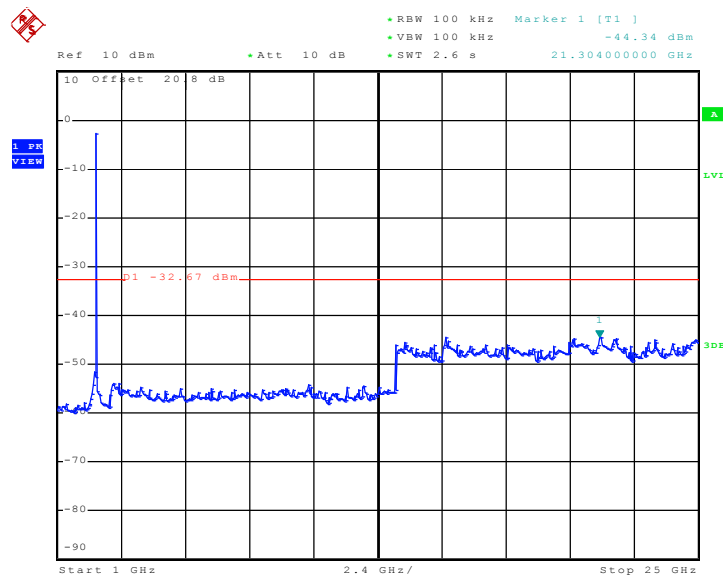


Test Mode :	Mode 6	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	42~43%
		Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Conducted Spurious Emission Plot between 1GHz ~ 25 GHz



Date: 21..III..2009 12:02:07

3.5 Power Spectral Density Measurement

3.5.1 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.

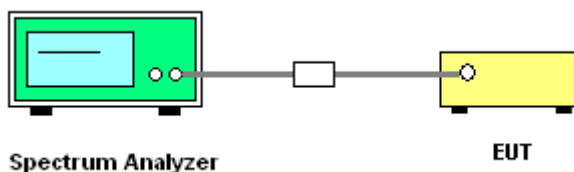
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 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.

3.5.4 Test Setup



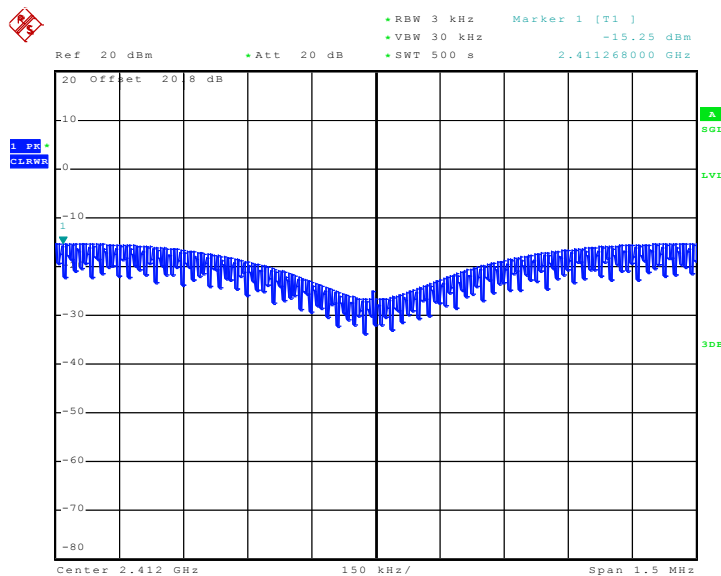


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-15.25	8	Pass
06	2437	-16.47	8	Pass
11	2462	-16.56	8	Pass

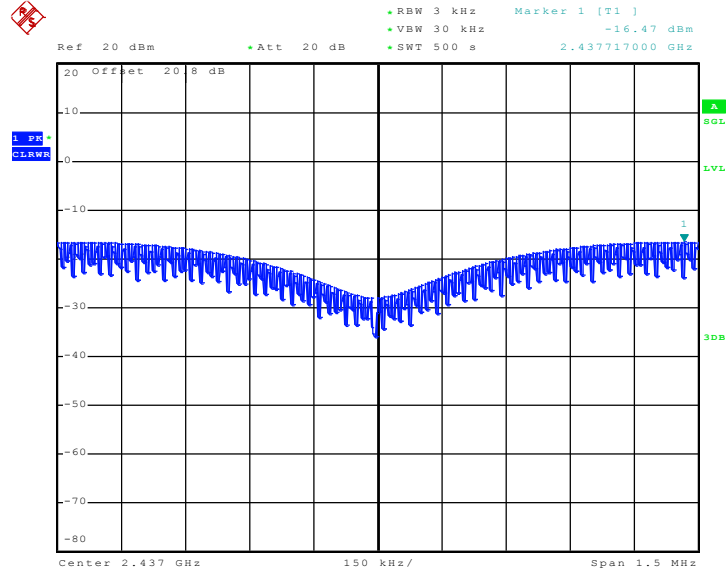
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 21..JUL..2009 10:40:27

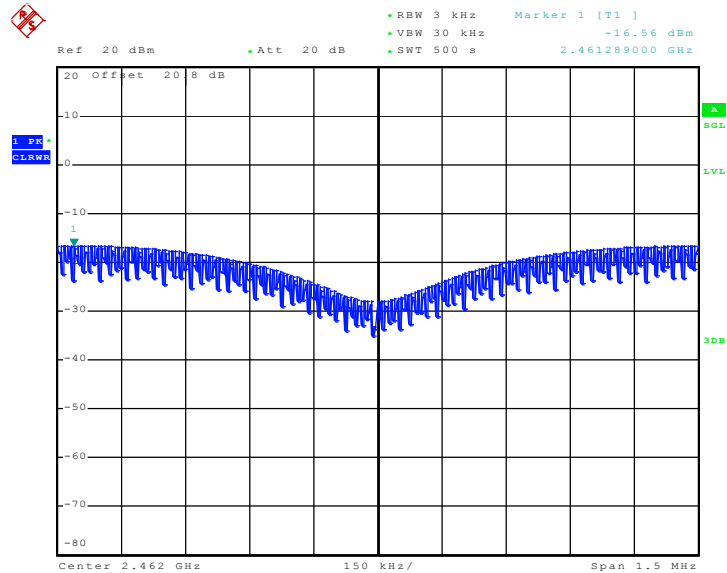


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 21.JUL.2009 10:49:16

Mode 3 : PSD Plot on 802.11b Channel 11



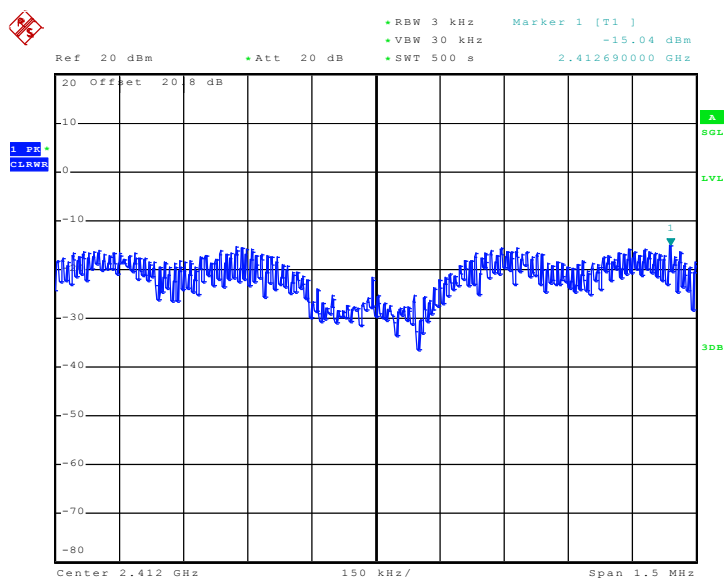
Date: 21.JUL.2009 10:58:13



Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-15.04	8	Pass
06	2437	-15.84	8	Pass
11	2462	-16.62	8	Pass

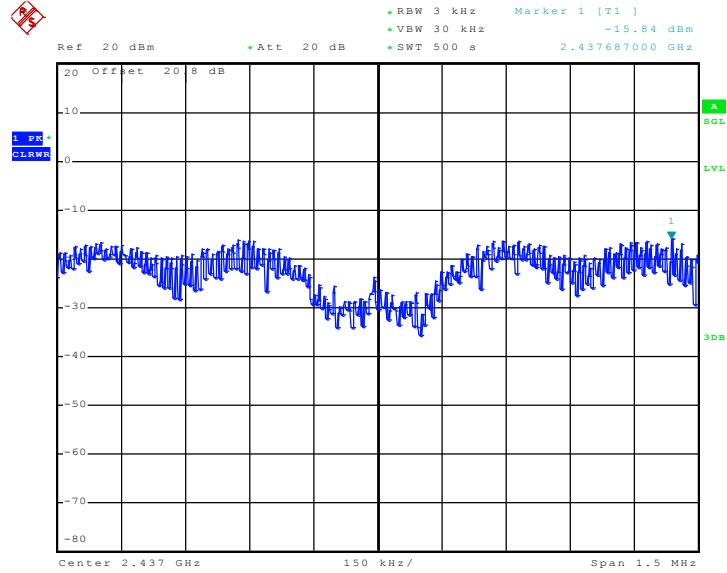
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 21..JUL..2009 11:07:46

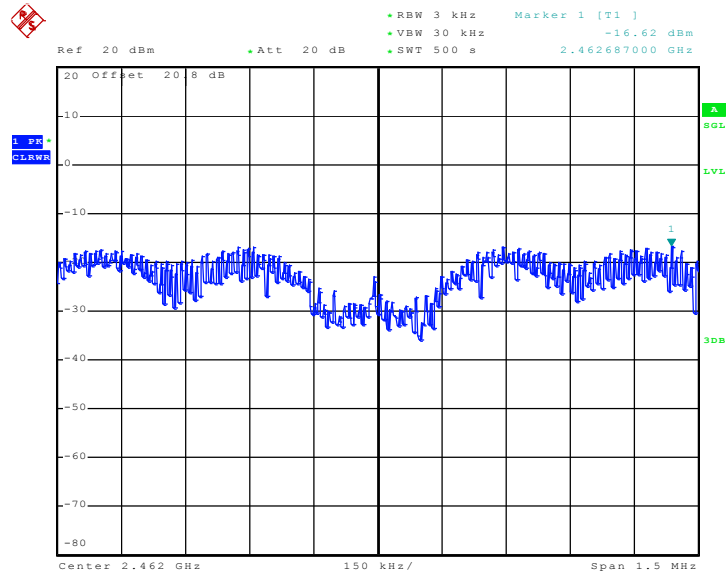


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 21.JUL.2009 11:16:40

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 21.JUL.2009 11:25:37



3.6 AC Conducted Emission Measurement

3.6.1 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.

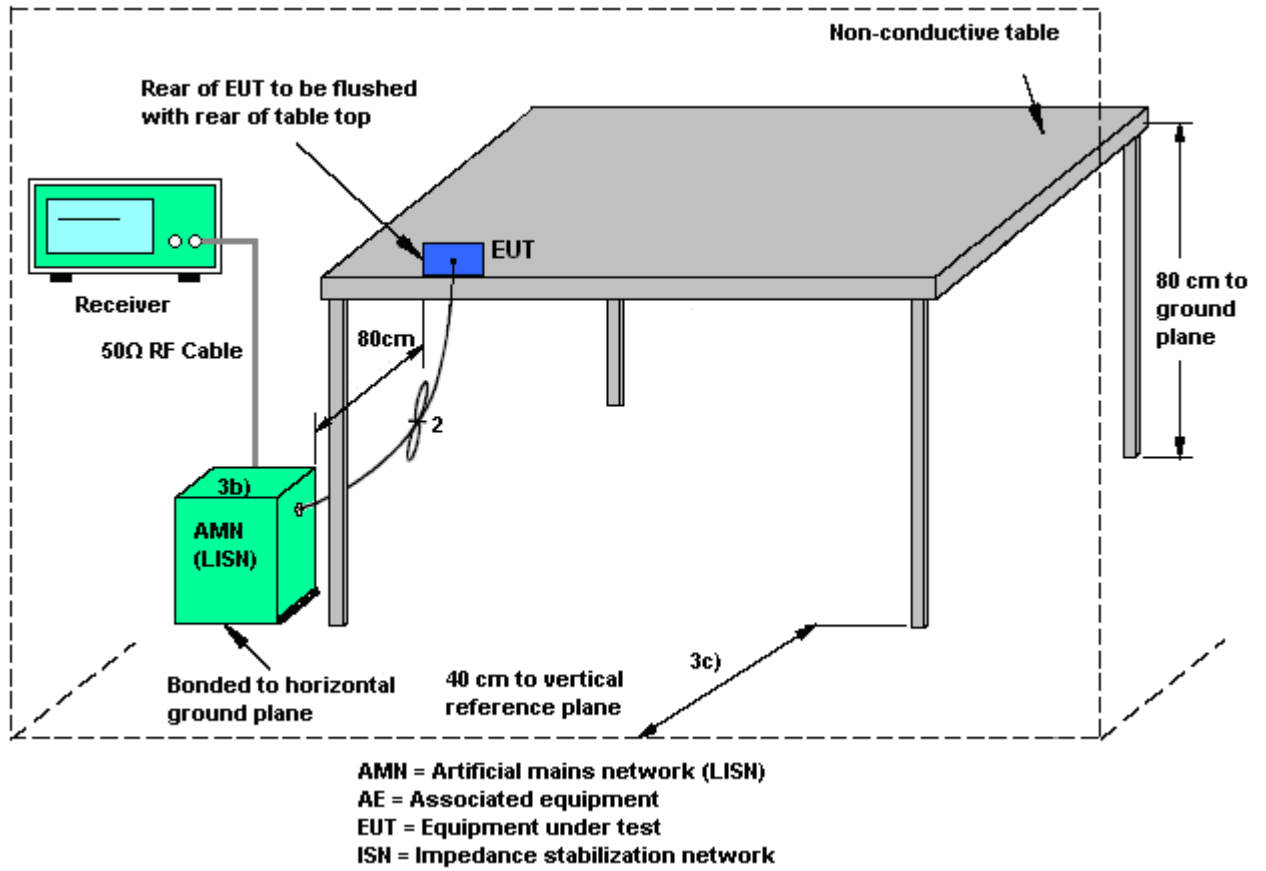
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

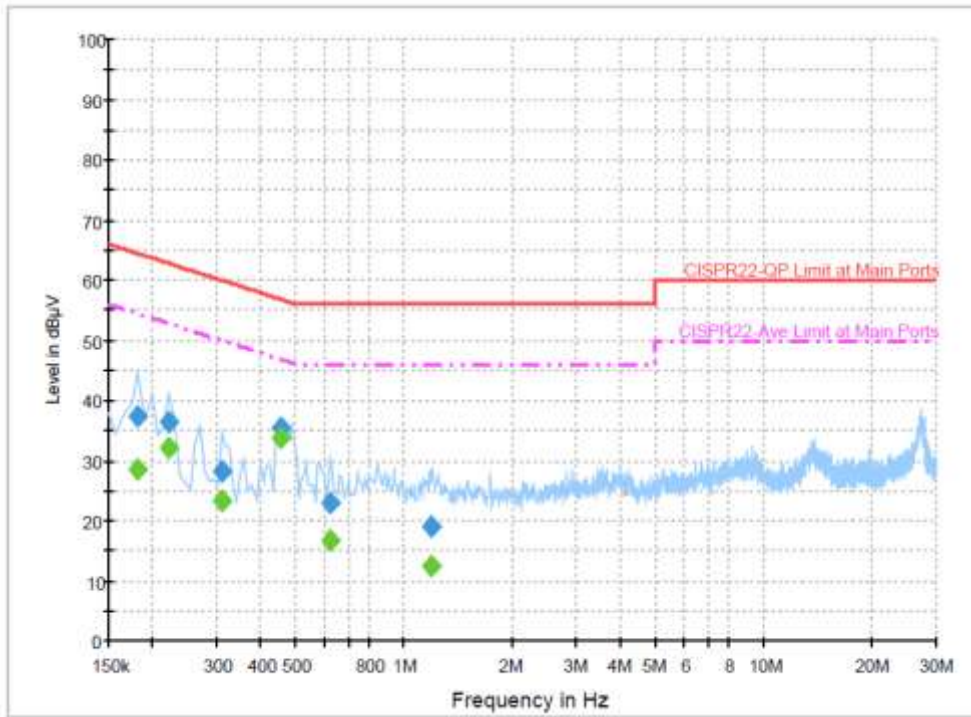
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	24~25°C
Test Engineer :	Cona Huang	Relative Humidity :	47~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + Bluetooth Link + GPS Rx + Adapter + MPEG4 + USB Cable (Link with PC) + RS232 Cable (Link with PC)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

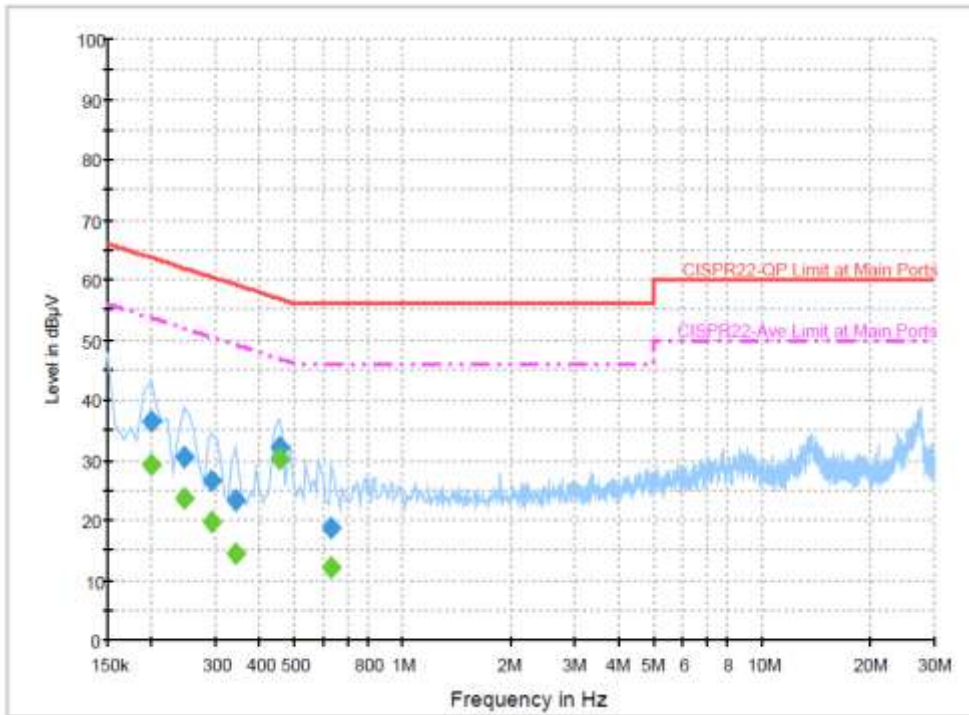
Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	37.5	Off	L1	19.5	26.9	64.4
0.222000	36.5	Off	L1	19.5	26.2	62.7
0.310000	28.3	Off	L1	19.4	31.7	60.0
0.454000	35.3	Off	L1	19.4	21.5	56.8
0.622000	23.0	Off	L1	19.4	33.0	56.0
1.190000	18.9	Off	L1	19.5	37.1	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	28.5	Off	L1	19.5	25.9	54.4
0.222000	32.2	Off	L1	19.5	20.5	52.7
0.310000	23.2	Off	L1	19.4	26.8	50.0
0.454000	33.8	Off	L1	19.4	13.0	46.8
0.622000	16.8	Off	L1	19.4	29.2	46.0
1.190000	12.6	Off	L1	19.5	33.4	46.0



Test Mode :	Mode 2	Temperature :	24~25°C
Test Engineer :	Cona Huang	Relative Humidity :	47~48%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + Bluetooth Link + GPS Rx + Adapter + MPEG4 + USB Cable (Link with PC) + RS232 Cable (Link with PC)		
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)
0.198000	36.2	Off	N	19.5	27.5	63.7
0.246000	30.6	Off	N	19.5	31.3	61.9
0.294000	26.7	Off	N	19.4	33.7	60.4
0.342000	23.2	Off	N	19.4	36.0	59.2
0.454000	32.3	Off	N	19.4	24.5	56.8
0.630000	18.6	Off	N	19.4	37.4	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	29.1	Off	N	19.5	24.7	53.7
0.246000	23.5	Off	N	19.5	28.4	51.9
0.294000	19.6	Off	N	19.4	30.8	50.4
0.342000	14.5	Off	N	19.4	34.7	49.2
0.454000	30.3	Off	N	19.4	16.5	46.8
0.630000	12.0	Off	N	19.4	34.0	46.0

3.7 Radiated Emission Measurement

3.7.1 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

3.7.2 Measuring Instruments

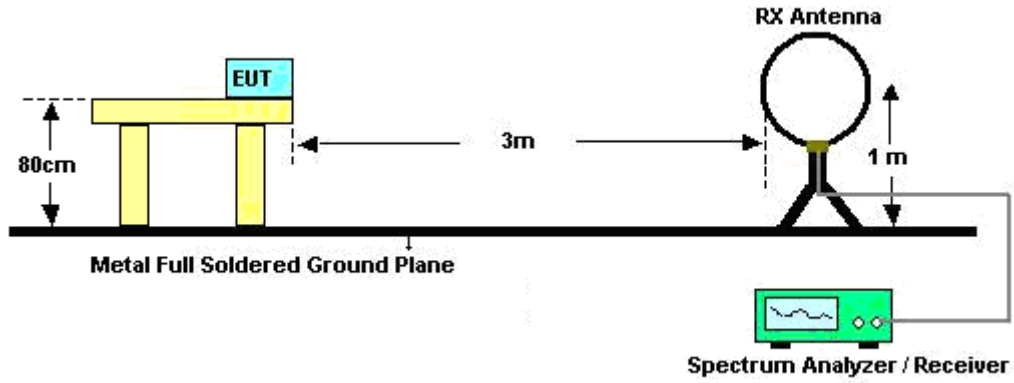
See list of measuring instruments of this test report.

3.7.3 Test Procedures

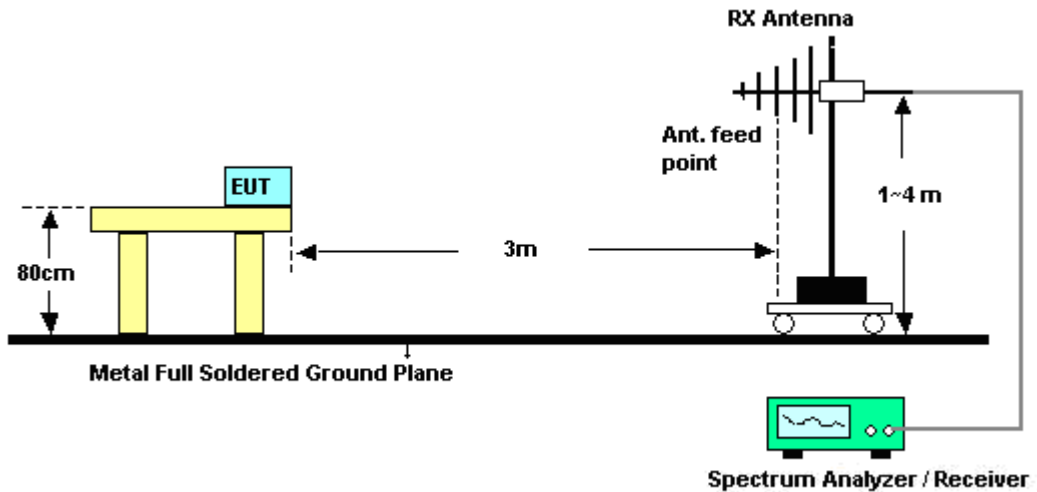
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto;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

3.7.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz





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

Test Engineer :	Kay Wang	Temperature :	29~30°C	
		Relative Humidity :	39~40%	
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.

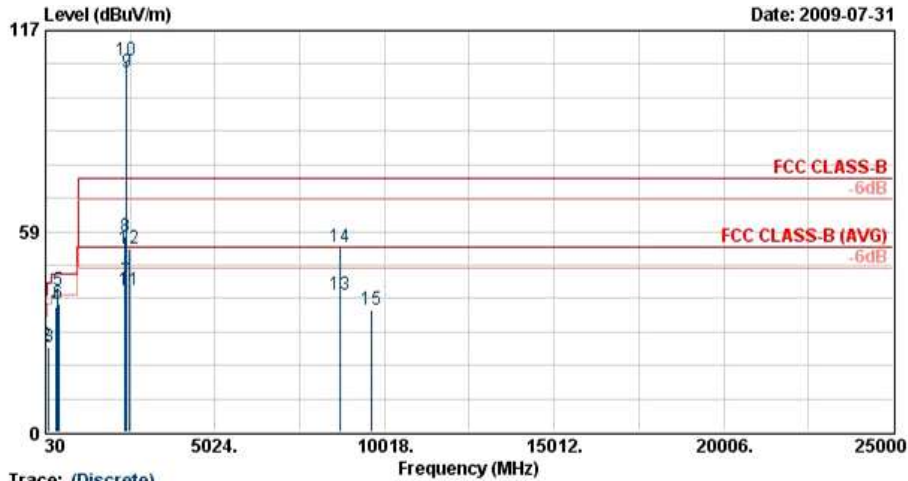
Distance extrapolation factor = $40 \log(\text{specific distance} / \text{test distance})$ (dB);

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



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

Test Mode :	Mode 1	Temperature :	29~30°C
Test Channel :	01	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

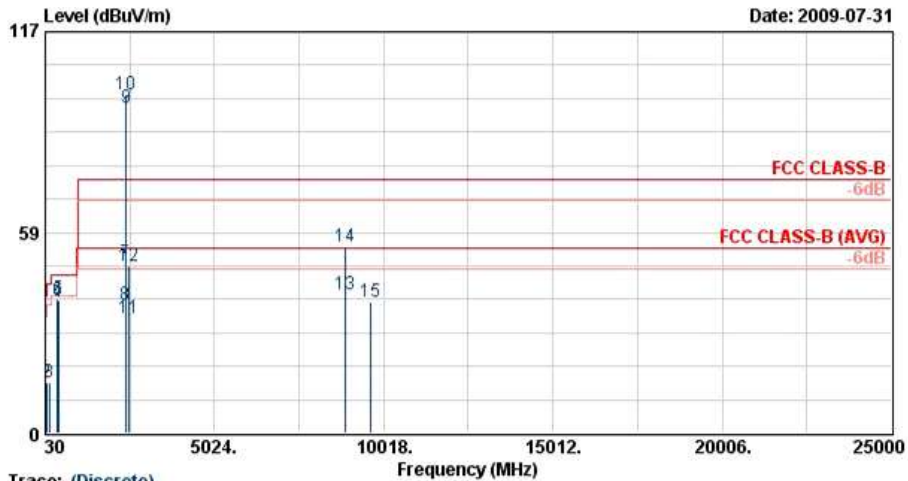


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 971335

	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	23.08	-16.92	40.00	34.24	19.90	0.64	31.70	---	---	Peak
2	37.29	25.36	-14.64	40.00	40.89	15.46	0.71	31.70	---	---	Peak
3	119.10	24.87	-18.63	43.50	43.23	12.05	1.27	31.68	---	---	Peak
4	352.50	36.74	-9.26	46.00	50.44	15.25	2.35	31.30	---	---	Peak
5 !	397.30	41.23	-4.77	46.00	53.55	16.35	2.53	31.20	100	63	Peak
6	419.00	37.19	-8.81	46.00	48.96	16.75	2.66	31.18	---	---	Peak
7	2385.62	44.10	-9.90	54.00	41.01	32.02	5.46	34.38	197	127	Average
8	2385.62	57.01	-16.99	74.00	53.92	32.02	5.46	34.38	197	127	Peak
9 @	2412.00	104.70			101.61	32.03	5.44	34.38	197	127	Average
10 X	2412.00	108.30			105.20	32.03	5.44	34.38	197	127	Peak
11	2483.50	41.33	-12.67	54.00	38.26	32.09	5.38	34.40	197	127	Average
12	2483.50	53.56	-20.44	74.00	50.49	32.09	5.38	34.40	197	127	Peak
13	8718.00	40.01	-13.99	54.00	29.23	35.87	10.25	35.34	190	100	Average
14	8718.00	54.11	-19.89	74.00	43.33	35.87	10.25	35.34	190	100	Peak
15	9645.00	35.65	-38.35	74.00	70.56	-10.09	10.74	35.57	---	---	Peak



Test Mode :	Mode 1	Temperature :	29~30°C
Test Channel :	01	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

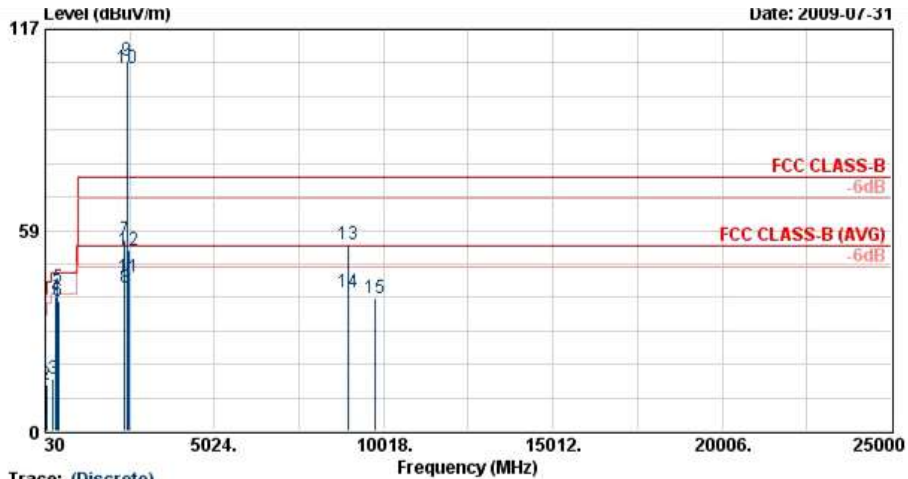


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-ERF HORN VERTICAL
 Project : FR 971335

	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	30.54	22.42	-17.58	40.00	34.11	19.36	0.65	31.70	---	---	Peak
2	67.53	14.82	-25.18	40.00	38.95	6.62	0.95	31.70	---	---	Peak
3	152.58	14.82	-28.68	43.50	33.41	11.58	1.48	31.65	---	---	Peak
4	391.00	38.11	-7.89	46.00	50.62	16.19	2.51	31.22	---	---	Peak
5	397.30	39.07	-6.93	46.00	51.39	16.35	2.53	31.20	100	143	Peak
6	410.60	38.76	-7.24	46.00	50.75	16.59	2.61	31.19	---	---	Peak
7	2387.90	49.79	-24.21	74.00	46.70	32.02	5.46	34.38	101	184	Peak
8	2387.90	37.22	-16.78	54.00	34.13	32.02	5.46	34.38	101	184	Average
9 @	2412.00	94.98			91.89	32.03	5.44	34.38	101	184	Average
10 X	2412.00	98.79			95.70	32.03	5.44	34.38	101	184	Peak
11	2483.50	33.57	-20.43	54.00	30.50	32.09	5.38	34.40	101	184	Average
12	2483.50	48.88	-25.12	74.00	45.81	32.09	5.38	34.40	101	184	Peak
13	8898.00	40.48	-13.52	54.00	29.53	36.02	10.31	35.38	100	163	Average
14	8898.00	54.29	-19.71	74.00	43.34	36.02	10.31	35.38	100	163	Peak
15	9645.00	38.31	-35.69	74.00	73.22	-10.09	10.74	35.57	---	---	Peak



Test Mode :	Mode 2	Temperature :	29~30°C
Test Channel :	06	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

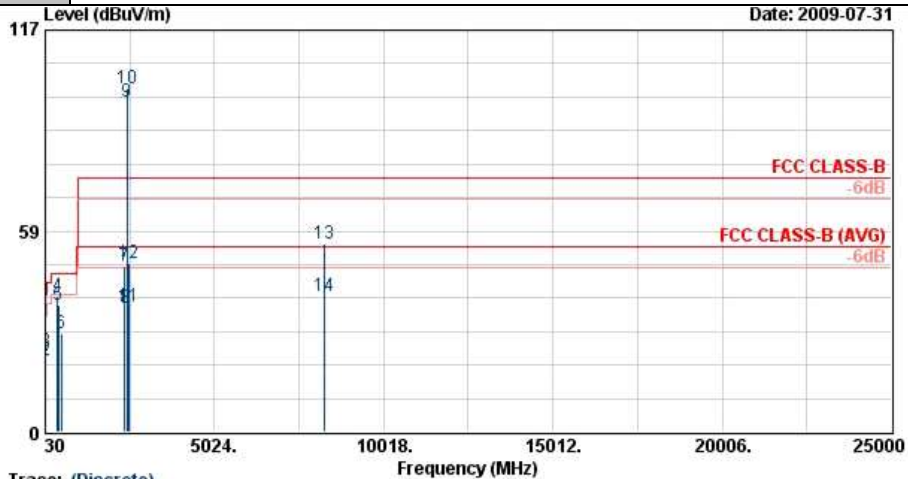


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 971335

	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	22.09	-17.91	40.00	33.25	19.90	0.64	31.70	---	---	Peak
2	67.26	13.47	-26.53	40.00	37.69	6.53	0.95	31.70	---	---	Peak
3	253.02	15.13	-30.87	46.00	31.56	13.13	1.93	31.49	---	---	Peak
4	355.30	39.15	-6.85	46.00	52.76	15.32	2.37	31.29	---	---	Peak
5 !	397.30	41.76	-4.24	46.00	54.08	16.35	2.53	31.20	100	21	Peak
6	408.50	37.75	-8.25	46.00	49.79	16.56	2.60	31.19	---	---	Peak
7	2372.00	55.74	-18.26	74.00	52.64	32.00	5.47	34.38	192	125	Peak
8	2372.00	41.71	-12.29	54.00	38.61	32.00	5.47	34.38	192	125	Average
9 X	2437.00	107.84			104.75	32.04	5.43	34.39	192	125	Peak
10 @	2437.00	105.52			102.44	32.06	5.41	34.39	192	125	Average
11	2483.50	44.83	-9.17	54.00	41.76	32.09	5.38	34.40	192	125	Average
12	2483.50	52.43	-21.57	74.00	49.36	32.09	5.38	34.40	192	125	Peak
13	8958.00	54.33	-19.67	74.00	43.34	36.06	10.32	35.39	184	106	Peak
14	8958.00	40.27	-13.73	54.00	29.28	36.06	10.32	35.39	184	106	Average
15	9741.00	38.79	-35.21	74.00	73.40	-9.87	10.81	35.55	---	---	Peak



Test Mode :	Mode 2	Temperature :	29~30°C
Test Channel :	06	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

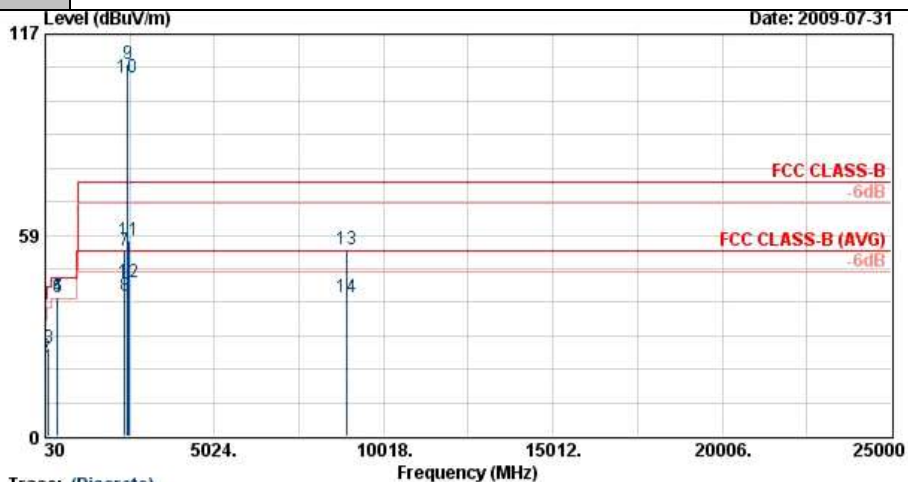


Trace: (Discrete)
 Site : 03CH07-HV
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 971335

	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	23.15	-16.85	40.00	34.31	19.90	0.64	31.70	---	---	Peak
2	41.61	20.74	-19.26	40.00	38.50	13.22	0.73	31.70	---	---	Peak
3	51.33	23.43	-16.57	40.00	45.42	8.87	0.84	31.70	---	---	Peak
4	397.30	39.54	-6.46	46.00	51.85	16.35	2.53	31.20	100	93	Peak
5	419.00	37.08	-8.92	46.00	48.85	16.75	2.66	31.18	---	---	Peak
6	498.10	28.76	-17.24	46.00	38.76	18.17	2.93	31.10	---	---	Peak
7	2372.00	48.49	-25.51	74.00	45.39	32.00	5.47	34.38	199	223	Peak
8	2372.00	36.04	-17.96	54.00	32.94	32.00	5.47	34.38	199	223	Average
9 @	2437.00	96.03			92.95	32.06	5.41	34.39	199	223	Average
10 X	2437.00	100.06			96.97	32.06	5.41	34.39	199	223	Peak
11	2483.50	36.56	-17.44	54.00	33.49	32.09	5.38	34.40	199	223	Average
12	2483.50	49.11	-24.89	74.00	46.03	32.09	5.38	34.40	199	223	Peak
13	8277.00	54.60	-19.40	74.00	44.22	35.66	10.03	35.30	180	227	Peak
14	8277.00	39.79	-14.21	54.00	29.41	35.66	10.03	35.30	180	227	Average



Test Mode :	Mode 3	Temperature :	29~30°C
Test Channel :	11	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

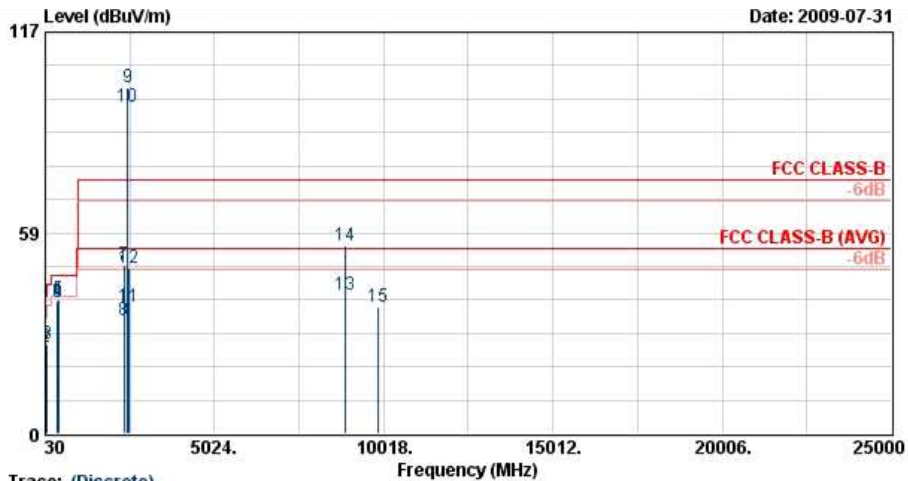


Trace: (Discrete)
 Site : 03CH07-HV
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 971335

	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	22.71	-17.29	40.00	33.87	19.90	0.64	31.70	---	---	Peak
2	44.58	23.07	-16.93	40.00	42.45	11.60	0.72	31.70	---	---	Peak
3	130.98	25.51	-17.99	43.50	43.53	12.28	1.37	31.67	---	---	Peak
4 !	391.00	40.39	-5.61	46.00	52.90	16.19	2.51	31.22	---	---	Peak
5 !	394.50	40.54	-5.46	46.00	52.94	16.28	2.53	31.21	100	88	Peak
6 !	399.40	40.47	-5.53	46.00	52.73	16.40	2.54	31.20	---	---	Peak
7	2374.00	54.09	-19.91	74.00	50.99	32.00	5.47	34.38	193	131	Peak
8	2374.00	40.99	-13.01	54.00	37.89	32.00	5.47	34.38	193	131	Average
9 X	2462.00	108.36			105.28	32.07	5.40	34.39	193	131	Peak
10 @	2462.00	104.59			101.51	32.07	5.40	34.39	193	131	Average
11	2483.50	56.78	-17.22	74.00	53.71	32.09	5.38	34.40	193	131	Peak
12	2483.50	44.89	-9.11	54.00	41.82	32.09	5.38	34.40	193	131	Average
13	8922.00	54.52	-19.48	74.00	43.56	36.03	10.31	35.38	187	100	Peak
14	8922.00	40.66	-13.34	54.00	29.70	36.03	10.31	35.38	187	100	Average



Test Mode :	Mode 3	Temperature :	29~30°C
Test Channel :	11	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

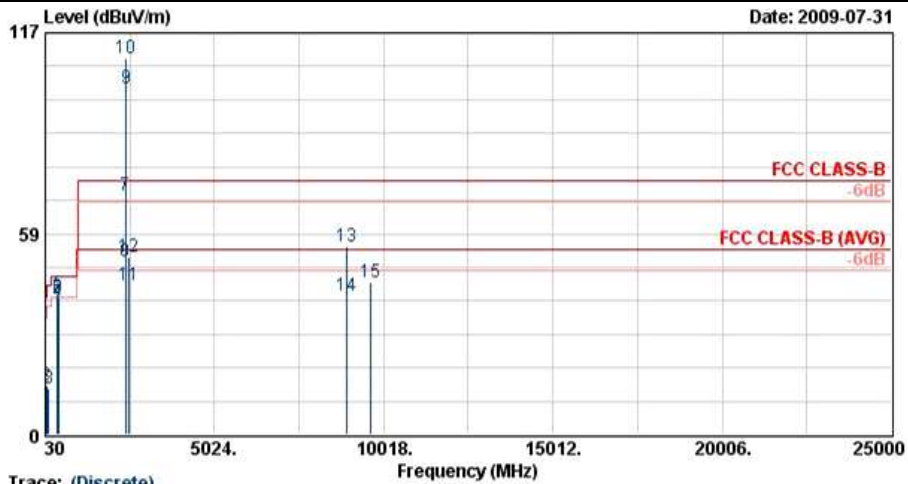


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 971335

	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	23.49	-16.51	40.00	34.65	19.90	0.64	31.70	---	---	Peak
2	72.66	25.25	-14.75	40.00	48.96	7.02	0.97	31.70	---	---	Peak
3	86.97	26.16	-13.84	40.00	48.06	8.72	1.08	31.70	---	---	Peak
4	394.50	38.66	-7.34	46.00	51.06	16.28	2.53	31.21	---	---	Peak
5	411.30	38.96	-7.04	46.00	50.93	16.61	2.61	31.19	100	145	Peak
6	419.00	38.35	-7.65	46.00	50.12	16.75	2.66	31.18	---	---	Peak
7	2356.00	48.97	-25.03	74.00	45.86	31.99	5.49	34.37	100	204	Peak
8	2356.00	33.15	-20.85	54.00	30.05	31.99	5.49	34.37	100	204	Average
9 X	2462.00	101.08			98.01	32.07	5.40	34.39	100	204	Peak
10 @	2462.00	95.12			92.04	32.07	5.40	34.39	100	204	Average
11	2483.50	36.96	-17.04	54.00	33.89	32.09	5.38	34.40	100	204	Average
12	2483.50	48.41	-25.59	74.00	45.34	32.09	5.38	34.40	100	204	Peak
13	8877.00	40.51	-13.49	54.00	29.59	35.99	10.30	35.37	100	190	Average
14	8877.00	54.81	-19.19	74.00	43.90	35.99	10.30	35.37	100	190	Peak
15	9846.00	37.14	-36.86	74.00	71.41	-9.63	10.89	35.53	---	---	Peak



Test Mode :	Mode 4	Temperature :	29~30°C
Test Channel :	01	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

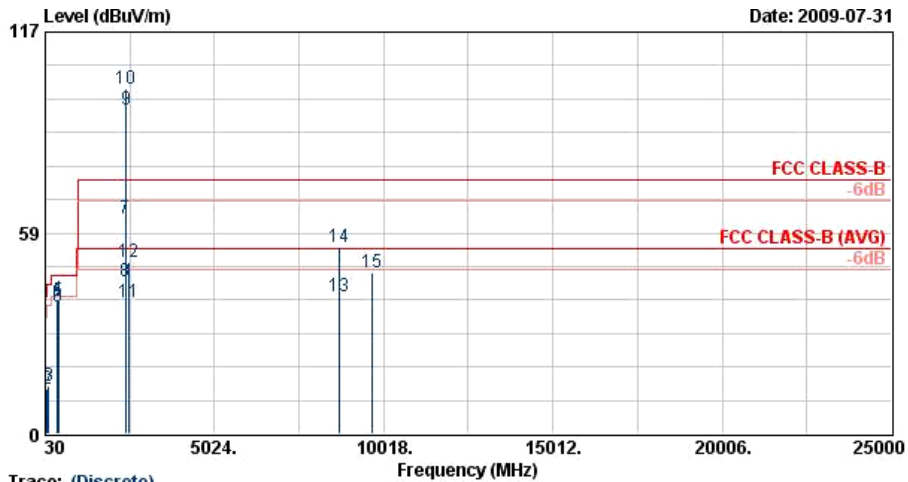


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 971335

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	22.32	-17.68	40.00	33.48	19.90	0.64	31.70	---	---	Peak
2	67.26	14.34	-25.66	40.00	38.56	6.53	0.95	31.70	---	---	Peak
3	136.65	13.36	-30.14	43.50	31.47	12.16	1.39	31.66	---	---	Peak
4	388.90	38.60	-7.40	46.00	51.17	16.14	2.51	31.22	---	---	Peak
5 !	397.30	41.05	-4.95	46.00	53.36	16.35	2.53	31.20	100	12	Peak
6	411.30	39.89	-6.11	46.00	51.86	16.61	2.61	31.19	---	---	Peak
7 !	2390.00	69.78	-4.22	74.00	66.69	32.02	5.46	34.38	196	127	Peak
8 !	2390.00	50.25	-3.75	54.00	47.16	32.02	5.46	34.38	196	127	Average
9 @	2412.00	100.82			97.73	32.03	5.44	34.38	196	127	Average
10 X	2412.00	109.48			106.39	32.03	5.44	34.38	196	127	Peak
11	2483.50	43.49	-10.51	54.00	40.42	32.09	5.38	34.40	196	127	Average
12	2483.50	51.87	-22.13	74.00	48.80	32.09	5.38	34.40	196	127	Peak
13	8937.00	54.71	-19.29	74.00	43.73	36.05	10.32	35.39	182	94	Peak
14	8937.00	40.41	-13.59	54.00	29.43	36.05	10.32	35.39	182	94	Average
15	9645.00	44.42	-29.58	74.00	79.33	-10.09	10.74	35.57	---	---	Peak



Test Mode :	Mode 4	Temperature :	29~30°C
Test Channel :	01	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



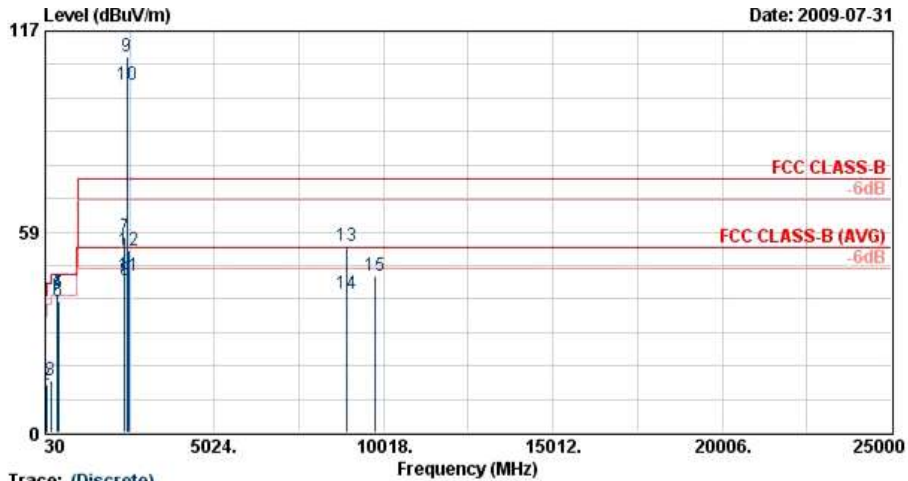
Trace: (Discrete)

Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 971335

	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	31.62	22.13	-17.87	40.00	34.35	18.82	0.66	31.70	---	---	Peak
2	92.37	13.18	-30.32	43.50	34.30	9.46	1.12	31.70	---	---	Peak
3	136.65	13.98	-29.52	43.50	32.09	12.16	1.39	31.66	---	---	Peak
4	394.50	38.93	-7.07	46.00	51.33	16.28	2.53	31.21	100	159	Peak
5	411.30	38.75	-7.25	46.00	50.71	16.61	2.61	31.19	---	---	Peak
6	419.00	36.87	-9.13	46.00	48.65	16.75	2.66	31.18	---	---	Peak
7	2390.00	62.73	-11.27	74.00	59.64	32.02	5.46	34.38	172	195	Peak
8	2390.00	44.57	-9.43	54.00	41.48	32.02	5.46	34.38	172	195	Average
9 @	2412.00	94.55			91.46	32.03	5.44	34.38	172	195	Average
10 X	2412.00	100.39			97.30	32.04	5.43	34.39	172	195	Peak
11	2483.50	38.40	-15.60	54.00	35.33	32.09	5.38	34.40	172	195	Average
12	2483.50	50.19	-23.81	74.00	47.12	32.09	5.38	34.40	172	195	Peak
13	8709.00	40.03	-13.97	54.00	29.27	35.86	10.24	35.34	166	231	Average
14	8709.00	54.44	-19.56	74.00	43.68	35.86	10.24	35.34	166	231	Peak
15	9654.00	47.03	-26.97	74.00	81.92	-10.07	10.74	35.57	---	---	Peak



Test Mode :	Mode 5	Temperature :	29~30°C
Test Channel :	06	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

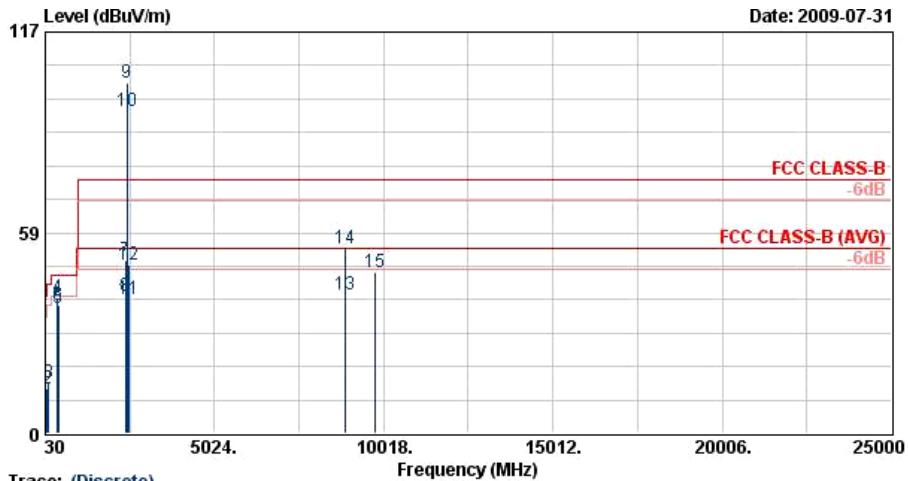


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 971335

	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	22.04	-17.96	40.00	33.20	19.90	0.64	31.70	---	---	Peak
2	67.26	13.85	-26.15	40.00	38.07	6.53	0.95	31.70	---	---	Peak
3	202.53	15.08	-28.42	43.50	34.71	10.25	1.71	31.59	---	---	Peak
4 !	388.90	40.35	-5.65	46.00	52.92	16.14	2.51	31.22	100	211	Peak
5 !	395.20	40.24	-5.76	46.00	52.64	16.28	2.53	31.21	---	---	Peak
6	410.60	38.33	-7.67	46.00	50.32	16.59	2.61	31.19	---	---	Peak
7	2382.00	56.86	-17.14	74.00	53.76	32.00	5.47	34.38	193	127	Peak
8	2382.00	44.29	-9.71	54.00	41.19	32.00	5.47	34.38	193	127	Average
9 X	2437.00	109.57			106.48	32.04	5.43	34.39	193	127	Peak
10 @	2437.00	101.41			98.33	32.06	5.41	34.39	193	127	Average
11	2483.50	45.52	-8.48	54.00	42.45	32.09	5.38	34.40	193	127	Average
12	2483.50	53.07	-20.93	74.00	49.99	32.09	5.38	34.40	193	127	Peak
13	8910.00	54.57	-19.43	74.00	43.62	36.02	10.31	35.38	182	100	Peak
14	8910.00	40.44	-13.56	54.00	29.49	36.02	10.31	35.38	182	100	Average
15	9753.00	45.79	-28.21	74.00	80.36	-9.85	10.82	35.55	---	---	Peak



Test Mode :	Mode 5	Temperature :	29~30°C
Test Channel :	06	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

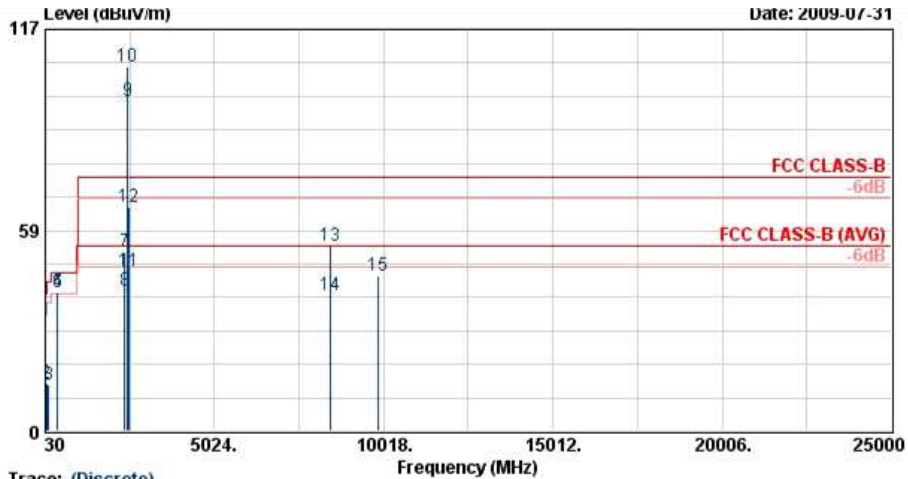


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 071335

	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	32.70	22.43	-17.57	40.00	35.18	18.28	0.66	31.70	---	---	Peak
2	76.98	13.23	-26.77	40.00	36.63	7.31	0.99	31.70	---	---	Peak
3	136.65	14.98	-28.52	43.50	33.09	12.16	1.39	31.66	---	---	Peak
4	394.50	39.43	-6.57	46.00	51.83	16.28	2.53	31.21	100	253	Peak
5	410.60	36.67	-9.33	46.00	48.66	16.59	2.61	31.19	---	---	Peak
6	419.00	37.45	-8.55	46.00	49.22	16.75	2.66	31.18	---	---	Peak
7	2390.00	50.60	-23.40	74.00	47.50	32.02	5.46	34.38	168	193	Peak
8	2390.00	39.99	-14.01	54.00	36.90	32.02	5.46	34.38	168	193	Average
9 X	2437.00	102.33			99.25	32.06	5.41	34.39	168	193	Peak
10 @	2437.00	93.97			90.89	32.06	5.41	34.39	168	193	Average
11	2483.50	39.07	-14.93	54.00	36.00	32.09	5.38	34.40	168	193	Average
12	2483.50	49.14	-24.86	74.00	46.07	32.09	5.38	34.40	168	193	Peak
13	8877.00	40.51	-13.49	54.00	29.59	35.99	10.30	35.37	157	190	Average
14	8877.00	53.90	-20.10	74.00	42.98	35.99	10.30	35.37	157	190	Peak
15	9741.00	46.84	-27.16	74.00	81.46	-9.87	10.81	35.55	---	---	Peak



Test Mode :	Mode 6	Temperature :	29~30°C
Test Channel :	11	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

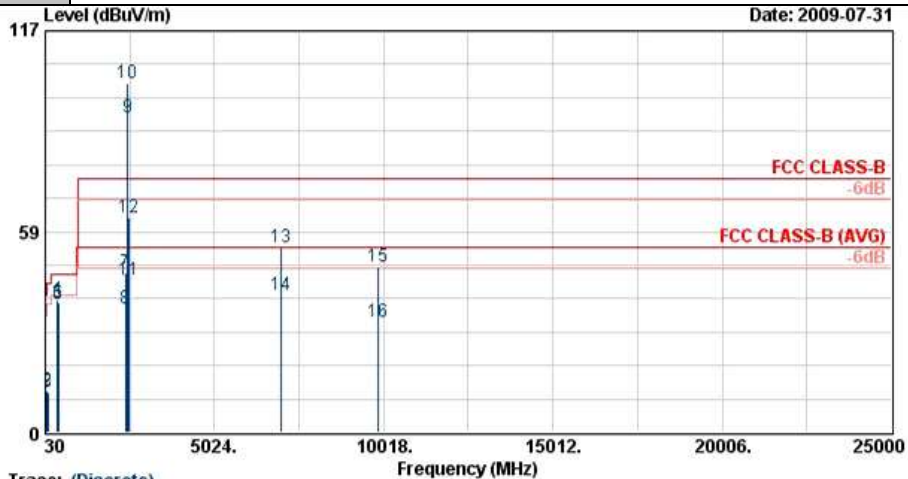


Trace: (Discrete)
 Site : 03CR07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 971335

	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	21.47	-18.53	40.00	32.63	19.90	0.64	31.70	---	---	Peak
2	67.53	13.97	-26.03	40.00	38.10	6.62	0.95	31.70	---	---	Peak
3	132.33	13.69	-29.81	43.50	31.73	12.26	1.37	31.67	---	---	Peak
4 !	391.00	40.55	-5.45	46.00	53.06	16.19	2.51	31.22	100	233	Peak
5 !	394.50	40.42	-5.58	46.00	52.82	16.28	2.53	31.21	---	---	Peak
6 !	400.10	40.27	-5.73	46.00	52.50	16.42	2.55	31.20	---	---	Peak
7	2382.00	52.30	-21.70	74.00	49.20	32.00	5.47	34.38	198	12	Peak
8	2382.00	40.88	-13.12	54.00	37.78	32.00	5.47	34.38	198	12	Average
9 @	2462.00	96.23			93.15	32.07	5.40	34.39	198	12	Average
10 X	2462.00	106.04			102.96	32.07	5.40	34.39	198	12	Peak
11	2483.50	46.39	-7.61	54.00	43.32	32.09	5.38	34.40	198	12	Average
12	2483.50	65.07	-8.93	74.00	62.00	32.09	5.38	34.40	198	12	Peak
13	8445.00	54.04	-19.96	74.00	43.51	35.69	10.14	35.30	186	70	Peak
14	8445.00	39.79	-14.21	54.00	29.26	35.69	10.14	35.30	186	70	Average
15	9846.00	45.22	-28.78	74.00	79.49	-9.63	10.89	35.53	---	---	Peak



Test Mode :	Mode 6	Temperature :	29~30°C
Test Channel :	11	Relative Humidity :	39~40%
Test Engineer :	Kay Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Trace: (Discrete)
 Site : 03CH07-HV
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 971335

	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	21.42	-18.58	40.00	32.58	19.90	0.64	31.70	---	---	Peak
2	83.73	12.01	-27.99	40.00	34.60	8.08	1.03	31.70	---	---	Peak
3	106.41	11.88	-31.62	43.50	31.18	11.20	1.20	31.69	---	---	Peak
4	394.50	38.76	-7.24	46.00	51.16	16.28	2.53	31.21	100	100	Peak
5	411.30	37.39	-8.61	46.00	49.36	16.61	2.61	31.19	---	---	Peak
6	419.00	38.01	-7.99	46.00	49.78	16.75	2.66	31.18	---	---	Peak
7	2390.00	46.62	-27.38	74.00	43.52	32.02	5.46	34.38	100	203	Peak
8	2390.00	36.12	-17.88	54.00	33.03	32.02	5.46	34.38	100	203	Average
9 @	2462.00	91.60			88.52	32.07	5.40	34.39	100	203	Average
10 X	2462.00	101.74			98.66	32.07	5.40	34.39	100	203	Peak
11	2483.50	44.30	-9.70	54.00	41.23	32.09	5.38	34.40	100	203	Average
12	2483.50	62.55	-11.45	74.00	59.48	32.09	5.38	34.40	100	203	Peak
13	7002.00	54.06	-19.94	74.00	43.45	35.50	10.11	35.00	100	231	Peak
14	7002.00	39.95	-14.05	54.00	29.34	35.50	10.11	35.00	100	231	Average
15	9848.00	48.47	-25.53	74.00	82.74	-9.63	10.89	35.53	100	36	Peak
16	9848.00	32.29	-21.71	54.00	66.57	-9.63	10.89	35.53	100	36	Average



3.8 Antenna Requirements

3.8.1 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.

3.8.2 Antenna Connected Construction

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

3.8.3 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. 23, 2009	Jun. 22, 2010	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)
GPS Base Station	T&E	GS-50	N/A	N/A	N/A	N/A	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	00075962	1G~18GHz	Aug. 18, 2008	Aug. 17, 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	00066584	1G~18GHz	Aug. 06, 2008	Aug. 05, 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)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	BBHA9170251	15G~40GHz	Oct. 16, 2008	Oct. 15, 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
President, Taiwan Accreditation Foundation
Date : April 17, 2009

Pl, 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 EP971335-01 as below.