



FCC RF Test Report

APPLICANT : Acer Inc.
EQUIPMENT : WLAN Module
BRAND NAME : Acer, Gateway, PackardBell
MODEL NAME : AR5B93
FCC ID : HLZ-AR5B93
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was installed into Notebook Computer (Brand Name: Acer, Gateway, PackardBell, Model Name: NAV50, NAV60) during the test.

The product was received on Oct. 21, 2009 and completely tested on Nov. 13, 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
FR902108-01	Rev. 01	Initial issue of report	Nov. 18, 2009



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.2	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 4.5 dB at 23.126 MHz
3.3	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.04 dB at 2390.00 MHz
3.4	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Acer Inc.

8F., No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Taipei Hsien 221, Taiwan, R.O.C.

1.2 Manufacturer

1. Compal Electronics (China) Co., Ltd.

No. 988, Tong Feng East Rd., Kunshan Economics & Technical Development Zone, Kunshan, Jiangsu, P.R. China

2. Compal Information (Kunshan) Co., Ltd.

The Third Street, Kunshan Export Processing Zone, Jiangsu, P.R. China

3. Compal Information Technology (Kunshan) Co., Ltd.

No. 58, The 1st Street, Kunshan Export Processing Zone, Jiangsu, P.R. China

4. Compal Electronics Technology (Kunshan) Co., Ltd.

No. 25, The Third Street, Kunshan Export Processing Zone, Jiangsu, P.R. China

5. Kunshang Botai Electronics Co., Ltd.

No. 988, Tong Feng East Rd., Kunshan Economic & Technical Development Zone, Kunshan, Jiangsu, P.R. China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	WLAN Module
Brand Name	Acer, Gateway, PackardBell
Model Name	AR5B93
FCC ID	HLZ-AR5B93
Host (Notebook Computer)	Brand Name : Acer, Gateway, PackardBell Model Name : NAV50, NAV60 HW Version : L02 (MB) SW Version : V0.07_ClkGen (BIOS)
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Channel Spacing	5 MHz
Type of Antenna Connector	IPEX
Antenna Type	Main Antenna : PIFA Antenna with gain -2.68 dBi Aux. Antenna : PIFA Antenna with gain -2.92 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

Remark: This test report recorded only product characteristics and test results of Digital Transmission System (DTS).

List of Accessory for Host (Notebook Computer):

Specification of Accessory		
AC Adapter	Brand Name	HIPRO
	Model Name	HP-A0301R3
	Power Rating	I/P:100-240Vac, 50-60Hz, 1A; O/P: 19Vdc, 1.58A, 30W
	DC Power Cord Type	1.5 meter shielded cable without ferrite core
Battery	Brand Name	Panasonic
	Model Name	UM09G51
	Power Rating	10.8Vdc, 2200mAh, 24Wh
	Type	Li-ion
WLAN Module	Brand Name	Atheros
	Model Name	AR5B93
Bluetooth Module	Brand Name	FOXCONN
	Model Name	BCM92046

Remark: The above information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description of the host (Notebook Computer).

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	03CH07HY	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	KA2DIR628A2	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
4.	Earphone	Ergotech	ET-E200	FCC DoC	Unshielded, 1.8 m	N/A
5.	Earphone	Sampo	EK-Y652CS	FCC DoC	Shielded, 1.8 m	N/A
6.	USB Cable	Apple	N/A	N/A	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency (MHz)	2.4GHz 802.11b RF Power (dBm)		
		At DSSS Data Rate: 1 Mbps		
		Port A	Port B	Port A+B
CH 01	2412 MHz	14.52	16.73	18.77
CH 06	2437 MHz	13.97	16.56	18.47
CH 11	2462 MHz	10.85	14.07	15.76

Channel	Frequency (MHz)	2.4GHz 802.11g RF Power (dBm)			2.4GHz 802.11n (BW 20MHz) RF Power (dBm)		
		At OFDM Data Rate: 6 Mbps			At OFDM Data Rate: 6.5M bps		
		Port A	Port B	Port A+B	Port A	Port B	Port A+B
CH 01	2412 MHz	18.07	19.24	21.70	17.62	19.34	21.57
CH 06	2437 MHz	19.42	20.82	23.19	19.50	20.66	23.13
CH 11	2462 MHz	17.68	19.24	21.54	17.73	19.15	21.51

Channel	Frequency (MHz)	2.4GHz 802.11n (BW 40MHz) RF Power (dBm)		
		At OFDM Data Rate: 13.5M bps		
		Port A	Port B	Port A+B
CH 03	2422 MHz	17.56	15.63	19.71
CH 06	2437 MHz	19.32	21.06	23.29
CH 09	2452 MHz	16.06	18.29	20.33

Remark:

1. The EUT is programmed to transmit signals continuously for all testing.
2. The data rates are set in 1Mbps at DSSS for 802.11b modes and 13.5Mbps at OFDM for 802.11n (BW40MHz) modes; only these modes were chosen for the complete radiated spurious emission tests due to the maximum RF power. For 802.11g and 802.11n (BW 20MHz) modes, only the frequency band edges tests were verified.



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).

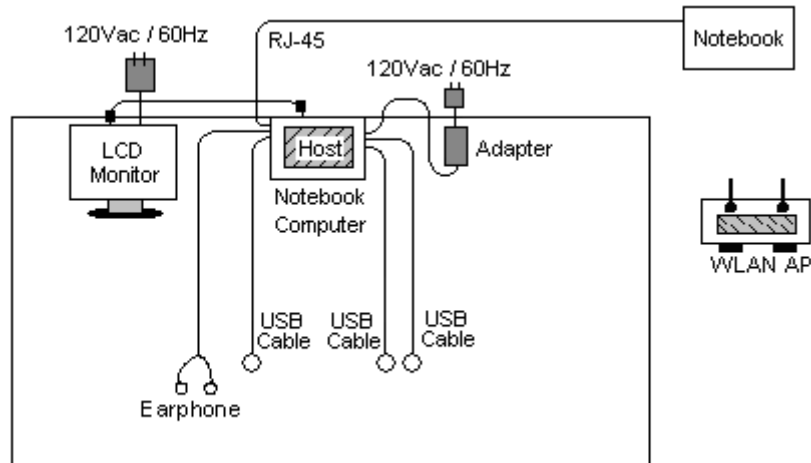
Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

The following table is showing the total pre-scanned test modes, and the worst modes are recorded in this report only.

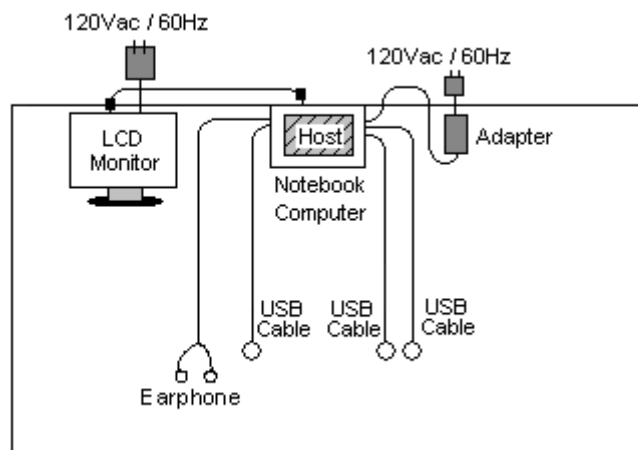
Test Cases	
Test Item	802.11b (Modulation : DSSS) 802.11g/n (Modulation : OFDM)
Radiated TCs	Mode 1: 802.11b_CH01_2412 MHz Mode 2: 802.11b_CH06_2437 MHz Mode 3: 802.11b_CH11_2462 MHz Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n_CH01_2412 MHz (BW 20MHz) Mode 8: 802.11n_CH06_2437 MHz (BW 20MHz) Mode 9: 802.11n_CH11_2462 MHz (BW 20MHz) Mode 10: 802.11n_CH03_2422 MHz (BW 40MHz) Mode 11: 802.11n_CH06_2437 MHz (BW 40MHz) Mode 12: 802.11n_CH09_2452 MHz (BW 40MHz)
AC Conducted Emission	WLAN Link + TC + Adapter
Remark: 1. TC stands for Test Configuration, and consists of USB cable, LCD monitor, earphone, and RJ-45. 2. Only the radiated emission and conducted emission tests of the WLAN Module on this Notebook Computer was performed in this report and the conducted test cases can be referred to the integrated WLAN module (Brand Name: Atheros / Model Name: AR5B93 / FCC ID: PPD-AR5B93 / CCS Report No. 81203004) report.	

2.3 Connection Diagram of Test System

<Conducted Emission Test>



<Radiated Emission Test>



Note: The EUT is a WLAN module which was installed into the host notebook computer (Brand Name: Acer, Gateway, PackardBell, Model Name: NAV50, NAV60) during the test.

2.4 RF Utility

The programmed RF utility "ART", 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 Band Edges Measurement

3.1.1 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.

3.1.2 Measuring Instruments

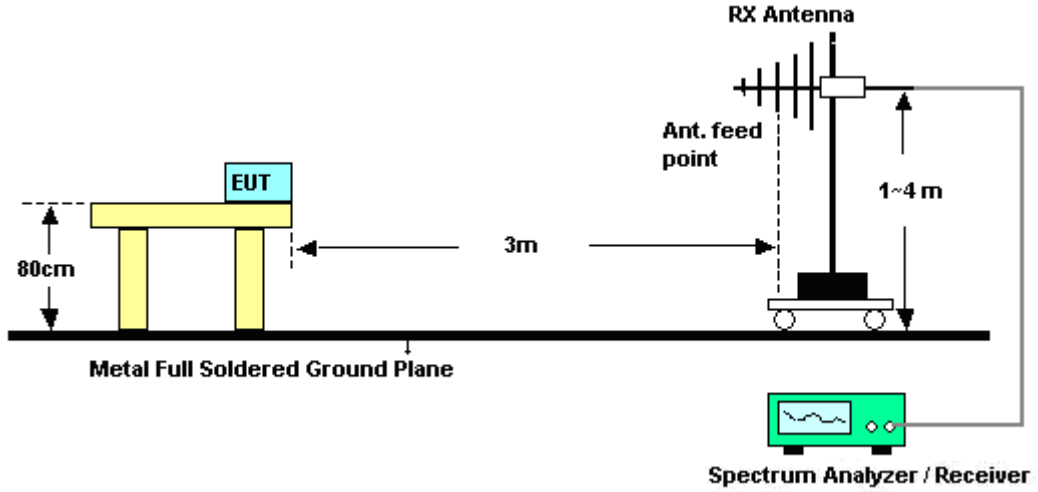
See list of measuring instruments of this test report.

3.1.3 Test Procedures

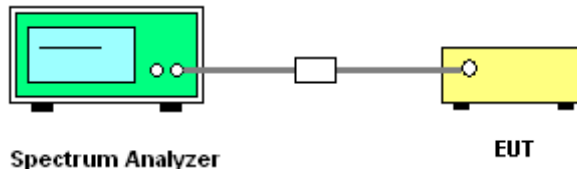
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 1 MHz, Video bandwidth (VBW) > RBW. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band as measured with a 1 MHz 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).

3.1.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>





3.1.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Kay Wu

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	56.42	-17.58	74.00	53.21	32.13	5.46	34.38	102	17	Peak
2390.00	47.17	-6.83	54.00	43.96	32.13	5.46	34.38	102	17	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
2320.45	50.26	-23.74	74.00	47.09	32.02	5.51	34.37	100	258	Peak
2320.45	39.19	-14.81	54.00	36.02	32.02	5.51	34.37	100	258	Average

Test Mode :	Mode 3	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Kay Wu

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
2483.85	48.09	-25.91	74.00	44.83	32.27	5.38	34.40	100	338	Peak
2483.85	38.52	-15.48	54.00	35.26	32.27	5.38	34.40	100	338	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
2496.77	52.94	-21.06	74.00	49.67	32.30	5.37	34.40	130	351	Peak
2496.77	36.57	-17.43	54.00	33.30	32.30	5.37	34.40	130	351	Average



Test Mode :	Mode 4	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Kay Wu

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	66.91	-7.09	74.00	63.70	32.13	5.46	34.38	100	360	Peak
2390.00	48.61	-5.39	54.00	45.40	32.13	5.46	34.38	100	360	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	63.14	-10.866	74.00	59.93	32.13	5.46	34.38	170	160	Peak
2390.00	44.27	-9.73	54.00	41.06	32.13	5.46	34.38	170	160	Average

Test Mode :	Mode 6	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Kay Wu

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	61.29	-12.71	74.00	58.03	32.27	5.38	34.40	100	342	Peak
2483.50	43.39	-10.61	54.00	40.13	32.27	5.38	34.40	100	342	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	62.95	-11.05	74.00	59.69	32.27	5.38	34.40	159	238	Peak
2483.50	44.95	-9.05	54.00	41.69	32.27	5.38	34.40	159	238	Average



Test Mode :	Mode 7	Temperature :	24~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Kay Wu

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	69.40	-4.60	74.00	66.19	32.13	5.46	34.38	102	0	Peak
2390.00	50.43	-3.57	54.00	47.22	32.13	5.46	34.38	102	0	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	63.59	-10.41	74.00	60.38	32.13	5.46	34.38	100	228	Peak
2390.00	45.25	-8.75	54.00	42.04	32.13	5.46	34.38	100	228	Average

Test Mode :	Mode 9	Temperature :	24~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Kay Wu

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	70.80	-3.20	74.00	67.54	32.27	5.38	34.40	100	17	Peak
2483.66	49.10	-4.90	54.00	45.84	32.27	5.38	34.40	100	17	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
2483.66	63.77	-10.23	74.00	60.51	32.27	5.38	34.40	100	128	Peak
2483.66	44.84	-9.16	54.00	41.58	32.27	5.38	34.40	100	128	Average



Test Mode :	Mode 10	Temperature :	24~25°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	42~43%
Test Channel :	03	Test Engineer :	Kay Wu

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
2388.85	65.94	-8.06	74.00	62.73	32.13	5.46	34.38	100	355	Peak
2388.85	49.59	-4.41	54.00	46.38	32.13	5.46	34.38	100	355	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
2381.82	60.35	-13.65	74.00	57.15	32.11	5.47	34.38	101	226	Peak
2381.82	42.30	-11.70	54.00	39.10	32.11	5.47	34.38	101	226	Average

Test Mode :	Mode 12	Temperature :	24~25°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	42~43%
Test Channel :	09	Test Engineer :	Kay Wu

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
2485.37	64.78	-9.22	74.00	61.52	32.27	5.38	34.40	100	254	Peak
2485.37	45.66	-8.34	54.00	42.40	32.27	5.38	34.40	100	254	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	62.41	-11.59	74.00	59.15	32.27	5.38	34.40	132	221	Peak
2483.50	47.45	-6.55	54.00	44.19	32.27	5.38	34.40	132	221	Average

3.2 AC Conducted Emission Measurement

3.2.1 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.

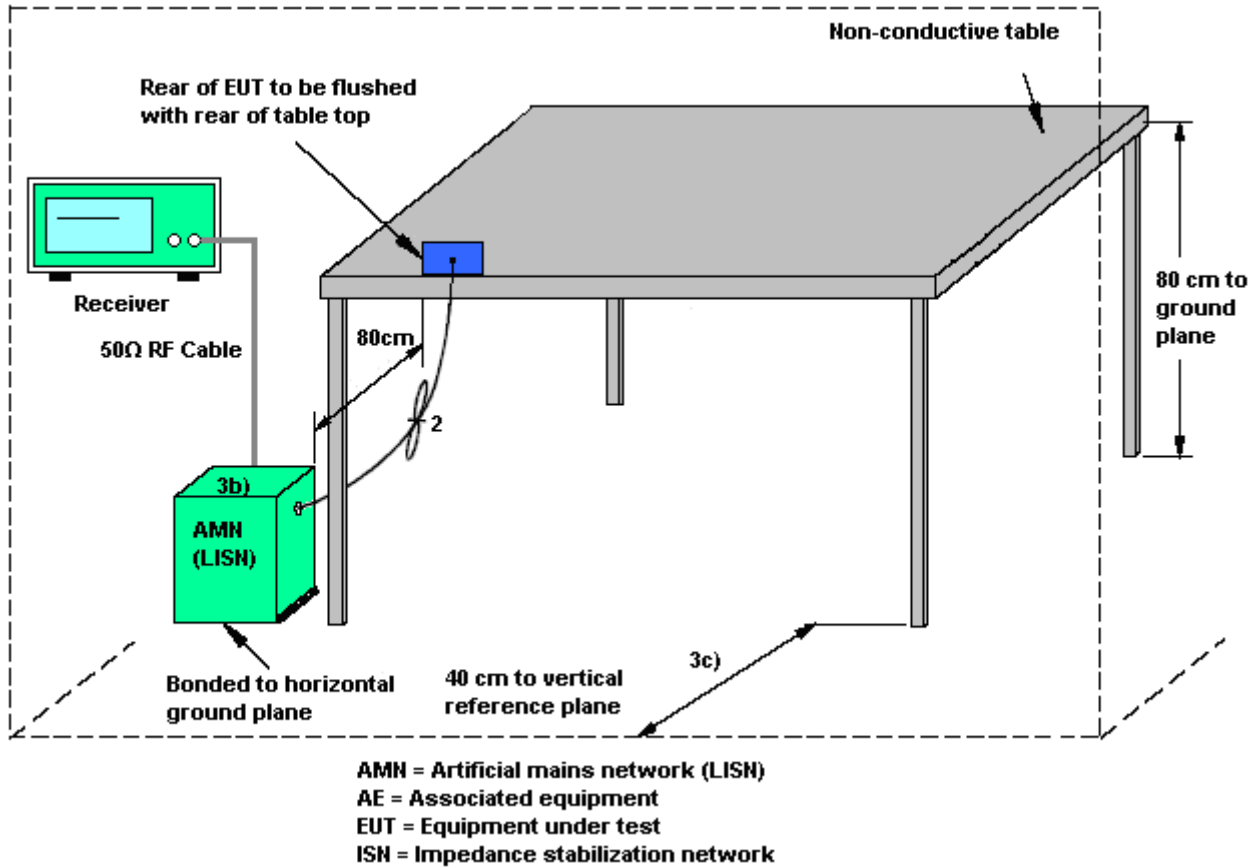
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

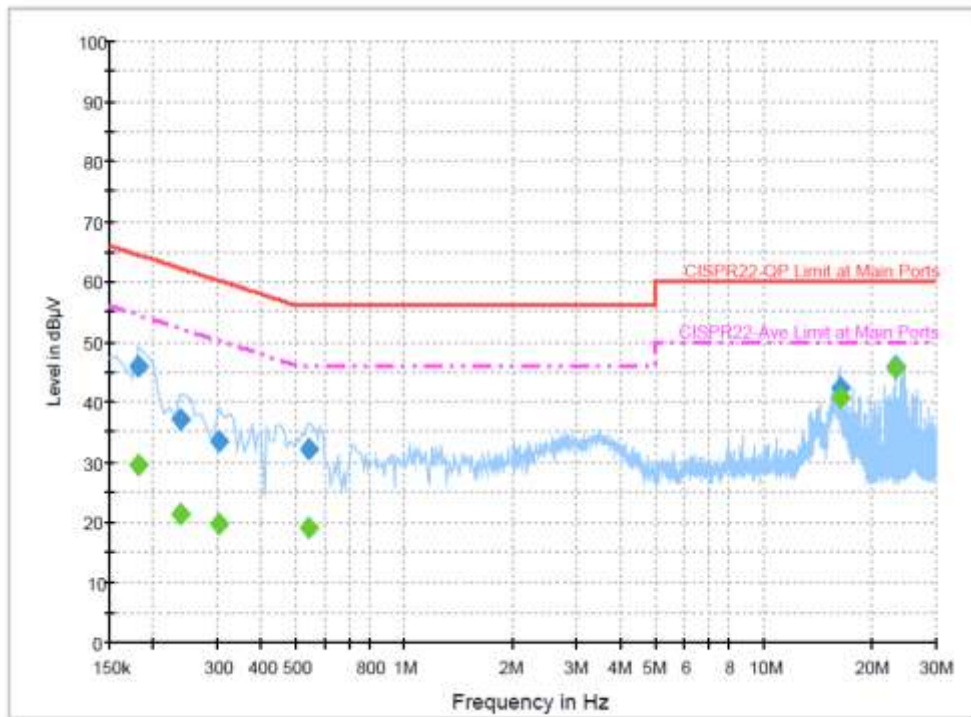
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.2.4 Test Setup



3.2.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Cona Huang	Relative Humidity :	54~57%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + TC + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

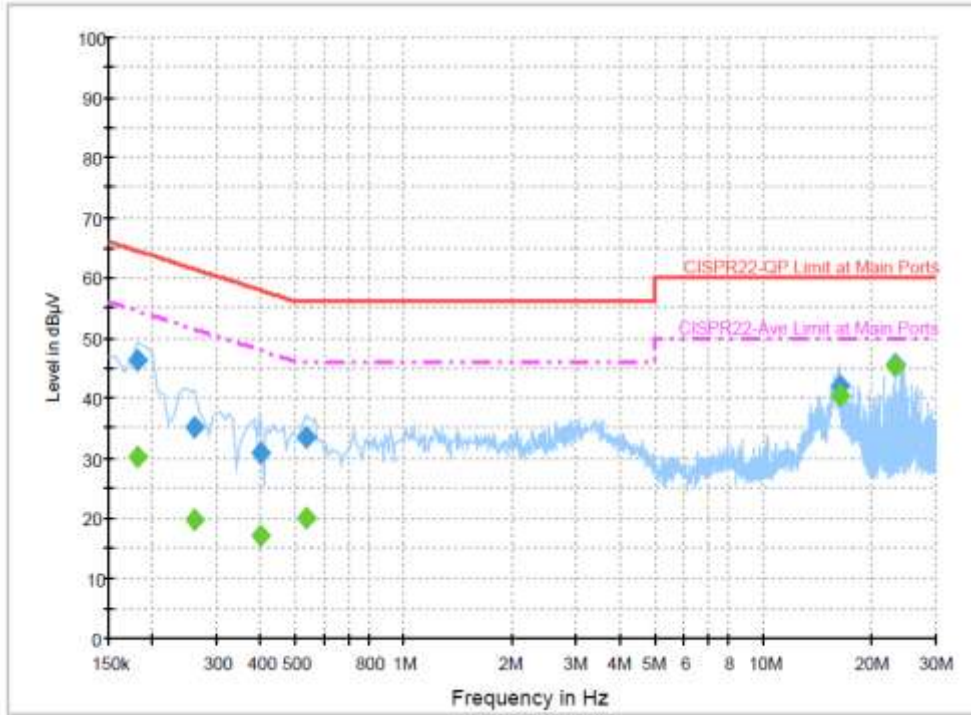
Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	45.9	Off	L1	19.5	18.5	64.4
0.238000	37.2	Off	L1	19.6	25.0	62.2
0.302000	33.4	Off	L1	19.5	26.8	60.2
0.542000	32.3	Off	L1	19.5	23.7	56.0
16.230000	42.2	Off	L1	19.7	17.8	60.0
23.126000	45.9	Off	L1	19.8	14.1	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	29.4	Off	L1	19.5	25.0	54.4
0.238000	21.4	Off	L1	19.6	30.8	52.2
0.302000	19.7	Off	L1	19.5	30.5	50.2
0.542000	19.1	Off	L1	19.5	26.9	46.0
16.230000	40.7	Off	L1	19.7	9.3	50.0
23.126000	45.5	Off	L1	19.8	4.5	50.0



Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Cona Huang	Relative Humidity :	54~57%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + TC + Adapter		
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	46.3	Off	N	19.5	18.1	64.4
0.262000	35.1	Off	N	19.5	26.3	61.4
0.398000	30.8	Off	N	19.5	27.1	57.9
0.534000	33.5	Off	N	19.5	22.5	56.0
16.230000	42.0	Off	N	19.8	18.0	60.0
23.126000	45.7	Off	N	19.9	14.3	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	30.1	Off	N	19.5	24.3	54.4
0.262000	19.5	Off	N	19.5	31.9	51.4
0.398000	17.1	Off	N	19.5	30.8	47.9
0.534000	20.2	Off	N	19.5	25.8	46.0
16.230000	40.2	Off	N	19.8	9.8	50.0
23.126000	45.4	Off	N	19.9	4.6	50.0

3.3 Radiated Emission Measurement

3.3.1 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

3.3.2 Measuring Instruments

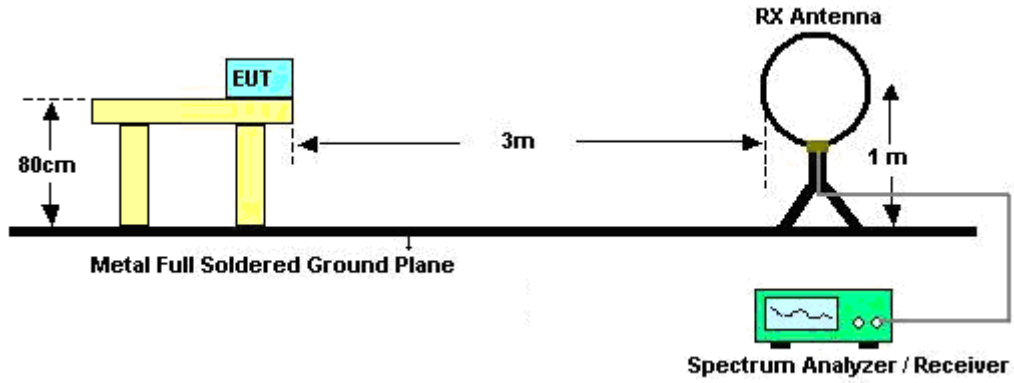
See list of measuring instruments of this test report.

3.3.3 Test Procedures

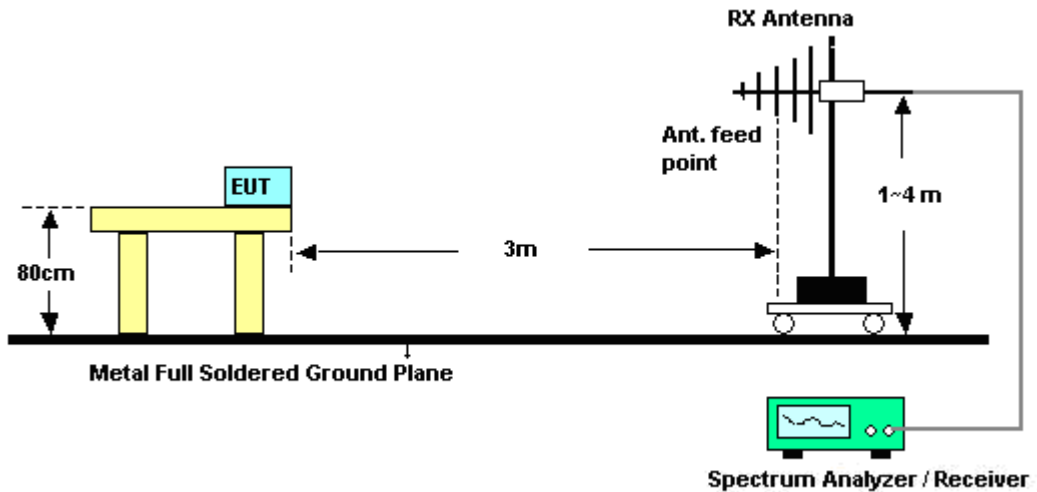
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto;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

3.3.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz





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

Test Engineer :	Kay Wu	Temperature :	24~25°C	
		Relative Humidity :	42~43%	
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.

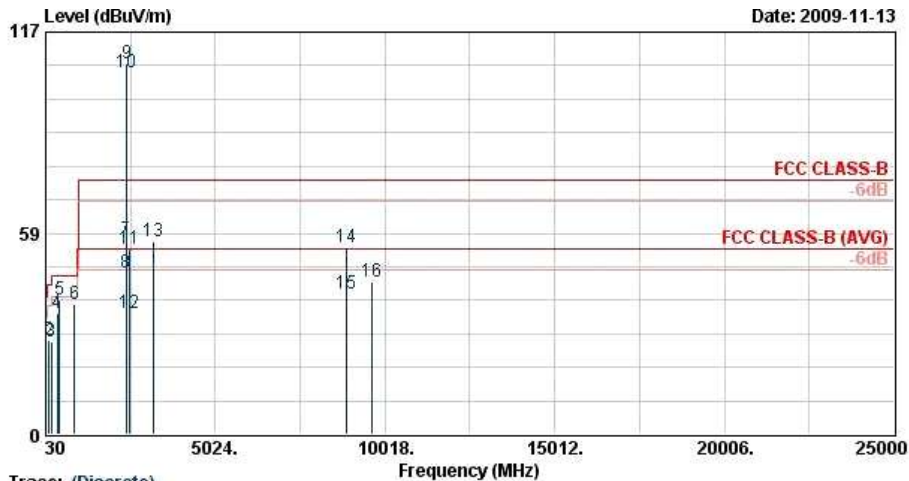
Distance extrapolation factor = $40 \log(\text{specific distance} / \text{test distance})$ (dB);

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



3.3.6 Test Result of Radiated Emission (30MHz ~ 10th Harmonic / 1GHz ~ 3GHz)

Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

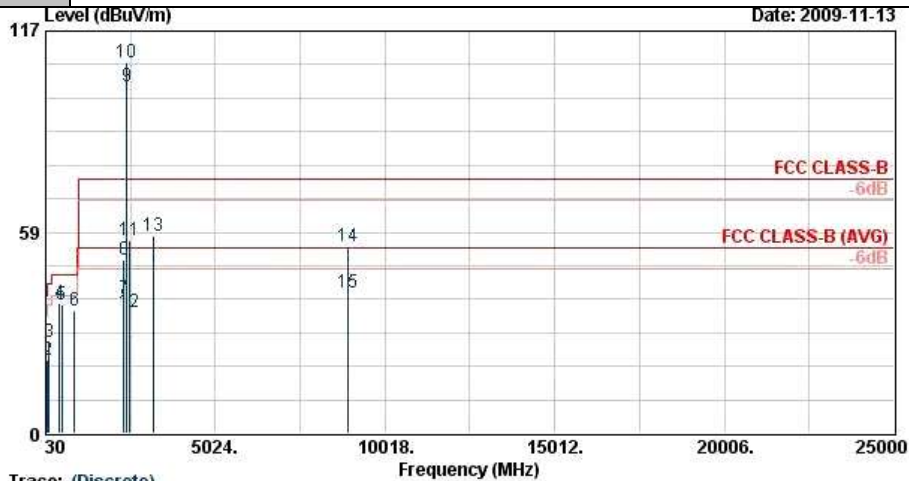


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 1

	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	22.36	-17.64	40.00	33.91	19.51	0.64	31.70	---	---	Peak
2	134.22	27.47	-16.03	43.50	46.01	11.74	1.38	31.67	---	---	Peak
3	186.06	27.10	-16.40	43.50	48.11	8.97	1.64	31.61	---	---	Peak
4	371.40	35.27	-10.73	46.00	48.71	15.36	2.45	31.26	---	---	Peak
5	430.90	39.16	-6.84	46.00	50.86	16.75	2.73	31.17	100	109	Peak
6	867.00	37.67	-8.33	46.00	41.48	22.86	4.03	30.70	---	---	Peak
7	2390.00	56.42	-17.58	74.00	53.21	32.13	5.46	34.38	102	17	Peak
8	2390.00	47.17	-6.83	54.00	43.96	32.13	5.46	34.38	102	17	Average
9 X	2412.00	108.07			104.85	32.16	5.44	34.38	102	17	Peak
10 @	2412.00	105.20			101.98	32.16	5.44	34.38	102	17	Average
11	2492.00	53.88	-20.12	74.00	50.61	32.30	5.37	34.40	102	17	Peak
12	2492.00	35.41	-18.59	54.00	32.14	32.30	5.37	34.40	102	17	Average
13	3213.00	55.91	-18.09	74.00	51.38	33.00	6.17	34.64	100	0	Peak
14	8865.00	54.29	-19.71	74.00	43.15	36.22	10.30	35.37	100	187	Peak
15	8865.00	40.88	-13.12	54.00	29.74	36.22	10.30	35.37	100	187	Average
16	9648.00	44.35	-29.65	74.00	79.27	-10.09	10.74	35.57	100	0	Peak



Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



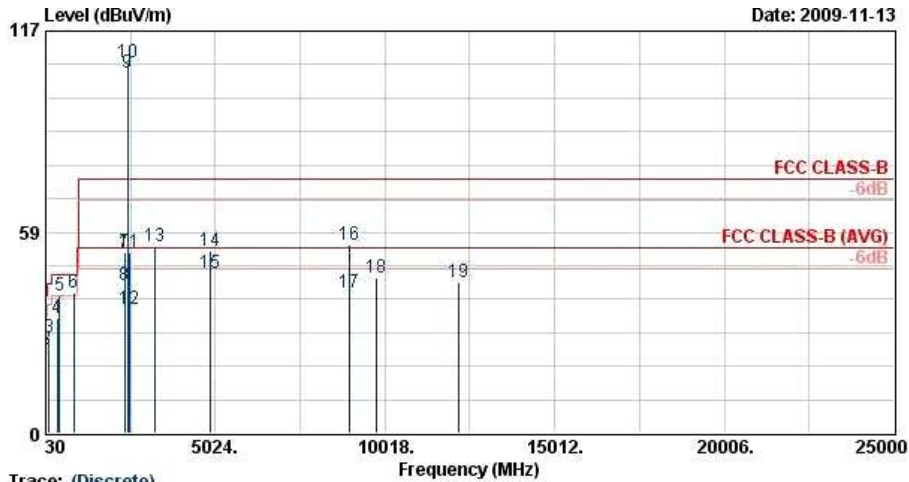
Site :
Condition :
Project :
Mode :

Trace: (Discrete)
: 03CH07-HV
: FCC CLASS-B 3m SHF-EHF HORN VERTICAL
: FR 902108-01
: Mode 1

	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	23.76	-16.24	40.00	35.31	19.51	0.64	31.70	---	---	Peak
2	76.17	21.53	-18.47	40.00	45.03	7.21	0.99	31.70	---	---	Peak
3	122.61	26.57	-16.93	43.50	44.88	12.06	1.31	31.68	---	---	Peak
4	430.90	37.63	-8.37	46.00	49.33	16.75	2.73	31.17	100	179	Peak
5	494.60	37.47	-8.53	46.00	47.59	18.06	2.92	31.11	---	---	Peak
6	867.70	35.58	-10.42	46.00	39.38	22.87	4.03	30.70	---	---	Peak
7	2320.45	39.19	-14.81	54.00	36.02	32.02	5.51	34.37	100	258	Average
8	2320.45	50.26	-23.74	74.00	47.09	32.02	5.51	34.37	100	258	Peak
9 @	2412.00	101.04			97.82	32.16	5.44	34.38	100	258	Average
10 X	2412.00	107.95			104.72	32.16	5.44	34.38	100	258	Peak
11	2500.00	56.08	-17.92	74.00	52.81	32.30	5.37	34.40	100	258	Peak
12	2500.00	35.39	-18.61	54.00	32.12	32.30	5.37	34.40	100	258	Average
13	3213.00	57.38	-16.62	74.00	52.85	33.00	6.17	34.64	100	0	Peak
14	8910.00	54.51	-19.49	74.00	43.34	36.24	10.31	35.38	100	27	Peak
15	8910.00	41.00	-13.00	54.00	29.83	36.24	10.31	35.38	100	27	Average



Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

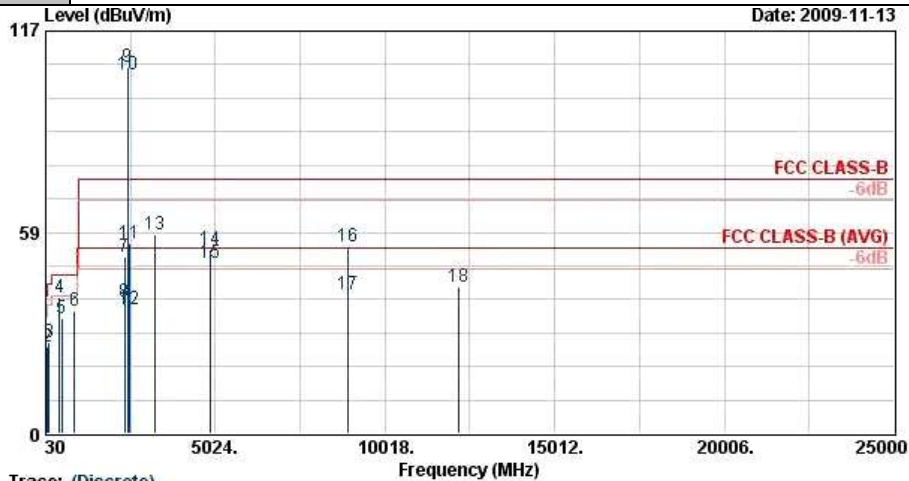


Trace: (Discrete)
 Site : D3CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 2

	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	31.89	27.63	-12.37	40.00	40.27	18.40	0.66	31.70	---	---	Peak
2	40.53	24.45	-15.55	40.00	41.99	13.43	0.73	31.70	---	---	Peak
3	130.98	27.63	-15.87	43.50	46.16	11.77	1.37	31.67	---	---	Peak
4	369.30	33.63	-12.37	46.00	47.14	15.31	2.44	31.26	---	---	Peak
5	433.00	39.97	-6.03	46.00	51.62	16.79	2.73	31.17	---	---	Peak
6 !	864.90	40.92	-5.08	46.00	44.75	22.84	4.02	30.70	100	292	Peak
7	2348.00	52.62	-21.38	74.00	49.43	32.05	5.50	34.37	101	18	Peak
8	2348.00	43.25	-10.75	54.00	40.07	32.05	5.50	34.37	101	18	Average
9 @	2437.00	104.90			101.66	32.22	5.41	34.39	101	18	Average
10 X	2437.00	107.73			104.49	32.22	5.41	34.39	101	18	Peak
11	2486.00	52.65	-21.35	74.00	49.39	32.27	5.38	34.40	101	18	Peak
12	2486.00	36.02	-17.98	54.00	32.76	32.27	5.38	34.40	101	18	Average
13	3246.00	54.56	-19.44	74.00	50.01	33.00	6.20	34.65	100	0	Peak
14	4874.00	52.86	-21.14	74.00	45.46	34.35	7.85	34.80	100	110	Peak
15	4874.00	46.56	-7.44	54.00	39.16	34.35	7.85	34.80	100	110	Average
16	8958.00	55.01	-18.99	74.00	43.81	36.27	10.32	35.39	100	187	Peak
17	8958.00	40.96	-13.04	54.00	29.76	36.27	10.32	35.39	100	187	Average
18	9748.00	45.06	-28.94	74.00	79.67	-9.87	10.81	35.55	100	0	Peak
19	12185.00	43.81	-30.19	74.00	76.71	-10.25	12.19	34.85	100	0	Peak



Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

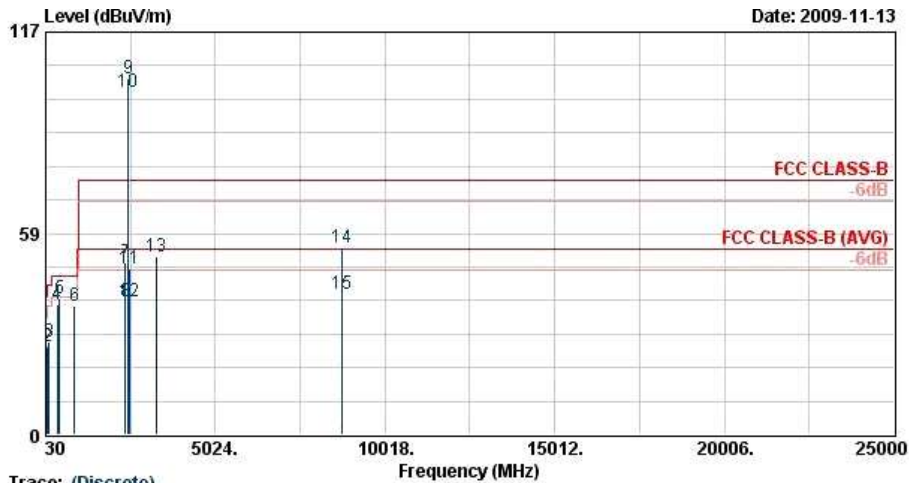


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 902108-01
 Mode : Mode 2

	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	32.96	-7.04	40.00	44.51	19.51	0.64	31.70	---	---	Peak
2	92.37	25.22	-18.28	43.50	46.63	9.17	1.12	31.70	---	---	Peak
3	123.69	26.53	-16.97	43.50	44.98	11.89	1.34	31.68	---	---	Peak
4	433.00	39.36	-6.64	46.00	51.01	16.79	2.73	31.17	100	129	Peak
5	492.50	33.62	-12.39	46.00	43.79	18.02	2.91	31.11	---	---	Peak
6	867.70	35.57	-10.43	46.00	39.36	22.87	4.03	30.70	---	---	Peak
7	2350.00	51.31	-22.69	74.00	48.13	32.05	5.50	34.37	105	8	Peak
8	2350.00	38.21	-15.79	54.00	35.03	32.05	5.50	34.37	105	8	Average
9 X	2437.00	106.49			103.26	32.19	5.43	34.39	105	8	Peak
10 @	2437.00	104.36			101.12	32.22	5.41	34.39	105	8	Average
11	2500.00	55.39	-18.61	74.00	52.12	32.30	5.37	34.40	105	8	Peak
12	2500.00	36.13	-17.87	54.00	32.86	32.30	5.37	34.40	105	8	Average
13	3246.00	57.91	-16.09	74.00	53.36	33.00	6.20	34.65	100	0	Peak
14	4874.00	53.44	-20.56	74.00	46.04	34.35	7.85	34.80	100	103	Peak
15 !	4874.00	49.64	-4.36	54.00	42.24	34.35	7.85	34.80	100	103	Average
16	8910.00	54.55	-19.45	74.00	43.38	36.24	10.31	35.38	100	19	Peak
17	8910.00	40.62	-13.38	54.00	29.45	36.24	10.31	35.38	100	19	Average
18	12185.00	42.52	-31.48	74.00	75.42	-10.21	12.18	34.86	100	0	Peak



Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



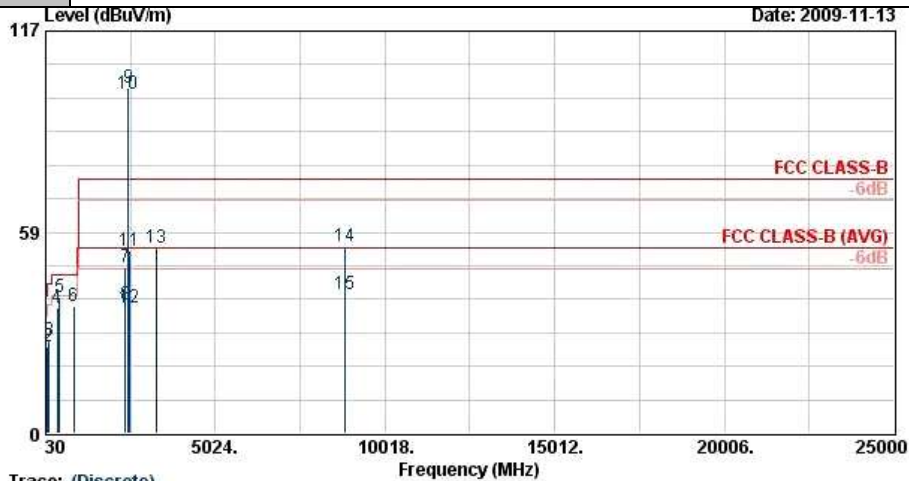
Trace: (Discrete)

Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 3

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	26.04	-13.96	40.00	37.59	19.51	0.64	31.70	---	---	Peak
2	92.37	25.58	-17.92	43.50	46.99	9.17	1.12	31.70	---	---	Peak
3	123.69	27.07	-16.43	43.50	45.51	11.89	1.34	31.68	---	---	Peak
4	371.40	37.72	-8.28	46.00	51.16	15.36	2.45	31.26	---	---	Peak
5	430.90	39.65	-6.35	46.00	51.34	16.75	2.73	31.17	100	183	Peak
6	867.70	37.45	-8.55	46.00	41.25	22.87	4.03	30.70	---	---	Peak
7	2374.00	49.93	-24.07	74.00	46.72	32.11	5.47	34.38	100	338	Peak
8	2374.00	38.57	-15.43	54.00	35.37	32.11	5.47	34.38	100	338	Average
9 X	2462.00	103.45			100.20	32.24	5.40	34.39	100	338	Peak
10 @	2462.00	99.51			96.26	32.24	5.40	34.39	100	338	Average
11	2483.85	48.09	-25.91	74.00	44.83	32.27	5.38	34.40	100	338	Peak
12	2483.85	38.52	-15.48	54.00	35.26	32.27	5.38	34.40	100	338	Average
13	3282.00	51.66	-22.34	74.00	47.08	33.00	6.23	34.66	100	0	Peak
14	8733.00	54.34	-19.66	74.00	43.29	36.14	10.25	35.35	100	174	Peak
15	8733.00	40.80	-13.20	54.00	29.75	36.14	10.25	35.35	100	174	Average



Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

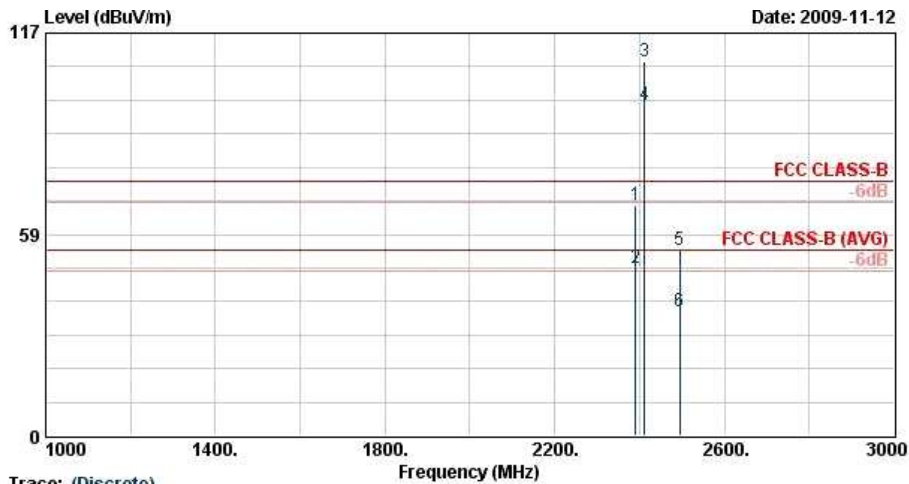


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 902108-01
 Mode : Mode 3

	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	24.88	-15.12	40.00	36.43	19.51	0.64	31.70	---	---	Peak
2	92.37	25.27	-18.23	43.50	46.68	9.17	1.12	31.70	---	---	Peak
3	123.69	26.97	-16.53	43.50	45.42	11.89	1.34	31.68	---	---	Peak
4	369.30	36.34	-9.66	46.00	49.85	15.31	2.44	31.26	---	---	Peak
5	433.00	39.52	-6.48	46.00	51.16	16.79	2.73	31.17	100	292	Peak
6	864.90	36.91	-9.09	46.00	40.74	22.84	4.02	30.70	---	---	Peak
7	2372.00	48.48	-25.52	74.00	45.28	32.11	5.47	34.38	130	351	Peak
8	2372.00	37.56	-16.44	54.00	34.36	32.11	5.47	34.38	130	351	Average
9 X	2462.00	100.48			97.23	32.24	5.40	34.39	130	351	Peak
10 @	2462.00	98.91			95.66	32.24	5.40	34.39	130	351	Average
11	2496.77	52.94	-21.06	74.00	49.67	32.30	5.37	34.40	130	351	Peak
12	2496.77	36.57	-17.43	54.00	33.30	32.30	5.37	34.40	130	351	Average
13	3282.00	53.72	-20.28	74.00	49.14	33.00	6.23	34.66	100	0	Peak
14	8829.00	54.34	-19.66	74.00	43.22	36.20	10.29	35.37	100	108	Peak
15	8829.00	40.59	-13.41	54.00	29.47	36.20	10.29	35.37	100	108	Average



Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		



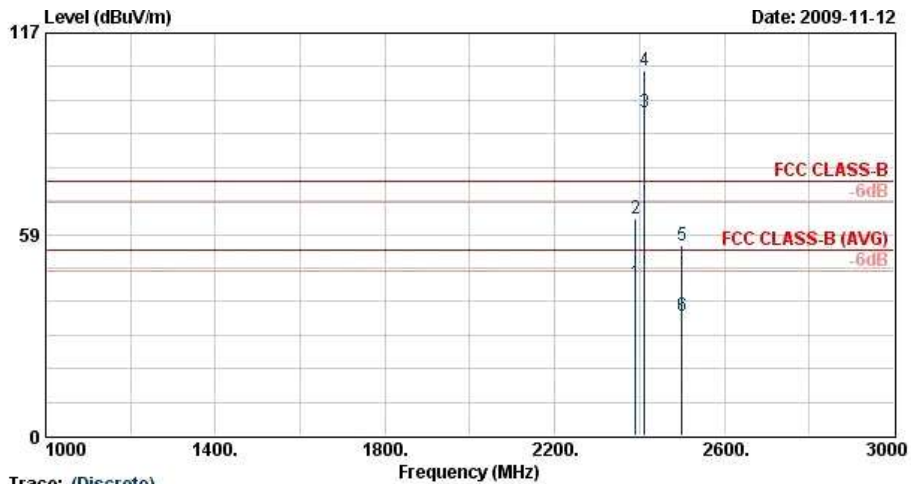
Trace: (Discrete)

Site : D3CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 4

	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	2390.00	66.91	-7.09	74.00	63.70	32.13	5.46	34.38	100	360	Peak
2 !	2390.00	48.61	-5.39	54.00	45.40	32.13	5.46	34.38	100	360	Average
3 X	2412.00	108.52			105.30	32.16	5.44	34.38	100	360	Peak
4 @	2412.00	96.05			92.83	32.16	5.44	34.38	100	360	Average
5	2494.00	53.93	-20.07	74.00	50.66	32.30	5.37	34.40	100	360	Peak
6	2494.00	36.02	-17.98	54.00	32.75	32.30	5.37	34.40	100	360	Average



Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		



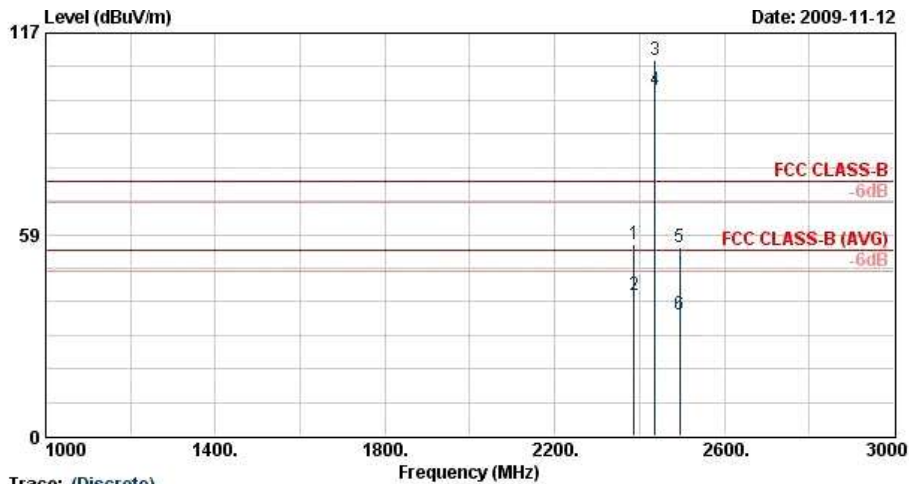
Trace: (Discrete)

Site : D3CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 VERTICAL
 Project : FR 902108-01
 Mode : Mode 4

	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	2390.00	44.27	-9.73	54.00	41.06	32.13	5.46	34.38	170	160	Average
2	2390.00	63.14	-10.86	74.00	59.93	32.13	5.46	34.38	170	160	Peak
3 @	2412.00	93.98			90.76	32.16	5.44	34.38	170	160	Average
4 X	2412.00	106.22			102.99	32.16	5.44	34.38	170	160	Peak
5	2500.00	55.05	-18.95	74.00	51.78	32.30	5.37	34.40	170	160	Peak
6	2500.00	34.89	-19.11	54.00	31.62	32.30	5.37	34.40	170	160	Average



Test Mode :	Mode 5	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		



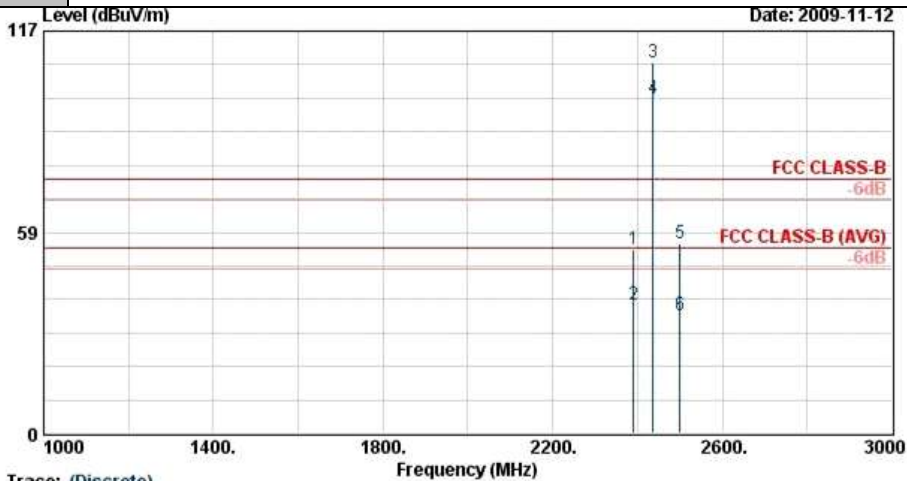
Trace: (Discrete)

Site : 03CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 5

	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	2388.00	55.59	-18.41	74.00	52.38	32.13	5.46	34.38	103	345	Peak
2	2388.00	41.01	-12.99	54.00	37.80	32.13	5.46	34.38	103	345	Average
3 X	2437.00	109.12			105.89	32.19	5.43	34.39	103	345	Peak
4 @	2437.00	100.46			97.22	32.22	5.41	34.39	103	345	Average
5	2494.00	54.68	-19.32	74.00	51.41	32.30	5.37	34.40	103	345	Peak
6	2494.00	35.17	-18.83	54.00	31.90	32.30	5.37	34.40	103	345	Average



Test Mode :	Mode 5	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		

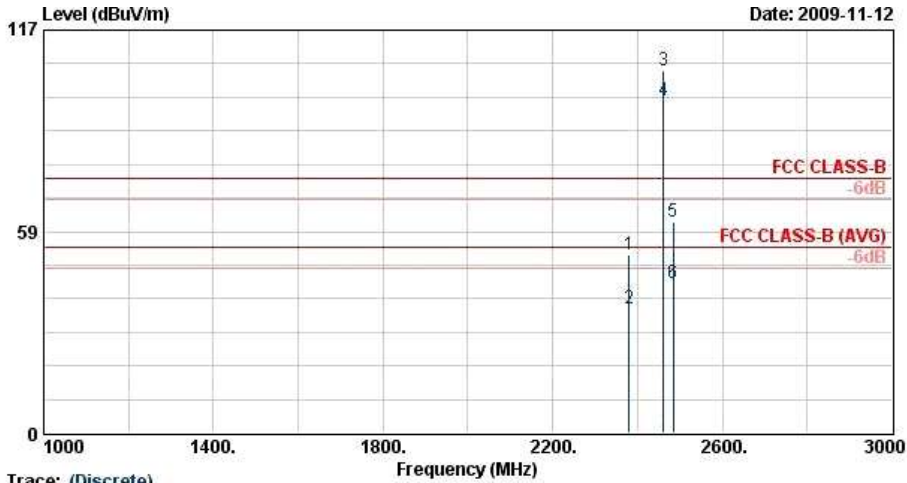


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 VERTICAL
 Project : FR 902108-01
 Mode : Mode 5

	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	2390.00	53.62	-20.38	74.00	50.41	32.13	5.46	34.38	100	232	Peak
2	2390.00	37.35	-16.65	54.00	34.14	32.13	5.46	34.38	100	232	Average
3 X	2437.00	107.81			104.58	32.19	5.43	34.39	100	232	Peak
4 @	2437.00	97.29			94.05	32.22	5.41	34.39	100	232	Average
5	2500.00	55.31	-18.69	74.00	52.04	32.30	5.37	34.40	100	232	Peak
6	2500.00	34.45	-19.55	54.00	31.18	32.30	5.37	34.40	100	232	Average



Test Mode :	Mode 6	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		



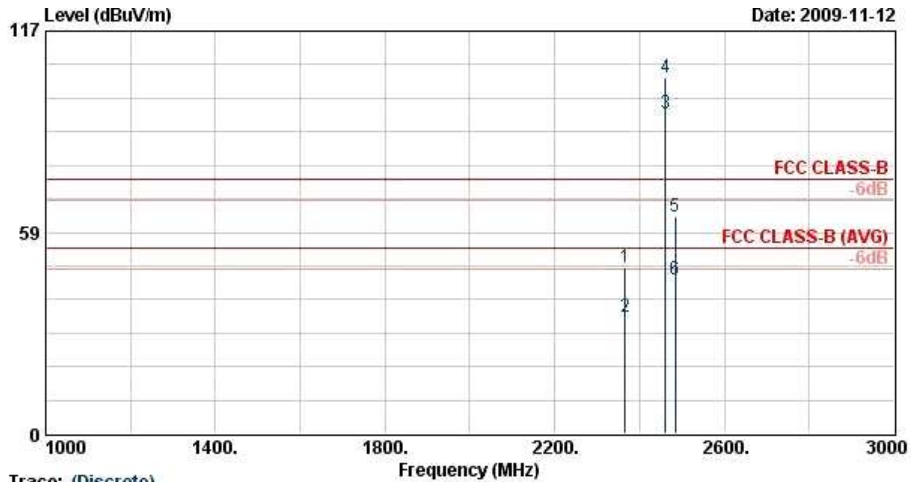
Trace: (Discrete)

Site : 03CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 6

	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	2380.00	51.71	-22.29	74.00	48.51	32.11	5.47	34.38	100	342	Peak
2	2380.00	36.04	-17.96	54.00	32.84	32.11	5.47	34.38	100	342	Average
3 X	2462.00	105.46			102.21	32.24	5.40	34.39	100	342	Peak
4 @	2462.00	96.34			93.09	32.24	5.40	34.39	100	342	Average
5	2483.50	61.29	-12.71	74.00	58.03	32.27	5.38	34.40	100	342	Peak
6	2483.50	43.39	-10.61	54.00	40.13	32.27	5.38	34.40	100	342	Average



Test Mode :	Mode 6	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		



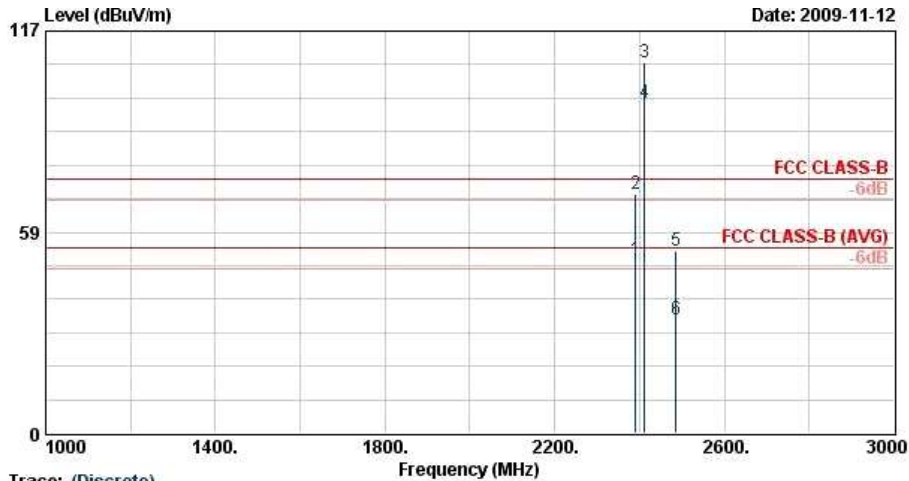
Trace: (Discrete)

Site : D3CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 VERTICAL
 Project : FR 902108-01
 Mode : Mode 6

	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	2366.00	48.48	-25.52	74.00	45.29	32.08	5.49	34.37	159	238	Peak
2	2366.00	34.01	-19.99	54.00	30.82	32.08	5.49	34.37	159	238	Average
3 @	2462.00	93.19			89.94	32.24	5.40	34.39	159	238	Average
4 X	2462.00	103.66			100.41	32.24	5.40	34.39	159	238	Peak
5	2483.50	62.95	-11.05	74.00	59.69	32.27	5.38	34.40	159	238	Peak
6	2483.50	44.95	-9.05	54.00	41.69	32.27	5.38	34.40	159	238	Average



Test Mode :	Mode 7	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		

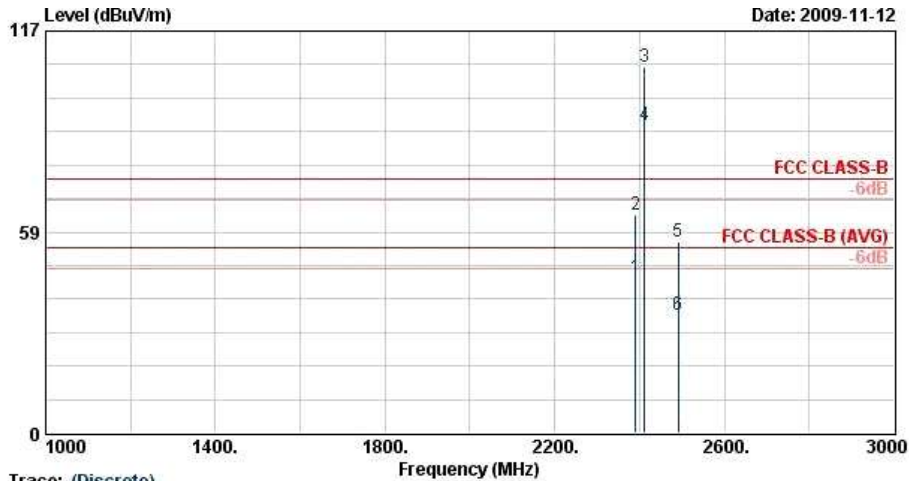


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 7

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 !	2390.00	50.43	-3.57	54.00	47.22	32.13	5.46	34.38	102	0 Average
2 !	2390.00	69.40	-4.60	74.00	66.19	32.13	5.46	34.38	102	0 Peak
3 X	2412.00	108.04			104.82	32.16	5.44	34.38	102	0 Peak
4 @	2412.00	96.07			92.85	32.16	5.44	34.38	102	0 Average
5	2486.00	53.28	-20.72	74.00	50.02	32.27	5.38	34.40	102	0 Peak
6	2486.00	33.10	-20.90	54.00	29.84	32.27	5.38	34.40	102	0 Average



Test Mode :	Mode 7	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		

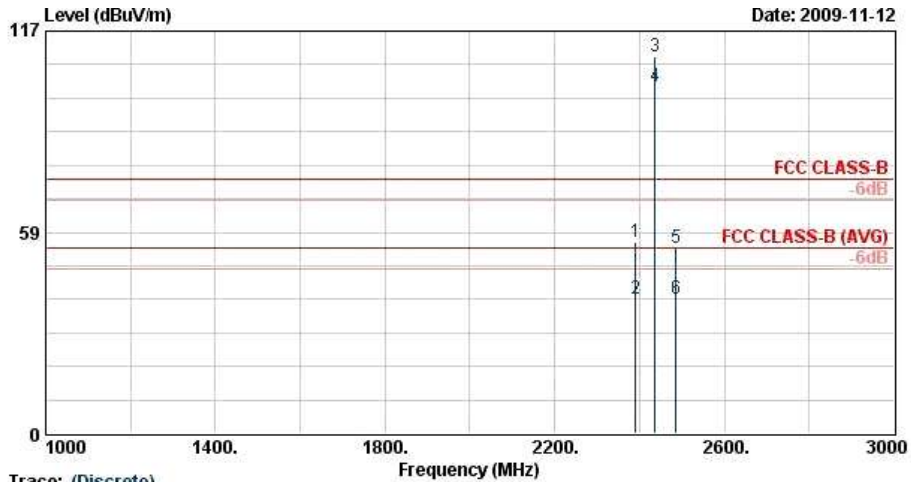


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 VERTICAL
 Project : FR 902108-01
 Mode : Mode 7

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	2390.00	45.25	-8.75	54.00	42.04	32.13	5.46	34.38	100	228 Average
2	2390.00	63.59	-10.41	74.00	60.38	32.13	5.46	34.38	100	228 Peak
3 X	2412.00	106.65			103.42	32.16	5.44	34.38	100	228 Peak
4 @	2412.00	89.54			86.32	32.16	5.44	34.38	100	228 Average
5	2492.00	55.49	-18.51	74.00	52.22	32.30	5.37	34.40	100	228 Peak
6	2492.00	34.31	-19.69	54.00	31.04	32.30	5.37	34.40	100	228 Average



Test Mode :	Mode 8	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		



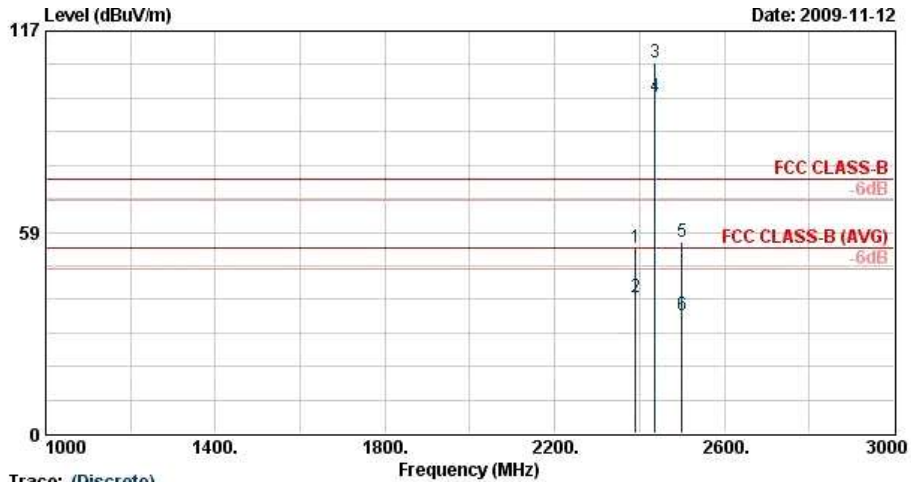
Trace: (Discrete)

Site : 03CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 6

	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	2390.00	55.56	-18.44	74.00	52.34	32.13	5.46	34.38	100	343	Peak
2	2390.00	39.14	-14.86	54.00	35.93	32.13	5.46	34.38	100	343	Average
3 X	2437.00	109.39			106.16	32.19	5.43	34.39	100	343	Peak
4 @	2437.00	100.78			97.54	32.22	5.41	34.39	100	343	Average
5	2486.00	53.97	-20.03	74.00	50.71	32.27	5.38	34.40	100	343	Peak
6	2486.00	39.20	-14.80	54.00	35.94	32.27	5.38	34.40	100	343	Average



Test Mode :	Mode 8	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		



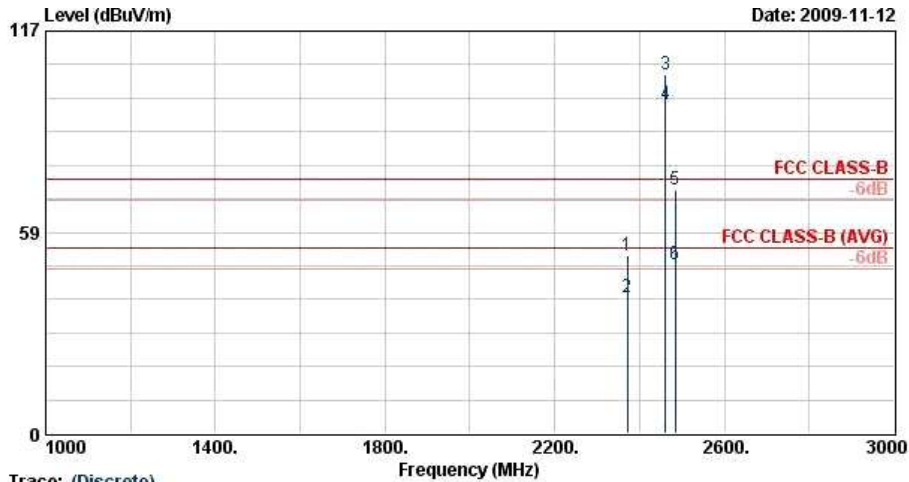
Trace: (Discrete)

Site : D3CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 VERTICAL
 Project : FR 902108-01
 Mode : Mode 8

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	2390.00	54.14	-19.86	74.00	50.93	32.13	5.46	34.38	133	151 Peak
2	2390.00	39.62	-14.38	54.00	36.41	32.13	5.46	34.38	133	151 Average
3 X	2437.00	107.76			104.53	32.19	5.43	34.39	133	151 Peak
4 @	2437.00	97.68			94.44	32.22	5.41	34.39	133	151 Average
5	2500.00	55.54	-18.46	74.00	52.27	32.30	5.37	34.40	133	151 Peak
6	2500.00	34.45	-19.55	54.00	31.18	32.30	5.37	34.40	133	151 Average



Test Mode :	Mode 9	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		

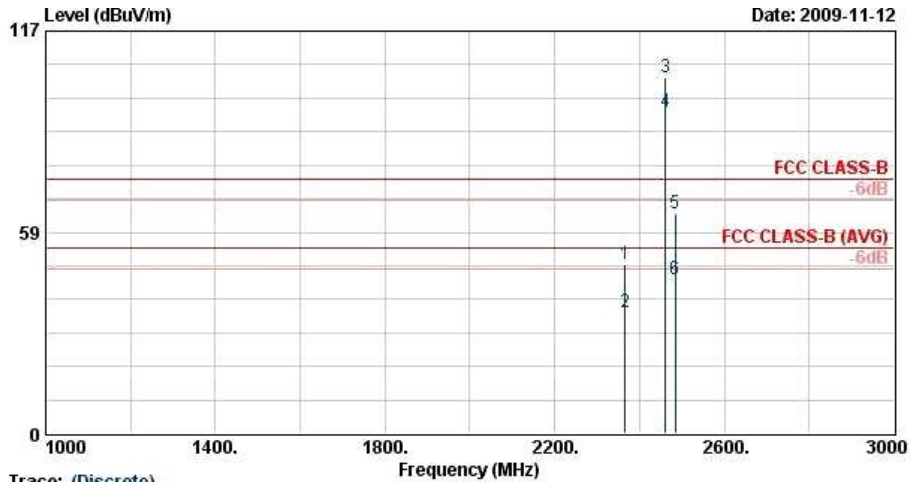


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 9

	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	2372.00	51.81	-22.19	74.00	48.61	32.11	5.47	34.38	100	17	Peak
2	2372.00	39.41	-14.59	54.00	36.21	32.11	5.47	34.38	100	17	Average
3 X	2462.00	104.28			101.03	32.24	5.40	34.39	100	17	Peak
4 @	2462.00	95.47			92.22	32.24	5.40	34.39	100	17	Average
5 !	2483.66	70.80	-3.20	74.00	67.54	32.27	5.38	34.40	100	17	Peak
6 !	2483.66	49.10	-4.90	54.00	45.84	32.27	5.38	34.40	100	17	Average



Test Mode :	Mode 9	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals which can be ignored.		



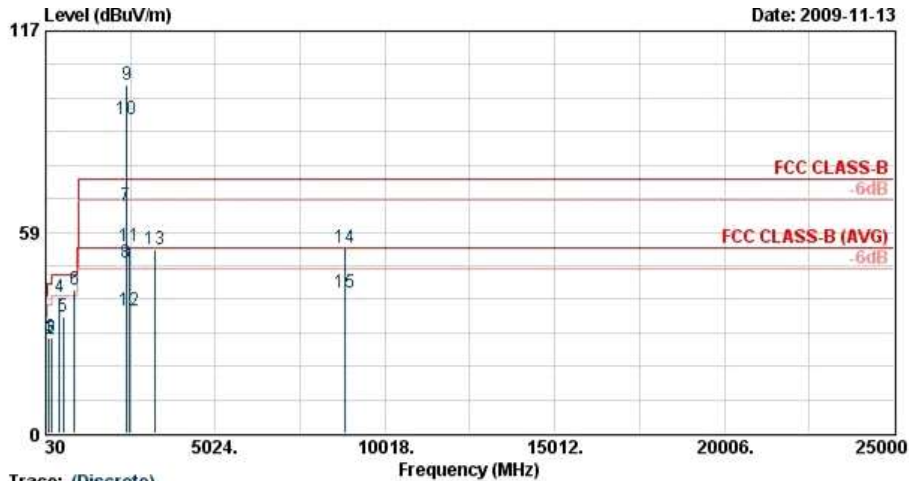
Trace: (Discrete)

Site : D3CH07-HY
 Condition : FCC CLASS-B 3m HF-ANT_090824 VERTICAL
 Project : FR 902108-01
 Mode : Mode 9

	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	2366.00	49.01	-24.99	74.00	45.82	32.08	5.49	34.37	100	128	Peak
2	2366.00	35.38	-18.62	54.00	32.19	32.08	5.49	34.37	100	128	Average
3 X	2462.00	103.56			100.31	32.24	5.40	34.39	100	128	Peak
4 X	2462.00	93.63			90.38	32.24	5.40	34.39	100	128	Average
5	2483.66	63.77	-10.23	74.00	60.51	32.27	5.38	34.40	100	128	Peak
6	2483.66	44.84	-9.16	54.00	41.58	32.27	5.38	34.40	100	128	Average



Test Mode :	Mode 10	Temperature :	24~25°C
Test Channel :	03	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

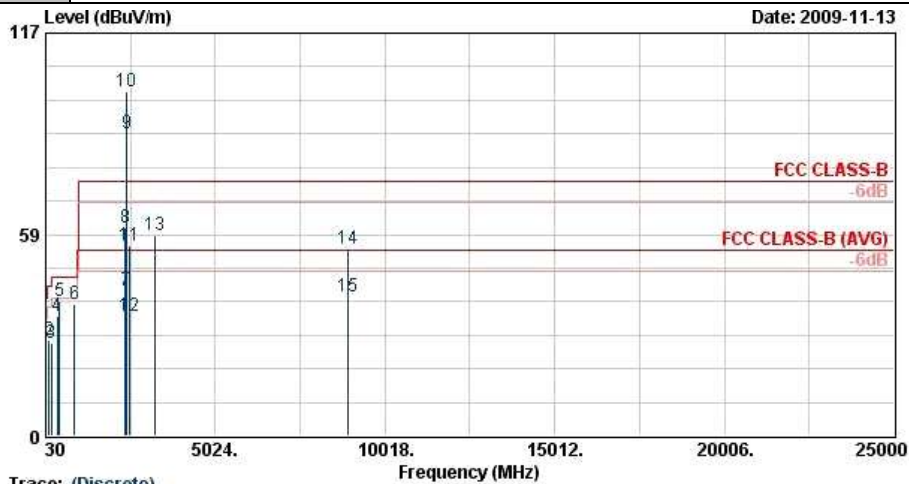


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 10

	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	134.22	27.84	-15.66	43.50	46.38	11.74	1.38	31.67	---	---	Peak
2	186.06	27.29	-16.21	43.50	48.30	8.97	1.64	31.61	---	---	Peak
3	196.86	27.62	-15.88	43.50	48.70	8.84	1.69	31.60	---	---	Peak
4	430.90	39.67	-6.33	46.00	51.37	16.75	2.73	31.17	---	---	Peak
5	556.90	34.05	-11.95	46.00	42.73	19.24	3.11	31.04	---	---	Peak
6 !	867.70	41.94	-4.06	46.00	45.73	22.87	4.03	30.70	100	302	Peak
7	2388.85	65.94	-8.06	74.00	62.73	32.13	5.46	34.38	100	355	Peak
8 !	2388.85	49.59	-4.41	54.00	46.38	32.13	5.46	34.38	100	355	Average
9 X	2422.00	101.38			98.16	32.16	5.44	34.38	100	355	Peak
10 @	2422.00	91.54			88.31	32.19	5.43	34.39	100	355	Average
11	2494.00	54.41	-19.59	74.00	51.14	32.30	5.37	34.40	100	355	Peak
12	2494.00	35.65	-18.35	54.00	32.38	32.30	5.37	34.40	100	355	Average
13	3225.00	53.51	-20.49	74.00	48.97	33.00	6.19	34.64	100	0	Peak
14	8850.00	54.13	-19.87	74.00	43.00	36.21	10.29	35.37	100	58	Peak
15	8850.00	40.78	-13.22	54.00	29.65	36.21	10.29	35.37	100	58	Average



Test Mode :	Mode 10	Temperature :	24~25°C
Test Channel :	03	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

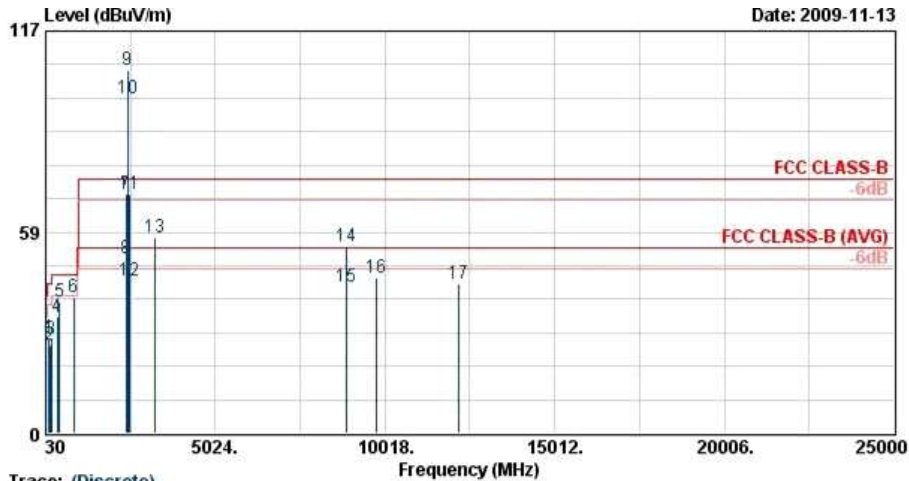


Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 902108-01
 Mode : Mode 10

	Trace: (Discrete)	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	Freq	Level	Limit	Level	Factor	Loss	Factor	Pos	Pos	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	30.00	23.91	-16.09	40.00	35.46	19.51	0.64	31.70	---	Peak
2	123.69	27.72	-15.78	43.50	46.16	11.89	1.34	31.68	---	Peak
3	186.06	26.97	-16.53	43.50	47.97	8.97	1.64	31.61	---	Peak
4	369.30	34.62	-11.38	46.00	48.13	15.31	2.44	31.26	---	Peak
5	433.00	38.98	-7.02	46.00	50.62	16.79	2.73	31.17	100	43 Peak
6	867.70	38.31	-7.69	46.00	42.11	22.87	4.03	30.70	---	Peak
7	2381.82	42.30	-11.70	54.00	39.10	32.11	5.47	34.38	101	226 Average
8	2381.82	60.35	-13.65	74.00	57.15	32.11	5.47	34.38	101	226 Peak
9 @	2422.00	88.05			84.82	32.19	5.43	34.39	101	226 Average
10 X	2422.00	100.08			96.84	32.19	5.43	34.39	101	226 Peak
11	2500.00	55.33	-18.67	74.00	52.06	32.30	5.37	34.40	101	226 Peak
12	2500.00	34.72	-19.28	54.00	31.45	32.30	5.37	34.40	101	226 Average
13	3225.00	58.48	-15.52	74.00	53.93	33.00	6.19	34.64	100	0 Peak
14	8925.00	54.15	-19.85	74.00	42.97	36.25	10.31	35.38	100	54 Peak
15	8925.00	40.58	-13.42	54.00	29.40	36.25	10.31	35.38	100	54 Average



Test Mode :	Mode 11	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

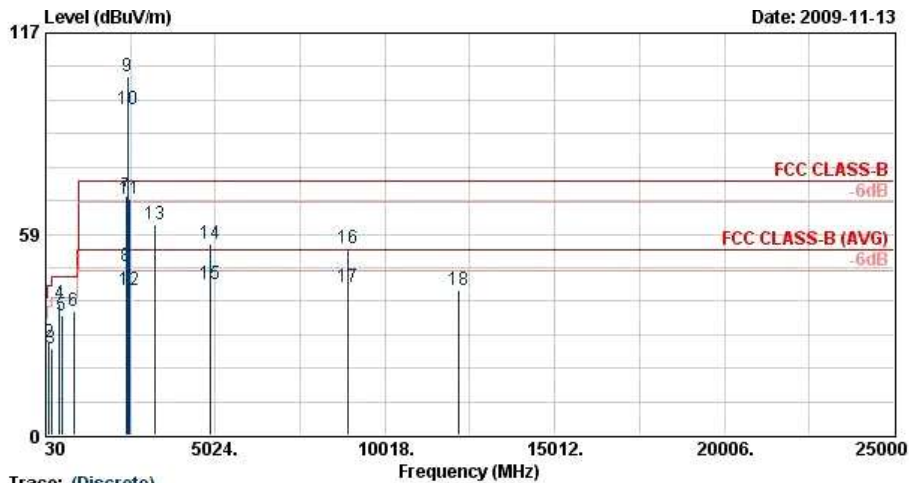


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 11

	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	134.49	27.69	-15.81	43.50	46.24	11.74	1.38	31.67	---	---	Peak
2	153.93	25.88	-17.62	43.50	45.16	10.87	1.49	31.65	---	---	Peak
3	196.86	27.61	-15.89	43.50	48.69	8.84	1.69	31.60	---	---	Peak
4	371.40	33.91	-12.09	46.00	47.36	15.36	2.45	31.26	---	---	Peak
5	433.70	38.44	-7.56	46.00	50.06	16.81	2.74	31.17	---	---	Peak
6	864.90	39.57	-6.43	46.00	43.41	22.84	4.02	30.70	100	106	Peak
7 !	2390.00	69.53	-4.47	74.00	66.32	32.13	5.46	34.38	102	345	Peak
8 !	2390.00	50.96	-3.04	54.00	47.75	32.13	5.46	34.38	102	345	Average
9 X	2437.00	105.84			102.61	32.19	5.43	34.39	102	345	Peak
10 @	2437.00	97.39			94.15	32.22	5.41	34.39	102	345	Average
11 !	2484.00	69.39	-4.61	74.00	66.13	32.27	5.38	34.40	102	345	Peak
12	2484.00	44.27	-9.73	54.00	41.01	32.27	5.38	34.40	102	345	Average
13	3246.00	57.07	-16.93	74.00	52.52	33.00	6.20	34.65	100	0	Peak
14	8877.00	54.26	-19.74	74.00	43.12	36.22	10.30	35.37	141	214	Peak
15	8877.00	42.58	-11.42	54.00	31.44	36.22	10.30	35.37	141	214	Average
16	9748.00	45.33	-28.67	74.00	79.98	-9.89	10.80	35.56	100	0	Peak
17	12185.00	43.48	-30.52	74.00	76.42	-10.35	12.23	34.82	100	0	Peak



Test Mode :	Mode 11	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

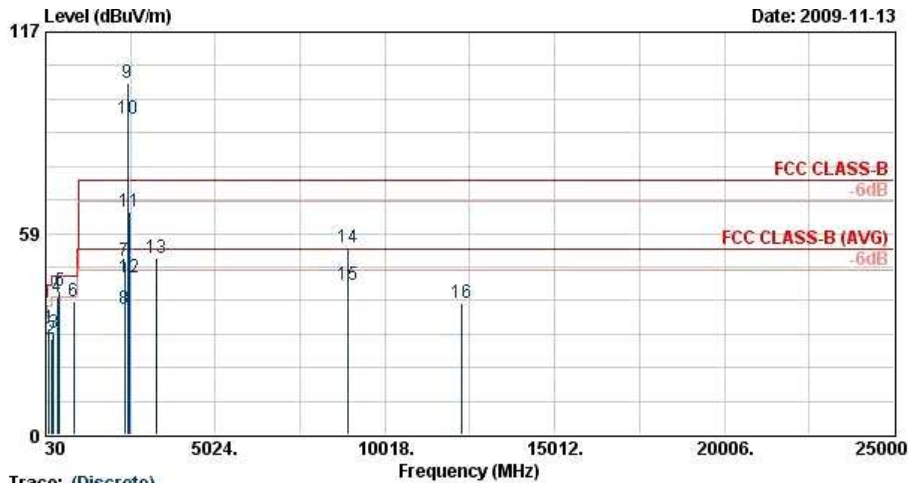


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 902108-01
 Mode : Mode 11

	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	37.02	28.15	-11.85	40.00	43.48	15.66	0.70	31.70	---	---	Peak
2	123.42	26.95	-16.55	43.50	45.32	11.98	1.32	31.68	---	---	Peak
3	186.06	25.15	-18.35	43.50	46.15	8.97	1.64	31.61	---	---	Peak
4	433.70	38.35	-7.65	46.00	49.97	16.81	2.74	31.17	100	109	Peak
5	494.60	34.84	-11.16	46.00	44.97	18.06	2.92	31.11	---	---	Peak
6	864.90	36.07	-9.93	46.00	39.91	22.84	4.02	30.70	---	---	Peak
7 !	2388.00	69.47	-4.53	74.00	66.26	32.13	5.46	34.38	129	221	Peak
8 !	2388.00	49.22	-4.78	54.00	46.01	32.13	5.46	34.38	129	221	Average
9 X	2437.00	104.37			101.13	32.19	5.43	34.39	129	221	Peak
10 @	2437.00	94.60			91.36	32.22	5.41	34.39	129	221	Average
11 !	2484.00	68.93	-5.07	74.00	65.67	32.27	5.38	34.40	129	221	Peak
12	2484.00	42.01	-11.99	54.00	38.75	32.27	5.38	34.40	129	221	Average
13	3246.00	61.26	-12.74	74.00	56.70	33.00	6.20	34.65	100	0	Peak
14	4874.00	55.66	-18.34	74.00	48.25	34.35	7.85	34.80	100	198	Peak
15	4874.00	43.88	-10.12	54.00	36.48	34.35	7.85	34.80	100	198	Average
16	8910.00	54.18	-19.82	74.00	43.01	36.24	10.31	35.38	100	251	Peak
17	8910.00	43.04	-10.96	54.00	31.87	36.24	10.31	35.38	100	251	Average
18	12185.00	42.22	-31.78	74.00	75.13	-10.31	12.23	34.82	100	0	Peak



Test Mode :	Mode 12	Temperature :	24~25°C
Test Channel :	09	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



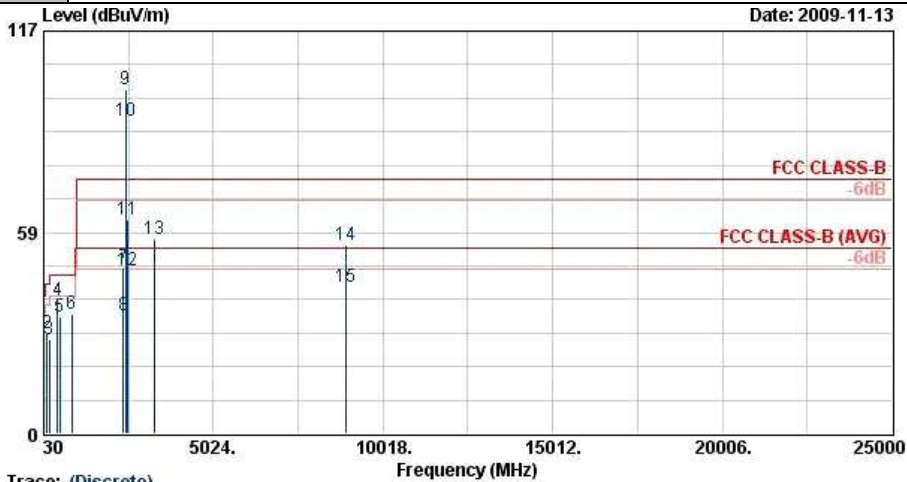
Trace: (Discrete)

Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 902108-01
 Mode : Mode 12

	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	133.14	30.83	-12.67	43.50	49.37	11.75	1.38	31.67	---	---	Peak
2	185.25	27.84	-15.66	43.50	48.83	8.98	1.64	31.61	---	---	Peak
3	262.74	29.74	-16.26	46.00	46.30	12.95	1.96	31.47	---	---	Peak
4 !	371.40	40.08	-5.92	46.00	53.53	15.36	2.45	31.26	---	---	Peak
5 !	433.70	41.94	-4.06	46.00	53.56	16.81	2.74	31.17	100	125	Peak
6	864.90	38.70	-7.30	46.00	42.53	22.84	4.02	30.70	---	---	Peak
7	2358.00	50.26	-23.74	74.00	47.06	32.08	5.49	34.37	100	254	Peak
8	2358.00	36.72	-17.28	54.00	33.53	32.08	5.49	34.37	100	254	Average
9 X	2452.00	102.31			99.06	32.24	5.40	34.39	100	254	Peak
10 @	2452.00	91.98			88.73	32.24	5.40	34.39	100	254	Average
11	2485.37	64.78	-9.22	74.00	61.52	32.27	5.38	34.40	100	254	Peak
12	2485.37	45.66	-8.34	54.00	42.40	32.27	5.38	34.40	100	254	Average
13	3270.00	51.52	-22.48	74.00	46.94	33.00	6.23	34.66	100	0	Peak
14	8910.00	54.40	-19.60	74.00	43.23	36.24	10.31	35.38	100	124	Peak
15	8910.00	43.71	-10.29	54.00	32.54	36.24	10.31	35.38	100	124	Average
16	12260.00	38.13	-35.87	74.00	71.11	-10.45	12.26	34.79	100	0	Peak



Test Mode :	Mode 12	Temperature :	24~25°C
Test Channel :	09	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	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 902108-01
 Mode : Mode 12

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1	30.00	24.26	-15.74	40.00	35.81	19.51	0.64	31.70	---	Peak
2	120.18	29.05	-14.45	43.50	47.22	12.23	1.28	31.68	---	Peak
3	186.06	27.25	-16.25	43.50	48.26	8.97	1.64	31.61	---	Peak
4	433.00	38.65	-7.35	46.00	50.29	16.79	2.73	31.17	100	286 Peak
5	494.60	34.08	-11.92	46.00	44.21	18.06	2.92	31.11	---	Peak
6	864.90	34.80	-11.20	46.00	38.63	22.84	4.02	30.70	---	Peak
7	2372.00	48.21	-25.79	74.00	45.01	32.11	5.47	34.38	132	221 Peak
8	2372.00	34.33	-19.67	54.00	31.13	32.11	5.47	34.38	132	221 Average
9 X	2452.00	100.07			96.84	32.19	5.43	34.39	132	221 Peak
10 @	2452.00	91.10			87.86	32.22	5.41	34.39	132	221 Average
11	2483.50	62.41	-11.59	74.00	59.15	32.27	5.38	34.40	132	221 Peak
12	2483.50	47.45	-6.55	54.00	44.19	32.27	5.38	34.40	132	221 Average
13	3270.00	56.39	-17.61	74.00	51.81	33.00	6.23	34.66	100	0 Peak
14	8913.00	54.66	-19.34	74.00	43.49	36.24	10.31	35.38	100	211 Peak
15	8913.00	42.82	-11.18	54.00	31.65	36.24	10.31	35.38	100	211 Average



3.4 Antenna Requirements

3.4.1 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.

3.4.2 Antenna Connected Construction

The antennas type used in this product is PIFA Antenna with IPEX connector and it is considered to meet antenna requirement.

3.4.3 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
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 05, 2009	Aug. 04, 2010	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)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 02, 2008	Dec. 01, 2009	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 20, 2009	Aug. 19, 2010	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 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)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 KHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26		

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		



Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	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 EP9O2108-01B as below.