FCC Test Report

EQUIPMENT	:	**WLAN Module**
BRAND NAME	:	**Atheros**
MODEL NAME	:	**AR5BHB63**
FCC ID	:	**HLZAR5BHB63**
STANDARD	:	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	:	**Digital Transmission System (DTS)**
APPLICANT	:	**Acer Inc.** 8F, No. 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.

The EUT was installed into notebook computer, trade name: ACER, GATEWAY, PACKARD BELL / model name: ZG8, Aspire one, AO530, during test.

The product sample received on Feb. 11, 2009 and completely tested on Mar. 04, 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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR921118	Rev. 01	Initial issue of report	Mar. 05, 2009

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	A8.4	Power Output	≤ 30dBm	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	< 20 dBc	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 16.7 dB at 22.670 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.74 dB at 2483.5 MHz
3.8	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

Quanta Computer Inc.

1. No. 2, Lane 58, Sanzhuang Road, Songjiang Export Processing Zone, Shanghai, P.R.C.

2. No. 4, Wen Ming 1st Street, Kuei Shan Hsiang, Taoyuan Shien 333, Taiwan, R.O.C.

3. No. 8, Dongjing Rd., Songjiang Industrial Zone, Shanghai, P.R.C.

4. No. 4, Lane 58, Sanzhuang Road, Songjiang Export Processing Zone, Shanghai, P.R.C.

5. North to Songsheng Road, Songjiang Industrial Zone, Shanghai, P.R.C.

6. B#, No. 1, South Rongteng Road, Songjiang Export Processing Zone, Shanghai, P.R.C.

7. Standard Factory, South to Valqua, Rongxin Road, Songjiang Export Processing Zone, Shanghai, P.R.C.

8. C#, No. 1, South Rongteng Road, Songhjang Export Processing Zone, Shanghai, P.R.C.

9. No. 6, Lane 66, Sanzhuang Road, Songjiang Export Processing Zone, Shanghai, P.R.C.

10. No. 6, Lane 58, Sanzhuang Road, Songjiang Export Processing Zone, Shanghai, P.R.C.

11. Huade Building, No. 18, ChuangYe Rd., ShandDi Zone, HaiDian District, Beijing, P.R.C.

12. No. 68, Sanzhuang Road, Songjiang Export Processing Zone, Shanghai, P.R.C.

13. 2F, C Building, XinYe Rd., Export Processing District In Torch, Zhongshan, Guangdong, P.R.C.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	WLAN Module
Brand Name	Atheros
Model Name	AR5BHB63
FCC ID	HLZAR5BHB63
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 17.80 dBm (60.26 mW) 802.11g : 20.67 dBm (116.68 mW)
Antenna Type	Fixed Internal Antenna
Type of Antenna Connector	N/A
Host PC Model	Trade Name : ACER, GATEWAY, PACKARD BELL Model Name : ZG8, Aspire one, AO530
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

Remark: The more details information of host (Brand name: ACER, GATEWAY, PACKARD BELL / Model name: ZG8, Aspire one, AO530), please find the user manual.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	**Sporton Site No.**		**FCC/IC Registration No.**
	CO05-HY	03CH07-HY	TW1022/4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC 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	DWL-7100AP	KA22003040018-1	N/A	Unshielded, 1.8 m
2.	WLAN AP	SMC	SMC-100	HEDWG4005ACC	N/A	Unshielded, 1.8 m
3.	(Mic) Earphone	Kolin	Kit-7460E	FCC DoC	Unshielded, 1.6 m	N/A
4.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	i-pod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A
6.	i-pod	Apple	A1236	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

2.1 Pre-Scanned RF Power

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

802.11b

2.4GHz 802.11b RF Power (dBm)					
Channel	Frequency (MHz)	Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	**15.55**	15.33	15.23	15.52
CH 06	2437 MHz	14.48	14.51	14.52	14.61
CH 11	2462 MHz	15.19	14.99	15.07	15.07

802.11g

2.4GHz 802.11g 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	15.21	15.16	15.05	15.34	15.28	14.90	15.12	14.92
CH 06	2437 MHz	**17.98**	17.80	17.71	17.65	17.66	17.54	17.49	17.83
CH 11	2462 MHz	15.80	15.76	15.80	15.60	15.59	15.59	15.29	15.70

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 6 Mbps for all the test cases, due to the highest RF output power.
3. The EUT is programmed to transmit signal continuously for all testing.

2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). The following tables are showing the test modes as the worst cases and recorded in this report.

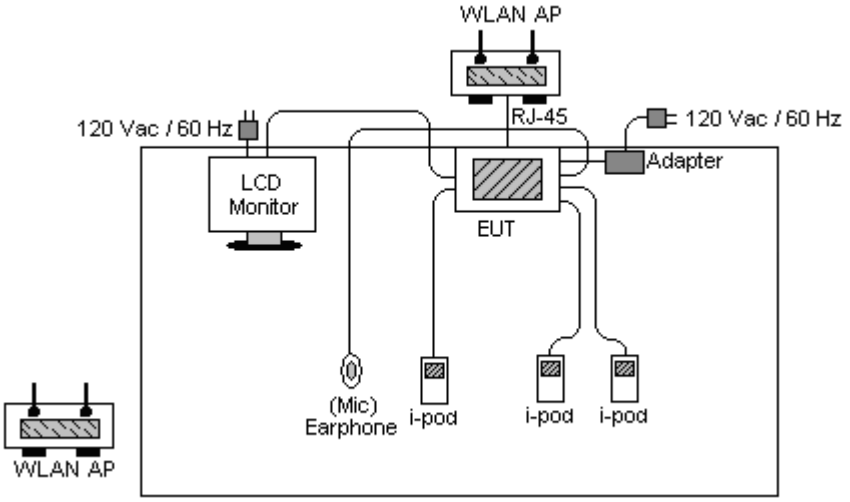
Test Cases		
Test Item	**802.11b** **Modulation : DSSS**	**802.11g** **Modulation : OFDM**
Conducted TCs	■ Mode 1: CH01_2412 MHz ■ Mode 2: CH06_2437 MHz ■ Mode 3: CH11_2462 MHz	■ Mode 4: CH01_2412 MHz ■ Mode 5: CH06_2437 MHz ■ Mode 6: CH11_2462 MHz
Radiated TCs	■ Mode 1: CH01_2412 MHz ■ Mode 2: CH06_2437 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 + Adapter + TC	

Remark:

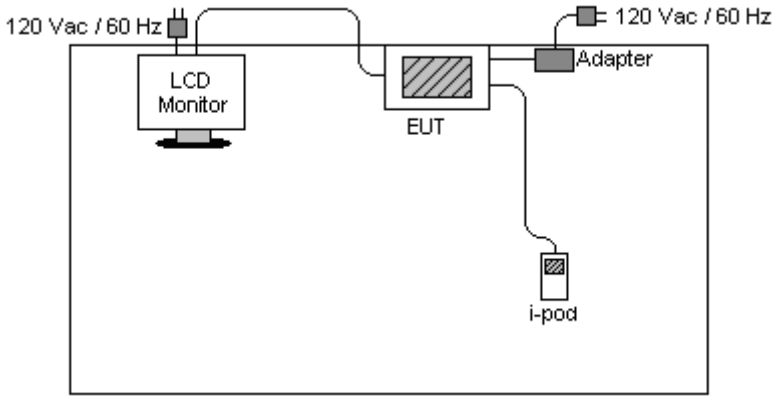
1. TC stands for Test Configuration, and consists of iPod, monitor, earphone, and RJ-45.
2. The Radiated Emission was pre-scanned in E1, E2, and H planes, and only the test data of worst mode, E1 plane was reported.

2.3 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



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 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

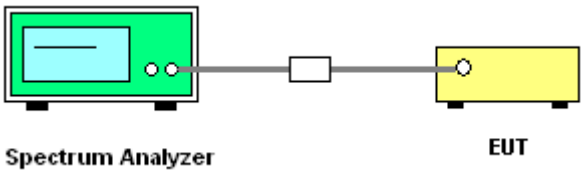
3.1.2 Measuring Instruments

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℃
Test Engineer :	Ken Hsu	Relative Humidity :	45~46%

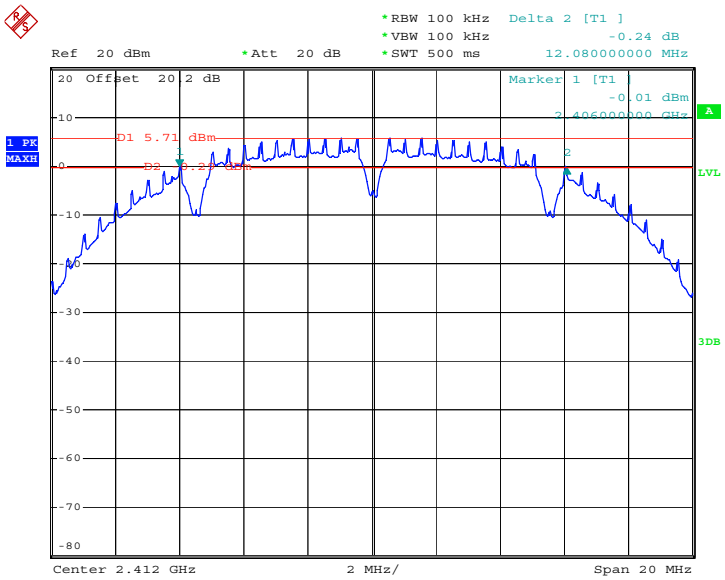
Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	12.08	0.5	Pass
06	2437	12.04	0.5	Pass
11	2462	12.08	0.5	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	23~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	45~46%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.32	0.5	Pass
06	2437	16.32	0.5	Pass
11	2462	16.36	0.5	Pass

3.1.6 Test Result of 6dB Bandwidth Plots

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



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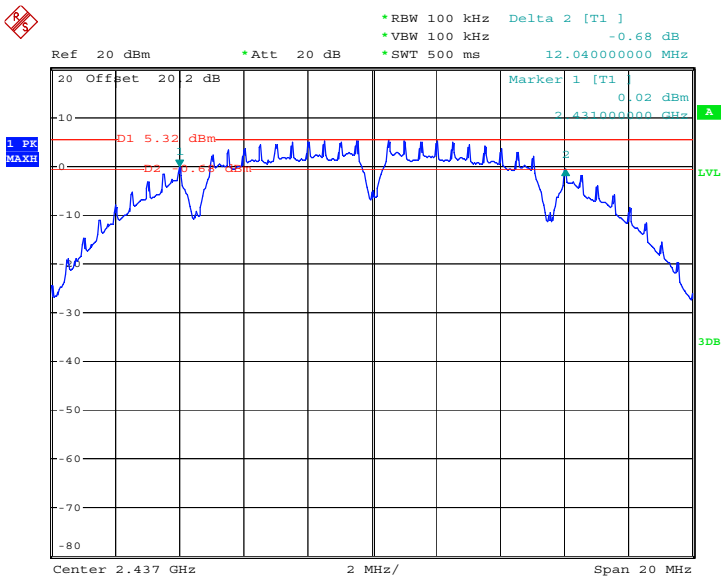
Date: 4.MAR.2009 18:54:45

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



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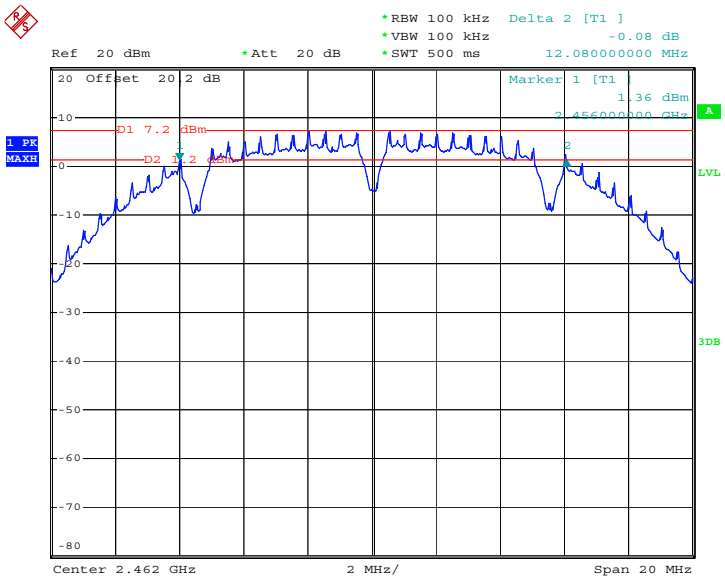
Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



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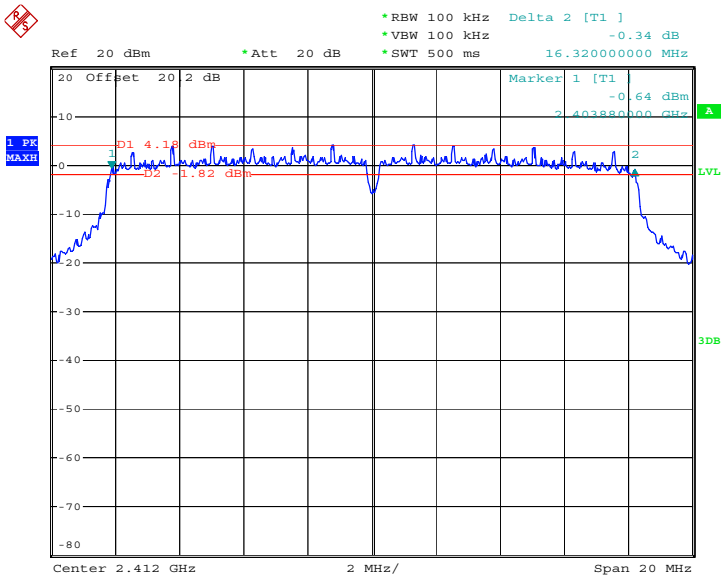
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



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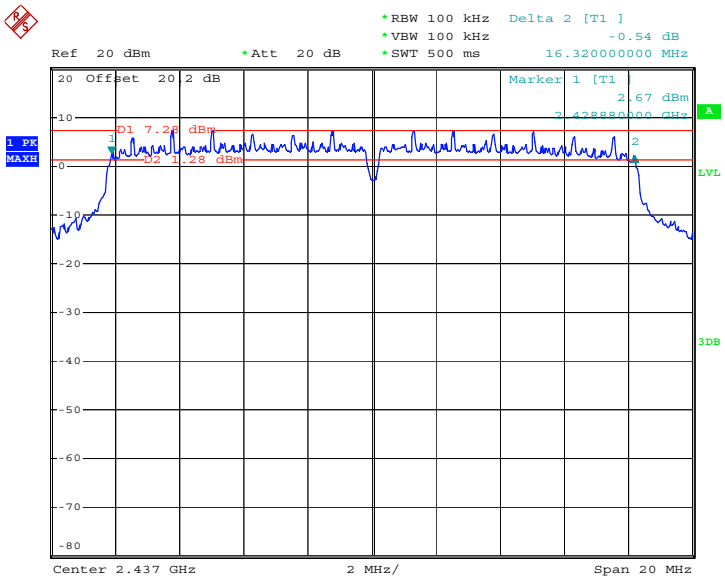
Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



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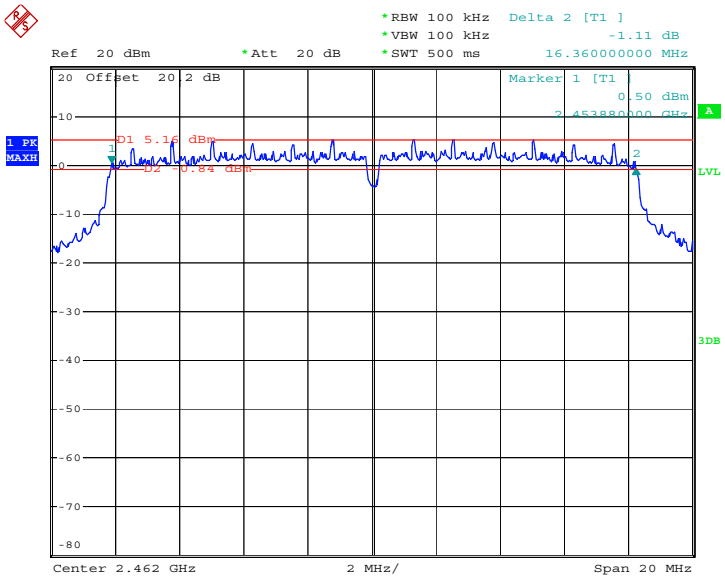
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



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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℃
Test Engineer :	Ken Hsu	Relative Humidity :	45~46%

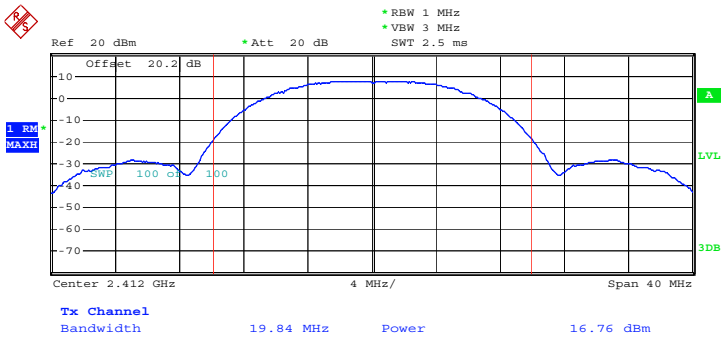
Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.76	30	Pass
06	2437	15.75	30	Pass
11	2462	17.80	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	23~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	45~46%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.76	30	Pass
06	2437	20.67	30	Pass
11	2462	18.68	30	Pass

3.2.6 Test Result of Output Power Plots

Mode 1 : Output Power Plot on 802.11b Channel 01



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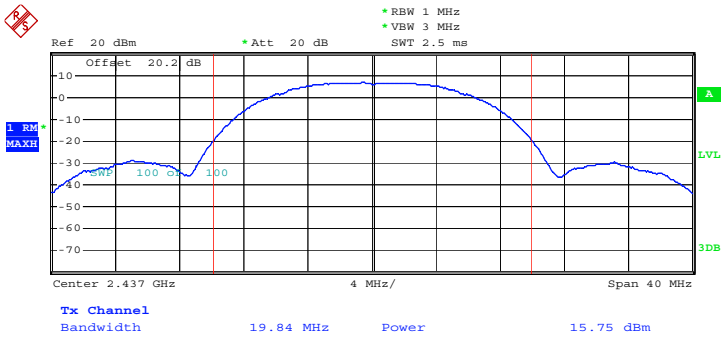
Mode 2 : Output Power Plot on 802.11b Channel 06



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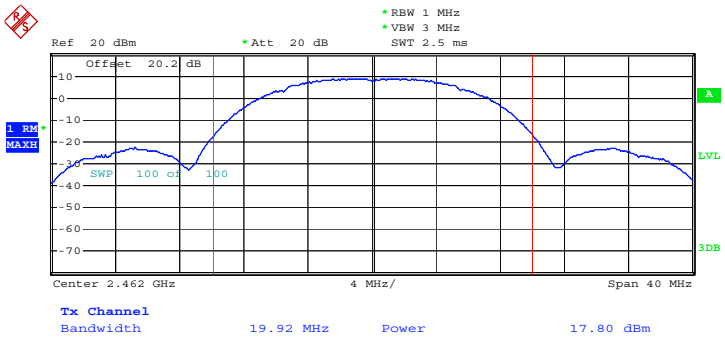
Mode 3 : Output Power Plot on 802.11b Channel 11



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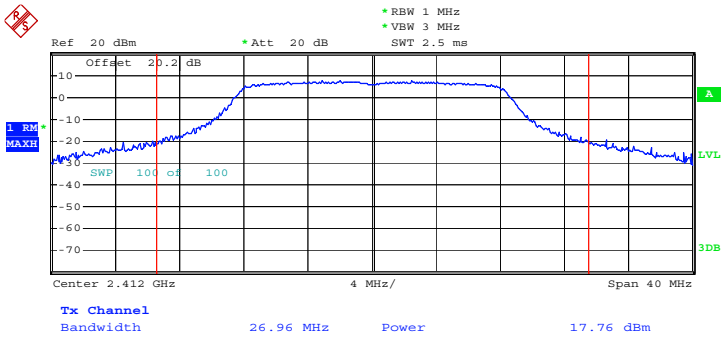
Date: 4.MAR.2009 08:37:04

Mode 4 : Output Power Plot on 802.11g Channel 01



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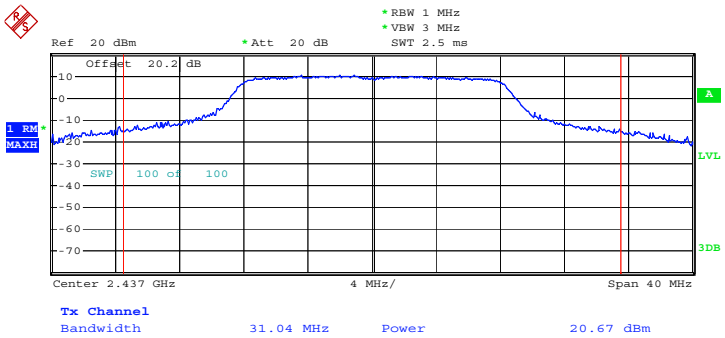
Date: 4.MAR.2009 08:37:53

Mode 5 : Output Power Plot on 802.11g Channel 06



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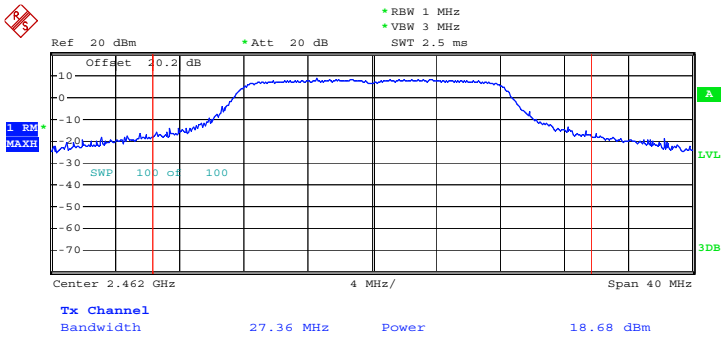
Mode 6 : Output Power Plot on 802.11g Channel 11



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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 :**	25~27°C
Test Band :	802.11b	**Relative Humidity :**	44~46%
Test Channel :	01	**Test Engineer :**	Elvis Chen

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBuV/m)**	**Over Limit (dB)**	**Limit Line (dBuV/m)**	**Read Level (dBuV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2389.42	50.53	-23.47	74.00	48.43	32.32	5.46	35.68	172	324	Peak
2389.42	38.49	-15.51	54.00	36.39	32.32	5.46	35.68	172	324	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	49.35	-24.65	74.00	47.20	32.30	5.51	35.67	100	47	Peak
2320.48	36.36	-17.64	54.00	34.21	32.30	5.51	35.67	100	47	Average

Test Mode :	Mode 3	**Temperature :**	25~27°C
Test Band :	802.11b	**Relative Humidity :**	44~46%
Test Channel :	11	**Test Engineer :**	Elvis Chen

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBuV/m)**	**Over Limit (dB)**	**Limit Line (dBuV/m)**	**Read Level (dBuV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2495.06	50.92	-23.08	74.00	48.95	32.30	5.37	35.70	171	321	Peak
2495.06	37.07	-19.93	54.00	35.10	32.30	5.37	35.70	171	321	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**
2498.29	48.85	-25.15	74.00	46.88	32.30	5.37	35.70	105	16	Peak
2498.29	36.19	-17.81	54.00	34.22	32.30	5.37	35.70	105	16	Average

Test Mode :	Mode 4	Temperature :	25~27°C
Test Band :	802.11g	Relative Humidity :	44~46%
Test Channel :	01	Test Engineer :	Elvis Chen

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	66.64	-7.36	74.00	64.54	32.32	5.46	35.68	171	324	Peak
2389.99	45.05	-8.65	54.00	42.95	32.32	5.46	35.68	171	324	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	64.43	-9.57	74.00	62.35	32.30	5.46	35.68	100	48	Peak
2389.99	44.03	-9.97	54.00	41.95	32.30	5.46	35.68	100	48	Average

Test Mode :	Mode 6	Temperature :	25~27°C
Test Band :	802.11g	Relative Humidity :	44~46%
Test Channel :	11	Test Engineer :	Elvis Chen

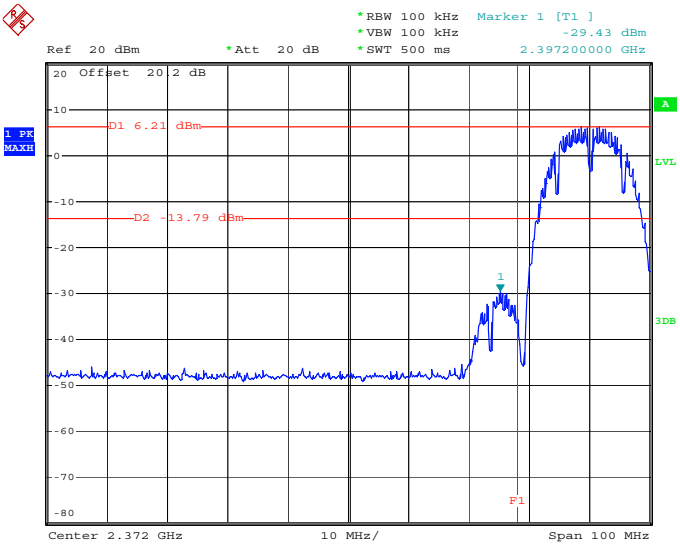
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	71.60	-2.40	74.00	69.61	32.30	5.38	35.70	170	322	Peak
2483.50	51.27	-2.73	54.00	49.28	32.30	5.38	35.70	170	322	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	73.26	-0.74	74.00	71.27	32.30	5.38	35.70	199	57	Peak
2483.50	49.81	-4.19	54.00	47.82	32.30	5.38	35.70	199	57	Average

3.3.6 Test Result of Conducted Band Edges

Test Mode :	Mode 1 and 3	**Temperature :**	23~24℃
Test Band :	802.11b	**Relative Humidity :**	45~46%
Test Channel :	01 and 11	**Test Engineer :**	Ken Hsu

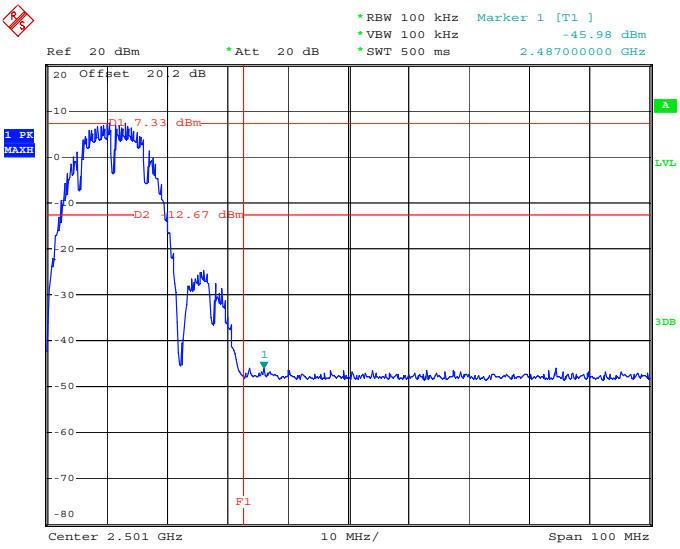
Low Band Edge Plot on 802.11b Channel 01



HAC-189-E

Date: 4.MAR.2009 10:08:02

High Band Edge Plot on 802.11b Channel 11

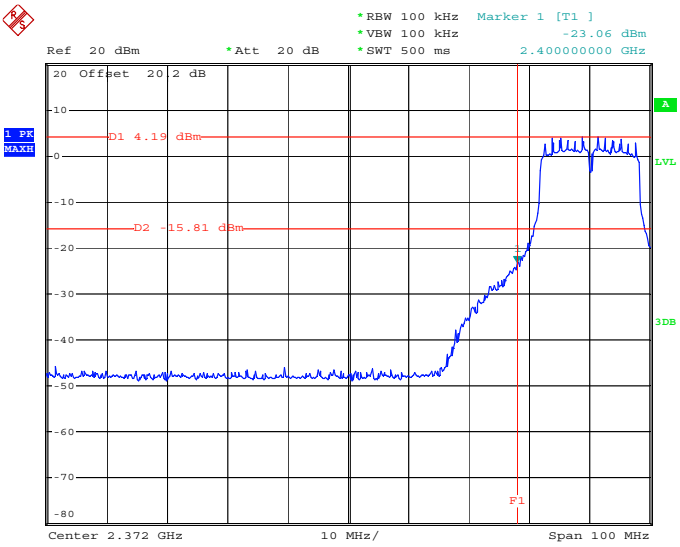


HAC-189-E

Date: 4.MAR.2009 10:06:02

Test Mode :	Mode 4 and 6	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

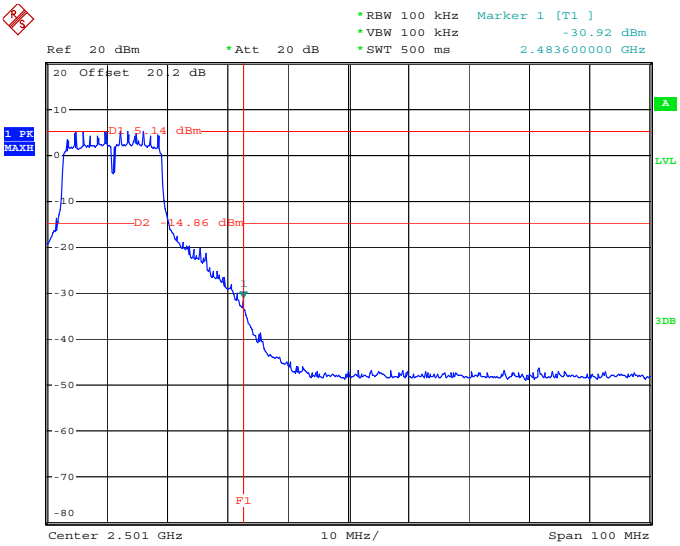
Low Band Edge Plot on 802.11g Channel 01



HAC-189-E

Date: 4.MAR.2009 10:09:35

High Band Edge Plot on 802.11g Channel 11



HAC-189-E

Date: 4.MAR.2009 10:02:58

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.

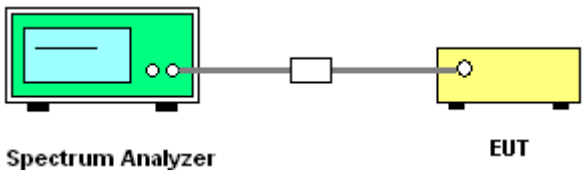
3.4.2 Measuring Instruments

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 the RBW of spectrum analyzer to 1MHz, VBW ≥ 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 1MHz RBW.

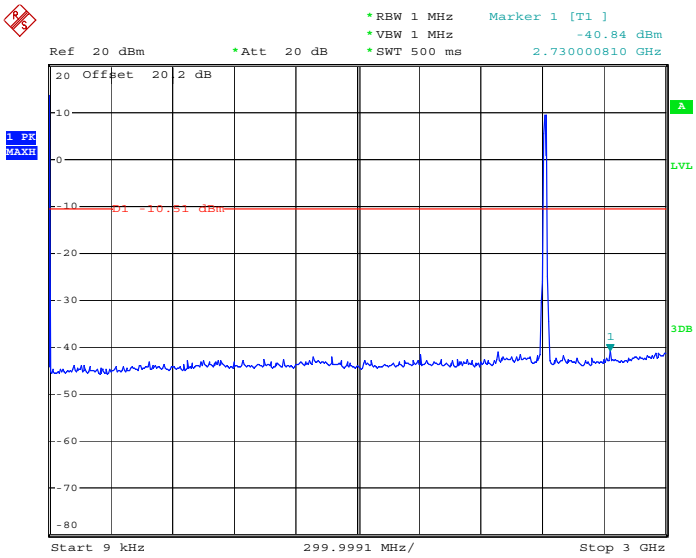
3.4.4 Test Setup



3.4.5 Test Result

Test Mode :	Mode 1	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	Ken Hsu

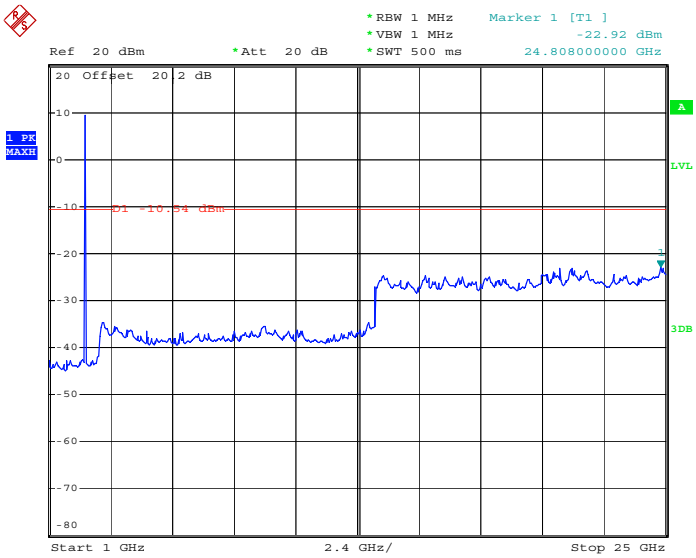
Conducted Emission Plot between 9k-3G



HAC-189-E

Date: 5.MAR.2009 08:17:50

Conducted Emission Plot between 1G-25G

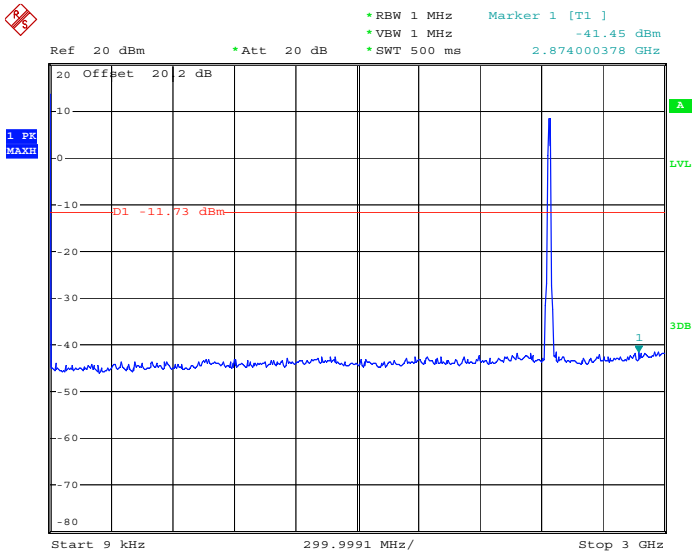


HAC-189-E

Date: 5.MAR.2009 08:18:59

Test Mode :	Mode 2	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	06	Test Engineer :	Ken Hsu

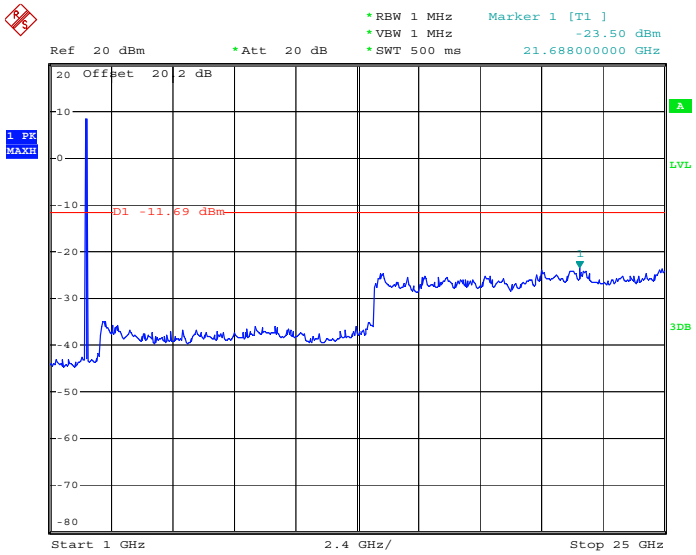
Conducted Emission Plot between 9k-3G



HAC-189-E

Date: 5.MAR.2009 08:16:51

Conducted Emission Plot between 1G-25G

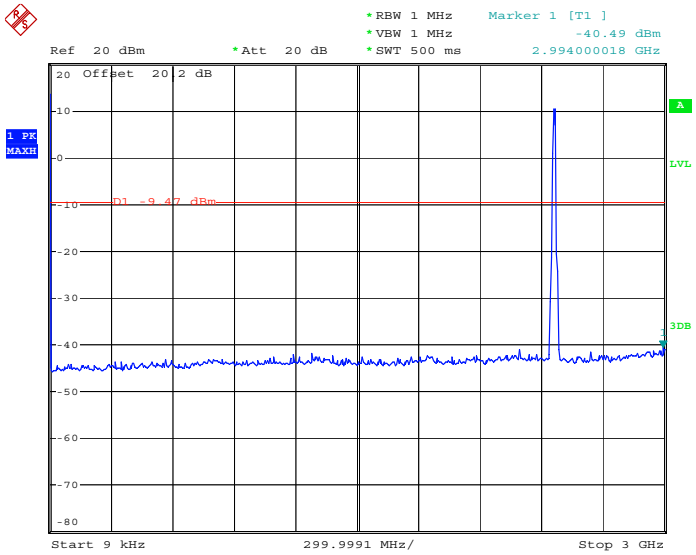


HAC-189-E

Date: 5.MAR.2009 08:19:43

Test Mode :	Mode 3	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	Ken Hsu

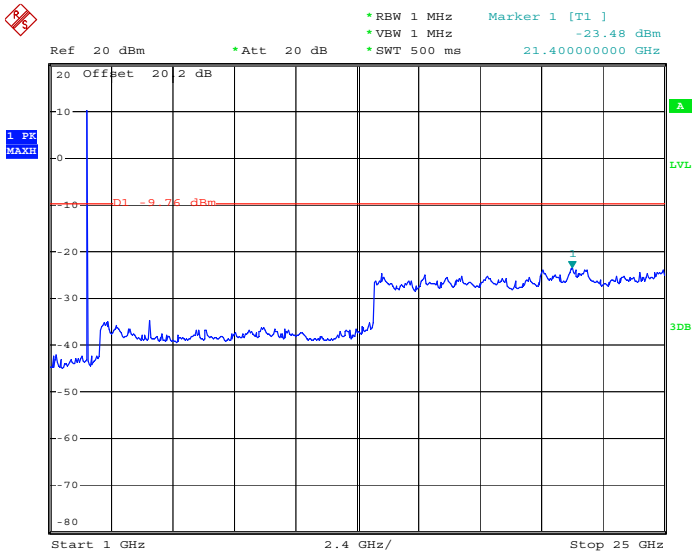
Conducted Emission Plot between 9k-3G



HAC-189-E

Date: 5.MAR.2009 08:16:08

Conducted Emission Plot between 1G-25G

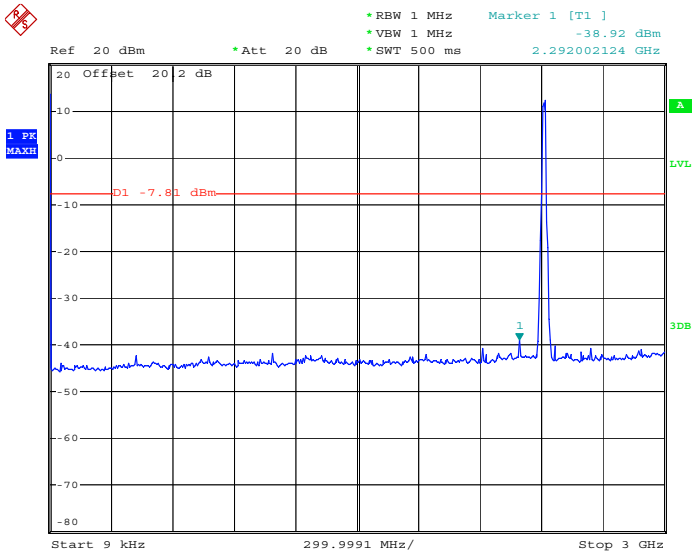


HAC-189-E

Date: 5.MAR.2009 08:20:31

Test Mode :	Mode 4	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	Ken Hsu

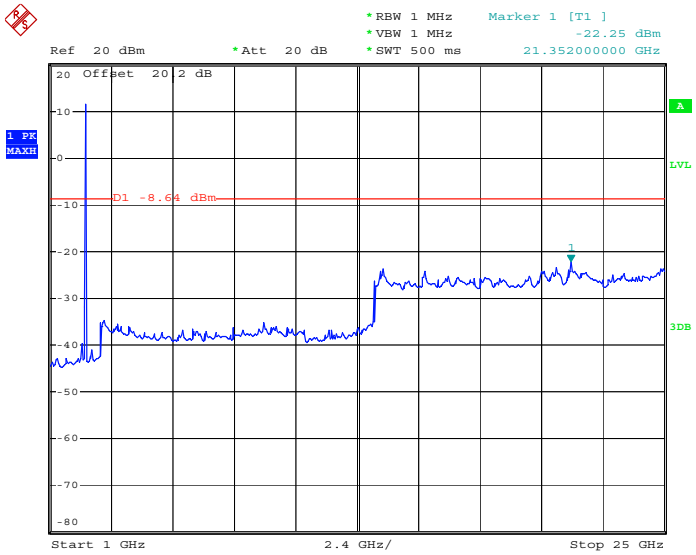
Conducted Emission Plot between 9k-3G



HAC-189-E

Date: 5.MAR.2009 08:13:12

Conducted Emission Plot between 1G-25G

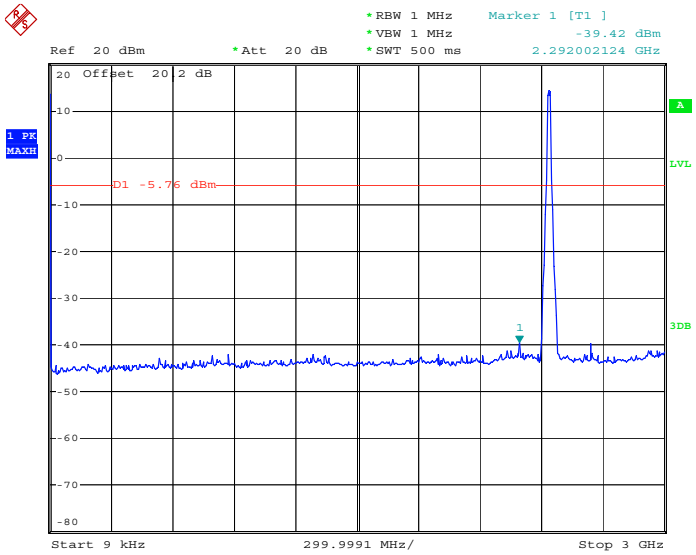


HAC-189-E

Date: 5.MAR.2009 08:26:20

Test Mode :	Mode 5	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	06	Test Engineer :	Ken Hsu

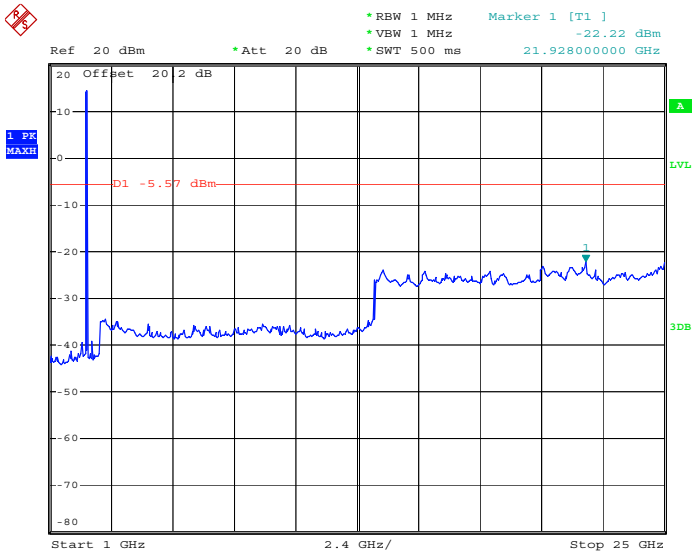
Conducted Emission Plot between 9k-3G



HAC-189-E

Date: 5.MAR.2009 08:14:03

Conducted Emission Plot between 1G-25G

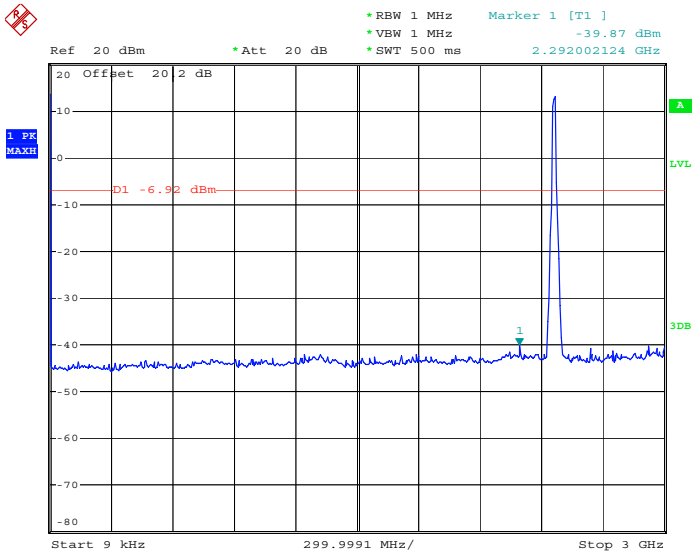


HAC-189-E

Date: 5.MAR.2009 08:25:22

Test Mode :	Mode 6	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	Ken Hsu

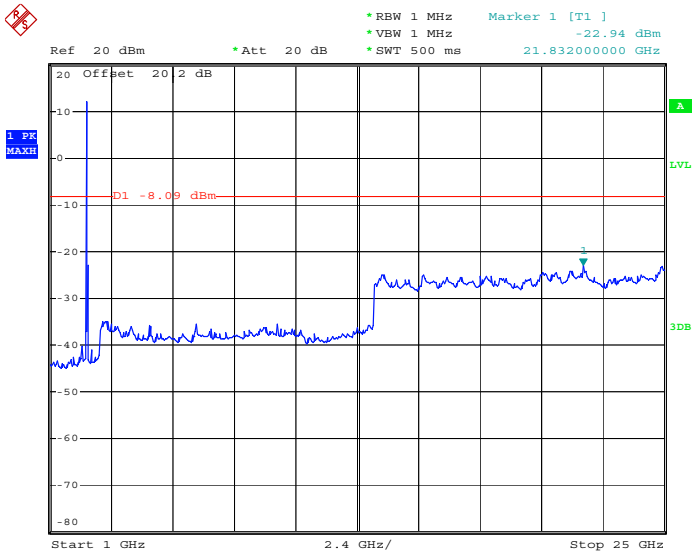
Conducted Emission Plot between 9k-3G



HAC-189-E

Date: 5.MAR.2009 08:15:03

Conducted Emission Plot between 1G-25G



HAC-189-E

Date: 5.MAR.2009 08:21:24

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.

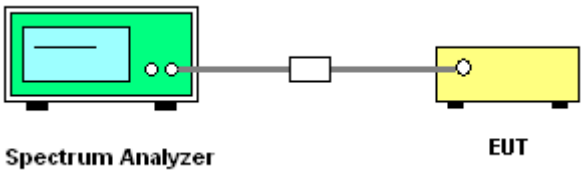
3.5.2 Measuring Instruments

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℃
Test Engineer :	Ken Hsu	Relative Humidity :	45~46%

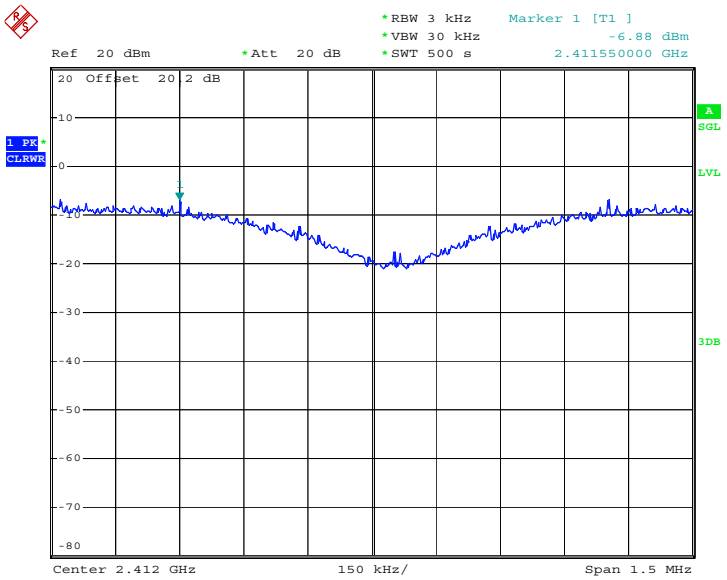
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-6.88	8	Pass
06	2437	-7.66	8	Pass
11	2462	-6.21	8	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	23~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	45~46%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-7.41	8	Pass
06	2437	-5.20	8	Pass
11	2462	-7.46	8	Pass

3.5.6 Test Result of Power Spectral Density Plots

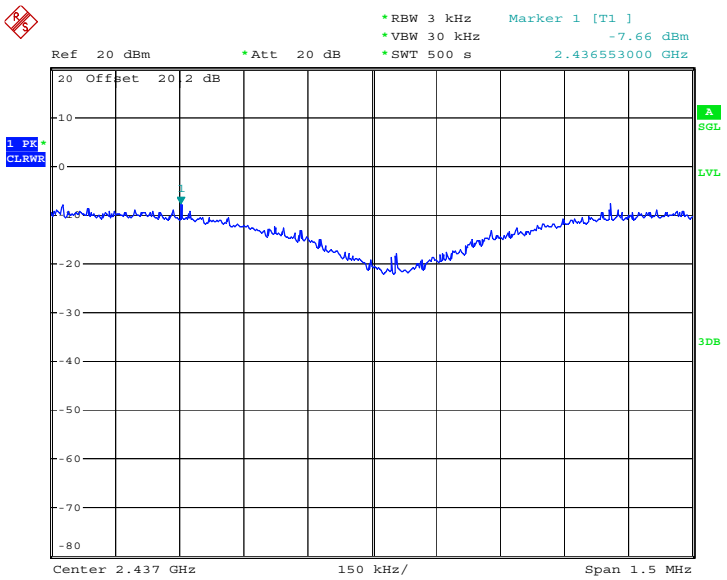
Mode 1 : PSD Plot on 802.11b Channel 01



HAC-189-E

Date: 4.MAR.2009 10:32:49

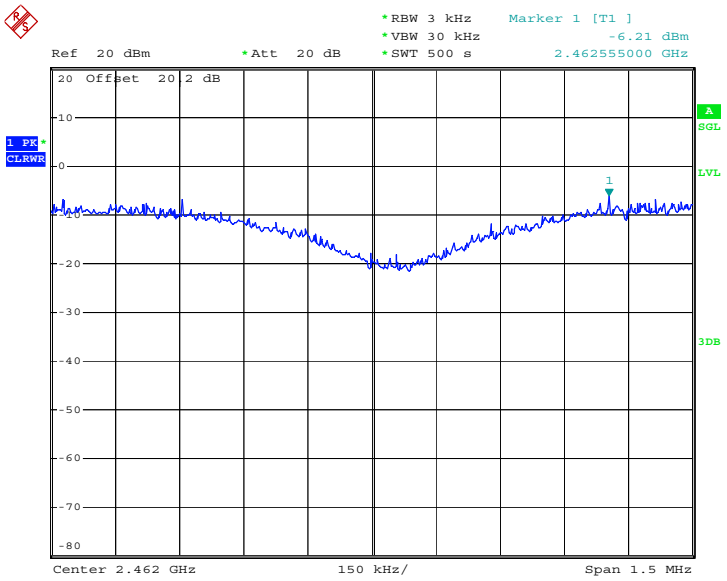
Mode 2 : PSD Plot on 802.11b Channel 06



HAC-189-E

Date: 4.MAR.2009 11:01:56

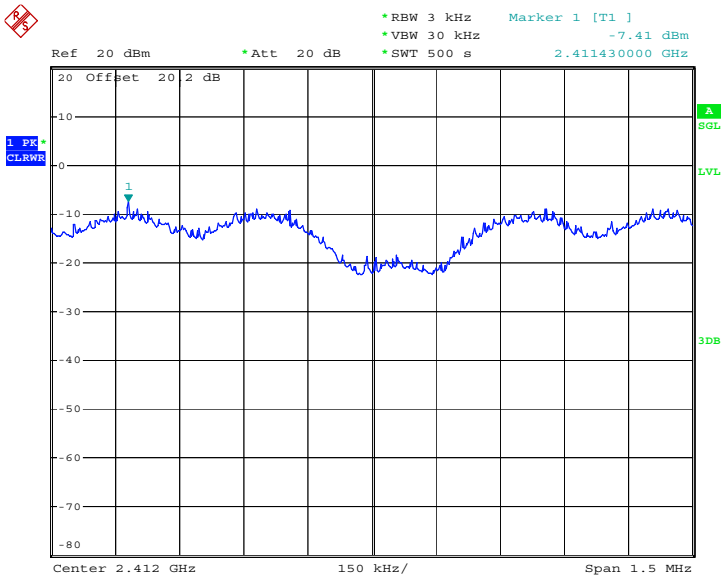
Mode 3 : PSD Plot on 802.11b Channel 11



HAC-189-E

Date: 4.MAR.2009 11:11:46

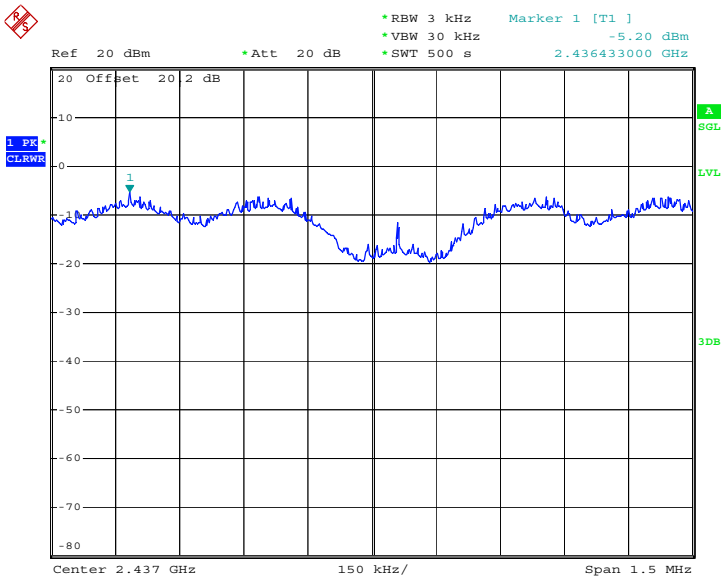
Mode 4 : PSD Plot on 802.11g Channel 01



HAC-189-E

Date: 4.MAR.2009 10:42:30

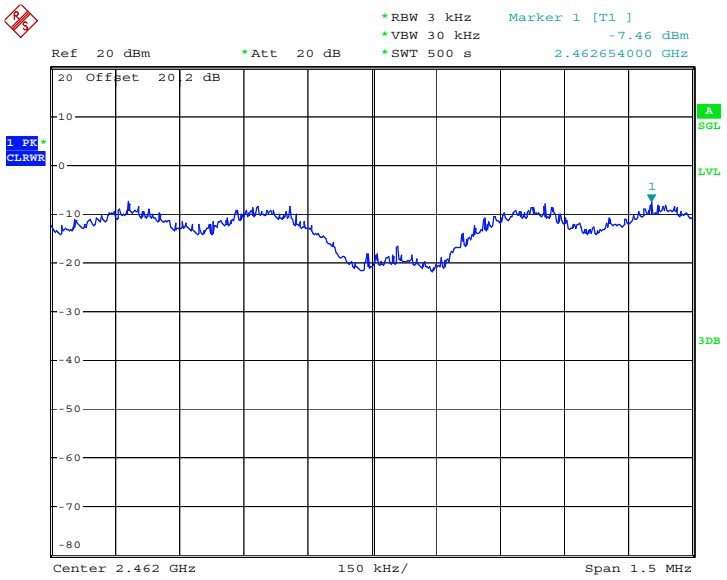
Mode 5 : PSD Plot on 802.11g Channel 06



HAC-189-E

Date: 4.MAR.2009 10:52:17

Mode 6 : PSD Plot on 802.11g Channel 11



HAC-189-E

Date: 4.MAR.2009 11:46:43

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.

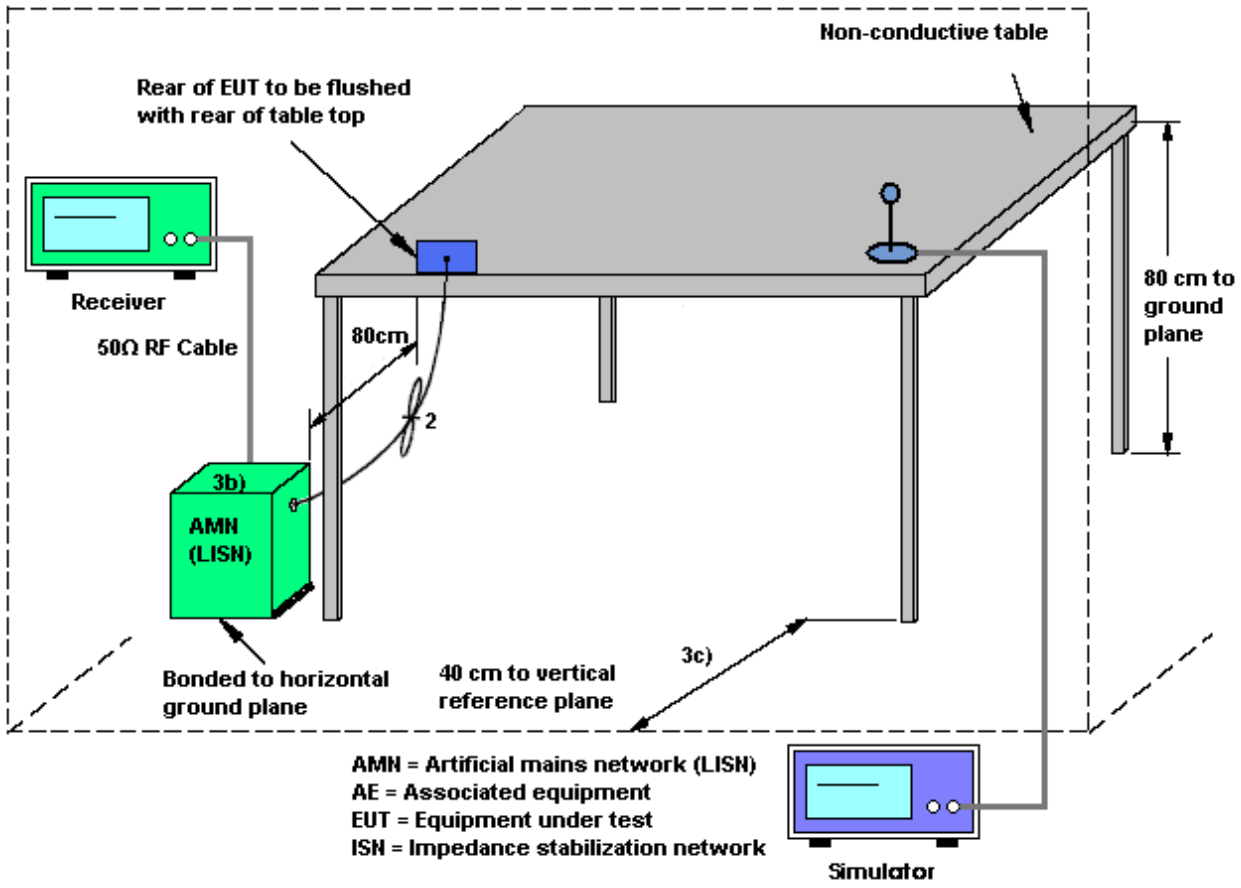
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

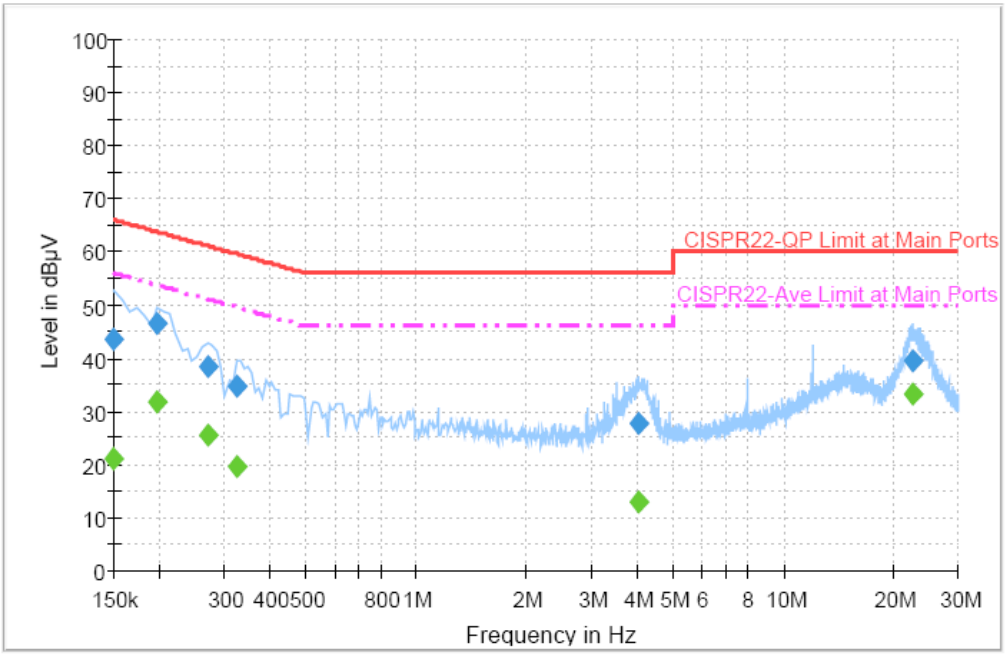
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 1	**Temperature :**	23~24℃
Test Engineer :	Cona Huang	**Relative Humidity :**	45~46%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WLAN Link + Adapter + TC		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



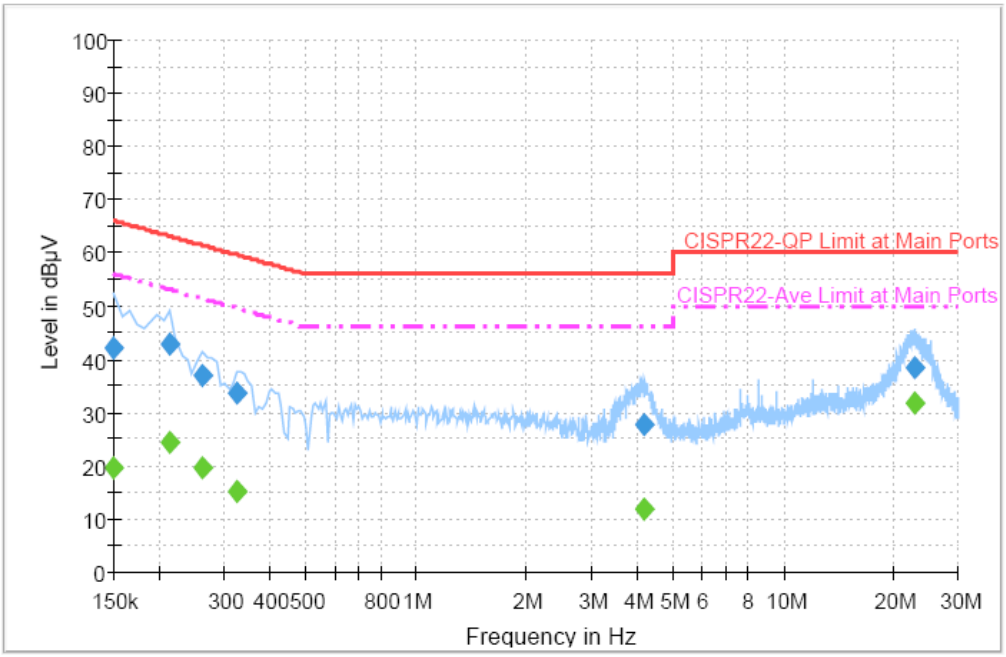
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	43.4	Off	L1	19.4	22.6	66.0
0.198000	46.3	Off	L1	19.3	17.4	63.7
0.270000	38.4	Off	L1	19.3	22.7	61.1
0.326000	34.6	Off	L1	19.3	25.0	59.6
4.030000	27.5	Off	L1	19.5	28.5	56.0
22.670000	39.6	Off	L1	19.8	20.4	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	20.9	Off	L1	19.4	35.1	56.0
0.198000	31.7	Off	L1	19.3	22.0	53.7
0.270000	25.3	Off	L1	19.3	25.8	51.1
0.326000	19.7	Off	L1	19.3	29.9	49.6
4.030000	12.9	Off	L1	19.5	33.1	46.0
22.670000	33.3	Off	L1	19.8	16.7	50.0

Test Mode :	Mode 1	Temperature :	23~24℃
Test Engineer :	Cona Huang	Relative Humidity :	45~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + Adapter + TC		
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)
0.150000	42.1	Off	N	19.4	23.9	66.0
0.214000	43.0	Off	N	19.4	20.0	63.0
0.262000	36.9	Off	N	19.4	24.5	61.4
0.326000	33.7	Off	N	19.3	25.9	59.6
4.198000	27.8	Off	N	19.5	28.2	56.0
22.790000	38.4	Off	N	19.9	21.6	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	19.4	Off	N	19.4	36.6	56.0
0.214000	24.3	Off	N	19.4	28.7	53.0
0.262000	19.5	Off	N	19.4	31.9	51.4
0.326000	15.2	Off	N	19.3	34.4	49.6
4.198000	11.9	Off	N	19.5	34.1	46.0
22.790000	31.7	Off	N	19.9	18.3	50.0

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

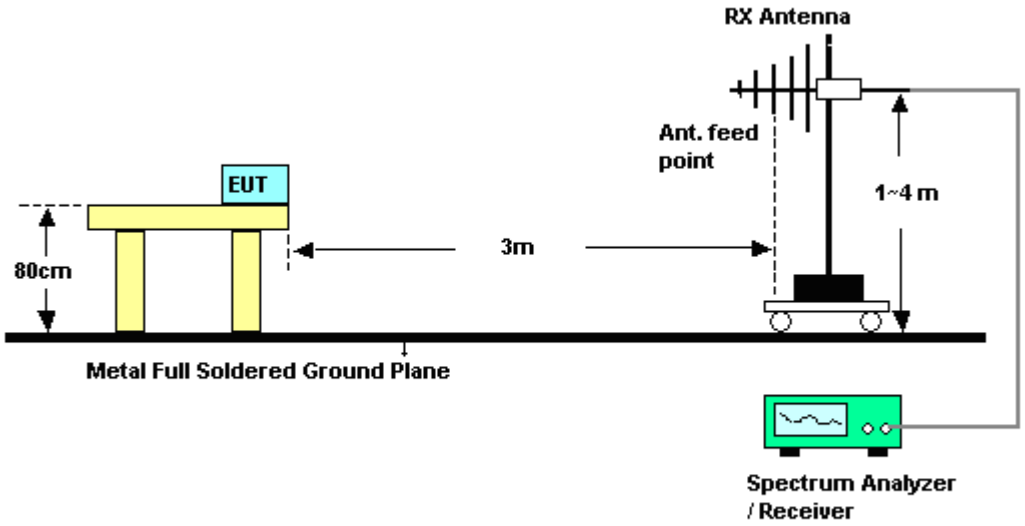
3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedures

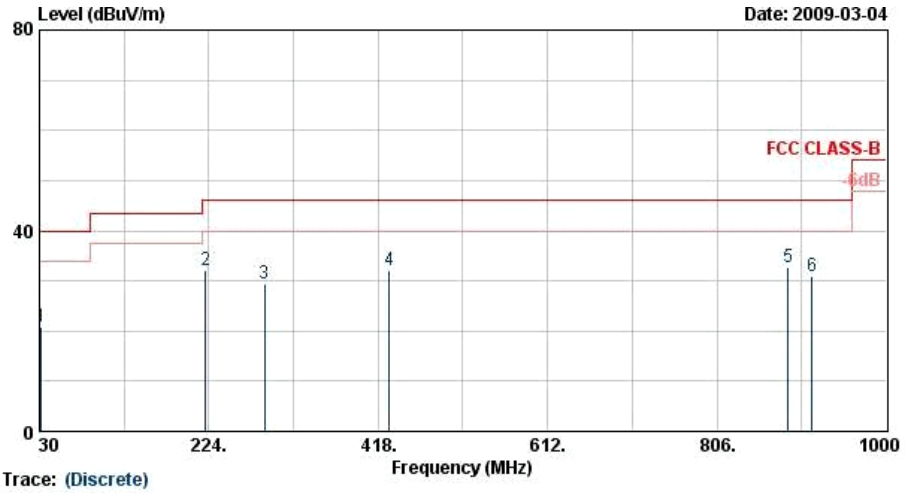
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
   Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
3. Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.
4. The WLAN Tx/Rx modes were scanned in 3 test planes (H, E1 and E2 planes) for both horizontal and vertical polarizations, and then the worst mode was performed the full test.

3.7.4 Test Setup



3.7.5 Test Result of Radiated Emission < 1GHz

Test Mode :	Mode 1	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :		Plane :	E1 Plane

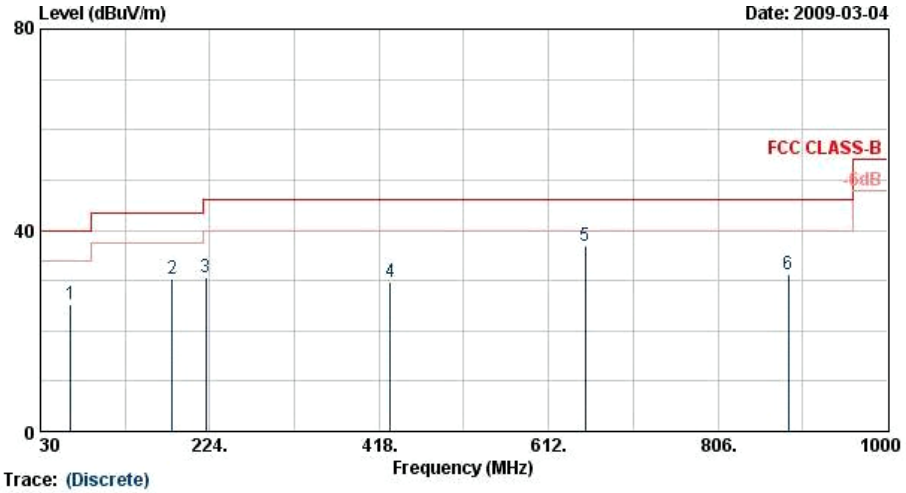


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 HORIZONTAL
Project : FR 921118
Memo : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	31.89	20.94	-19.06	40.00	33.72	17.82	0.66	31.26	---	---	Peak
2	220.62	32.05	-13.95	46.00	51.04	10.69	1.80	31.48	---	---	Peak
3	287.85	29.51	-16.49	46.00	45.80	13.07	2.07	31.43	---	---	Peak
4	430.90	32.11	-13.89	46.00	44.51	16.17	2.73	31.30	---	---	Peak
5	887.30	32.70	-13.30	46.00	37.74	21.40	4.11	30.55	100	94	Peak
6	915.30	30.89	-15.11	46.00	35.73	21.56	4.19	30.59	---	---	Peak

Test Mode :	Mode 1	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :		Plane :	E1 Plane

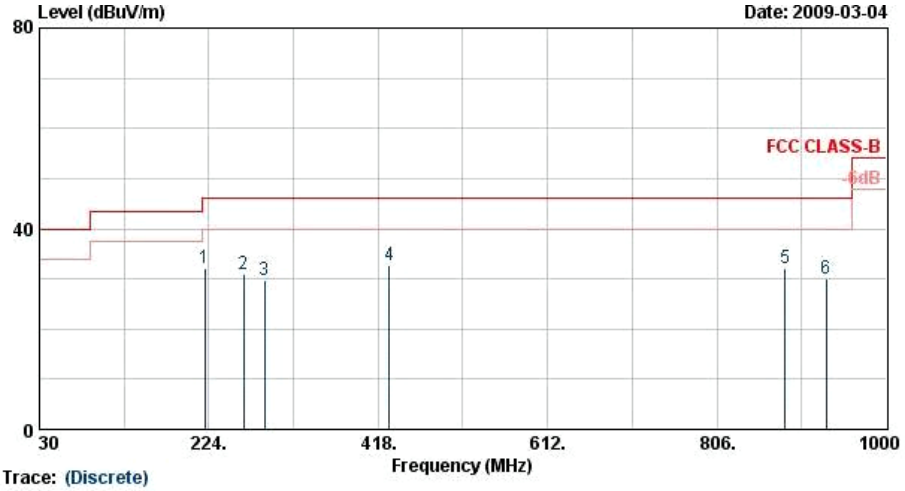


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 VERTICAL
Project : FR 921118
Memo : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	64.29	25.15	-14.85	40.00	49.34	6.28	0.93	31.39	---	---	Peak
2	180.93	30.38	-13.12	43.50	50.81	9.32	1.62	31.38	---	---	Peak
3	219.54	30.51	-15.49	46.00	49.65	10.52	1.79	31.46	---	---	Peak
4	430.90	29.79	-16.21	46.00	42.19	16.17	2.73	31.30	---	---	Peak
5	654.20	36.89	-9.11	46.00	45.39	18.97	3.42	30.90	100	163	Peak
6	886.60	31.29	-14.71	46.00	36.35	21.38	4.11	30.55	---	---	Peak

Test Mode :	Mode 2	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :		Plane :	E1 Plane

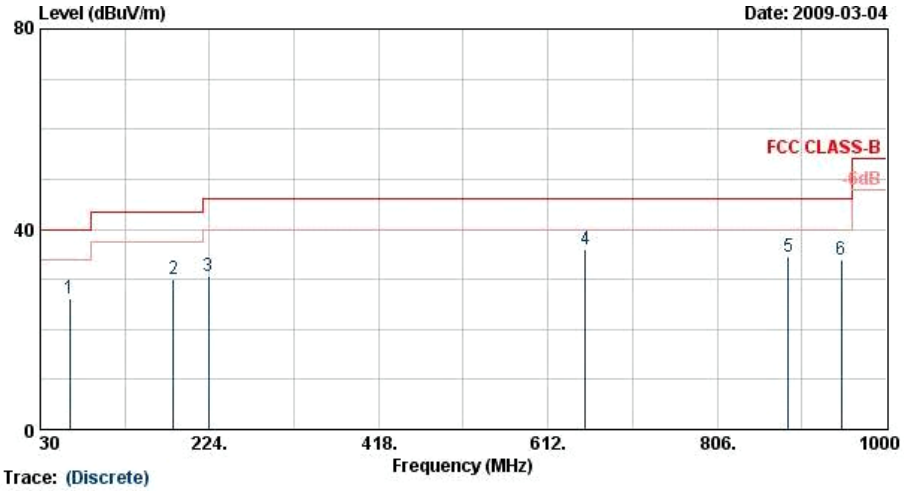


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 HORIZONTAL
Project : FR 921118
Memo : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	219.81	32.24	-13.76	46.00	51.31	10.60	1.80	31.47	---	---	Peak
2	264.09	30.97	-15.03	46.00	47.36	13.10	1.96	31.46	---	---	Peak
3	287.85	29.83	-16.17	46.00	46.12	13.07	2.07	31.43	---	---	Peak
4	430.90	32.58	-13.42	46.00	44.98	16.17	2.73	31.30	100	174	Peak
5	883.80	32.18	-13.82	46.00	37.31	21.34	4.09	30.56	---	---	Peak
6	931.40	30.01	-15.99	46.00	34.92	21.54	4.22	30.66	---	---	Peak

Test Mode :	Mode 2	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :		Plane :	E1 Plane

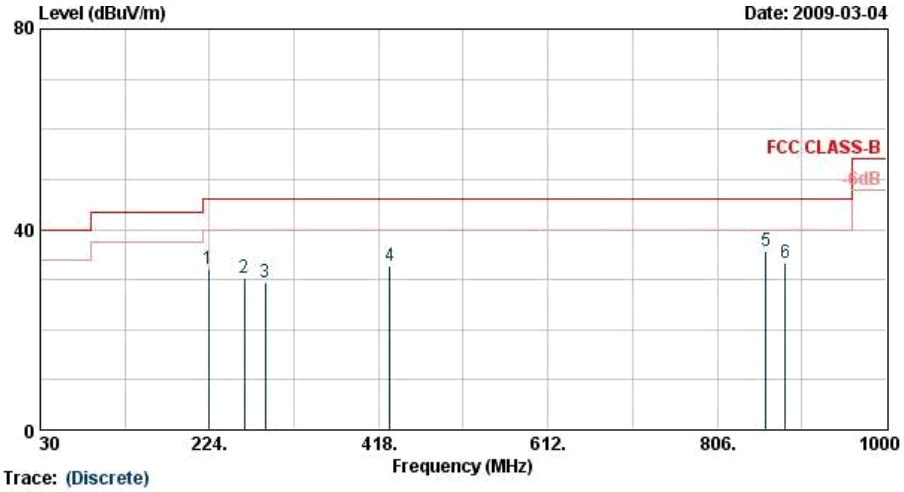


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 VERTICAL
Project : FR 921118
Memo : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	64.02	26.04	-13.96	40.00	50.22	6.28	0.93	31.39	---	---	Peak
2	183.09	29.95	-13.55	43.50	50.41	9.27	1.63	31.37	---	---	Peak
3	223.05	30.64	-15.36	46.00	49.47	10.85	1.81	31.49	---	---	Peak
4	654.90	36.03	-9.97	46.00	44.53	18.97	3.42	30.90	100	83	Peak
5	887.30	34.50	-11.50	46.00	39.54	21.40	4.11	30.55	---	---	Peak
6	948.20	33.94	-12.06	46.00	38.92	21.51	4.26	30.75	---	---	Peak

Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :		Plane :	E1 Plane

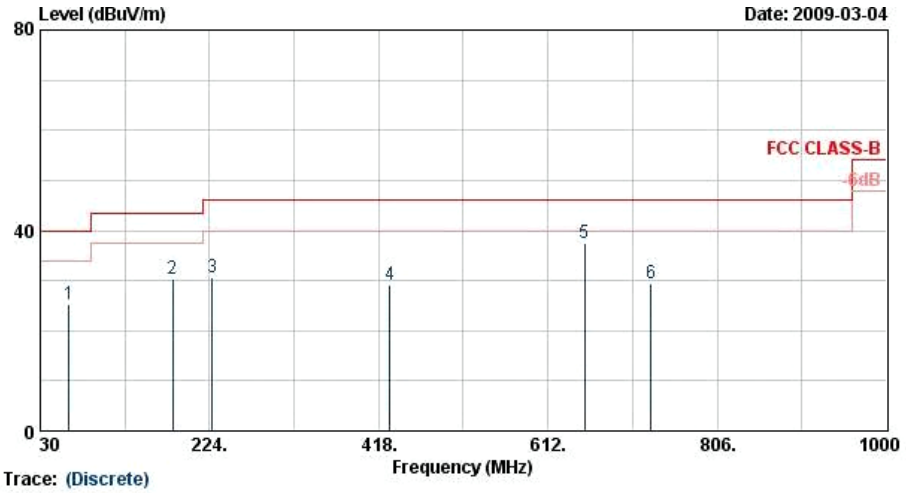


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 HORIZONTAL
Project : FR921118
Memo : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	222.78	32.22	-13.78	46.00	51.06	10.85	1.81	31.49	---	---	Peak
2	264.09	30.43	-15.57	46.00	46.82	13.10	1.96	31.46	---	---	Peak
3	287.85	29.54	-16.46	46.00	45.83	13.07	2.07	31.43	---	---	Peak
4	430.90	32.83	-13.17	46.00	45.23	16.17	2.73	31.30	---	---	Peak
5 @	862.10	35.73	-10.27	46.00	41.29	21.03	4.01	30.60	100	86	Peak
6 @	884.50	33.40	-12.60	46.00	38.50	21.35	4.10	30.55	---	---	Peak

Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :		Plane :	E1 Plane

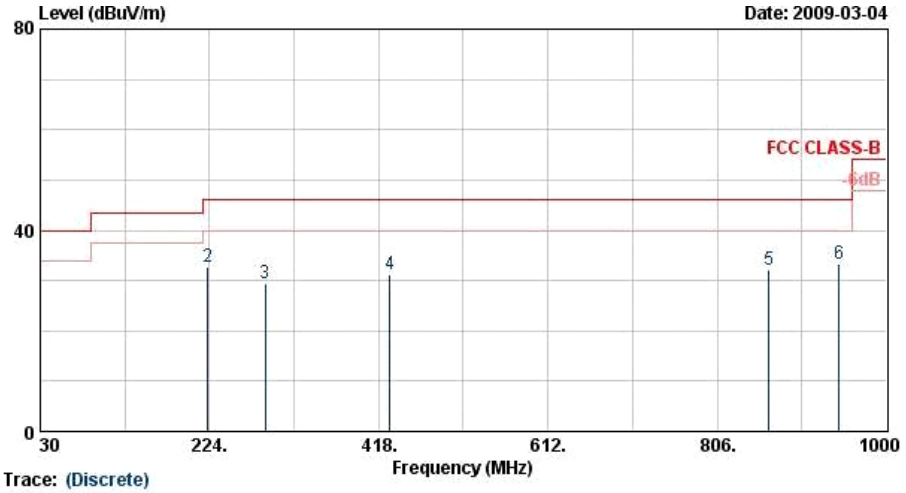


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 VERTICAL
Project : FR921118
Memo : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	63.21	25.17	-14.83	40.00	49.37	6.28	0.93	31.40	---	---	Peak
2	181.74	30.37	-13.13	43.50	50.80	9.32	1.62	31.38	---	---	Peak
3	227.10	30.75	-15.25	46.00	49.25	11.17	1.83	31.51	---	---	Peak
4	430.90	29.26	-16.74	46.00	41.66	16.17	2.73	31.30	---	---	Peak
5 @	654.20	37.54	-8.46	46.00	46.04	18.97	3.42	30.90	100	126	Peak
6	730.50	29.53	-16.47	46.00	37.29	19.43	3.64	30.84	---	---	Peak

Test Mode :	Mode 4	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :		Plane :	E1 Plane

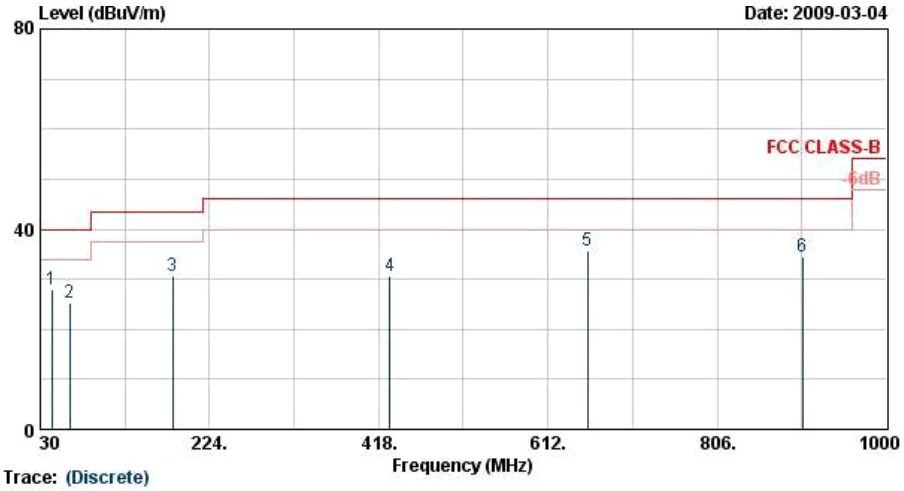


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 HORIZONTAL
Project : FR 921118
Memo : Mode 4

	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	30.27	21.08	-18.92	40.00	32.54	19.21	0.64	31.31	---	---	Peak
2	221.70	32.73	-13.27	46.00	51.64	10.77	1.81	31.48	---	---	Peak
3	287.85	29.38	-16.62	46.00	45.67	13.07	2.07	31.43	---	---	Peak
4	430.90	31.11	-14.89	46.00	43.51	16.17	2.73	31.30	---	---	Peak
5	864.90	32.09	-13.91	46.00	37.60	21.07	4.02	30.60	---	---	Peak
6 @	945.40	33.37	-12.63	46.00	38.34	21.52	4.25	30.73	100	49	Peak

Test Mode :	Mode 4	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :		Plane :	E1 Plane

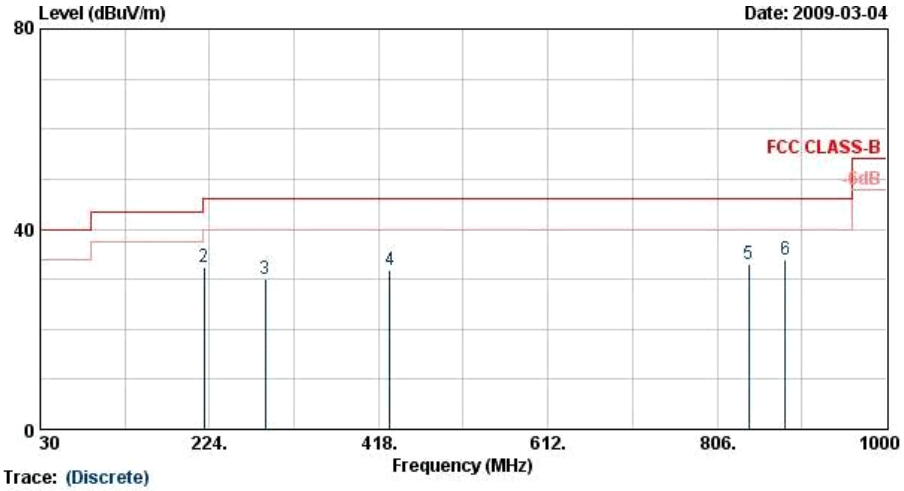


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 VERTICAL
Project : FR 921118
Memo : Mode 4

	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 @	43.50	27.88	-12.12	40.00	47.49	10.87	0.72	31.20	---	---	Peak
2	64.02	25.35	-14.65	40.00	49.54	6.28	0.93	31.39	---	---	Peak
3	181.74	30.51	-12.99	43.50	50.95	9.32	1.62	31.38	---	---	Peak
4	430.90	30.67	-15.33	46.00	43.07	16.17	2.73	31.30	---	---	Peak
5 @	657.00	35.62	-10.38	46.00	44.11	18.98	3.43	30.90	100	63	Peak
6 @	903.40	34.39	-11.61	46.00	39.19	21.58	4.17	30.53	---	---	Peak

Test Mode :	Mode 5	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :		Plane :	E1 Plane

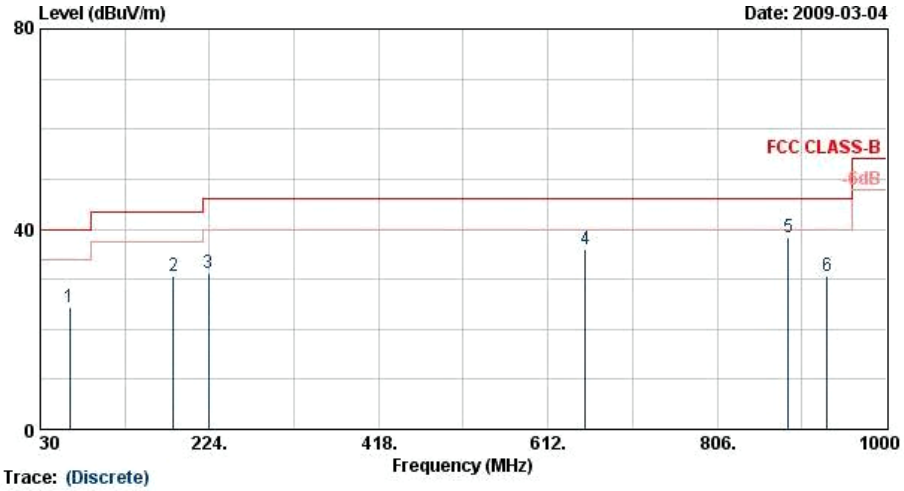


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 HORIZONTAL
Project : FR 921118
Memo : Mode 5

	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	21.71	-18.29	40.00	33.17	19.21	0.64	31.31	---	---	Peak
2	217.38	32.38	-13.62	46.00	51.68	10.36	1.78	31.44	---	---	Peak
3	287.85	29.93	-16.07	46.00	46.22	13.07	2.07	31.43	---	---	Peak
4	430.90	31.76	-14.24	46.00	44.16	16.17	2.73	31.30	---	---	Peak
5	841.80	32.96	-13.04	46.00	38.94	20.73	3.94	30.65	---	---	Peak
6 @	884.50	33.77	-12.23	46.00	38.87	21.35	4.10	30.55	100	122	Peak

Test Mode :	Mode 5	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :		Plane :	E1 Plane

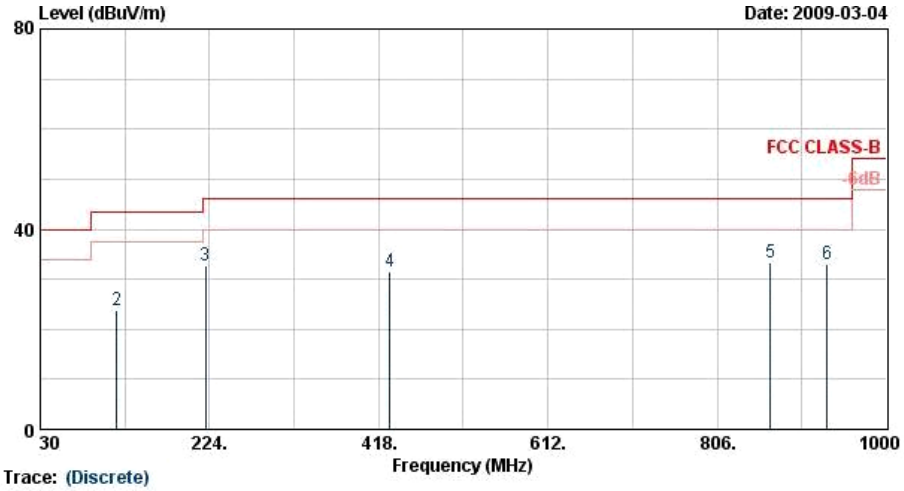


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 VERTICAL
Project : FR 921118
Memo : Mode 5

	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	64.02	24.40	-15.60	40.00	48.59	6.28	0.93	31.39	---	---	Peak
2	183.09	30.68	-12.82	43.50	51.14	9.27	1.63	31.37	---	---	Peak
3	223.05	31.13	-14.87	46.00	49.97	10.85	1.81	31.49	---	---	Peak
4 @	654.90	35.88	-10.12	46.00	44.38	18.97	3.42	30.90	---	---	Peak
5 @	887.30	38.50	-7.50	46.00	43.54	21.40	4.11	30.55	100	213	Peak
6	932.10	30.60	-15.40	46.00	35.51	21.54	4.22	30.67	---	---	Peak

Test Mode :	Mode 6	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :		Plane :	E1 Plane

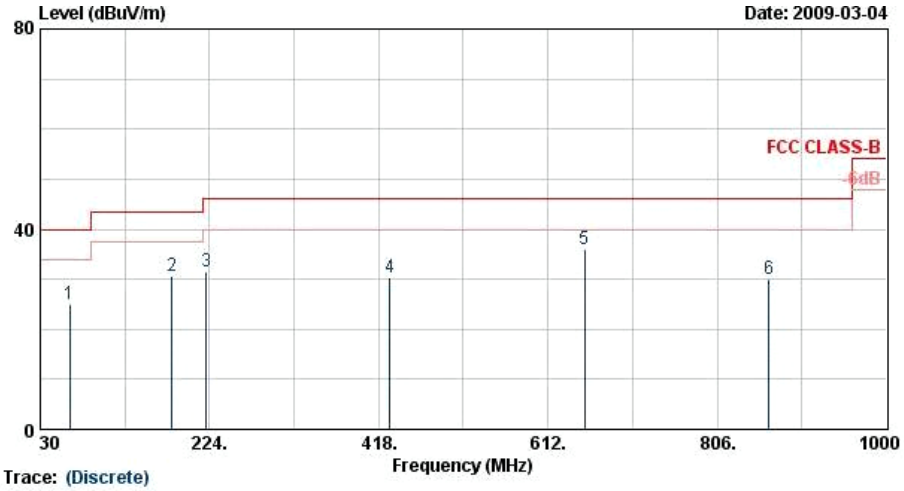


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 HORIZONTAL
Project : FR 921118
Memo : Mode 6

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.54	21.22	-18.78	40.00	33.34	18.51	0.65	31.28	---	---	Peak
2	118.02	23.75	-19.75	43.50	41.83	12.06	1.27	31.41	---	---	Peak
3	219.81	32.63	-13.37	46.00	51.70	10.60	1.80	31.47	---	---	Peak
4	430.90	31.49	-14.51	46.00	43.89	16.17	2.73	31.30	---	---	Peak
5 @	867.00	33.24	-12.76	46.00	38.70	21.10	4.03	30.59	100	58	Peak
6	932.10	33.03	-12.97	46.00	37.94	21.54	4.22	30.67	---	---	Peak

Test Mode :	Mode 6	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :		Plane :	E1 Plane



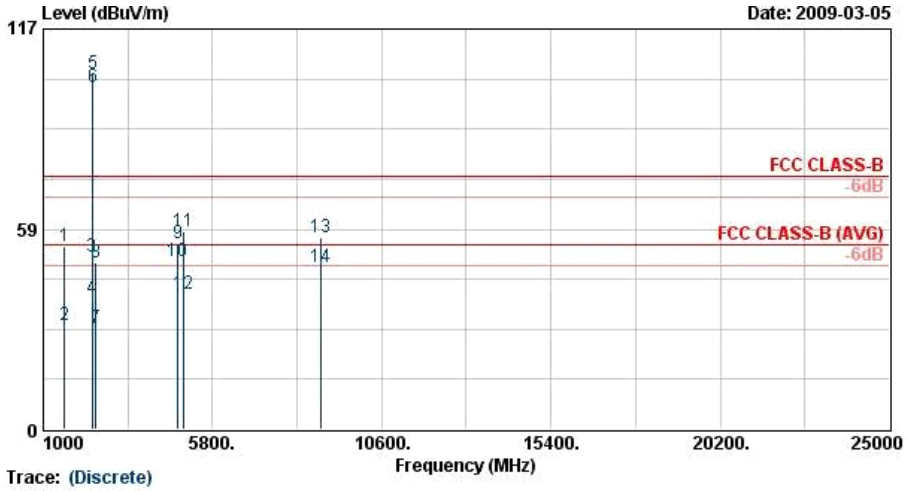
Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m BILOG_081118 VERTICAL
Project : FR 921118
Memo : Mode 6

	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	64.02	25.08	-14.92	40.00	49.27	6.28	0.93	31.39	---	---	Peak
2	180.93	30.67	-12.83	43.50	51.10	9.32	1.62	31.38	---	---	Peak
3	220.62	31.39	-14.61	46.00	50.38	10.69	1.80	31.48	---	---	Peak
4	430.90	30.31	-15.69	46.00	42.71	16.17	2.73	31.30	---	---	Peak
5 @	654.20	35.93	-10.07	46.00	44.43	18.97	3.42	30.90	100	38	Peak
6	864.90	30.00	-16.00	46.00	35.51	21.07	4.02	30.60	---	---	Peak

3.7.6 Test Result of Radiated Emission ≥ 1GHz

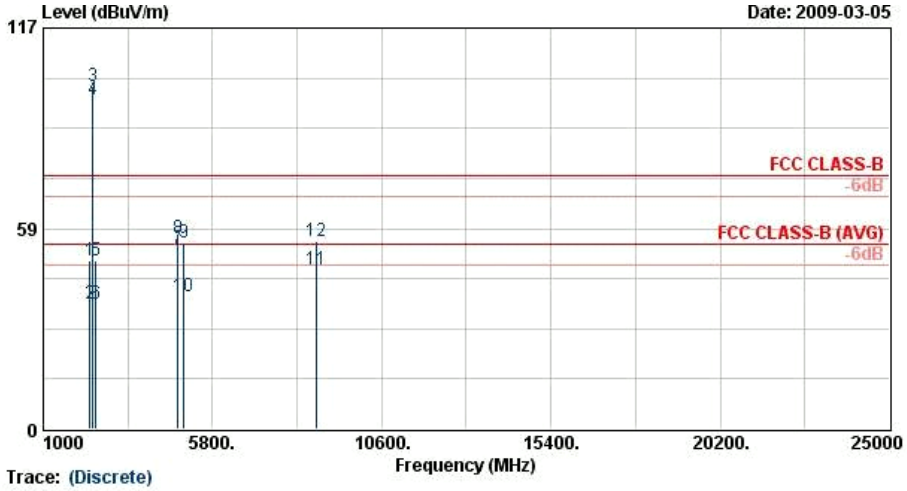
Test Mode :	Mode 1	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#5 and #6 are Fundamental Signals	Plane :	E1 Plane



Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) HORIZONTAL
Project : FR921118
Memo : Mode 1

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		1596.00	53.71	-20.29	74.00	55.49	29.52	4.47	35.77	172	324	Peak
2		1596.00	30.27	-23.73	54.00	32.05	29.52	4.47	35.77	172	324	Average
3		2389.42	50.53	-23.47	74.00	48.43	32.32	5.46	35.68	172	324	Peak
4		2389.42	38.49	-15.51	54.00	36.39	32.32	5.46	35.68	172	324	Average
5	X	2412.00	103.93			101.85	32.32	5.44	35.68	172	324	Peak
6	@	2412.00	100.18			98.10	32.32	5.44	35.68	172	324	Average
7		2500.00	29.77	-24.23	54.00	27.80	32.30	5.37	35.70	172	324	Average
8		2500.00	48.75	-25.25	74.00	46.78	32.30	5.37	35.70	172	324	Peak
9		4821.00	54.35	-19.65	74.00	46.62	35.59	7.81	35.67	100	105	Peak
10	!	4821.00	49.10	-4.90	54.00	41.37	35.59	7.81	35.67	100	105	Average
11		4977.00	57.78	-16.22	74.00	49.67	35.78	7.94	35.61	100	249	Peak
12		4977.00	39.75	-14.25	54.00	31.64	35.78	7.94	35.61	100	249	Average
13		8865.00	56.29	-17.71	74.00	43.88	38.62	10.30	36.51	100	16	Peak
14		8865.00	47.60	-6.40	54.00	35.19	38.62	10.30	36.51	100	16	Average

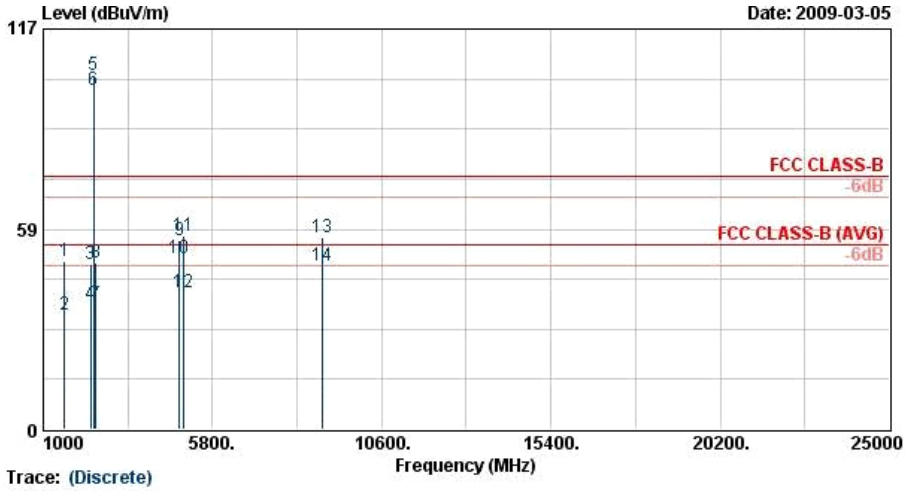
Test Mode :	Mode 1	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals	Plane :	E1 Plane



Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) VERTICAL
Project : FR 921118
Memo : Mode 1

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		2320.45	49.35	-24.65	74.00	47.20	32.30	5.51	35.67	100	47	Peak
2		2320.45	36.36	-17.64	54.00	34.21	32.30	5.51	35.67	100	47	Average
3	X	2412.00	100.14			98.08	32.30	5.44	35.68	100	47	Peak
4	@	2412.00	96.19			94.13	32.30	5.44	35.68	100	47	Average
5		2494.00	49.04	-24.96	74.00	47.07	32.30	5.37	35.70	100	47	Peak
6		2494.00	36.60	-17.40	54.00	34.63	32.30	5.37	35.70	100	47	Average
7	!	4821.00	52.50	-1.50	54.00	45.40	34.97	7.81	35.67	100	118	Average
8		4821.00	55.60	-18.40	74.00	48.49	34.97	7.81	35.67	100	118	Peak
9		4989.00	54.47	-19.53	74.00	47.13	35.00	7.95	35.61	100	254	Peak
10		4989.00	38.74	-15.26	54.00	31.40	35.00	7.95	35.61	100	254	Average
11		8757.00	46.75	-7.25	54.00	35.49	37.45	10.26	36.45	100	78	Average
12		8757.00	54.63	-19.37	74.00	43.37	37.45	10.26	36.45	100	78	Peak

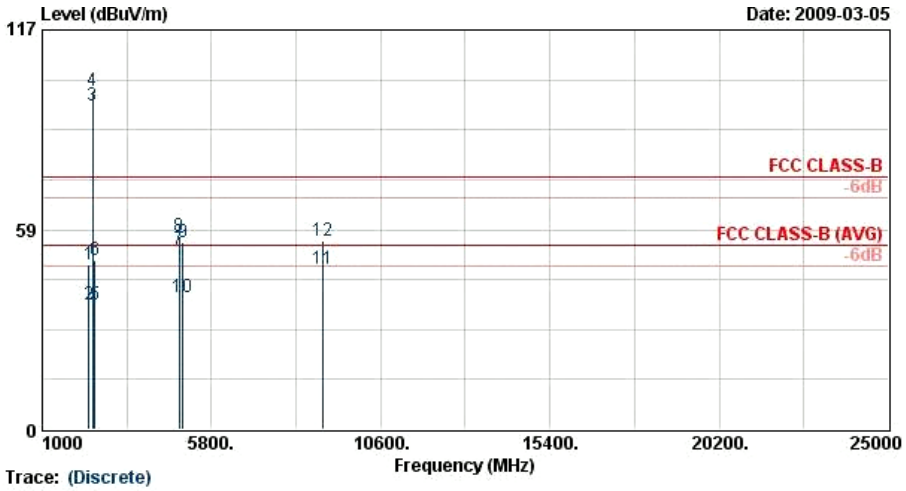
Test Mode :	Mode 2	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#5 and #6 are Fundamental Signals	Plane :	E1 Plane



Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) HORIZONTAL
Project : FR 921118
Memo : Mode 2

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		1596.00	49.18	-24.82	74.00	50.96	29.52	4.47	35.77	144	323	Peak
2		1596.00	33.37	-20.63	54.00	35.15	29.52	4.47	35.77	144	323	Average
3		2342.00	48.41	-25.59	74.00	46.25	32.33	5.50	35.67	144	323	Peak
4		2342.00	36.35	-17.65	54.00	34.19	32.33	5.50	35.67	144	323	Average
5	X	2437.00	103.72			101.68	32.31	5.41	35.69	144	323	Peak
6	@	2437.00	99.37			97.33	32.31	5.41	35.69	144	323	Average
7		2492.00	36.44	-17.56	54.00	34.47	32.30	5.37	35.70	144	323	Average
8		2492.00	48.75	-25.25	74.00	46.78	32.30	5.37	35.70	144	323	Peak
9		4869.00	55.19	-18.81	74.00	47.34	35.66	7.85	35.65	100	300	Peak
10	!	4869.00	50.06	-3.94	54.00	42.20	35.66	7.85	35.65	100	300	Average
11		4989.00	56.76	-17.24	74.00	48.62	35.80	7.95	35.61	100	249	Peak
12		4989.00	39.94	-14.06	54.00	31.80	35.80	7.95	35.61	100	249	Average
13		8898.00	55.92	-18.08	74.00	43.51	38.64	10.31	36.54	100	62	Peak
14		8898.00	47.96	-6.04	54.00	35.55	38.64	10.31	36.54	100	62	Average

Test Mode :	Mode 2	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals	Plane :	E1 Plane

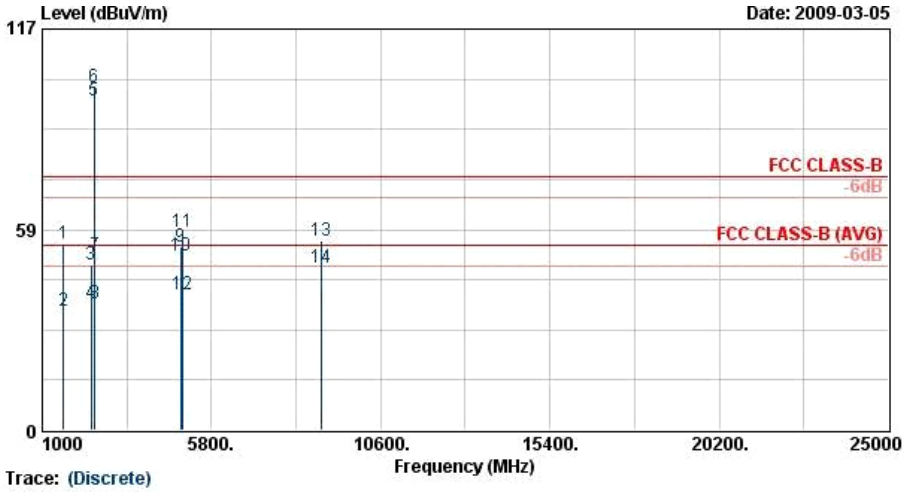


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) VERTICAL
Project : FR921118
Memo : Mode 2

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		2316.00	48.29	-25.71	74.00	46.12	32.30	5.53	35.67	173	48	Peak
2		2316.00	36.32	-17.68	54.00	34.16	32.30	5.53	35.67	173	48	Average
3	@	2437.00	94.88			92.85	32.30	5.41	35.69	173	48	Average
4	X	2437.00	99.17			97.12	32.30	5.43	35.69	173	48	Peak
5		2494.00	36.57	-17.43	54.00	34.60	32.30	5.37	35.70	173	48	Average
6		2494.00	49.77	-24.23	74.00	47.80	32.30	5.37	35.70	173	48	Peak
7	!	4878.00	52.54	-1.46	54.00	45.36	34.98	7.85	35.65	100	56	Average
8		4878.00	56.61	-17.39	74.00	49.43	34.98	7.85	35.65	100	56	Peak
9		4986.00	54.65	-19.35	74.00	47.33	35.00	7.94	35.61	100	255	Peak
10		4986.00	38.60	-15.40	54.00	31.28	35.00	7.94	35.61	100	255	Average
11		8973.00	47.09	-6.91	54.00	35.77	37.58	10.33	36.59	100	29	Average
12		8973.00	55.10	-18.90	74.00	43.77	37.58	10.33	36.59	100	29	Peak

Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#5 and #6 are Fundamental Signals	Plane :	E1 Plane

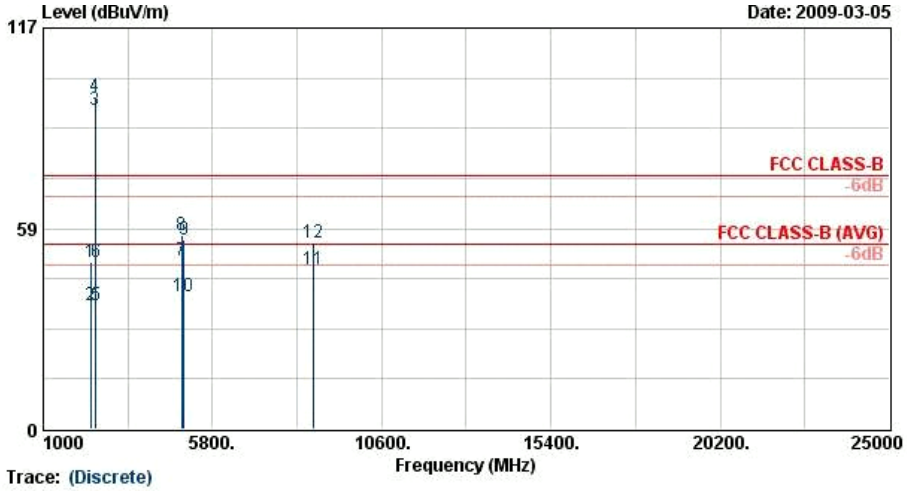


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) HORIZONTAL
Project : FR 921118
Memo : Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1596.00	54.19	-19.81	74.00	55.97	29.52	4.47	35.77	171	321	Peak
2	1596.00	34.92	-19.08	54.00	36.70	29.52	4.47	35.77	171	321	Average
3	2390.00	48.45	-25.55	74.00	46.35	32.32	5.46	35.68	171	321	Peak
4	2390.00	36.77	-17.23	54.00	34.67	32.32	5.46	35.68	171	321	Average
5 @	2462.00	96.17			94.15	32.31	5.40	35.69	171	321	Average
6 @	2462.00	100.05			98.03	32.31	5.40	35.69	171	321	Peak
7	2495.06	50.92	-23.08	74.00	48.95	32.30	5.37	35.70	171	321	Peak
8	2495.06	37.07	-16.93	54.00	35.10	32.30	5.37	35.70	171	321	Average
9	4926.00	53.33	-20.67	74.00	45.35	35.72	7.89	35.63	100	114	Peak
10 @	4926.00	51.01	-2.99	54.00	43.03	35.72	7.89	35.63	100	114	Average
11	4989.00	57.92	-16.08	74.00	49.78	35.80	7.95	35.61	100	249	Peak
12	4989.00	39.78	-14.22	54.00	31.64	35.80	7.95	35.61	100	249	Average
13	8922.00	55.28	-18.72	74.00	42.88	38.65	10.31	36.56	100	107	Peak
14 @	8922.00	47.29	-6.71	54.00	34.88	38.65	10.31	36.56	100	107	Average

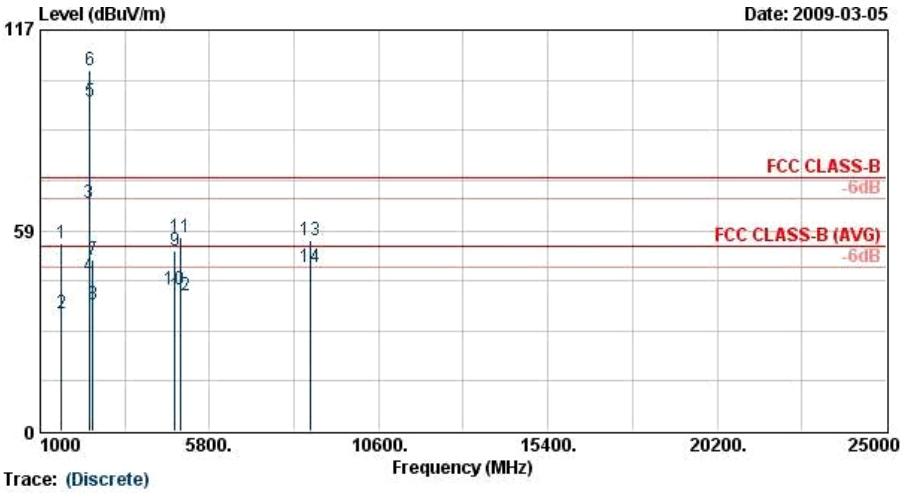
Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals	Plane :	E1 Plane



Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) VERTICAL
Project : FR 921118
Memo : Mode 3

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		2348.00	48.72	-25.28	74.00	46.59	32.30	5.50	35.67	105	16	Peak
2		2348.00	36.23	-17.77	54.00	34.10	32.30	5.50	35.67	105	16	Average
3	@	2462.00	93.14			91.13	32.30	5.40	35.69	105	16	Average
4	@	2462.00	97.13			95.12	32.30	5.40	35.69	105	16	Peak
5		2498.29	36.19	-17.81	54.00	34.22	32.30	5.37	35.70	105	16	Average
6		2498.29	48.85	-25.15	74.00	46.88	32.30	5.37	35.70	105	16	Peak
7	@	4926.00	49.35	-4.65	54.00	42.10	34.99	7.89	35.63	100	266	Average
8		4926.00	56.36	-17.64	74.00	49.11	34.99	7.89	35.63	100	266	Peak
9		4989.00	55.09	-18.91	74.00	47.75	35.00	7.95	35.61	100	255	Peak
10		4989.00	38.64	-15.36	54.00	31.30	35.00	7.95	35.61	100	255	Average
11	@	8661.00	46.46	-7.54	54.00	35.22	37.40	10.23	36.39	100	28	Average
12		8661.00	54.53	-19.47	74.00	43.29	37.40	10.23	36.39	100	28	Peak

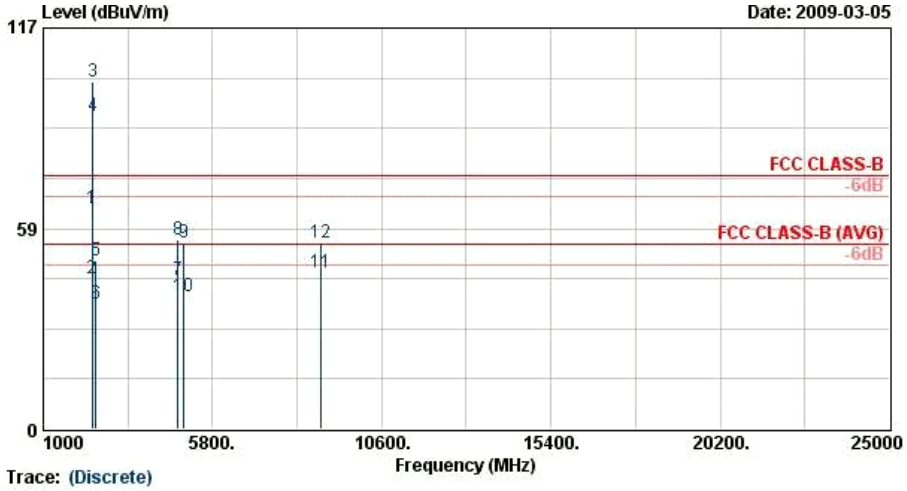
Test Mode :	Mode 4	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#5 and #6 are Fundamental Signals	Plane :	E1 Plane



Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) HORIZONTAL
Project : FR921118
Memo : Mode 4

		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		1598.00	54.73	-19.27	74.00	56.51	29.52	4.47	35.77	171	324	Peak
2		1598.00	34.50	-19.50	54.00	36.28	29.52	4.47	35.77	171	324	Average
3	@	2389.99	66.64	-7.36	74.00	64.54	32.32	5.46	35.68	171	324	Peak
4	@	2389.99	45.05	-8.95	54.00	42.95	32.32	5.46	35.68	171	324	Average
5	@	2412.00	96.11			94.03	32.32	5.44	35.68	171	324	Average
6	@	2412.00	105.39			103.31	32.32	5.44	35.68	171	324	Peak
7		2492.00	50.01	-23.99	74.00	48.04	32.30	5.37	35.70	171	324	Peak
8		2492.00	37.15	-16.85	54.00	35.18	32.30	5.37	35.70	171	324	Average
9		4821.00	52.62	-21.38	74.00	44.89	35.59	7.81	35.67	100	107	Peak
10	@	4821.00	41.41	-12.59	54.00	33.68	35.59	7.81	35.67	100	107	Average
11		4986.00	56.51	-17.49	74.00	48.41	35.78	7.94	35.61	100	249	Peak
12		4986.00	39.77	-14.23	54.00	31.66	35.78	7.94	35.61	100	249	Average
13		8649.00	55.64	-18.36	74.00	43.31	38.49	10.23	36.39	100	144	Peak
14	@	8649.00	47.66	-6.34	54.00	35.33	38.49	10.23	36.39	100	144	Average

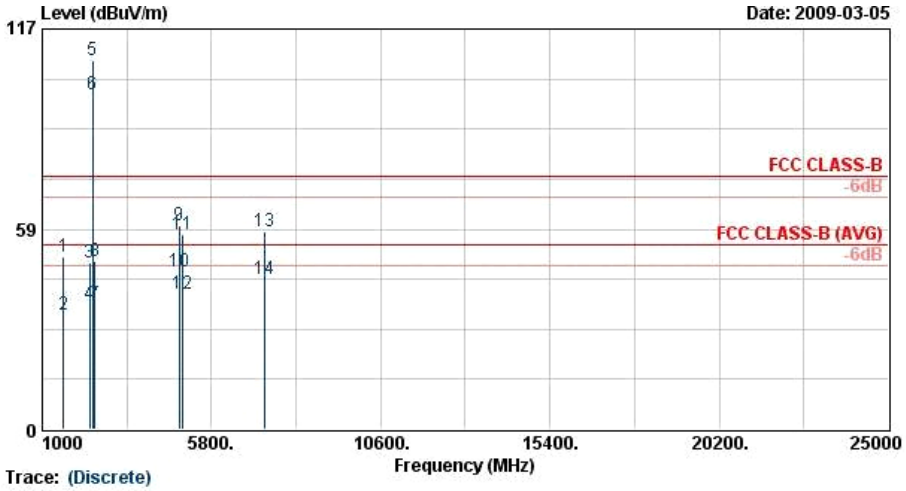
Test Mode :	Mode 4	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals	Plane :	E1 Plane



Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) VERTICAL
Project : FR 921118
Memo : Mode 4

	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 @	2389.99	64.43	-9.57	74.00	62.35	32.30	5.46	35.68	100	48	Peak
2 @	2389.99	44.03	-9.97	54.00	41.95	32.30	5.46	35.68	100	48	Average
3 @	2412.00	101.33			99.26	32.30	5.44	35.68	100	48	Peak
4 @	2412.00	91.54			89.48	32.30	5.44	35.68	100	48	Average
5	2494.00	49.28	-24.72	74.00	47.31	32.30	5.37	35.70	100	48	Peak
6	2494.00	36.68	-17.32	54.00	34.71	32.30	5.37	35.70	100	48	Average
7 @	4821.00	43.36	-10.64	54.00	36.26	34.97	7.81	35.67	100	149	Average
8	4821.00	55.05	-18.95	74.00	47.95	34.97	7.81	35.67	100	149	Peak
9	4998.00	54.56	-19.44	74.00	47.21	35.00	7.95	35.60	100	254	Peak
10	4998.00	38.62	-15.38	54.00	31.27	35.00	7.95	35.60	100	254	Average
11 @	8853.00	45.78	-8.22	54.00	34.49	37.51	10.29	36.51	100	78	Average
12	8853.00	54.24	-19.76	74.00	42.94	37.51	10.29	36.51	100	78	Peak

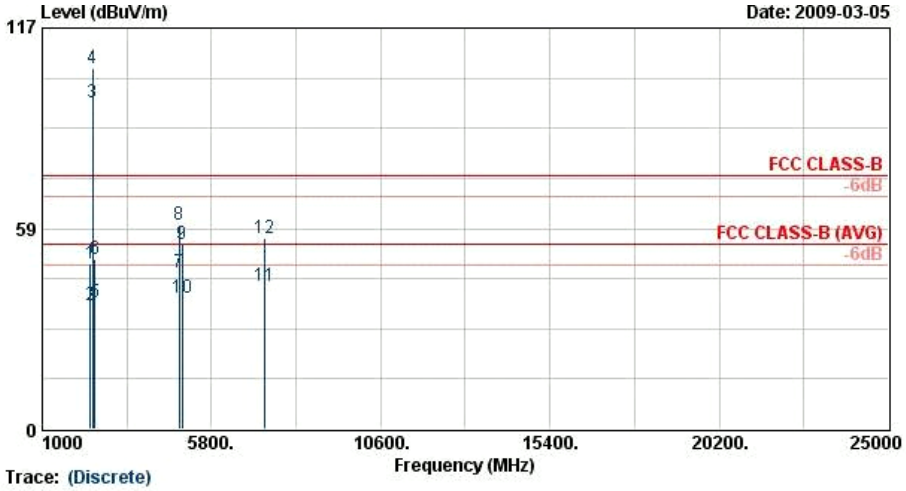
Test Mode :	Mode 5	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#5 and #6 are Fundamental Signals	Plane :	E1 Plane



Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) HORIZONTAL
Project : FR 921118
Memo : Mode 5

	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	1596.00	50.56	-23.44	74.00	52.34	29.52	4.47	35.77	144	322	Peak
2	1596.00	33.45	-20.55	54.00	35.23	29.52	4.47	35.77	144	322	Average
3	2350.00	48.59	-25.41	74.00	46.43	32.33	5.50	35.67	144	322	Peak
4	2350.00	36.66	-17.34	54.00	34.50	32.33	5.50	35.67	144	322	Average
5 @	2437.00	107.96			105.92	32.31	5.41	35.69	144	322	Peak
6 @	2437.00	98.00			95.96	32.31	5.41	35.69	144	322	Average
7	2492.00	36.61	-17.39	54.00	34.64	32.30	5.37	35.70	144	322	Average
8	2492.00	49.06	-24.94	74.00	47.09	32.30	5.37	35.70	144	322	Peak
9	4878.00	59.47	-14.53	74.00	51.61	35.66	7.85	35.65	100	112	Peak
10 @	4878.00	46.04	-7.96	54.00	38.18	35.66	7.85	35.65	100	112	Average
11	4977.00	56.84	-17.16	74.00	48.74	35.78	7.94	35.61	100	249	Peak
12	4977.00	39.73	-14.27	54.00	31.62	35.78	7.94	35.61	100	249	Average
13	7314.00	57.75	-16.25	74.00	46.09	37.99	9.81	36.13	100	102	Peak
14 @	7314.00	43.87	-10.13	54.00	32.20	37.99	9.81	36.13	100	102	Average

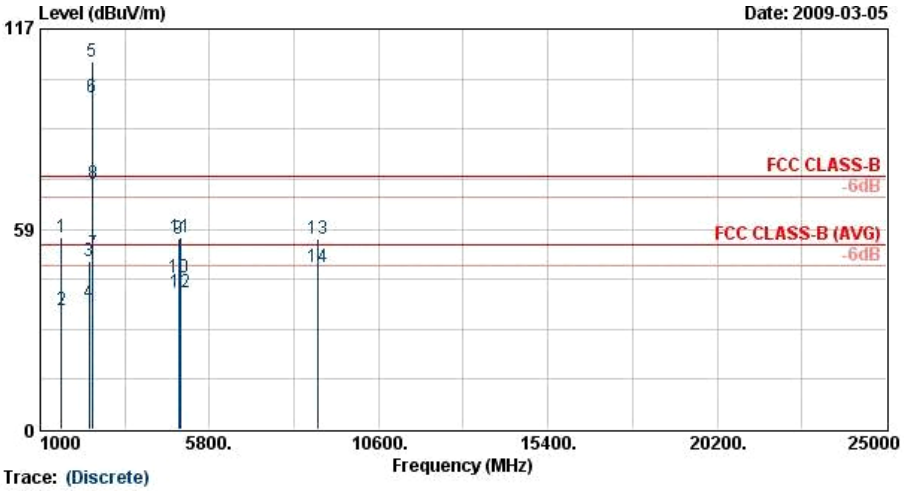
Test Mode :	Mode 5	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals	Plane :	E1 Plane



Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) VERTICAL
Project : FR 921118
Memo : Mode 5

		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		2372.00	48.15	-25.85	74.00	46.06	32.30	5.47	35.68	200	54	Peak
2		2372.00	36.25	-17.75	54.00	34.15	32.30	5.47	35.68	200	54	Average
3	@	2437.00	95.07			93.04	32.30	5.41	35.69	200	54	Average
4	@	2437.00	105.13			103.11	32.30	5.41	35.69	200	54	Peak
5		2494.00	36.87	-17.13	54.00	34.90	32.30	5.37	35.70	200	54	Average
6		2494.00	49.75	-24.25	74.00	47.78	32.30	5.37	35.70	200	54	Peak
7	@	4878.00	45.82	-8.18	54.00	38.64	34.98	7.85	35.65	100	154	Average
8		4878.00	59.43	-14.57	74.00	52.25	34.98	7.85	35.65	100	154	Peak
9		4977.00	54.08	-19.92	74.00	46.76	35.00	7.94	35.61	100	270	Peak
10		4977.00	38.45	-15.55	54.00	31.13	35.00	7.94	35.61	100	270	Average
11	@	7305.00	41.91	-12.09	54.00	31.49	36.72	9.81	36.12	100	126	Average
12		7305.00	55.53	-18.47	74.00	45.12	36.72	9.81	36.12	100	126	Peak

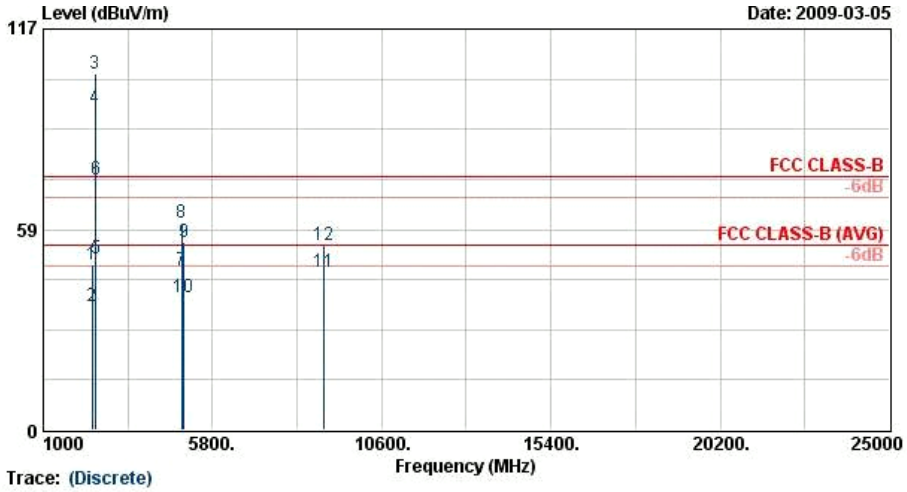
Test Mode :	Mode 6	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Horizontal
Remark :	#5 and #6 are Fundamental Signals	Plane :	E1 Plane



Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) HORIZONTAL
Project : FR 921118
Memo : Mode 6

	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	1596.00	56.01	-17.99	74.00	57.79	29.52	4.47	35.77	170	322	Peak
2	1596.00	34.88	-19.12	54.00	36.66	29.52	4.47	35.77	170	322	Average
3	2390.00	49.13	-24.87	74.00	47.03	32.32	5.46	35.68	170	322	Peak
4	2390.00	36.84	-17.16	54.00	34.74	32.32	5.46	35.68	170	322	Average
5 @	2462.00	107.35			105.33	32.31	5.40	35.70	170	322	Peak
6 @	2462.00	96.95			94.93	32.31	5.40	35.69	170	322	Average
7 @	2483.50	51.27	-2.73	54.00	49.28	32.30	5.38	35.70	170	322	Average
8 @	2483.50	71.60	-2.40	74.00	69.61	32.30	5.38	35.70	170	322	Peak
9	4926.00	55.65	-18.35	74.00	47.67	35.72	7.89	35.63	100	115	Peak
10 @	4926.00	44.17	-9.83	54.00	36.19	35.72	7.89	35.63	100	115	Average
11	4998.00	55.92	-18.08	74.00	47.77	35.80	7.95	35.60	100	249	Peak
12	4998.00	39.80	-14.20	54.00	31.65	35.80	7.95	35.60	100	249	Average
13	8886.00	55.53	-18.47	74.00	43.12	38.63	10.30	36.53	100	304	Peak
14 @	8886.00	47.52	-6.48	54.00	35.11	38.63	10.30	36.53	100	304	Average

Test Mode :	Mode 6	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	44~46%
Test Engineer :	Elvis Chen	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals	Plane :	E1 Plane



Site : 03CH07-HY
Condition : FCC CLASS-B 3m HF-ANT(080305) VERTICAL
Project : FR921118
Memo : Mode 6

		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		2388.00	48.29	-25.71	74.00	46.20	32.30	5.46	35.68	199	57	Peak
2		2388.00	36.22	-17.78	54.00	34.14	32.30	5.46	35.68	199	57	Average
3	@	2462.00	104.00			101.99	32.30	5.40	35.70	199	57	Peak
4	@	2462.00	93.84			91.83	32.30	5.40	35.69	199	57	Average
5	@	2483.50	49.81	-4.19	54.00	47.82	32.30	5.38	35.70	199	57	Average
6	@	2483.50	73.26	-0.74	74.00	71.27	32.30	5.38	35.70	199	57	Peak
7	@	4917.00	46.71	-7.29	54.00	39.48	34.98	7.88	35.63	100	89	Average
8		4917.00	60.60	-13.40	74.00	53.37	34.98	7.88	35.63	100	89	Peak
9		4998.00	54.79	-19.21	74.00	47.44	35.00	7.95	35.60	100	254	Peak
10		4998.00	38.61	-15.39	54.00	31.26	35.00	7.95	35.60	100	254	Average
11	@	8958.00	46.02	-7.98	54.00	34.70	37.57	10.32	36.57	100	238	Average
12		8958.00	54.13	-19.87	74.00	42.80	37.57	10.32	36.57	100	238	Peak

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 Fixed Internal 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
System Simulator	R&S	CMU200	105934	N/A	Nov. 08, 2008	Nov. 07, 2009	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 26, 2008	Jun. 25, 2009	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 19, 2009	Feb. 18, 2010	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 19, 2009	Feb. 18, 2010	Conducted (TH02-HY)
Thermal Chamber	TEN BILLION	TTH-D35P	TBN-930701	N/A	Aug. 01, 2008	Jul. 31, 2009	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)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz~1GHz	Nov. 20, 2008	Nov. 19, 2009	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9kHz~30GHz	Dec. 02, 2008	Dec. 01, 2009	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1G~18GHz	Aug. 13, 2008	Aug. 12. 2009	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1G~26.5GHz	Dec. 17, 2008	Dec. 16, 2009	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10~1000MHz. 32dB.GAIN	Mar. 31, 2008	Mar. 30, 2009	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	66584	1G~18GHz	Aug. 06, 2008	Aug. 05. 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		$u(x_i)$	Ci	$Ci * u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1= 0.197 Antenna VSWR Γ2= 0.194 Uncertainty=20log(1-Γ1*Γ2)	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	**2.36**				
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	**4.72**				

6 Certification of TAF Accreditation

TAF

Certificate No.：L1190-081212

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

Certificate of Accreditation

This is to certify that

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

is accredited in respect of laboratory

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

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

P1, total 18 pages

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

Appendix A. Photographs of EUT

Please refer to Sporton report number EP921118 as below.