FCC TEST REPORT

for

47 CFR, Part 15, Subpart C

Equipment	:	**Wireless IP Phone**
Model No.	:	**WLAN600**
FCC ID	:	**RPW-WLAN600**
Filing Type	:	**Certification**
Applicant	:	**BCM Communication Co., Ltd** 8F, No.3, Wolung Street, Taipei, Taiwan

- The test result refers exclusively to the test presented test model / sample.
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- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.**

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

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History of this test report

Original Report Issue Date:Dec.10, 2003

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

Certificate No. : F3N2801

CERTIFICATE OF COMPLIANCE

for

47 CFR, Part 15, Subpart C

Equipment : **Wireless IP Phone**

Model No. : **WLAN600**

FCC ID : **RPW-WLAN600**

Filing Type : **Certification**

Applicant : **BCM Communication Co., Ltd.**
8F, No.3, Wolung Street, Taipei, Taiwan

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 2001** and the equipment under test was ***passed*** all test items required in FCC Part 15 subpart C, relative to the equipment under test. Testing was carried out on Dec. 05, 2003 at **SPORTON International Inc.** LAB.

Joe Yang
Director

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

1. General Description of Equipment under Test

1.1. Applicant

BCM Communication Co., Ltd.
8F, No.3, Wolung Street, Taipei, Taiwan

1.2. Manufacturer

BCM Communication Co., Ltd.
4F-1, No.66, Sec.2, Nan-Kan Rd., Lu-Chu Hsiang, Taoyuan Hsien, Taiwan

1.3. Basic Description of Equipment under Test

Equipment	: Wireless IP Phone
Model No.	: WLAN600
Trade Name	: BCM
FCC ID	: RPW-WLAN600
Power Supply Type	: Switching
AC Power Cord	: AC 100~240V, 1.8meter, 2pin

1.4. Feature of Equipment under Test

Product Feature & Specification	
1. Host/Radio Interface	DSSS
2. Type of Modulation	11M/5Mbps: CCK, 2Mbps: DQPSK, 1Mbps: DBPSK
3. Number of Channels	11
4. Frequency Band	2.4~2.4835GHz
5. Carrier Frequency of each channel	[2412+(N-1)*5]GHz N=1~11
6. Bandwidth of each channel	22MHz
7. Maximum Output Power to Antenna	13.5 dBm
8. IF & L.O. frequency	LO: 4824MHz(Ch1); Zero-IF
9. Type of Antenna Connector (Ex: SMA,TNC, MCX, MMCX, UFC…….etc)	UFC
10. Antenna Type / Class and Gain	Monopole Antenna / 1.3 dBi
11. Function Type	Transceiver
12. Power Rating (DC/AC , Voltage)	DC 3.03V
13. Duty Cycle	100 %

14. Basic function of product	Wireless Lan VoIP Phone
15. Temperature Range (Operating)	0 ~ + 40 °C
16. Humidity	10% to 90%
17. Earphone	TOP Den: TS168S-03206N-MV
18. Adapter	BCM

2. Test Configuration of Equipment under Test

2.1. Test Manner

a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2001 and configuration operated in a manner, which tended to maximize its emission characteristics in a typical application.

b. The complete test system included A/C adapter, earphone and EUT for EMI test

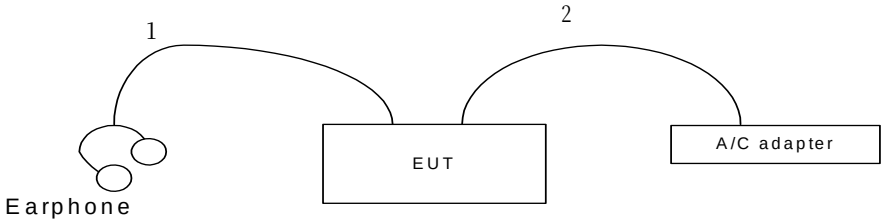
c. The EUT can operate on eleven channels from 2412.0MHz to 2462.0MHz. (as listed in section 1.4). According to 15.31(m), three channels (one near top, one near middle and one near bottom) were performed as following:

d. The following test modes were pretested for conduction test:
Mode 1: 802. 11b CH01（2412MHz）
Mode 2: 802. 11b CH06（2437MHz）
Mode 3: 802. 11b CH11（2462MHz）

f. The following test modes were pretested for radiation test:
Mode 1: 802. 11b CH01（2412MHz）
Mode 2: 802. 11b CH06（2437MHz）
Mode 3: 802. 11b CH11（2462MHz）

g. Frequency range investigated: conduction 150 KHz to 30 MHz, radiation 30 MHz to 24835 MHz.

2.2. Connection Diagram of Test System



1. The Audio cable is connected from EUT to the EUT's peripheral (earphone).
2. The Power cable is connected from EUT to the EUT's peripheral (A/C adapter).

3. Operation of Equipment under Test

Executed the RF test Utility and the EUT was keep transmitting signals at fixed frequency.

4. General Information of Test

Test Site Location	:	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiag, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-318-0055
Test Site No	:	CO01-HY, 03CH03-HY

4.1. Test Voltage

110V/ 60Hz

4.2. Standard for Methods of Measurement

ANSI C63.4-2001 for conducted power line test and radiated emission test,
"Guidance on Measurements for Direct Sequence Spread Spectrum Systems" for test of 6dB Bandwidth
"Guidance on Measurements for Direct Sequence Spread Spectrum Systems" for test of Maximum Peak Output Power
"Guidance on Measurements for Direct Sequence Spread Spectrum Systems" for test of 100kHz Bandwidth of Frequency Band Edges
"Guidance on Measurements for Direct Sequence Spread Spectrum Systems" for test of Power Spectral Density

4.3. Test in Compliance with

FCC Part 15, Subpart C

4.4. Frequency Range Investigated

a. Conduction: from 150 kHz to 30 MHz
b. Radiation: from 30 MHz to 24835 MHz

4.5. Test Distance

The test distance of radiated emission from antenna to EUT is 3 M.

5. Report of Measurements and Examinations

5.1. List of Measurements and Examinations

FCC Rule	Description of Test	Result
15.207	Conducted Emission	Pass
15.247(a)(2)	6dB Bandwidth	Pass
15.247(b)	Maximum Peak Output Power	Pass
15.209	Radiated Emission	Pass
15.247(c)	100kHz Bandwidth of Frequency Band Edges	Pass
15.247(d)	Power Spectral Density	Pass
15.203	Antenna Requirement	Pass

5.2. 6dB Bandwidth

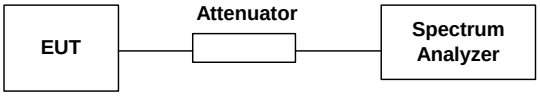
5.2.1. Measuring Instruments：

As described in chapter 7 of this test report.

5.2.2. Test Procedure：

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.
3. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

5.2.3. Test Setup Layout：



5.2.4. Test Result：The spectrum analyzer plots are attached as below

- Temperature : 20.4 °C
- Relative Humidity : 43%

- **Mode 1~3 (802.11b)**

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	6.56	0.5	1
06	2437	6.56	0.5	2
11	2462	6.56	0.5	3

5.3. Maximum Peak Output Power

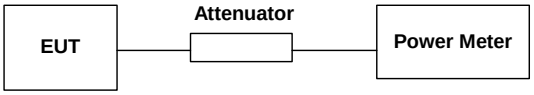
5.3.1. Measuring Instruments：

As described in chapter 7 of this test report.

5.3.2. Test Procedure：

The antenna port（RF output）of the EUT was connected to the input（RF input）of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

5.3.3. Test Setup Layout：



5.3.4. Test Result：See spectrum analyzer plots below

- Temperature : 20.4°C
- Relative Humidity : 43 %
- Antenna Gain: 1.3 dBi

- **Mode 1~3 (802.11b)**

Channel	Frequency (MHz)	Measured Output Power (mWatt)	Measured Output Power (dBm)	Limits (Watt/dBm)
01	2412	22.2	13.5	1W/30 dBm
06	2437	20.4	13.1	1W/30 dBm
11	2462	19.6	13.0	1W/30 dBm

- Comments：Maximum Peak Output Power < 30dBm (1Watt)

5.4. Power Spectral Density

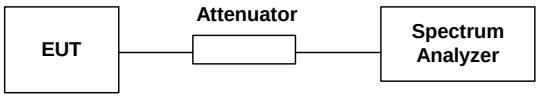
5.4.1. Measuring Instruments：

As described in chapter 7 of this test report.

5.4.2. Test Procedure：

1. The transmitter output was connected to spectrum analyzer through an attenuator.
2. The spectrum analyzer's resolution bandwidth were set at 3KHz RBW and 30KHz VBW as that of the fundamental frequency. Set the sweep time=span/3KHz.
3. The power spectral density was measured and recorded.
4. The sweep time is allowed to be longer than span/3KHz for a full response of the mixer in the spectrum analyzer.

5.4.3. Test Setup Layout：



5.4.4. Test Result：See spectrum analyzer plots below

- Mode 1~3: 802.11b .
- Temperature : 20.4°C
- Relative Humidity : 43%

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-17.90	8	4
06	2437	-18.36	8	5
11	2462	-20.69	8	6

5.5. Test of Conducted Emission

Conducted Emissions were measured from 150 KHz to 30 MHz with a bandwidth of 9 KHz and return leads of the EUT according to the methods defined in ANSI C63.4-2001 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

5.5.1. Major Measuring Instruments：

● Test Receiver	(R&S ESCS 30)
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

5.5.2. Test Procedures：

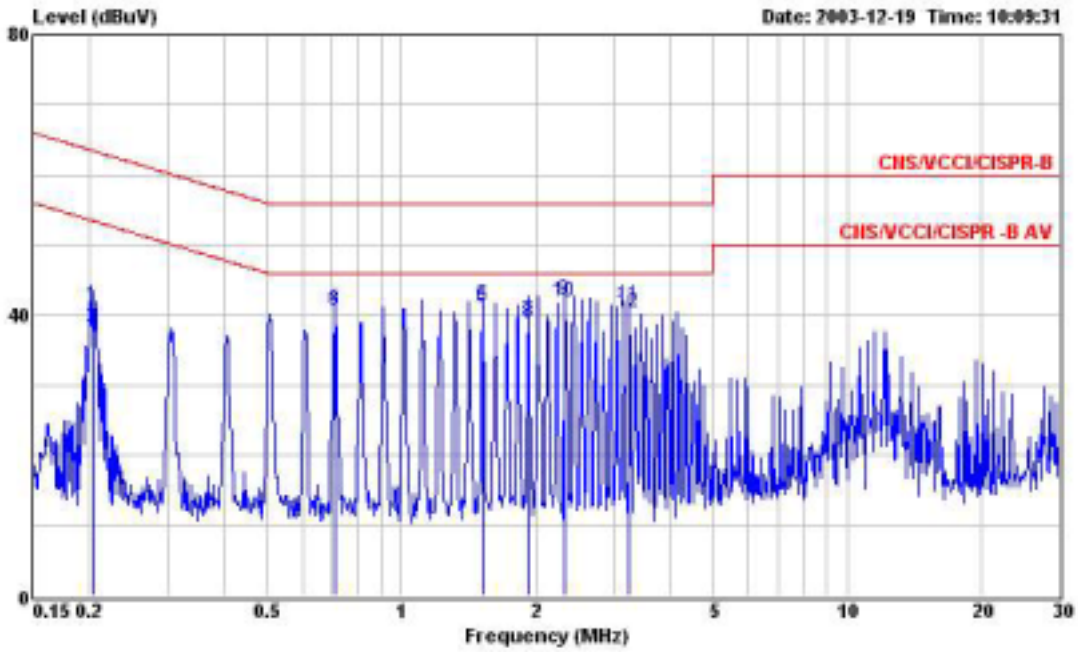
a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connect to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 KHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5.5.3. Test Result of Conducted Emission：

Frequency Range of Test : from 150KHz to 30 MHz. 6dB Bandwidth : 9KHz

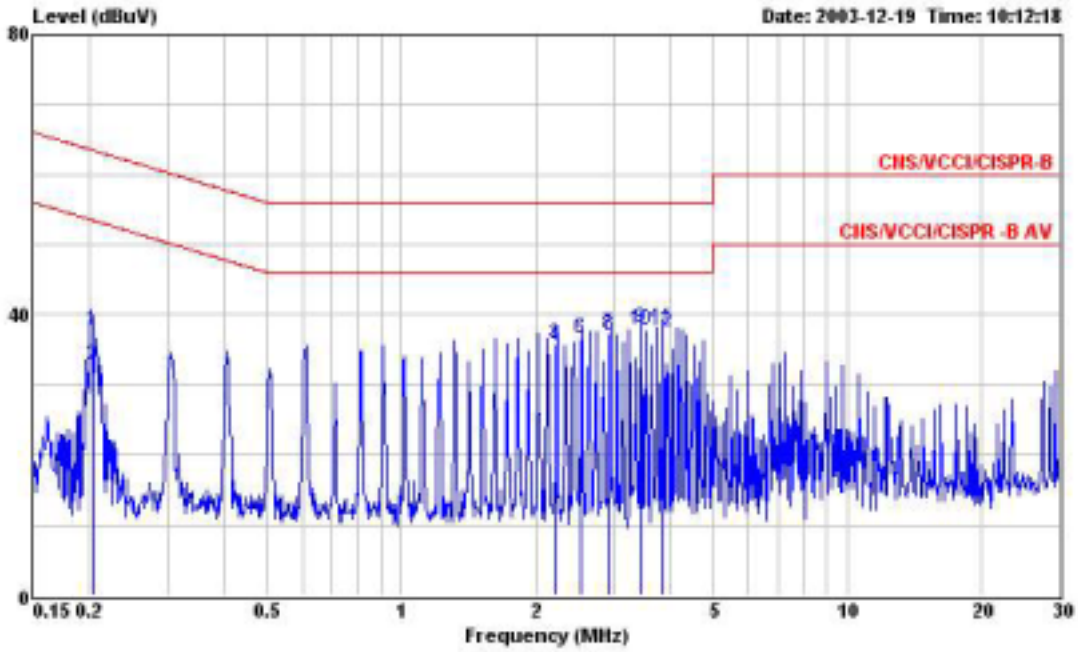
- Test Mode : Mode 1 (CH01 2412MHz)
- Temperature : 25°C
- Relative Humidity : 53 %

■ **The test was passed at the minimum margin that marked by the frame in the following table**



Site : C001-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : Wireless IP Phone
Power : 110V/60Hz
Model : WLAN600
Memo : Tx CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.203	41.43	-22.06	63.49	41.15	0.10	0.18	QP
2	0.203	38.45	-15.04	53.49	38.17	0.10	0.18	Average
3	0.708	40.69	-5.31	46.00	40.54	0.10	0.05	Average
4	0.708	40.86	-15.14	56.00	40.71	0.10	0.05	QP
5	1.520	41.30	-4.70	46.00	41.13	0.10	0.07	Average
6	1.520	41.18	-14.82	56.00	41.01	0.10	0.07	QP
7	1.929	39.00	-17.00	56.00	38.80	0.10	0.10	QP
8	1.929	38.97	-7.03	46.00	38.77	0.10	0.10	Average
9	2.330	42.08	-13.92	56.00	41.87	0.10	0.11	QP
10	2.330	41.85	-4.15	46.00	41.64	0.10	0.11	Average
11	3.240	41.50	-14.50	56.00	41.26	0.10	0.14	QP
12	3.240	40.29	-5.71	46.00	40.05	0.10	0.14	Average



Site : C001-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : Wireless IP Phone
Power : 110V/60Hz
Model : WLAN600
Memo : Tx CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.203	37.81	-25.68	63.49	37.53	0.10	0.18	QP
2	0.203	32.71	-20.78	53.49	32.43	0.10	0.18	Average
3	2.230	35.79	-10.21	46.00	35.56	0.12	0.11	Average
4	2.230	35.57	-20.43	56.00	35.34	0.12	0.11	QP
5	2.533	36.68	-9.32	46.00	36.43	0.13	0.12	Average
6	2.533	36.53	-19.47	56.00	36.28	0.13	0.12	QP
7	2.938	37.33	-18.67	56.00	37.04	0.16	0.13	QP
8	2.938	37.16	-8.84	46.00	36.87	0.16	0.13	Average
9	3.445	38.07	-17.93	56.00	37.74	0.18	0.15	QP
10	3.445	37.87	-8.13	46.00	37.54	0.18	0.15	Average
11	3.850	38.04	-17.96	56.00	37.69	0.19	0.16	QP
12	3.850	37.55	-8.45	46.00	37.20	0.19	0.16	Average

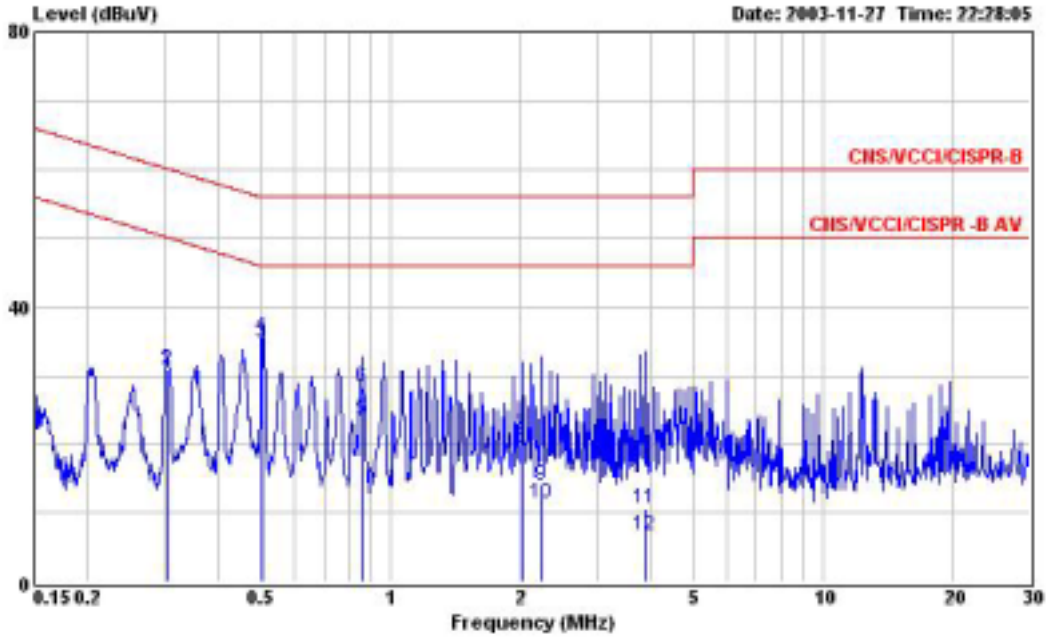
Test Engineer : Jones Tsai

Jones Tsai

5.5.4. Test Result of Conducted Emission：

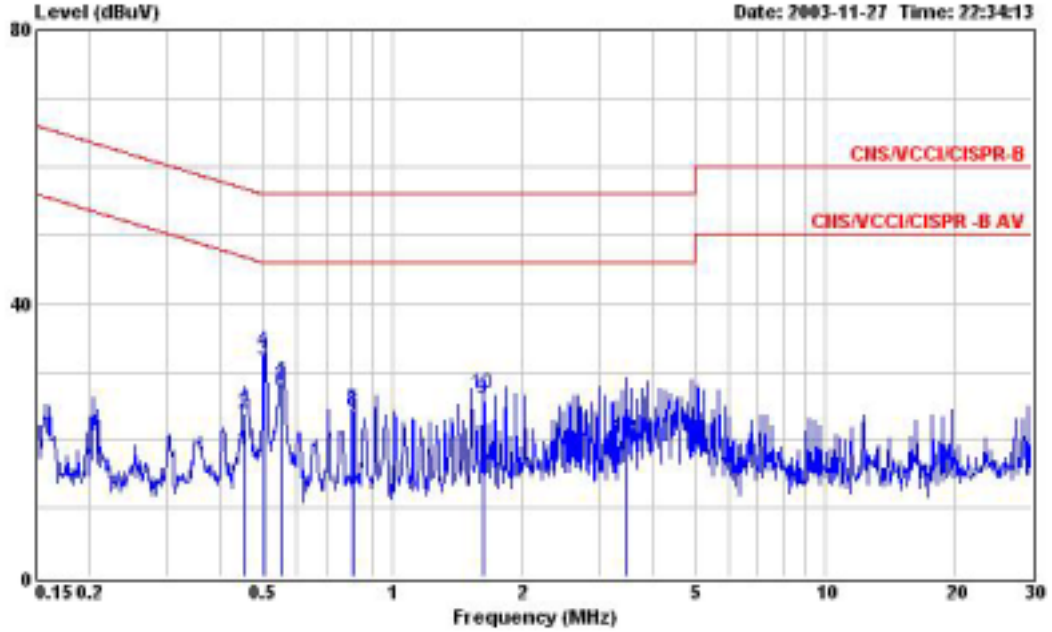
- Frequency Range of Test : from 150KHz to 30 MHz. 6dB Bandwidth : 9KHz
- Test Mode : Mode 2(CH06 2437MHz)
- Temperature : 25°C
- Relative Humidity :53 %

■ **The test was passed at the minimum margin that marked by the frame in the following table**



Site : C001-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : Wireless IP Fone
Power : 110V/60Hz
Model : WLAN600
Memo : Tx CH06 2437MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.305	31.03	-19.08	50.11	30.80	0.10	0.13	Average
2	0.305	30.98	-29.13	60.11	30.75	0.10	0.13	QP
3	0.507	34.88	-11.12	46.00	34.70	0.10	0.08	Average
4	0.507	35.62	-20.38	56.00	35.44	0.10	0.08	QP
5	0.862	23.69	-22.31	46.00	23.56	0.10	0.03	Average
6	0.862	28.27	-27.73	56.00	28.14	0.10	0.03	QP
7	2.020	21.36	-34.64	56.00	21.16	0.10	0.10	QP
8	2.020	19.37	-26.63	46.00	19.17	0.10	0.10	Average
9	2.240	13.92	-42.08	56.00	13.71	0.10	0.11	QP
10	2.240	11.32	-34.68	46.00	11.11	0.10	0.11	Average
11	3.860	10.71	-45.29	56.00	10.45	0.10	0.16	QP
12	3.860	6.70	-39.30	46.00	6.44	0.10	0.16	Average



Site : C001-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : Wireless IP Fone
Power : 110V/60Hz
Model : WLAN600
Memo : Tx CH06 2437MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.456	18.39	-28.38	46.77	18.20	0.10	0.09	Average
2	0.456	23.86	-32.91	56.77	23.67	0.10	0.09	QP
3	0.507	31.72	-14.28	46.00	31.54	0.10	0.08	Average
4	0.507	32.87	-23.13	56.00	32.69	0.10	0.08	QP
5	0.555	28.41	-27.59	56.00	28.24	0.10	0.07	QP
6	0.555	27.11	-18.89	46.00	26.94	0.10	0.07	Average
7	0.813	24.38	-31.62	56.00	24.24	0.10	0.04	QP
8	0.813	24.09	-21.91	46.00	23.95	0.10	0.04	Average
9	1.620	26.05	-19.95	46.00	25.87	0.10	0.08	Average
10	1.620	26.63	-29.37	56.00	26.45	0.10	0.08	QP
11	3.450	20.43	-35.57	56.00	20.10	0.18	0.15	QP
12	3.450	20.17	-25.83	46.00	19.84	0.18	0.15	Average

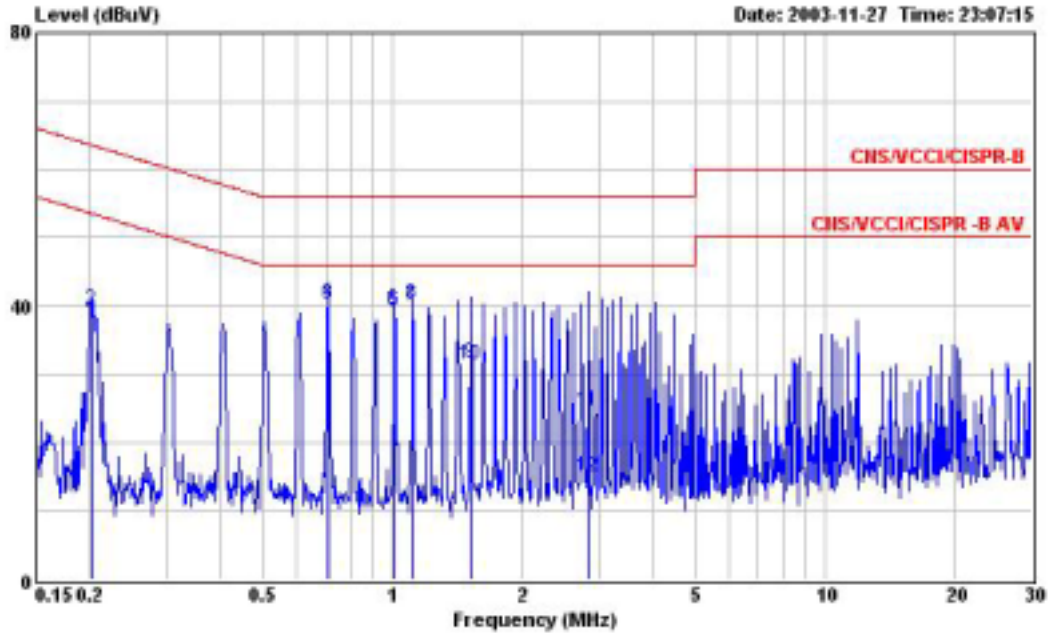
Test Engineer : Jones Tsai

Jones Tsai

5.5.5. Test Result of Conducted Emission：

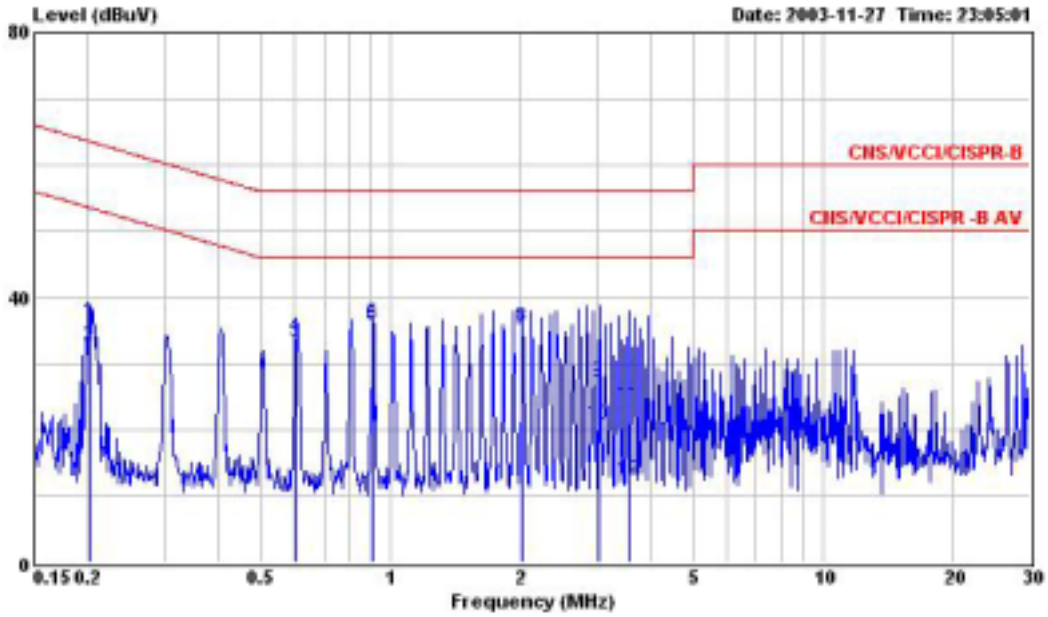
- Frequency Range of Test : from 150KHz to 30 MHz. 6dB Bandwidth : 9KHz
- Test Mode : Mode 3(CH11 2462MHz)
- Temperature : 24.5°C
- Relative Humidity : 52 %

■ **The test was passed at the minimum margin that marked by the frame in the following table**



Site : C001-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : Wireless IP Fone
Power : 110V/60Hz
Model : WLAN600
Memo : Tx CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.201	37.74	-15.83	53.57	37.46	0.10	0.18	Average
2	0.201	39.61	-23.96	63.57	39.33	0.10	0.18	QP
3	0.708	40.22	-5.78	46.00	40.07	0.10	0.05	Average
4	0.708	40.41	-15.59	56.00	40.26	0.10	0.05	QP
5	1.010	39.34	-16.66	56.00	39.22	0.10	0.02	QP
6	1.010	39.55	-6.45	46.00	39.43	0.10	0.02	Average
7	1.110	40.10	-15.90	56.00	39.97	0.10	0.03	QP
8	1.110	40.18	-5.82	46.00	40.05	0.10	0.03	Average
9	1.510	31.71	-24.29	56.00	31.54	0.10	0.07	QP
10	1.510	31.47	-14.53	46.00	31.30	0.10	0.07	Average
11	2.840	24.71	-31.29	56.00	24.48	0.10	0.13	QP
12	2.840	15.11	-30.89	46.00	14.88	0.10	0.13	Average



Site : C001-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : Wireless IP Fone
Power : 110V/60Hz
Model : WLAN600
Memo : Tx CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.202	36.29	-27.24	63.53	36.01	0.10	0.18	QP
2	0.202	32.76	-20.77	53.53	32.48	0.10	0.18	Average
3	0.604	33.31	-22.69	56.00	33.15	0.10	0.06	QP
4	0.604	33.91	-12.09	46.00	33.75	0.10	0.06	Average
5	0.909	36.00	-20.00	56.00	35.87	0.10	0.03	QP
6	0.909	35.87	-10.13	46.00	35.74	0.10	0.03	Average
7	2.020	35.13	-10.87	46.00	34.93	0.10	0.10	Average
8	2.020	35.71	-20.29	56.00	35.51	0.10	0.10	QP
9	3.040	27.40	-28.60	56.00	27.10	0.16	0.14	QP
10	3.040	20.81	-25.19	46.00	20.51	0.16	0.14	Average
11	3.550	23.59	-32.41	56.00	23.26	0.18	0.15	QP
12	3.550	12.36	-33.64	46.00	12.03	0.18	0.15	Average

Test Engineer : Jones Tsai

Jones Tsai

5.6. Test of Radiated Emission

Radiated emissions from 30 MHz to 24.835 GHz were measured according to the methods defines in ANSI C63.4-2001. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

5.6.1. Major Measuring Instruments

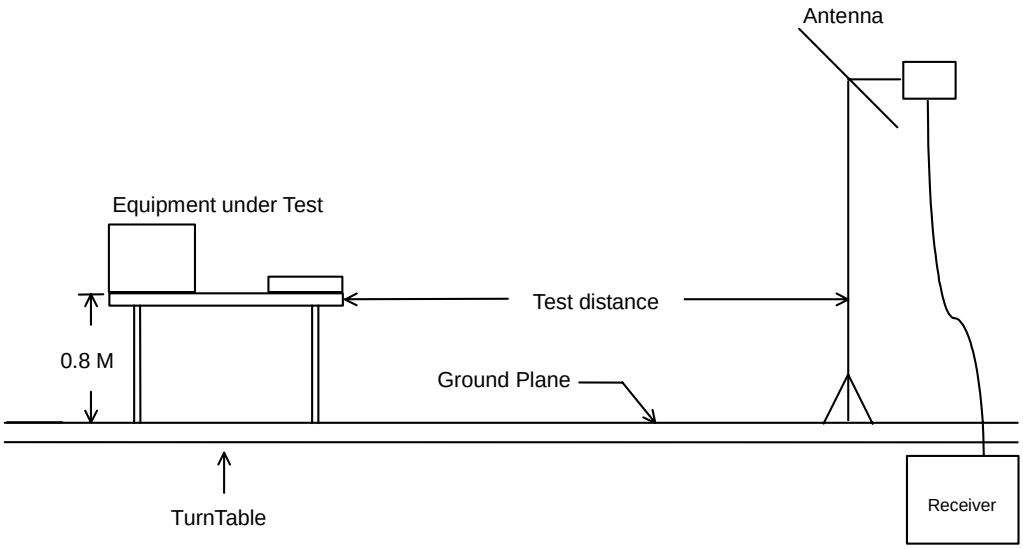
● Amplifier	(MITEQ AFS44)
RF Gain	40 dB
Signal Input	100 MHz to 26.5 GHz

● Spectrum analyzer	(R&S FSP40)
Attenuation	10 dB
Start Frequency	30 MHz
Stop Frequency	25 GHz
Resolution Bandwidth	120 KHz / 1 MHz
Video Bandwidth	300 KHz / 1MHz
Signal Input	9 KHz to 40 GHz

5.6.2. Test Procedures

A. The EUT was placed on a rotatable table top 0.8 meter above ground.
B. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
C. The table was rotated 360 degrees to determine the position of the highest radiation.
D. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
E. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
F. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
G. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
H. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.6.3. Typical Test Setup Layout of Radiated Emission



5.6.4. Test Result of Radiated Emission

- Test Mode: Mode 1 (CH01 2412MHz)
- Test Distance : 3 M
- Temperature : 25 °C
- Relative Humidity :53 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ **The test was passed at the minimum margin that marked by the frame in the following table**

■ Spurious Emission

Site : 03CH03-HY
Condition : 3m 03CH03-MAT VERTICAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1 !	32.970	39.92	-0.08	40.00	53.14	13.80	1.02	28.04	Peak	100	330
2	32.970	32.22	-7.78	40.00	45.44	13.80	1.02	28.04	QP	100	330
3	98.850	30.25	-13.25	43.50	47.12	9.29	1.74	27.90	Peak	---	---
4	178.500	32.15	-11.35	43.50	49.96	7.58	2.35	27.74	Peak	---	---

Site : 03CH03-HY
Condition : 3m 03CH03-MAT VERTICAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	375.000	39.77	-6.23	46.00	49.94	13.83	3.67	27.67	Peak	150	65
2	449.800	34.83	-11.17	46.00	44.04	15.33	3.70	28.24	Peak	---	---
3	733.300	31.61	-14.39	46.00	37.25	18.26	4.83	28.73	Peak	---	---

Site : 03CH03-HY
Condition : 3m 03CH03-MAT HORIZONTAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	145.290	30.76	-12.74	43.50	46.61	9.81	2.15	27.81	Peak	---	---
2	180.930	36.26	-7.24	43.50	54.04	7.57	2.39	27.74	Peak	100	325
3	264.090	38.11	-7.89	46.00	50.94	11.70	2.91	27.44	Peak	---	---

Site : 03CH03-HY
Condition : 3m 03CH03-MAT HORIZONTAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1 !	375.000	43.71	-2.29	46.00	53.88	13.83	3.67	27.67	Peak	100	335
2 !	375.000	42.71	-3.29	46.00	52.88	13.83	3.67	27.67	QP	100	335
3 !	380.500	40.30	-5.70	46.00	50.17	14.03	3.80	27.70	Peak	---	---
4	449.800	39.11	-6.89	46.00	48.32	15.33	3.70	28.24	Peak	---	---

Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2384.500	60.83	-13.17	74.00	62.69	28.19	6.19	36.24	Peak	100	350
2 !	2384.500	49.85	-4.15	54.00	51.71	28.19	6.19	36.24	Average	100	350

Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4824.000	54.12	-19.88	74.00	48.19	33.07	9.06	36.20	Peak	100	62
2	4824.000	42.61	-11.39	54.00	36.68	33.07	9.06	36.20	Average	100	62

Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2387.000	61.79	-12.21	74.00	63.64	28.20	6.19	36.24	Peak	100	32
2 !	2387.000	49.64	-4.36	54.00	51.49	28.20	6.19	36.24	Average	100	32

Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4824.000	54.62	-19.38	74.00	48.69	33.07	9.06	36.20	Peak	100	59
2	4824.000	42.79	-11.21	54.00	36.86	33.07	9.06	36.20	Average	100	59

➢ For 4.825GHz ~ 24.835GHz

Remark: Frequency from 4825MHz to 24835MHz, the emission emitted by the EUT is too low to be measured

Test Engineer : Jones Tsai

Jones Tsai

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission (dBuV/m)	Level (uV/m)	Margin (dB)	Detect Mode
2414.000	V	28.25	6.23	73.79	-	-	108.27	-	34.27	Peak
2414.000	V	28.25	6.23	65.16	-	-	99.64	-	45.64	AV
2414.000	H	28.25	6.23	72.86	-	-	107.34	-	33.34	Peak
2414.000	H	28.25	6.23	65.26	-	-	99.74	-	45.74	AV
4824.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
7236.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
9648.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
12060.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
14472.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
16884.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
19296.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
21708.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
24120.000	V/H	-	-	-	-	-	-	-	-	AV/Peak

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : Jones Tsai

Jones Tsai

5.6.5. Test Result of Radiated Emission

- Test Mode: Mode 2 (CH06 2437 MHz)
- Test Distance : 3 M
- Temperature : 25°C
- Relative Humidity : 53 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ **The test was passed at the minimum margin that marked by the frame in the following table**

■ Spurious Emission

Site : 03CH03-HY
Condition : 3m 03CH03-MAT VERTICAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH06 2437MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1 !	32.970	37.76	-2.24	40.00	50.98	13.80	1.02	28.04	Peak	100	332
2	32.970	32.02	-7.98	40.00	45.24	13.80	1.02	28.04	QP	100	332
3	97.770	28.73	-14.77	43.50	45.68	9.23	1.72	27.90	Peak	---	---
4	180.930	30.77	-12.73	43.50	48.55	7.57	2.39	27.74	Peak	---	---

Site : 03CH03-HY
Condition : 3m 03CH03-MAT VERTICAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH06 2437MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	310.500	28.32	-17.68	46.00	40.95	11.71	3.01	27.35	Peak	---	---
2	374.200	35.05	-10.95	46.00	45.24	13.82	3.66	27.67	Peak	151	61
3	449.800	33.45	-12.55	46.00	42.66	15.33	3.70	28.24	Peak	---	---

Site : 03CH03-HY
Condition : 3m 03CH03-MAT HORIZONTAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH06 2437MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	145.290	37.42	-6.08	43.50	53.27	9.81	2.15	27.81	Peak	100	332
2	180.930	36.73	-6.77	43.50	54.51	7.57	2.39	27.74	Peak	---	---
3	264.090	34.69	-11.31	46.00	47.52	11.70	2.91	27.44	Peak	---	---

Site : 03CH03-HY
Condition : 3m 03CH03-MAT HORIZONTAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH06 2437MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	310.500	32.82	-13.18	46.00	45.45	11.71	3.01	27.35	Peak	---	---
2 !	375.000	44.17	-1.83	46.00	54.34	13.83	3.67	27.67	Peak	100	329
3 !	375.000	43.09	-2.91	46.00	53.26	13.83	3.67	27.67	QP	100	329
4	449.800	37.89	-8.11	46.00	47.10	15.33	3.70	28.24	Peak	---	---

Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH06 2437MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4874.000	57.11	-16.89	74.00	51.05	33.17	9.09	36.20	Peak	100	335
2	4874.000	42.77	-11.23	54.00	36.71	33.17	9.09	36.20	Average	100	335

Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH06 2437MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4874.000	54.25	-19.75	74.00	48.19	33.17	9.09	36.20	Peak	100	342
2	4874.000	42.87	-11.13	54.00	36.81	33.17	9.09	36.20	Average	100	342

- For 4.875GHz ~ 24.850GHz

  Remark: Frequency from 4875MHz to 24850MHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission (dBuV/m)	Level (uV/m)	Margin (dB)	Detect Mode
2436.000	V	28.29	6.26	72.05	-	-	106.60	-	32.60	Peak
2436.000	V	28.29	6.26	64.73	-	-	99.28	-	45.28	AV
2436.000	H	28.29	6.26	71.12	-	-	105.67	-	31.67	Peak
2436.000	H	28.29	6.23	63.34	-	-	97.86		43.86	AV
4874.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
7311.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
9748.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
12185.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
14622.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
17059.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
19496.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
21933.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
24370.000	V/H	-	-	-	-	-	-	-	-	AV/Peak

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : Jones Tsai

Jones Tsai

5.6.6. Test Result of Radiated Emission

- Test Mode: Mode 3 (CH11 2462 MHz)
- Test Distance : 3 M
- Temperature : 25 °C
- Relative Humidity : 53 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ **The test was passed at the minimum margin that marked by the frame in the following table**

■ Spurious Emission

Site : 03CH03-HY
Condition : 3m 03CH03-MAT VERTICAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	52.140	25.61	-14.39	40.00	45.92	6.18	1.50	27.99	Peak	---	---
2	178.770	32.25	-11.25	43.50	50.04	7.59	2.36	27.74	Peak	100	260
3	264.090	29.93	-16.07	46.00	42.76	11.70	2.91	27.44	Peak	---	---

Site : 03CH03-HY
Condition : 3m 03CH03-MAT VERTICAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	374.200	36.44	-9.56	46.00	46.63	13.82	3.66	27.67	Peak	152	63
2	449.800	32.15	-13.85	46.00	41.36	15.33	3.70	28.24	Peak	---	---
3	548.500	31.91	-14.09	46.00	39.87	16.56	4.23	28.75	Peak	---	---

Site : 03CH03-HY
Condition : 3m 03CH03-MAT HORIZONTAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	93.180	27.92	-15.58	43.50	45.18	8.97	1.68	27.91	Peak	---	---
2	178.770	28.28	-15.22	43.50	46.07	7.59	2.36	27.74	QP	190	266

Site : 03CH03-HY
Condition : 3m 03CH03-MAT HORIZONTAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1 !	374.200	41.89	-4.11	46.00	52.08	13.82	3.66	27.67	Peak	102	334
2	449.800	37.91	-8.09	46.00	47.12	15.33	3.70	28.24	Peak	---	---
3	553.400	32.86	-13.14	46.00	40.71	16.66	4.24	28.75	Peak	---	---

Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
3	2483.500	55.37	-18.63	74.00	56.88	28.39	6.32	36.22	Peak	117	327
4	2483.500	44.47	-9.53	54.00	45.98	28.39	6.32	36.22	Average	117	327

Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
3	2483.500	52.10	-21.90	74.00	53.61	28.39	6.32	36.22	Peak	100	2
4	2483.500	39.66	-14.34	54.00	41.17	28.39	6.32	36.22	Average	100	2

Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Wireless IP Phone
Power : 110V / 60Hz
MODEL : WLAN600
MEMO : TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4924.000	56.90	-17.10	74.00	50.70	33.27	9.12	36.19	Peak	103	331
2	4924.000	45.21	-8.79	54.00	39.01	33.27	9.12	36.19	Average	103	331

- For 4.925GHz ~ 24.850GHz

  Remark: Frequency from 4925MHz to 24850MHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission (dBuV/m)	Level (uV/m)	Margin (dB)	Detect Mode
178.770	H	7.59	2.36	33.89	-	-	43.84	-	0.34	Peak
2462.000	V	28.35	6.29	71.81	-	-	106.45	-	32.45	Peak
2462.000	V	28.35	6.29	64.27	-	-	98.91	-	44.91	AV
2462.000	H	28.35	6.29	68.81	-	-	103.45	-	29.45	Peak
2462.000	H	28.35	6.29	61.37	-	-	96.01	-	42.01	AV
4924.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
7386.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
9848.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
12310.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
14772.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
17234.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
19696.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
22158.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
24620.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : Jones Tsai

Jones Tsai

5.7. Band Edges Measurement

5.7.1. Measuring Instruments：

As described in chapter 7 of this test report.

5.7.2. Test Procedure：

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100KHz with convenient frequency span including 100 KHz bandwidth from band edge.
3. The band edges was measured and recorded.

5.7.3. Test Result：

- Test Result in lower band (Channel 1) ：PASS
- Test Result in higher band(Channel 11)：PASS

5.7.4. Note on Band edge Emission

The band edge emission plot on appendix B page B7. shows 48.59 dB delta between carrier maximum power and local maximum emission in the restricted band (2.390GHz).

The band edge emission plot on appendix B page B8. shows 48.02dB delta between carrier maximum power and local maximum emission in the restricted band (2.4835GHz).

Mode 1~3 (802.11b)

Polarity	The emission of carrier power strength (dB μ V/m)	The maximum field strength in restrict band (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
H	109.19	60.9	74	-13.1	Peak
H	104.12	56.1	74	-17.9	Peak
H	100.06	51.47	54	-2.53	Average
H	96.03	48.01	54	-5.99	Average
V	108.46	59.87	74	-14.13	Peak
V	107.29	59.27	74	-14.73	Peak
V	99.7	51.11	54	-2.89	Average
V	99.05	51.03	54	-2.97	Average

5.8. Antenna Requirements

The EUT use a fixed antenna without external connector. It is considered meet antenna requirement of FCC.

5.8.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

5.8.2. Antenna Connected Construction

The maximum Gain antenna used in this product is monopole antenna. No antenna connector.

6. EMI Suppression Component List

No EMI suppression components.

7. Antenna Factor & Cable Loss

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)	Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	15.35	0.92	1000	24.10	3.92
35	13.63	1.05	2000	27.40	5.66
40	11.11	1.08	3000	30.00	7.20
45	10.59	1.15	4000	32.60	9.36
50	6.47	1.29	5000	33.40	9.16
55	5.83	1.63	6000	34.20	10.70
60	5.18	1.30	7000	35.30	12.16
65	4.81	1.36	8000	36.90	13.12
70	4.43	1.43	9000	38.10	13.81
75	5.10	1.48	10000	39.00	14.83
80	5.91	1.53	11000	38.60	15.83
85	7.33	1.61	12000	39.50	17.11
90	8.74	1.69	13000	39.30	17.62
95	9.05	1.67	14000	41.60	18.37
100	9.36	1.76	15000	40.60	19.10
110	9.65	1.80	16000	37.20	19.72
120	9.97	1.90	17000	40.20	21.98
130	10.51	1.61	18000	48.90	21.22
140	10.32	2.14	19000	37.60	23.90
150	9.42	2.16	20000	37.30	24.07
160	8.09	2.16	21000	37.00	25.49
170	7.43	1.99	22000	38.00	24.92
180	7.60	2.39	23000	38.70	25.60
190	7.43	2.38	24000	38.60	25.70
200	7.26	2.46	25000	24.10	3.92
220	9.11	2.59	14000	27.40	5.66
240	10.88	2.68	15000	30.00	7.20
260	11.75	2.91	16000	32.60	9.36
280	11.55	2.92	17000	33.40	9.16
300	11.36	2.99	18000	34.20	10.70
320	12.03	3.03	19000	35.30	12.16
340	12.69	3.22	20000	36.90	13.12
360	13.33	3.28	21000	38.10	13.81
380	14.00	3.80	22000	39.00	14.83
400	14.63	3.80	23000	38.60	15.83
450	15.33	3.69	24000	39.50	17.11
500	16.03	3.93	25000	39.30	17.62
550	16.65	3.56			
600	17.29	4.15			
650	17.64	4.58			
700	18.00	4.73			
750	18.39	4.71			
800	18.79	4.99			
850	19.10	5.24			
900	19.42	5.38			
950	19.58	5.57			
1000	19.75	5.62			

8. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100132	9 KHz – 2.75 GHz	Jun. 12, 2003	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001-008	9 KHz – 30 MHz	Apr. 29, 2003	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001-009	9 KHz – 30 MHz	Apr. 29, 2003	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450 Hz	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 ~ 60 Hz	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9KHz~30MHz	Jan. 07, 2003	Conduction (CO01-HY)
50 ohm BNC type Terminal	NOBLE	50ohm	TM009	50 ohm	Apr. 24, 2003	Conduction (CO01-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	Jun. 21, 2003	Radiation (03CH03-HY)
Spectrum analyzer	R&S	FSP40	100004	9KHZ~40GHz	Aug. 07, 2003	Radiation (03CH03-HY)
Amplifier	MITEQ	AFS44	879981	100MHz~26.5GHz	Jul. 23, 2003	Radiation (03CH03-HY)
Horn Antenna	COM-POWER	AH-118	10094	1GHz – 18GHz	Apr. 10, 2003	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
RF Cable-HIGH	Jye Bao	RG142	CB030-HIGH	1GHz~29.5GHz	Mar. 14, 2003	Radiation (03CH03-HY)

※ Calibration Interval of instruments listed above is one year, except for Horn Antenna, BBHA9170.

9. Uncertainty of Test Site

Uncertainty of Radiated Emission Measurement

Contribution	Probability Distribution	3m
Antenna factor calibration	normal(k=2)	±1
cable loss calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2
Antenna Directivity	rectangular	±3
Antenna Factor V.S. Height	rectangular	±2
Antenna Factor Interpolation for Frequency	rectangular	±0.25
site imperfection	rectangular	±2
Mismatch Receiver VSWR Γ1=0.09 Antenna VSWR Γ2=0.67 Uncertainty=20log(1-Γ1*Γ2)	U-shaped	±0.54
combined standard uncertainty Ue(y)	normal	±2.7
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	normal (k=2)	±5.4

$U=\sqrt{\{(1/2)^2+(0.3/2)^2+(2^2+0.5^2+2^2+0.25^2+2^2)/3+(0.54)^2/2\}}=2.2$ for 10m test distance

$U=\sqrt{\{(1/2)^2+(0.3/2)^2+(2^2+3^2+2^2+0.25^2+2^2)/3+(0.54)^2/2\}}=2.7$ for 3m test distance

Uncertainty of Conducted Emission Measurement

Contribution	Probability Distribution	150KHz – 30MHz
Cable and I/P attenuator calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2
LISN coupling specification	rectangular	±1.5
Transducer factor frequency interpolation	rectangular	±0.2
Mismatch Receiver VSWR Γ1=0.09 LISN VSWR Γ2=0.33 Uncertainty=20log(1-Γ1*Γ2)	U-shaped	0.2
combined standard uncertainty Ue(y)	normal	±1.66
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	normal (k=2)	±3.32

$U=\sqrt{\{(0.3/2)^2+(2^2+1.5^2+0.2^2)/3+(0.2)^2/2\}}=1.66$