FCC Part 15 EMI TEST REPORT

of

E.U.T. : MiniPCI WLAN Adapter

(802.11b/g)

FCC ID.: MQ4WMG2K4

MODEL: WMG2400

for

APPLICANT : AboCom Systems, Inc

ADDRESS: 1F, No.21, R&D Rd.II,SBIP,Hsin-Chu 300,

Taiwan, R.O.C.

Test Performed by

ELECTRONICS TESTING CENTER, TAIWAN

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Report Number: ET92R-08-115

Applicant

TEST REPORT CERTIFICATION

: AboCom Systems, Inc

Note: 1. The result of the testing report relate only to the item tested.

Sep 15, 2003

Issued Date:

	1F, No.21, R&D Rd.II,SBIP,Hsin-Chu 300,Taiwan,R.O.C.						
Manufacturer	: AboCom Systems , Inc No.77, Yu-Yih Rd.,Chu-Nan Chen,Miao-Lih Hsuan350, Taiwan,R.O.C.						
Description of EUT	:						
a) Type of EUT	: MiniPCI WLAN Adapter (802.11b/g)						
b) Trade Name	: AboCom						
c) Model No.	: WMG2400						
d) Power Supply	: From Notebook PC						
Regulation Applied	: FCC Rules and Regulations Part 15 Subpart B & C (2002)						
procedures given in ANSI (AT: The data shown in this report were made in accordance with the 263.4, and the energy emitted by the device was founded to be within the Il responsibility for accuracy and completeness of these data.						

2. The testing report shall not be reproduced expect in full, without the written approval of ETC.

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1 GENERAL INFORMATION

1.1 Product Description

a) Type of EUT : MiniPCI WLAN Adapter (802.11b/g)

b) Trade Name : AboCom c) Model No. : WMG2400

d) Power Supply : From Notebook PC

1.2 Characteristics of Device

The 802.11g Wireless MiniPCI Card is a device that lets you connect your notebook to a wireless local area network (LAN). A wireless LAN is like a regular LAN, except that you can share information without looking for a place to plug in, and augment networks without installing or moving wires. Based on radio frequency (RF) technology, a wireless LAN transmits and receives data over the air, along with the guarantee to provide privacy and noninterference by the use of separate radio frequency. The 802.11g Wireless MiniPCI Card allows you to take full advantage of your PC's mobility with access to real-time information and online services anytime and anywhere. Plus, with the network installation simplicity and flexibility, you can eliminate the need to pull cable through walls and ceilings and allow the network to go where wires cannot go. Exploring WWW and augmenting networks can never be done more easily.

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1.3 Test Methodology

For MiniPCI WLAN Adapter (802.11b/g), both conducted and radiated emissions were performed according to the procedures illustrated in ANSI C63.4 (1992) and for processing gain measurement is according to FCC Public Notice. Other required measurements were illustrated in separate sections of this test report for details.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the roof top of Building at No. 34, Lin 5, Ding Fu Tsun, Linkou Hsiang, Taipei Hsien, Taiwan 244, R.O.C.

This site has been fully described in a report submitted to your office, and accepted in a letter dated Feb. 10, 2000.

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2 PROVISIONS APPLICABLE

2.1 Definition

Unintentional radiator:

A device that intentionally generates and radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:

A digital device which is marketed for use in commercial or business environment; exclusive of a device which is market for use by the general public, or which is intended to be used in the home.

Class B Digital Device:

A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business of industrial environment. Example of such devices that are marketed for the general public.

Note: A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

Intentional radiator:

A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Requirement for Compliance

(1) Conducted Emission Requirement

Except for Class A digital devices, for equpment 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 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50ì H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency MHz	Quasi Peak dB µ V	Average dB µ V
0.15 - 0.5	66-56*	56-46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

^{*} Decreases with the logarithm of the frequency

(2) Radiated Emission Requirement

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency MHz	Distance Meters	Radiated dB µ V/m	Radiated µ V/m
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

(3) Antenna Requirement

For intentional device, according to § 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.

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(4) Bandwidth Requirement

For direct sequence system, according to 15.247(a)(2), the minimum 6dB bandwidth shall be at least 500 kHz.

(5) Output Power Requirement

For direct sequence system, according to 15.247(b), the maximum peak output power of the transmitter shall not exceed 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(6) 100 kHz Bandwidth of Frequency Band Edges Requirement

According to 15.247(c), if any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified in § 15.209(a), whichever results in the lesser attenuation.

(7) Power Density Requirement

According to 15.247(d), for direct sequence systems, the transmitted power density averaged over any 1 second interval shall not be greater than 8 dBm in any 3 kHz bandwidth within these bands.

2.3 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.15
0.495 - 0.505 **	16.69475 - 16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425 - 16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475 - 156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3360-4400	Above 38.6
13.36-13.41			

^{**:} Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- -- Reorient or relocate the receiving antenna.
- -- Increase the separation between the equipment and receiver.
- -- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- -- Consult the dealer or an experienced radio / TV technician for help.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

For both radiated and conducted emissions below 1 GHz, the system was configured for testing in a typical fashion as a customer would normally use it. The peripherals other than EUT were connected in normally standing by situation. Measurement was performed under the condition that a computer program was exercised to simulate data communication of EUT, and the transmission rate was set to maximum allowed by EUT. Three highest emissions were verified with varying placement of the transmitting antenna connected to EUT to maximize the emission from EUT.

For conducted emissions, only measured on TX and RX operation, for the digital circuits portion also function normally whenever TX or RX is operated. For radiated emissions, whichever RF channel is operated, the digital circuits function identically. As the reason, measurement of radiated emissions from digital circuits is only performed with channel 7 by transmitting mode.

During the preliminary test, the worse case is the antenna with a cable, and data presented in this test report just shows the worse case.

3.2 Devices for Tested System

Device	Manufacture	Model / FCC ID.	Cable Description
MiniPCI WLAN	AboCom Systems,	WMG2400/	
Adapter (802.11b/g)	Inc	MQ4WMG2K4	
Notebook PC	DELL	PP03S	1.8m Unshielded AC Power Cord

Remark "*" means equipment under test.

4 RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For unintentional radiator, the radiated emission shall comply with § 15.109(a).

For intentional radiators, according to § 15.247 (a), operation under this provision is limited to frequency hopping and direct sequence spread spectrum, and the out band emission shall be comply with § 15.247 (c)

4.2 Measurement Procedure

- 1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively.
- 2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
- 3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
- 4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 to 360 with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.
- 5. Repeat step 4 until all frequencies need to be measured were complete.
- 6. Repeat step 5 with search antenna in vertical polarized orientations.
- 7. Check the three frequencies of highest emission with varying the placement of cables associated with EUT to obtain the worse case and record the result.

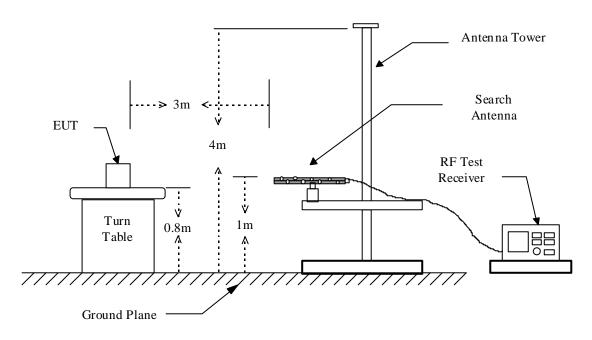
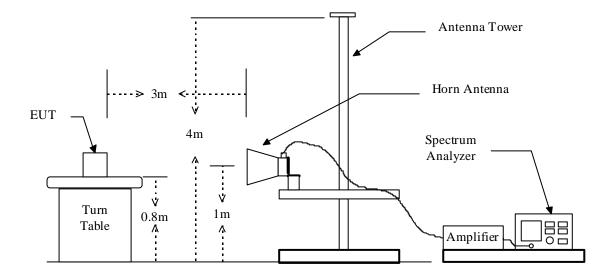


Figure 1 : Frequencies measured below 1 GHz configuration

Figure 2: Frequencies measured above 1 GHz configuration



4.3 Measuring Instrument

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The following instrument are used for radiated emissions measurement:

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Hewlett-Packard	8568B	01/09/2004
Pre-selector	Hewlett-Packard	85685A	01/09/2004
Quasi Peak Detector	Hewlett-Packard	85650A	01/09/2004
Spectrum Analyzer	Adventest	R3271	09/08/2004
RF Test Receiver	Rohde & Schwarz	ESVS 30	08/09/2004
Horn Antenna	EMCO	3115	05/28/2004
Horn Antenna	EMCO	3116	01/10/2004
Log periodic Antenna	EMCO	3146	12/05/2003
Biconical Antenna	EMCO	3110B	11/05/2003
Preamplifier	Hewlett-Packard	8449B	06/30/2004
Preamplifier	Hewlett-Packard	8447D	09/29/2003
Spectrum Analyzer	Hewlett-Packard	8564E	04/16/2004

Measuring instrument setup in measured frequency band when specified detector function is used:

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	N/A
30 to 1000	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10 Hz

4.4 Radiated Emission Data

4.4.1 RF Portion

A. 802.11b (Antenna: PIFA Antenna / C068-510273-A)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2412 MHz (Local Frequency: 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency (MHz)	H Peak	_	(dBuV) Peak	V Ave	Factor (dB) Corr.	Result (dBu Peak	: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
* 2037.780					-4.5			74.0	54.0			
* 4075.560					2.0			74.0	54.0			
* 6113.340					4.5			74.0	54.0			
* 8151.120					6.5			74.0	54.0			
* 10188.900					7.6			74.0	54.0			
4824.000			49.2		2.6	51.8		74.0	54.0	-2.2	192	1.1
7236.000	47.5		51.2	40.8	5.8	57.0	46.6	74.0	54.0	-7.4	84	1.5
9648.000					7.3			74.0	54.0			
12060.000					9.2			74.0	54.0			
14472.000					11.6			74.0	54.0			
16884.000					12.1			74.0	54.0			
19296.000					8.8			74.0	54.0			
21708.000					9.8			74.0	54.0			
24120.000					10.4			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

ETC Report No. : ET92R-08-115

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2437 MHz (Local Frequency: 2063 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

F	requency (MHz)	H Peak	g (dBuV) Peak	V Ave	Factor (dB) Corr.		t @3m V/m) Ave	Limit (dBu Peak	@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
*	2062.770	43.6	 45.5		-4.4	41.1		74.0	54.0	-12.9	153	1.1
*	4125.540		 		2.0			74.0	54.0			
*	6188.310		 		4.5			74.0	54.0			
*	8251.080		 		6.6			74.0	54.0			
*	10313.850		 		7.7			74.0	54.0			
	4874.000		 48.8		2.7	51.5		74.0	54.0	-2.5	78	1.1
	7311.000		 49.0	37.6	5.9	54.9	43.5	74.0	54.0	-10.5	149	1.0
	9748.000		 		7.3			74.0	54.0			
	12185.000		 		9.3			74.0	54.0			
	14622.000		 		11.6			74.0	54.0			
	17059.000		 		13.1			74.0	54.0			
	19496.000		 		8.5			74.0	54.0			
	21933.000		 		9.9			74.0	54.0			
	24370.000		 		10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

c) Channel High

Operation Mode : Receiving / Transmitting

Fundamental Frequency : 2462 MHz (Local Frequency: 2088 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency	H		g (dBuV) V		Factor Result @3m Limit @3m (dBuV/m) (dBuV/m) Peak Ave Peak Ave.		(dBuV/m) (dl			Margin (dB)	Table Deg. (Deg.)	Ant. High
(MHz)	Peak	Ave	Peak	Ave	Corr.						` ",	(m)
* 2087.790					-4.3			74.0	54.0			
* 4175.580					2.0			74.0	54.0			
* 6263.370					4.5			74.0	54.0			
* 8351.160					6.7			74.0	54.0			
* 10438.950					7.8			74.0	54.0			
4924.000			50.2		2.8	53.0		74.0	54.0	-1.0	147	1.0
7386.000			48.7	35.8	6.0	54.7	41.8	74.0	54.0	-12.2	183	1.0
9848.000					7.3			74.0	54.0			
12310.000					9.3			74.0	54.0			
14772.000					11.5			74.0	54.0			
17234.000					14.3			74.0	54.0			
19696.000					8.5			74.0	54.0			
22158.000					10.0			74.0	54.0			
24620.000					10.9			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

B 802.11b (Antenna: 2.4GHz Dipole Antenna x 2 / F1B-003404-52)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2412 MHz (Local Frequency: 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency (MHz)	H Peak	_	g (dBuV) Peak	V Ave	Factor (dB) Corr.		t @3m V/m) Ave		@3m IV/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
* 4076.100			43.8		2.0	45.8		74.0	54.0	-8.2	254	1.0
* 6114.000					4.5			74.0	54.0			
* 8151.900					6.5			74.0	54.0			
* 10189.800					7.6			74.0	54.0			
* 12227.700					9.3			74.0	54.0		-	
4823.900			46.3		2.6	48.9		74.0	54.0	-5.1	96	1.1
7236.000					5.8			74.0	54.0		-	
9648.100					7.3			74.0	54.0		-	
12060.200					9.2			74.0	54.0		-	
14472.300					11.6			74.0	54.0		-	
16884.400					12.1			74.0	54.0			
19296.500					8.8			74.0	54.0			
21708.600					9.8			74.0	54.0			
24120.700					10.4			74.0	54.0		-	

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2437 MHz (Local Frequency: 2063 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

I	Frequency (MHz)	H Peak	g (dBuV) Peak	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
*	4126.100	31.8	 41.7		2.0	43.7		74.0	54.0	-10.3	193	1.1
*	6189.000		 		4.5			74.0	54.0			
*	8251.900		 		6.6			74.0	54.0			
*	10314.800		 		7.7			74.0	54.0			
*	12377.700		 		9.4			74.0	54.0			
	4874.000		 41.2		2.7	43.9		74.0	54.0	-10.1	89	1.0
	7311.000		 		5.9			74.0	54.0			
	9748.000		 		7.3			74.0	54.0			
	12185.000		 		9.3			74.0	54.0			
	14622.000		 		11.6			74.0	54.0			
	17059.000		 		13.1			74.0	54.0			
	19496.000		 		8.5			74.0	54.0			
	21933.000		 		9.9			74.0	54.0			
	24370.000		 		10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

c) Channel High

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2462 MHz (Local Frequency: 2088 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency (MHz)	H Peak	g (dBuV) Peak	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
* 4176.030		 41.8		2.0	43.8		74.0	54.0	-10.2	141	1.1
* 6264.000		 		4.5			74.0	54.0	10.2		
* 8351.970		 		6.7			74.0	54.0			
* 10439.940		 		7.8			74.0	54.0			
* 12527.910		 		9.5			74.0	54.0			
4924.070		 42.7		2.8	45.5		74.0	54.0	-8.5	183	1.1
7386.000		 		6.0			74.0	54.0			
9847.930		 		7.3			74.0	54.0			
12309.860		 		9.3			74.0	54.0			
14771.790		 		11.5			74.0	54.0			
17233.720		 		14.3			74.0	54.0			
19695.650		 		8.5			74.0	54.0			
22157.580		 		10.0			74.0	54.0			
24619.510		 		10.9			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

C. 802.11b (Antenna: Dipole Antenna / SJW-0007A)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2412 MHz (Local Frequency: 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

F	requency	Н	_	g (dBuV)	V	Factor (dB)	Result (dBu Peak	V/m)	(dBu	@3m V/m)	Margin (dB)	Table Deg.	Ant. High
	(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.		(Deg.)	(m)
*	4076.100			41.6		2.0	43.6		74.0	54.0	-10.4	145	1.3
*	6114.000					4.5			74.0	54.0			
*	8151.900					6.5			74.0	54.0			
*	10189.800					7.6			74.0	54.0			
*	12227.700					9.3			74.0	54.0			
	4823.900			41.3		2.6	43.9		74.0	54.0	-10.1	89	1.1
	7236.000					5.8			74.0	54.0			
	9648.100					7.3			74.0	54.0			
	12060.200					9.2			74.0	54.0			
	14472.300					11.6			74.0	54.0			
	16884.400					12.1			74.0	54.0			
	19296.500					8.8			74.0	54.0			
	21708.600					9.8			74.0	54.0			
	24120.700					10.4			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2437 MHz (Local Frequency: 2063 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

I	requency (MHz)	H Peak	g (dBuV) Peak	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
*	4126.100		 39.8		2.0	41.8		74.0	54.0	-12.2	254	1.1
*	6189.000		 		4.5			74.0	54.0			
*	8251.900		 		6.6			74.0	54.0			
*	10314.800		 		7.7			74.0	54.0			
*	12377.700		 		9.4			74.0	54.0			
	4874.000		 41.3		2.7	44.0		74.0	54.0	-10.0	193	1.0
	7311.000		 		5.9			74.0	54.0		-	
	9748.000		 		7.3			74.0	54.0		-	
	12185.000		 		9.3			74.0	54.0		-	
	14622.000		 		11.6			74.0	54.0		-	
	17059.000		 		13.1			74.0	54.0			
	19496.000		 		8.5			74.0	54.0			
	21933.000		 		9.9			74.0	54.0			
	24370.000		 		10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

c) Channel High

Operation Mode : Receiving / Transmitting

Fundamental Frequency : 2462 MHz (Local Frequency : 2088 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency (MHz)	H Peak	g (dBuV) Peak	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
* 4176.030		 42.4		2.0	44.4		74.0	54.0	-9.6	193	1.1
* 6264.000		 		4.5			74.0	54.0			
* 8351.970		 		6.7			74.0	54.0			
* 10439.940		 		7.8			74.0	54.0			
* 12527.910		 		9.5			74.0	54.0			
4924.070		 41.3		2.8	44.1		74.0	54.0	-9.9	254	1.0
7386.000		 		6.0			74.0	54.0		-	
9847.930		 		7.3			74.0	54.0		-	
12309.860		 		9.3			74.0	54.0			
14771.790		 		11.5			74.0	54.0			
17233.720		 		14.3			74.0	54.0			
19695.650		 		8.5			74.0	54.0			
22157.580		 		10.0			74.0	54.0			
24619.510		 		10.9			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

D. 802.11b (Antenna: 2.4GHz Dipole Antenna / F1B-003404-52)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2412 MHz (Local Frequency: 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

I	Frequency	H			V	Factor (dB)		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High
-	(MHz)	Peak	Ave	Peak	Ave	Corr.		T					(m)
*	4076.100			40.8		2.0	42.8		74.0	54.0	-11.2	247	1.1
*	6114.000					4.5			74.0	54.0			
*	8151.900					6.5			74.0	54.0			
*	10189.800		ł	-	-	7.6			74.0	54.0		ŀ	
*	12227.700					9.3			74.0	54.0		-	
	4823.900			40.7		2.6	43.3		74.0	54.0	-10.7	182	1.3
	7236.000					5.8			74.0	54.0		-	
	9648.100					7.3			74.0	54.0		-	
	12060.200					9.2			74.0	54.0		-	
	14472.300					11.6			74.0	54.0			
	16884.400					12.1			74.0	54.0			
	19296.500					8.8			74.0	54.0			
	21708.600					9.8			74.0	54.0			
	24120.700					10.4			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2437 MHz (Local Frequency: 2063 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency	Н	•	g (dBuV)	V	Factor (dB)		t @3m IV/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High
(MHz)	Peak	Ave	Peak	Ave	Corr.	1 oak	7170	1 oak	710.		(209.)	(m)
* 4126.100			40.1		2.0	42.1		74.0	54.0	-12.9	148	1.1
* 6189.000					4.5			74.0	54.0			
* 8251.900					6.6			74.0	54.0			
* 10314.800					7.7			74.0	54.0			-
* 12377.700					9.4			74.0	54.0			
4874.000			40.4		2.7	43.1		74.0	54.0	-2.5	177	1.0
7311.000					5.9			74.0	54.0			
9748.000					7.3			74.0	54.0			
12185.000					9.3			74.0	54.0			
14622.000					11.6			74.0	54.0			
17059.000					13.1			74.0	54.0			
19496.000					8.5			74.0	54.0			
21933.000					9.9			74.0	54.0			
24370.000					10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

c) Channel High

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2462 MHz (Local Frequency: 2088 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency (MHz)	H Peak		g (dBuV) Peak	V Ave	Factor (dB) Corr.		t @3m IV/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High
	reak	Ave	Ī	Ave]	I	<u> </u> 				(m)
* 4176.030			41.8		2.0	43.8		74.0	54.0	-10.2	243	1.1
* 6264.000					4.5			74.0	54.0			
* 8351.970		-			6.7			74.0	54.0		-	
* 10439.940					7.8			74.0	54.0			
* 12527.910					9.5			74.0	54.0			
4924.070			40.9		2.8	43.7		74.0	54.0	-10.3	98	1.1
7386.000					6.0			74.0	54.0			
9847.930					7.3			74.0	54.0			
12309.860					9.3			74.0	54.0			
14771.790		-			11.5			74.0	54.0		-	
17233.720					14.3			74.0	54.0			
19695.650					8.5			74.0	54.0			
22157.580					10.0			74.0	54.0			
24619.510					10.9			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

E. 802.11b (Antenna: 2.4/4.9-5.85 GHz Swivel Antenna SMA/ F1B-303706-52)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2412 MHz (Local Frequency: 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Fre	equency	Н	_	g (dBuV)	V	Factor (dB)	,	V/m)	(dBu	@3m V/m)	Margin (dB)	Table Deg.	Ant. High
((MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.		(Deg.)	(m)
*	4076.100			41.8		2.0	43.8		74.0	54.0	-10.2	278	1.0
*	6114.000					4.5			74.0	54.0			
*	8151.900					6.5			74.0	54.0			
* 1	0189.800					7.6			74.0	54.0			
* 1	2227.700					9.3			74.0	54.0			
	4823.900			42.4		2.6	45.0		74.0	54.0	-9.0	302	1.1
	7236.000					5.8			74.0	54.0			
	9648.100					7.3			74.0	54.0			
1	2060.200					9.2			74.0	54.0			
1	4472.300					11.6			74.0	54.0			
1	6884.400					12.1			74.0	54.0			
1	9296.500					8.8			74.0	54.0			
2	21708.600					9.8			74.0	54.0			
2	24120.700					10.4			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2437 MHz (Local Frequency: 2063 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

F	requency (MHz)	H Peak	g (dBuV) Peak	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
*	4126.100		 40.1		2.0	42.1		74.0	54.0	-11.9	145	1.3
*	6189.000		 		4.5			74.0	54.0			
*	8251.900		 		6.6			74.0	54.0			
*	10314.800		 		7.7			74.0	54.0			
*	12377.700		 		9.4			74.0	54.0			
	4874.000		 41.2		2.7	43.9		74.0	54.0	-10.1	59	1.1
	7311.000		 		5.9			74.0	54.0			
	9748.000		 		7.3			74.0	54.0			
	12185.000		 		9.3			74.0	54.0			
	14622.000		 		11.6			74.0	54.0			
	17059.000		 		13.1			74.0	54.0			
	19496.000		 		8.5			74.0	54.0			
	21933.000		 		9.9			74.0	54.0			
	24370.000		 		10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

c) Channel High

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2462 MHz (Local Frequency: 2088 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

F	requency	Н		g (dBuV)	V	Factor (dB)		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High
	(MHz)	Peak	Ave	Peak	Ave	Corr.							(m)
*	4176.030		-	43.0	-	2.0	45.0		74.0	54.0	-9.0	243	1.1
*	6264.000					4.5			74.0	54.0			
*	8351.970					6.7			74.0	54.0			
*	10439.940					7.8			74.0	54.0			
*	12527.910					9.5			74.0	54.0			
	4924.070			42.4		2.8	45.2		74.0	54.0	-8.8	194	1.3
	7386.000					6.0			74.0	54.0			
	9847.930					7.3			74.0	54.0		-	
	12309.860					9.3			74.0	54.0			
	14771.790					11.5			74.0	54.0			
	17233.720					14.3			74.0	54.0			
	19695.650					8.5			74.0	54.0			
	22157.580					10.0			74.0	54.0			
	24619.510					10.9			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

F. 802.11b (Antenna: 2.4G Antenna / W111-094-D8)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2412 MHz (Local Frequency: 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency	Н	_	j (dBuV)	V	Factor (dB)	Result @3m (dBuV/m) Peak Ave		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Deg. (Deg.)	Ant. High
(MHz)	Peak	Ave	Peak	Ave	Corr.	reak	Ave	reak	Ave.		(Deg.)	(m)
* 4076.100			42.9		2.0	44.9		74.0	54.0	-9.1	49	1.1
* 6114.000					4.5			74.0	54.0			
* 8151.900					6.5			74.0	54.0		-	
* 10189.800					7.6			74.0	54.0		-	
* 12227.700				-	9.3			74.0	54.0		-	
4823.900			44.7	-	2.6	47.3		74.0	54.0	-6.7	254	1.0
7236.000				-	5.8			74.0	54.0		-	
9648.100				-	7.3			74.0	54.0		-	
12060.200				-	9.2			74.0	54.0		-	
14472.300					11.6			74.0	54.0			
16884.400				-	12.1			74.0	54.0		-	
19296.500					8.8			74.0	54.0		-	
21708.600					9.8			74.0	54.0		-	
24120.700					10.4			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2437 MHz (Local Frequency: 2063 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

F	requency (MHz)	Reading H Peak Ave		g (dBuV) V Peak Ave		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
*							44.0	<u> </u>	740	540	40.0	40	
	4126.100			39.8		2.0	41.8		74.0	54.0	-12.2	48	1.0
*	6189.000					4.5			74.0	54.0			
*	8251.900		ł	ł	-	6.6			74.0	54.0		I	
*	10314.800					7.7			74.0	54.0		-	
*	12377.700					9.4			74.0	54.0		-	
	4874.000			42.3		2.7	45.0		74.0	54.0	-9.0	192	1.1
	7311.000					5.9			74.0	54.0		-	
	9748.000					7.3			74.0	54.0		-	
	12185.000					9.3			74.0	54.0		-	
	14622.000					11.6			74.0	54.0		-	
	17059.000					13.1			74.0	54.0			
	19496.000					8.5			74.0	54.0			
	21933.000					9.9			74.0	54.0			
	24370.000					10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

c) Channel High

Operation Mode : Receiving / Transmitting

Fundamental Frequency : 2462 MHz (Local Frequency : 2088 MHz)

Test Date : <u>Sep. 24, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

I	requency				V	Factor (dB)		: @3m V/m) Ave	Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Deg. (Deg.)	Ant. High
	(MHz)	Peak	Ave	Peak	Ave	Corr.		•					(m)
*	4176.030			42.3		2.0	44.3		74.0	54.0	-9.7	48	1.1
*	6264.000		ł	ł	I	4.5			74.0	54.0		I	
*	8351.970					6.7			74.0	54.0			
*	10439.940					7.8			74.0	54.0			
*	12527.910					9.5			74.0	54.0			
	4924.070			41.7		2.8	44.5		74.0	54.0	-9.5	144	1.0
	7386.000					6.0			74.0	54.0			
	9847.930		-	-	-	7.3			74.0	54.0		-	
	12309.860		-	-	-	9.3			74.0	54.0		-	
	14771.790					11.5			74.0	54.0			
	17233.720					14.3			74.0	54.0			
	19695.650					8.5			74.0	54.0			
	22157.580					10.0			74.0	54.0			
	24619.510					10.9			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

A. 802.11g (Antenna: PIFA Antenna / C068-510273-A)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2412 MHz (Local Frequency: 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

F	Frequency (MHz)	H Peak	Reading	V Ave	Factor (dB) Corr.	: @3m V/m) Ave		Limit @3m (dBuV/m) Peak Ave.		Table Deg. (Deg.)	Ant. High (m)
*	2037.780			 	-4.5	 	74.0	54.0			
*	4075.560			 	2.0	 	74.0	54.0			
*	6113.340			 	4.5	 	74.0	54.0			
*	8151.120			 	6.5	 	74.0	54.0			
*	10188.900			 	7.6	 	74.0	54.0			
	4824.000			 	2.6	 	74.0	54.0			
	7236.000			 	5.8	 	74.0	54.0			
	9648.000			 	7.3	 	74.0	54.0			
	12060.000			 	9.2	 	74.0	54.0			
	14472.000			 	11.6	 	74.0	54.0			
	16884.000			 	12.1	 	74.0	54.0			
	19296.000			 	8.8	 	74.0	54.0			
	21708.000			 	9.8	 	74.0	54.0			
	24120.000			 	10.4	 	74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2437 MHz (Local Frequency: 2063 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

F	requency (MHz)	Read H Peak Ave		ng (dBuV) V Peak Ave		Factor (dB) Corr.		Result @3m (dBuV/m) Peak Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
*	2062.770	43.6		45.5		-4.4	41.1		74.0	54.0	-12.9	254	1.5
*	4125.540					2.0			74.0	54.0			
*	6188.310					4.5			74.0	54.0			
*	8251.080					6.6			74.0	54.0			
*	10313.850					7.7			74.0	54.0			
	4874.000					2.7			74.0	54.0			
	7311.000					5.9			74.0	54.0			
	9748.000					7.3			74.0	54.0			
	12185.000					9.3			74.0	54.0			
	14622.000					11.6			74.0	54.0			
	17059.000					13.1			74.0	54.0			
	19496.000					8.5			74.0	54.0			
	21933.000					9.9			74.0	54.0			
	24370.000					10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

c) Channel High

Operation Mode : Receiving / Transmitting

Fundamental Frequency : 2462 MHz (Local Frequency : 2088 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

F	Frequency (MHz) Pea		Reading (dBuV) H V Peak Ave Peak			Factor (dB) Corr.	: @3m V/m) Ave	Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
		1 Cak	Ave	1 Cak	Ave		1					(111)
*	2087.790					-4.3	 	74.0	54.0			
*	4175.580					2.0	 	74.0	54.0			
*	6263.370					4.5	 	74.0	54.0			
*	8351.160			-	I	6.7	 	74.0	54.0		I	
*	10438.950				-	7.8	 	74.0	54.0		-	
	4924.000				-	2.8	 	74.0	54.0		-	
	7386.000					6.0	 	74.0	54.0			
	9848.000				-	7.3	 	74.0	54.0		-	
	12310.000				-	9.3	 	74.0	54.0		-	
	14772.000					11.5	 	74.0	54.0			
	17234.000					14.3	 	74.0	54.0			
	19696.000					8.5	 	74.0	54.0		-	
	22158.000					10.0	 	74.0	54.0			
	24620.000					10.9	 	74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

B. 802.11g (Antenna: 2.4GHz Dipole Antenna x 2 / F1B-003404-52)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2412 MHz (Local Frequency: 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency (MHz)	H Peak	Reading (dBuV) H \ Peak Ave Peak			Factor (dB) Corr.		: @3m V/m) Ave	Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
* 4076.100			41.2		2.0	43.2		74.0	54.0	-10.8	148	1.3
* 6114.000					4.5			74.0	54.0			
* 8151.900					6.5			74.0	54.0			
* 10189.800					7.6			74.0	54.0			
* 12227.700					9.3			74.0	54.0			
4823.900			44.8		2.6	47.4		74.0	54.0	-6.6	247	1.1
7236.000					5.8			74.0	54.0			
9648.100					7.3			74.0	54.0			
12060.200					9.2			74.0	54.0			
14472.300					11.6			74.0	54.0			
16884.400					12.1			74.0	54.0			
19296.500					8.8			74.0	54.0			
21708.600					9.8			74.0	54.0			
24120.700					10.4			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

Operation Mode : Receiving / Transmitting

Fundamental Frequency : 2437 MHz (Local Frequency : 2063 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency (MHz)	F Peak	g (dBuV) Peak	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
* 4126.100		 39.6		2.0	41.6		74.0	54.0	-12.4	96	1.1
* 6189.000		 		4.5			74.0	54.0			
* 8251.900		 		6.6			74.0	54.0			
* 10314.800		 		7.7			74.0	54.0			
* 12377.700		 		9.4			74.0	54.0			
4874.000		 40.3		2.7	43.0		74.0	54.0	-11.0	83	1.0
7311.000		 		5.9			74.0	54.0			
9748.000		 		7.3			74.0	54.0			
12185.000		 		9.3			74.0	54.0		-	
14622.000		 -	-	11.6			74.0	54.0		-	
17059.000		 		13.1			74.0	54.0			
19496.000		 		8.5			74.0	54.0			
21933.000		 		9.9			74.0	54.0			
24370.000		 		10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

c) Channel High

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2462 MHz (Local Frequency: 2088 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

1	Frequency (MHz)	H Peak	g (dBuV) Peak	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
*	4176.030		 42.1		2.0	44.1		74.0	54.0	-9.9	341	1.0
*	6264.000		 		4.5			74.0	54.0			
*	8351.970		 		6.7			74.0	54.0			
*	10439.940		 		7.8			74.0	54.0			
*	12527.910		 		9.5			74.0	54.0			
	4924.070		 42.5		2.8	45.3		74.0	54.0	-8.7	284	1.0
	7386.000		 		6.0			74.0	54.0		-	
	9847.930		 		7.3			74.0	54.0		-	
	12309.860		 -		9.3			74.0	54.0		-	
	14771.790		 		11.5			74.0	54.0		-	
	17233.720		 		14.3			74.0	54.0			
	19695.650		 		8.5			74.0	54.0			
	22157.580		 		10.0			74.0	54.0			
	24619.510		 		10.9			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

C. 802.11g (Antenna: Dipole Antenna / SJW-0007A)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2412 MHz (Local Frequency: 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency (MHz)	H Peak	_	g (dBuV) Peak	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
* 4076.100			40.8		2.0	42.8		74.0	54.0	-11.2	192	1.1
* 6114.000					4.5			74.0	54.0			
* 8151.900					6.5			74.0	54.0			
* 10189.800					7.6			74.0	54.0			
* 12227.700					9.3			74.0	54.0			
4823.900			41.3		2.6	43.9		74.0	54.0	-10.1	86	1.0
7236.000					5.8			74.0	54.0			
9648.100					7.3			74.0	54.0		-	
12060.200					9.2			74.0	54.0		-	
14472.300				-	11.6			74.0	54.0		-	
16884.400					12.1			74.0	54.0			
19296.500					8.8			74.0	54.0			
21708.600					9.8			74.0	54.0			
24120.700					10.4			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2437 MHz (Local Frequency: 2063 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

F	Frequency (MHz)	H Peak		g (dBuV) Peak	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
H	, ,	1 Cak	AVC		AVC			1					
*	4126.100			41.1		2.0	43.1		74.0	54.0	-10.9	39	1.0
*	6189.000					4.5			74.0	54.0			
*	8251.900					6.6			74.0	54.0			
*	10314.800		-	-	-	7.7			74.0	54.0		I	
*	12377.700					9.4			74.0	54.0		-	
	4874.000		-	41.3	-	2.7	44.0		74.0	54.0	-10.0	188	1.0
	7311.000					5.9			74.0	54.0		-	
	9748.000					7.3			74.0	54.0		-	
	12185.000					9.3			74.0	54.0		-	
	14622.000					11.6			74.0	54.0		-	
	17059.000					13.1			74.0	54.0			
	19496.000					8.5			74.0	54.0			
	21933.000					9.9			74.0	54.0			
	24370.000					10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

c) Channel High

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2462 MHz (Local Frequency: 2088 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency	Н		g (dBuV)	V	Factor (dB)		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High
(MHz)	Peak	Ave	Peak	Ave	Corr.						`	(m)
* 4176.030			40.9		2.0	42.9		74.0	54.0	-11.1	247	1.1
* 6264.000					4.5			74.0	54.0			
* 8351.970					6.7			74.0	54.0			
* 10439.940					7.8			74.0	54.0			
* 12527.910					9.5			74.0	54.0			
4924.070			40.8		2.8	43.6		74.0	54.0	-10.4	98	1.0
7386.000					6.0			74.0	54.0			
9847.930					7.3			74.0	54.0			
12309.860					9.3			74.0	54.0			
14771.790					11.5			74.0	54.0			
17233.720					14.3			74.0	54.0			
19695.650					8.5			74.0	54.0			
22157.580					10.0			74.0	54.0			
24619.510					10.9			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

D. 802.11g (Antenna: 2.4GHz Dipole Antenna / F1B-003404-52)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency : 2412 MHz (Local Frequency: 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency (MHz)	H Peak	Reading Ave		V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
* 4076.100			40.8		2.0	42.8		74.0	54.0	-11.2	294	1.1
* 6114.000					4.5			74.0	54.0			
* 8151.900					6.5			74.0	54.0			
* 10189.800					7.6			74.0	54.0			
* 12227.700					9.3			74.0	54.0			
4823.900			44.1		2.6	46.7		74.0	54.0	-7.3	86	1.0
7236.000					5.8			74.0	54.0			
9648.100					7.3			74.0	54.0			
12060.200					9.2			74.0	54.0			
14472.300					11.6			74.0	54.0			
16884.400					12.1			74.0	54.0			
19296.500					8.8			74.0	54.0			
21708.600					9.8			74.0	54.0			
24120.700					10.4			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2437 MHz (Local Frequency: 2063 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency	F	•	g (dBuV)	V	Factor (dB)		t @3m IV/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High
(MHz)	Peak	Ave	Peak	Ave	Corr.	1 our	7.70	. our	71101		(209.)	(m)
* 4126.100			41.3		2.0	43.3		74.0	54.0	-10.7	79	1.0
* 6189.000					4.5			74.0	54.0			
* 8251.900					6.6			74.0	54.0			-
* 10314.800					7.7			74.0	54.0			
* 12377.700					9.4			74.0	54.0			-
4874.000			40.7		2.7	43.4		74.0	54.0	-10.6	351	1.0
7311.000					5.9			74.0	54.0			
9748.000					7.3			74.0	54.0			
12185.000					9.3			74.0	54.0			
14622.000					11.6			74.0	54.0			
17059.000					13.1			74.0	54.0			
19496.000					8.5			74.0	54.0			
21933.000					9.9			74.0	54.0			
24370.000					10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

c) Channel High

ETC Report No.: ET92R-08-115

Operation Mode : Receiving / Transmitting

Fundamental Frequency : 2462 MHz (Local Frequency : 2088 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency (MHz)	H Peak	g (dBuV) Peak	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
* 4176.030		 40.7		2.0	42.7		74.0	54.0	-11.3	149	1.0
* 6264.000		 		4.5			74.0	54.0			
* 8351.970		 		6.7			74.0	54.0			
* 10439.940		 		7.8			74.0	54.0			
* 12527.910		 		9.5			74.0	54.0			
4924.070		 41.8		2.8	44.6		74.0	54.0	-9.4	86	1.1
7386.000		 		6.0			74.0	54.0			
9847.930		 		7.3			74.0	54.0			
12309.860		 		9.3			74.0	54.0			
14771.790		 		11.5			74.0	54.0		-	
17233.720		 		14.3			74.0	54.0		-	
19695.650		 		8.5			74.0	54.0			
22157.580		 		10.0			74.0	54.0			
24619.510		 		10.9			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

E. 802.11g (Antenna: 2.4/4.9-5.85 GHz Swivel Antenna SMA/ F1B-303706-52)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency : 2412 MHz (Local Frequency : 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

	equency (MHz)	H Peak	Reading	. , ,	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
*	4076.100			41.1		2.0	43.1		74.0	54.0	-10.9	259	1.1
*	6114.000					4.5			74.0	54.0			
*	8151.900					6.5			74.0	54.0			
*	10189.800					7.6			74.0	54.0			
* /	12227.700					9.3			74.0	54.0			
	4823.900			42.4		2.6	45.0		74.0	54.0	-9.0	304	1.0
	7236.000					5.8			74.0	54.0			
	9648.100					7.3			74.0	54.0			
,	12060.200					9.2			74.0	54.0			
,	14472.300					11.6			74.0	54.0			
,	16884.400					12.1			74.0	54.0			
,	19296.500					8.8			74.0	54.0			
2	21708.600					9.8			74.0	54.0			
2	24120.700					10.4			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

ETC Report No.: ET92R-08-115

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2437 MHz (Local Frequency: 2063 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

F	requency	Н		g (dBuV)	V	Factor (dB)		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High
	(MHz)	Peak	Ave	Peak	Ave	Corr.							(m)
*	4126.100		-	40.7		2.0	42.7		74.0	54.0	-11.3	64	1.0
*	6189.000		ł	ł	I	4.5			74.0	54.0		I	
*	8251.900		-	-	-	6.6			74.0	54.0		-	
*	10314.800		-	-	-	7.7			74.0	54.0		-	
*	12377.700		-	-	-	9.4			74.0	54.0		-	
	4874.000		-	41.1	-	2.7	43.8		74.0	54.0	-10.2	182	1.1
	7311.000		-	-	-	5.9			74.0	54.0		-	
	9748.000		-	-	-	7.3			74.0	54.0		-	
	12185.000		-	-	-	9.3			74.0	54.0		-	
	14622.000		-	-	-	11.6			74.0	54.0		-	
	17059.000		-	-	-	13.1			74.0	54.0		-	
	19496.000					8.5			74.0	54.0			
	21933.000					9.9			74.0	54.0		-	
	24370.000					10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

c) Channel High

Operation Mode : Receiving / Transmitting

Fundamental Frequency : 2462 MHz (Local Frequency : 2088 MHz)

Test Date : Sep. 12, 2003 Temperature : 23 Humidity : 65 %

F	requency (MHz)	H Peak	g (dBuV) Peak	V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
*	4176.030		 41.2		2.0	43.2		74.0	54.0	-10.8	98	1.0
*	6264.000		 		4.5			74.0	54.0			
*	8351.970		 		6.7			74.0	54.0			
*	10439.940		 		7.8			74.0	54.0			
*	12527.910		 		9.5			74.0	54.0			
	4924.070		 41.6		2.8	44.4		74.0	54.0	-9.6	256	1.1
	7386.000		 		6.0			74.0	54.0			
	9847.930		 		7.3			74.0	54.0			
	12309.860		 		9.3			74.0	54.0			
	14771.790		 		11.5			74.0	54.0			
	17233.720		 		14.3			74.0	54.0		-	
	19695.650		 		8.5			74.0	54.0			
	22157.580		 		10.0			74.0	54.0			
	24619.510		 		10.9			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

F. 802.11g (Antenna: 2.4G Antenna / W111-094-D8)

a) Channel Low

Operation Mode : Receiving / Transmitting

Fundamental Frequency : 2412 MHz (Local Frequency : 2038 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

F	requency (MHz)	H Peak	Reading		V Ave	Factor (dB) Corr.		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
*	4076.100			41.3		2.0	43.3		74.0	54.0	-10.7	162	1.0
*	6114.000					4.5			74.0	54.0			
*	8151.900					6.5			74.0	54.0			
*	10189.800					7.6			74.0	54.0			
*	12227.700					9.3			74.0	54.0			
	4823.900			43.2		2.6	45.8		74.0	54.0	-8.2	87	1.1
	7236.000				1	5.8			74.0	54.0		-	
	9648.100		-	-	1	7.3			74.0	54.0		-	
	12060.200		-	-	1	9.2			74.0	54.0		-	
	14472.300		-	-	1	11.6			74.0	54.0		-	
	16884.400					12.1			74.0	54.0			
	19296.500					8.8			74.0	54.0			
	21708.600					9.8			74.0	54.0			
	24120.700					10.4			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

b) Channel Mid

Operation Mode : Receiving / Transmitting

Fundamental Frequency: 2437 MHz (Local Frequency: 2063 MHz)

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency	F		g (dBuV)	V	Factor (dB)		: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High
(MHz)	Peak	Ave	Peak	Ave	Corr.	1 oak	7.00	1 our	71101		(209.)	(m)
* 2062.770					-4.4			74.0	54.0			
* 4125.540				-	2.0			74.0	54.0		-	
* 6188.310				-	4.5			74.0	54.0		-	
* 8251.080				-	6.6			74.0	54.0		-	
* 10313.850				-	7.7			74.0	54.0		-	
4874.000				-	2.7			74.0	54.0		-	
7311.000				-	5.9			74.0	54.0		-	
9748.000				-	7.3			74.0	54.0		-	
12185.000				-	9.3			74.0	54.0		-	
14622.000				-	11.6			74.0	54.0		-	
17059.000					13.1			74.0	54.0			
19496.000					8.5			74.0	54.0			
21933.000					9.9			74.0	54.0			
24370.000					10.7			74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

ETC Report No.: ET92R-08-115

c) Channel High

Operation Mode : Receiving / Transmitting

Fundamental Frequency : 2462 MHz (Local Frequency : 2088 MHz)

Test Date : Sep. 12, 2003 Temperature : 23 Humidity : 65 %

F	requency	Н		g (dBuV)	V	Factor (dB)	: @3m V/m) Ave		@3m V/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High
	(MHz)	Peak	Ave	Peak	Ave	Corr.					\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	(m)
*	2087.790					-4.3	 	74.0	54.0			
*	4175.580					2.0	 	74.0	54.0			
*	6263.370					4.5	 	74.0	54.0			
*	8351.160					6.7	 	74.0	54.0			
*	10438.950					7.8	 	74.0	54.0			
	4924.000					2.8	 	74.0	54.0			
	7386.000			-	-	6.0	 	74.0	54.0		-	
	9848.000			-	-	7.3	 	74.0	54.0		-	
	12310.000			-	-	9.3	 	74.0	54.0		-	
	14772.000			-	-	11.5	 	74.0	54.0		-	
	17234.000					14.3	 	74.0	54.0			
	19696.000					8.5	 	74.0	54.0			
	22158.000					10.0	 	74.0	54.0			
	24620.000					10.9	 	74.0	54.0			

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- 6. Remark "*" means the receiving local frequency and the harmonics.

4.4.2 Radiated Eimssion of Restricted bands

1. Antenna: PIFA Antenna / C068-510273-A

Test Date : Sep 12, 2003 Temperature : 23 Humidity : 65 %

Operation Mode : 802.11b; CH01 Restricted Frequency band: 2310MHz – 2390MHz

	Frequency		Readi	ng (dBuV)		Factor	Result (dBu		Limit (dBuV/m)		Table Deg.	Ant.
		H V Peak Ave Peak		/	(dB)	Peak	Ave	Av		(Deg.)	High	
L	(MHz)	Peak Ave Peak		Ave	Corr.						(m)	
	2374.800	46.6		33.1		-3.2	43.4		74.0	54.0	237	1.5
	2381.200	46.4		32.9		-3.2	43.3		74.0	54.0	49	1.5

Operation Mode : 802.11g; CH01 Restricted Frequency band: 2310MHz – 2390MHz

Fre	quency		Readin	g (dBuV)		Factor	Result	@3m	Limit @	 2∂m	Table	Ant.
		Н		V		(dB)	(dB) (dBuV/m) Peak Ave		(dBuV/m) Ave	Peak e.	Deg. (Deg.)	High
(MHz)	Peak	Ave	Peak	Ave	Corr.					` 0,	(m)
237	71.400	47.1		33.7		-3.2	43.9		74.0	54.0	198	1.5

Operation Mode : 802.11b; CH11 Restricted Frequency band: 2483.5MHz – 2500MHz

F	requency		Readir	ng (dBuV)		Factor	Result	: @3m	Limit	@3m	Table	Ant.
		H	H V			(dB)	(dBuV/m) Peak Ave		(dBuV/m) Peak Ave.		Deg. (Deg.)	High
	(MHz)	Peak	Ave	Peak	Ave	Corr.					. ,	(m)
2	2488.200	46.5		33.2		-2.7	43.8		74.0	54.0	253	1.4

Operation Mode : 802.11g; CH11 Restricted Fre quency band: 2483.5MHz – 2500MHz

Ī	Frequency		Readir	ng (dBuV)		Factor	Result	@3m	Limit	@3m	Table	Ant.
		F	H V			(dB)	(dBu' Peak	V/m) Ave	(dBuV/m) Peak Ave.		Deg. (Deg.)	High
	(MHz)	Peak	Ave	Peak	Ave	Corr.					, 0,	(m)
	2490.300	47.0		32.8	1	-2.7	44.3		74.0	54.0	192	1.5

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

2. Antenna: 2.4GHz Dipole Antenna x 2 / F1B-003404-52

Test Date : Sep 12, 2003 Temperature : 23 Humidity : 65 %

Operation Mode : 802.11b; CH01 Restricted Frequency band: 2310MHz – 2390MHz

-	1					1 0						
I	Frequency		Reading	g (dBuV)		Factor	Result	: @3m	Limit	@3m	Table	Ant.
		F	1	\	/	(dB) (dBuV/m) Peak Ave			(dBuV/m) Peak Ave.		Deg. (Deg.)	High
l	(MHz)	Peak	Ave	Peak	Ave	Corr.					, ,,	(m)
ĺ	2359.300	46.7		31.9		-3.2	43.5		74.0	54.0	304	1.5

Operation Mode : 802.11g; CH01 Restricted Frequency band: 2310MHz – 2390MHz

Frequency		Readino	g (dBuV)		Factor	Result	: @3m	Limit	@3m	Table	Ant.
	+	H V			(dB)	(dBuV/m) Peak Ave		(dBuV/m) Peak Ave.		Deg. (Deg.)	High
(MHz)	Peak	Ave	Peak	Ave	Corr.				_	(3)	(m)
2361.900	47.0		32.0		-3.2	43.8		74.0	54.0	98	1.4

Operation Mode : 802.11b; CH11 Restricted Frequency band: 2483.5MHz – 2500MHz

Frequency		Readin	g (dBuV)		Factor		@3m		@3m		Ant.
	H V			(dB)	(dBuV/m) Peak Ave		(dBuV/m) Peak Ave.		Deg. (Deg.)	High	
(MHz)	Peak	Ave	Peak	Ave	Corr.					(),	(m)
2492.300	47.0		33.1		-2.7	44.3		74.0	54.0	142	1.5

Operation Mode : 802.11g; CH11 Restricted Frequency band: 2483.5MHz – 2500MHz

Frequency			g (dBuV)		Factor		: @3m V/m)		@3m V/m)	Table Deg.	Ant.
(MHz)	Peak	H Ave) Peak	√ Ave	(dB) Corr.	Peak	(dBuV/m) Peak Ave		Peak Ave.		High (m)
2487.700	46.8		32.4		-2.7	44.1		74.0	54.0	38	1.5
2489.200	46.9		31.7		-2.7	44.2		74.0	54.0	247	1.5

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

3. Antenna: Dipole Antenna / SJW-0007A

Test Date : Sep 12, 2003 Temperature : $\underline{23}$ Humidity : $\underline{65}$ %

Operation Mode	: 802.11b; CH01	Restricted Frequency band: 2310MHz – 2390MHz
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	Frequency		Readi	ng (dBuV)		Factor	Result	@3m	Limit (2)3m	Table	Ant.
	110 4.0000)		Н		V	(dBuV/m) Peak Ave		//m)	(dBu\ Peak		Deg. (Deg.)	High
	(MHz)	Peak	Ave	e Peak	Ave	Corr.					` 0,	(m)
Ī	2347.100	47.0		33.1		-3.3	43.7		74.0	54.0	49	1.5

Operation Mode : 802.11g; CH01 Restricted Frequency band: 2310MHz – 2390MHz

Frequency		Read	ding (dBuV)		Factor	Result		Limit @		Table	Ant.
		Н	V	1	(dB)	(dBuV Peak	//m) Ave	(dBuV Peak	//m) Ave.	Deg. (Deg.)	High
(MHz)	Peak	Av	e Peak	Ave	Corr.					(= -9-)	(m)
2359.900	46.9		32.7		-3.2	43.7		74.0	54.0	205	1.3

Operation Mode : 802.11b; CH11 Restricted Frequency band: 2483.5MHz – 2500MHz

Frequency		Read	ing (dBuV)		Factor	Result		Limit (Table	Ant.
		Н	V	•	(dB)	(dBu Peak	V/m) Ave	(dBu\ Peak	,	Deg. (Deg.)	High
(MHz)	Peak	Ave	e Peak	Ave	Corr.					`	(m)
2491.400	47.2		33.4		-2.7	44.5		74.0	54.0	144	1.5

Operation Mode : 802.11g; CH11 Restricted Frequency band: 2483.5MHz – 2500MHz

Frequency		Read	ing (dBuV)		Factor	Result	@3m	Limit (@3m	Table	Ant.
		Н	V	•	(dB)	(dBu Peak	V/m) Ave	(dBu\ Peak	,	Deg. (Deg.)	High
(MHz)	Peak	Ave	e Peak	Ave	Corr.					`	(m)
2498.300	46.9		32.7		-2.7	44.2		74.0	54.0	291	1.5

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

4. Antenna: 2.4GHz Dipole Antenna / F1B-003404-52

Test Date : <u>Aug. 26, 2003</u> Temperature : <u>25</u> Humidity : <u>60</u> %

Operation M	ode	: 802.11b; CH01	Restrict	ed Frequency band	: 2310MHz – 2	2390M	Hz
				_	_		

Frequency		Readi	ing (dBuV)		Factor	Result	@3m	Limit @		Table	Ant.
		Н		V	(dB)	(dBuV Peak	//m) Ave	(dBu∖ Peak	//m) Ave.	Deg. (Deg.)	High
(MHz)	Peak	Ave	e Peak	Ave	Corr.		-		_	(3)	(m)
2341.900	47.1		34.5		-3.3	43.8		74.0	54.0	243	1.5

Operation Mode : 802.11g; CH01 Restricted Frequency band: 2310MHz – 2390MHz

Frequency		Readi	ng (dBuV)		Factor	Result		Limit (Table	Ant.
		Н		V	(dB)	(dBuV Peak	//m) Ave	(dBu∖ Peak	//m) Ave.	Deg. (Deg.)	High
(MHz)	Peak	Ave	Peak	Ave	Corr.					(= = 9.)	(m)
2357.300	46.9		33.6		-3.2	43.6		74.0	54.0	213	1.5

Operation Mode : 802.11b; CH11 Restricted Frequency band: 2483.5MHz – 2500MHz

Frequency		Readi	ing (dBuV)		Factor	Result		Limit @		Table	Ant.
		Н		V	(dB)	(dBuV Peak	//m) Ave	(dBu√ Peak	//m) Ave.	Deg. (Deg.)	High
(MHz)	Peak	Ave	e Peak	Ave	Corr.					(3)	(m)
2498.100	46.9		34.1		-2.7	44.2		74.0	54.0	141	1.4
2399.200	46.8		33.7		-3.1	43.7		74.0	54.0	178	1.5

Operation Mode : 802.11g; CH11 Restricted Frequency band: 2483.5MHz – 2500MHz

Frequency		Readi	ng (dBuV)		Factor	Result	@3m	Limit (2)3m	Table	Ant.
, ,		Н		V	(dB)	(dBuV Peak	//m) Ave	(dBu∖ Peak	//m) Ave.	Deg. (Deg.)	
(MHz)	Peak	Ave	Peak	Ave	Corr.					` 07	(m)
2485.500	47.0		34.2		-2.8	44.3		74.0	54.0	96	1.3

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

5. Antenna: 2.4/4.9-5.85 GHz Swivel Antenna SMA/ F1B-303706-52

Test Date : Sep. 12, 2003 Temperature : $\underline{25}$ Humidity : $\underline{65}$ %

Operation Mode : 802.11b; CH01 Restricted Frequency band: 2310MHz – 2390MHz

Frequency		Readi	ing (dBuV)		Factor	Result	@3m	Limit (23m	Table	Ant.
		Н		V	(dB)	(dBuV Peak	//m) Ave	(dBu∖ Peak	//m) Ave.	Deg. (Deg.)	High
(MHz)	Peak	Ave	e Peak	Ave	Corr.					, ,	(m)
2342.500	47.0		34.7		-3.3	43.7		74.0	54.0	154	1.4

Operation Mode : 802.11g; CH01 Restricted Frequency band: 2310MHz – 2390MHz

Frequency		Readi	ng (dBuV)		Factor	Result	@3m	Limit (Table	Ant.
		Н		V	(dB)	(dBuV Peak	//m) Ave	(dBu\ Peak	//m) Ave.	Deg. (Deg.)	High
(MHz)	Peak	Ave	Peak	Ave	Corr.	rount	7.00	1 oan	7110.	(D0g.)	(m)
2339.200	47.1		34.2		-3.3	43.8		74.0	54.0	98	1.5

Operation Mode : 802.11b; CH11 Restricted Frequency band: 2483.5MHz – 2500MHz

Frequency		Readi	ng (dBuV)		Factor	Result		Limit @		Table	Ant.
		Н		V	(dB)	(dBuV Peak	//m) Ave	(dBu\ Peak	,	Deg. (Deg.)	High
(MHz)	Peak	Ave	e Peak	Ave	Corr.		7•	· Gait	7	(= 09.)	(m)
2499.100	46.9		34.1		-2.7	44.2		74.0	54.0	113	1.5

Operation Mode	: 802.11g; CH11	Restricted Frequency band: 2	2483.5MHz - 2500MHz
Operation Mode	• 002:11 <u>6</u> • CIIII	11Counter and 1 Counter Duna.	

Frequency		Reading (dBuV)				Result	@3m	Limit (@3m	Table	Ant.
		H V		V	(dB)	(dBuV Peak	//m) Ave	(dBu\ Peak	//m) Ave.	Deg. (Deg.)	High
(MHz)	Peak	Ave	Peak	Ave	Corr.					. 37	(m)
2491.300	47.0		34.6		-2.7	44.3		74.0	54.0	249	1.5

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

6. Antenna: 2.4G Antenna / W111-094-D8

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>25</u> Humidity : <u>65</u> %

Frequency		Readi	ing (dBuV)		Factor	Result	@3m	Limit @		Table	Ant.
		H V		V	(dB)	(dBuV/m) Peak Ave		(dBuV/m) Peak Ave.		Deg. (Deg.)	High
(MHz)	Peak	Ave	e Peak	Ave	Corr.		-		_	(3)	(m)
2349.200	47.7		33.5		-3.3	44.4		74.0	54.0	314	1.3

Operation Mode : 802.11g; CH01 Restricted Frequency band: 2310MHz – 2390MHz

Frequency		Readi	ng (dBuV)		Factor	Result ((dBuV		Limit (Table	Ant.
		Н		V	(dB)	Peak	Ave	Peak	Ave.	Deg. (Deg.)	High
(MHz)	Peak	Ave	e Peak	Ave	Corr.						(m)
2341.800	47.3	-	34.1		-3.3	44.0		74.0	54.0	291	1.5

Operation Mode : 802.11b; CH11 Restricted Frequency band: 2483.5MHz – 2500MHz

-												
	Frequency		Readi	ing (dBuV)		Factor	Result	@3m	Limit @	23m	Table	Ant.
		H V		(dB)	(dBuV Peak	//m) Ave	(dBu√ Peak	//m) Ave.	Deg. (Deg.)	High		
	(MHz)	Peak	Ave	e Peak	Ave	Corr.					, ,	(m)
	2488.100	47.7		32.7		-2.7	44.9		74.0	54.0	122	1.5

Operation Mode : 802.11g; CH11 Restricted Frequency band: 2483.5MHz – 2500MHz

Frequency		Reading (dBuV)				Result		Limit @		Table	Ant.
		Н		V	(dB)	(dBu√ Peak	//m) Ave	(dBu∖ Peak	//m) Ave.	Deg. (Deg.)	High
(MHz)	Peak	Ave	Peak	Ave	Corr.	. •	7 0	· oan	7	(= 09.)	(m)
2491.100	47.3		33.4		-2.7	44.6		74.0	54.0	238	1.5

- 1. Item of margin shown in above table refer to average limit.
- 2. It is considered that the results of average comply with average limit when measuring data with a peak function detector meet the average limit. Mark "***" means that Peak result is meet average limit.
- 3. Remark "---" means that the emissions level is too low to be measured.
- 4. Item "Margin" referred to Average limit while there is only peak result.
- 5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

4.4.3 Other Emission

A. 802.11b (Antenna: PIFA Antenna / C068-510273-A)

a) Emission frequencies below 1 GHz

Test Date : Sep. 12, 2003 Temperature : $\underline{23}$ Humidity : $\underline{65}$ %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
162.872	Н	32.8	-9.4	23.4	43.5	-20.1	174	1.4
196.114	V	32.3	-7.6	24.7	43.5	-18.8	184	1.1
200.469	V	30.7	-7.1	23.6	43.5	-19.9	177	1.1
236.847	V	30.2	-4.7	25.5	46.0	-20.5	99	1.1
401.254	Н	36.0	-6.4	29.6	46.0	-16.4	48	1.3
736.192	Н	28.0	-0.6	27.4	46.0	-18.6	348	1.3

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.
 - b) Emission frequencies above 1 GHz

B. 802.11g (Antenna: PIFA Antenna / C068-510273-A)

a) Emission frequencies below 1 GHz

Test Date: Sep 12, 2003 Temperature : 23 Humidity: 65 %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
162.941	Н	35.5	-9.4	26.1	43.5	-17.4	98	1.4
195.826	Н	33.0	-7.6	25.4	43.5	-18.1	328	1.5
200.159	V	28.9	-7.1	21.8	43.5	-21.7	208	1.0
235.771	Н	28.9	-4.8	24.1	46.0	-21.9	154	1.5
400.192	V	30.5	-6.4	24.1	46.0	-21.9	193	1.0
734.283	Н	27.9	-0.6	27.3	46.0	-18.7	183	1.5

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.
 - b) Emission frequencies above 1 GHz

C. 802.11b (Antenna: 2.4GHz Dipole Antenna x 2 / F1B-003404-52)

a) Emission frequencies below 1 GHz

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
160.154	Н	33.4	-9.5	23.9	43.5	-19.6	193	1.5
200.483	Н	31.2	-7.1	24.1	43.5	-19.4	254	1.5
247.569	V	28.1	-4.0	24.1	46.0	-21.9	305	1.0
402.973	Н	31.9	-6.3	25.6	46.0	-20.4	96	1.4
768.594	V	28.6	-0.3	28.3	46.0	-17.7	196	1.0
801.914	V	27.1	0.8	27.9	46.0	-18.1	270	1.1

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.
 - b) Emission frequencies above 1 GHz

D. 802.11g (Antenna: 2.4GHz Dipole Antenna x 2 / F1B-003404-52)

a) Emission frequencies below 1 GHz

Test Date: Sep 12, 2003 Temperature : 23 Humidity: 65 %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
160.169	Н	33.5	-9.5	24.0	43.5	-19.5	192	1.4
200.483	Н	30.3	-7.1	23.2	43.5	-20.3	84	1.5
250.114	V	27.7	-3.9	23.8	46.0	-22.2	236	1.0
402.805	V	29.8	-6.3	23.5	46.0	-22.5	331	1.0
767.982	Н	26.5	-0.3	26.2	46.0	-19.8	193	1.4
801.049	Н	26.4	0.7	27.1	46.0	-18.9	24	1.5

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.
 - b) Emission frequencies above 1 GHz

E. 802.11b (Antenna: Dipole Antenna / SJW-0007A)

a) Emission frequencies below 1 GHz

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
160.249	Н	34.3	-9.5	24.8	43.5	-18.7	274	1.5
168.772	V	33.7	-9.1	24.6	43.5	-18.9	214	1.1
201.092	V	28.9	-7.0	21.9	43.5	-21.6	341	1.1
236.194	V	29.4	-4.7	24.7	46.0	-21.3	96	1.1
240.883	Н	31.6	-4.4	27.2	46.0	-18.8	176	1.4
733.641	V	28.3	-0.6	27.7	46.0	-18.3	311	1.0

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- b) Emission frequencies above 1 GHz

F. 802.11g (Antenna: Dipole Antenna / SJW-0007A)

a) Emission frequencies below 1 GHz

Test Date: Sep 12, 2003 Temperature : 23 Humidity: 65 %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
160.342	Н	34.2	-9.5	24.7	43.5	-18.8	76	1.4
167.928	V	33.2	-9.1	24.1	43.5	-19.4	254	1.0
200.433	V	30.7	-7.1	23.6	43.5	-19.9	98	1.0
237.195	Н	28.4	-4.7	23.7	46.0	-22.3	283	1.5
240.826	V	31.6	-4.5	27.1	46.0	-18.9	274	1.0
734.199	V	29.0	-0.6	28.4	46.0	-17.6	290	1.0

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.
 - b) Emission frequencies above 1 GHz

G. 802.11b (Antenna: 2.4GHz Dipole Antenna / F1B-003404-52)

a) Emission frequencies below 1 GHz

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
399.143	Н	33.6	-6.4	27.2	46.0	-18.8	274	1.4
481.272	V	30.8	-4.5	26.3	46.0	-19.7	98	1.0
662.947	V	27.8	-1.9	25.9	46.0	-20.1	194	1.0
696.085	Н	24.9	-1.0	23.9	46.0	-22.1	301	1.3
730.172	V	29.8	-0.7	29.1	46.0	-16.9	177	1.0
766.892	V	27.5	-0.3	27.2	46.0	-18.8	179	1.0

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.
 - b) Emission frequencies above 1 GHz

H. 802.11g (Antenna: 2.4GHz Dipole Antenna / F1B-003404-52)

a) Emission frequencies below 1 GHz

Test Date: Sep 12, 2003 Temperature : 23 Humidity: 65 %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
401.933	Н	32.4	-6.3	26.1	46.0	-19.9	271	1.5
464.192	V	32.1	-5.0	27.1	46.0	-18.9	64	1.3
663.098	V	26.4	-1.9	24.5	46.0	-21.5	225	1.1
689.154	Н	26.9	-1.0	25.9	46.0	-20.1	283	1.5
731.126	V	28.1	-0.7	27.4	46.0	-18.6	103	1.0
779.804	V	27.9	-0.1	27.8	46.0	-18.2	114	1.0

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.
 - b) Emission frequencies above 1 GHz

I. 802.11b (Antenna: 2.4/4.9-5.85 GHz Swivel Antenna SMA/ F1B-303706-52)

a) Emission frequencies below 1 GHz

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
194.148	V	33.6	-7.9	25.7	43.5	-17.8	48	1.0
241.992	Н	30.3	-4.4	25.9	46.0	-20.1	152	1.5
400.082	V	32.7	-6.4	26.3	46.0	-19.7	250	1.0
490.156	V	32.5	-4.4	28.1	46.0	-17.9	271	1.0
701.834	V	25.5	-1.0	24.5	46.0	-21.5	331	1.1
767.492	Н	28.4	-0.3	28.1	46.0	-17.9	192	1.5

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.

b) Emission frequencies above 1 GHz

J. 802.11g (Antenna: 2.4/4.9-5.85 GHz Swivel Antenna SMA/ F1B-303706-52)

a) Emission frequencies below 1 GHz

Test Date: Sep 12, 2003 Temperature : 23 Humidity: 65 %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
196.545	Н	31.0	-7.5	23.5	43.5	-20.0	27	1.5
240.192	V	29.6	-4.5	25.1	46.0	-20.9	99	1.0
400.073	V	33.6	-6.4	27.2	46.0	-18.8	155	1.1
491.114	Н	31.7	-4.4	27.3	46.0	-18.7	105	1.4
700.108	V	26.1	-1.0	25.1	46.0	-20.9	184	1.1
767.551	Н	28.3	-0.3	28.0	46.0	-18.0	312	1.5

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.
 - b) Emission frequencies above 1 GHz

K. 802.11b (Antenna: 2.4G Antenna / W111-094-D8)

a) Emission frequencies below 1 GHz

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity : <u>65</u> %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
240.158	Н	36.6	-4.5	32.1	46.0	-13.9	147	1.5
461.423	V	32.9	-5.1	27.8	46.0	-18.2	234	1.1
500.258	Н	32.0	-4.4	27.6	46.0	-18.4	114	1.5
667.436	V	29.2	-1.6	27.6	46.0	-18.4	153	1.1
734.196	Н	31.6	-0.6	31.0	46.0	-15.0	309	1.5
765.832	Н	31.3	-0.3	31.0	46.0	-15.0	172	1.5

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.
- b) Emission frequencies above 1 GHz

L. 802.11g (Antenna: 2.4G Antenna / W111-094-D8)

a) Emission frequencies below 1 GHz

Test Date: Sep 12, 2003 Temperature : 23 Humidity: 65 %

Frequency	Ant-Pol	Meter	Corrected	Result	Limit	Margin	Table	Ant. High
		Reading	Factor	@3m	@3m	(dB)	Degree	(m)
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)		(Deg.)	
161.047	Н	34.8	-9.4	25.4	43.5	-18.1	27	1.1
167.491	V	34.2	-9.1	25.1	43.5	-18.4	233	1.1
200.154	V	27.5	-7.1	20.4	43.5	-23.1	79	1.1
235.072	Н	27.6	-4.8	22.8	46.0	-23.2	193	1.5
241.190	Н	34.5	-4.4	30.1	46.0	-15.9	310	1.4
734.742	Н	30.4	-0.6	29.8	46.0	-16.2	294	1.5

Note:

- 1. Remark "---" means that the emissions level is too low to be measured.
- 2. The expanded uncertainty of the radiated emission tests is 3.53 dB.
 - b) Emission frequencies above 1 GHz

Radiated emission frequencies above 1 GHz to 25 GHz were too low to be measured with a pre-amplifier of 35 dB.

4.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss(if used) and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

where

Corrected Factor = Antenna FACTOR + Cable Loss + High Pass Filter Loss - Amplifier Gain

4.6 Photos of Radiation Measuring Setup

Antenna: PIFA Antenna / C068-510273-A

Please see Exhibit –F-Test Setup_Photos

Sheet 66 of 89Sheets FCC ID.: MQ4WMG2K4

Antenna: 2.4GHz Dipole Antenna x 2 / F1B-003404-52
Please see Exhibit -F-Test Setup_Photos

Antenna: Dipole Antenna / SJW-0007A

Please see Exhibit –F-Test Setup_Photos

Sheet 68 of 89Sheets FCC ID.: MQ4WMG2K4

Antenna: 2.4GHz Dipole Antenna / F1B-003404-52
Please see Exhibit –F-Test Setup_Photos

Sheet 69 of 89Sheets FCC ID.: MQ4WMG2K4

Antenna: 2.4/4.9-5.85 GHz Swivel Antenna SMA/ F1B-303706-52 Please see Exhibit –F-Test Setup_Photos **Antenna: 2.4G Antenna / W111-094-D8**

Please see Exhibit –F-Test Setup_Photos

5 CONDUCTED EMISSION MEASUREMENT

5.1 Standard Applicable

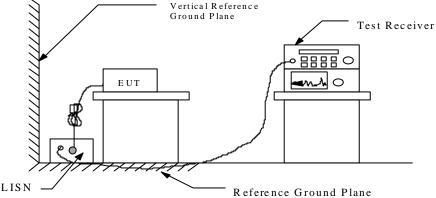
ETC Report No.: ET92R-08-115

For unintentional and intentional device, Line Conducted Emission Limits are in accordance to § 15.107(a) and § 15.207(a) respectively. Both Limits are identical specification.

5.2 Measurement Procedure

- 1. Setup the configuration per figure 3.
- 2. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.
- 3. Record the 6 or 8 highest emissions relative to the limit.
- 4. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then record the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.
- 5. Confirm the highest three emissions with variation of the EUT cable configuration and record the final data.
- 6. Repeat all above procedures on measuring each operation mode of EUT.

Figure 3 : Conducted emissions measurement configuration



5.3 Conducted Emission Data

A. 801.11b

a) Channel Low

Operation Mode: Transmitting / Receiving

Test Date : <u>Sep. 12, 2003</u> Temperature : <u>23</u> Humidity: <u>65 %</u>

Freq.	Meter Reading			Factor	Li	mit		Res	sult		
		(dBì V)				(dBì V)		(dBì V)			
	Q.P V	Value	AVG.	Value		Q.P	AVG.	Q.P '	Value	AVG.	Value
(MHz)	N	L1	N	L1	(dB)	Value	Value	N	L1	N	L1
0.166	44.8	44.2			0.2	65.2	55.2	45.0	44.4		
0.177	40.5	40.6			0.2	64.6	54.6	40.7	40.8		
0.255	39.1	38.6			0.2	61.6	51.6	39.3	38.8		
0.341	31.8	30.7			0.3	59.2	49.2	32.1	31.0		
8.629	19.0	12.5			0.8	60.0	50.0	19.8	13.3		
16.484	15.9	17.7			1.2	60.0	50.0	17.1	18.9		

b) Channel Mid

Operation Mode: Transmitting / Receiving

Test Date : Sep. 12, 2003 Temperature : 23 Humidity: 65 %

Freq.	Meter Reading			Factor	Limit			Result			
		(dBì V)				(dBì V)		(dBì V)			
	Q.P '	Value	AVG.	Value		Q.P	AVG.	Q.P V	Value	AVG.	Value
(MHz)	N	L1	N	L1	(dB)	Value	Value	N	L1	N	L1
0.174	43.2	42.8			0.2	64.8	54.8	43.4	43.0		
0.183	40.1	39.8			0.2	64.4	54.4	40.3	40.0		
0.291	38.7	39.1			0.2	60.5	50.5	38.9	39.3		
0.356	32.1	31.6			0.3	58.8	48.8	32.4	31.9		
8.515	29.3	24.6			0.8	60.0	50.0	30.1	25.4		
17.012	20.5	21.6			1.2	60.0	50.0	21.7	22.8		

c) Channel High

Operation Mode: Transmitting / Receiving

Test Date : Sep. 12, 2003 Temperature : 23 Humidity: 65 %

Freq.	Meter Reading			Factor	Liı	mit	Result				
		(dBì V)				(dB	lì V)	(dBì V)			
	Q.P V	Value	AVG.	Value		Q.P	AVG.	Q.P V	Value	AVG.	Value
(MHz)	N	L1	N	L1	(dB)	Value	Value	N	L1	N	L1
0.159	40.9	41.3			0.2	65.5	55.5	41.1	41.5		
0.177	40.3	40.1			0.2	64.6	54.6	40.5	40.3		
0.256	38.9	39.4			0.2	61.6	51.6	39.1	39.6		
0.352	30.7	31.2			0.3	58.9	48.9	31.0	31.5		
8.773	25.4	21.3			0.8	60.0	50.0	26.2	22.1		
15.944	20.9	20.4			1.2	60.0	50.0	22.1	21.6		

Note: 1. Please see appendix 1 for Plotted Data

^{2.} The expanded uncertainty of the conducted emission tests is 2.45 dB.

B. 801.11g

a) Channel Low

Operation Mode : Transmitting / Receiving

Test Date : Sep 12, 2003 Temperature : 23 Humidity: 65 %

Freq.	Meter Reading			Factor	Liı	mit	Result				
		(dBì V)				(dB	àV)	(dBì V)			
	Q.P '	Value	AVG.	Value		Q.P	AVG.	Q.P '	Value	AVG.	Value
(MHz)	N	L1	N	L1	(dB)	Value	Value	N	L1	N	L1
0.166	43.1	42.7			0.2	65.2	55.2	43.3	42.9		
0.177	41.2	41.5			0.2	64.6	54.6	41.4	41.7		
0.255	38.2	37.9			0.2	61.6	51.6	38.4	38.1		
8.738	26.8	15.6			0.8	60.0	50.0	27.6	16.4		
11.563	23.6	16.0			0.9	60.0	50.0	24.5	16.9		
14.219	24.5	18.0			1.1	60.0	50.0	25.6	19.1		

b) Channel Mid

Operation Mode: Transmitting / Receiving

Test Date : $\underline{\text{Sep } 12,2003}$ Temperature : $\underline{23}$ Humidity: $\underline{65 \%}$

Freq.	Meter Reading			Factor	Limit		Result				
	(dBì V)				(dBì V)		(dBì V)				
	Q.P V	Value	AVG.	Value		Q.P	AVG.	Q.P `	Value	AVG.	Value
(MHz)	N	L1	N	L1	(dB)	Value	Value	N	L1	N	L1
0.174	40.2	41.2			0.2	64.8	54.8	40.4	41.4		
0.186	40.8	40.4			0.2	64.2	54.2	41.0	40.6		
0.247	39.6	38.7			0.2	61.9	51.9	39.8	38.9		
9.154	29.3	27.4			0.8	60.0	50.0	30.1	28.2		
10.648	24.5	28.3			0.8	60.0	50.0	25.3	29.1		
14.728	25.1	20.4			1.1	60.0	50.0	26.2	21.5		

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c) Channel High

Operation Mode: Transmitting / Receiving

Test Date : Sep 12, 2003 Temperature : 23 Humidity: 65 %

Freq.	Meter Reading			Factor	Liı	mit	Result				
	(dBì V)				(dB	lì V)	(dBì V)				
	Q.P V	Value	AVG.	Value		Q.P	AVG.	Q.P V	Value	AVG.	Value
(MHz)	N	L1	N	L1	(dB)	Value	Value	N	L1	N	L1
0.163	41.1	40.2			0.2	65.3	55.3	41.3	40.4		
0.179	40.4	40.1			0.2	64.5	54.5	40.6	40.3		
0.267	39.6	38.4			0.2	61.2	51.2	39.8	38.6		
8.653	28.7	36.2			0.8	60.0	50.0	29.5	37.0		
11.494	26.5	28.5			0.9	60.0	50.0	27.4	29.4		
15.641	21.3	25.1			1.1	60.0	50.0	22.4	26.2		

Note: 1. Please see appendix 1 for Plotted Data

5.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + LISN FACTOR

Assume a receiver reading of 22.5 dB μ V is obtained, and LISN Factor is 0.1 dB, then the total of disturbance voltage is 22.6 dB μ V.

RESULT =
$$22.5 + 0.1 = 22.6$$
 dB μ V
Level in μ V = Common Antilogarithm[(22.6 dB μ V)/20]
= 13.48 μ V

^{2.} The expanded uncertainty of the conducted emission tests is 2.45 dB.

5.5 Conducted Measurement Equipment

The following test equipment are used during the conducted test $\boldsymbol{.}$

Equipment	Manufacturer	Model No.	Next Cal. Due
EMI Test Receiver	Rohde and Schwarz	ESCS 30	11/27/2003
Line Impedance	Rohde and Schwarz	ESH2-Z5	09/03/2004
Stabilization network			
Monitor	IBM	E54	N.C.R.
Printer	HP	LaserJet 1000	N.C.R.
Shielded Room	Riken		N.C.R.
Computer	Acer	Veriton	N.C.R.
EMI Test Receiver	Rohde and Schwarz	ESCS 30	11/27/2003

5.6 Photos of Conduction Measuring Setup

Please see Exhibit –F-Test Setup_Photos

6 ANTENNA REQUIREMENT

6.1 Standard Applicable

For intentional device, according to § 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 § 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.2 Antenna Construction and Directional Gain

There are six antenna employed by this wireless module. The directional gain of each antenna is given below.

Antenna Type / Model	Directional Gain
PIFA Antenna	1 dBi
C068-510273-A	
2.4GHz Dipole Antenna x 2	2 dBi
F1B-003404-52	
Dipole Antenna	5 dBi
SJW-0007A	
2.4GHz Dipole Antenna	2 dBi
F1B-003404-52	
2.4/4.9-5.85 GHz Swivel Antenna SMA	2 dBi
F1B-303706-52	
2.4G Antenna	0 dBi
W111-094-D8	

Please see constraction Photos Of Exhibit B for details.

7 EMISSION BANDWIDTH MEASUREMENT

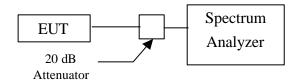
7.1 Standard Applicable

According to 15.247(a)(2), for direct sequence system, the minimum 6dB bandwidth shall be at least 500 kHz.

7.2 Measurement Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- 3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
- 4. Repeat above procedures until all frequencies measured were complete.

Figure 4: Emission bandwidth measurement configuration.



Equipment	Manufacturer	Model No.	Next Cal. Due	
RF Test Receiver	Rohde & Schwarz	ESBI	05/31/2004	
Plotter	Hewlett-Packard	7440A	N/A	
Attenuator	Weinschel Engineering	AS3667	N/A	

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7.4 Measurement Data

Test Date : Sep 12, 2003 Temperature : 23 Humidity: 65 %

A. 802.11b

- a) Channel 01: 6 dB Emission Bandwidth is 12.00 MHz
- b) Channel 06: 6 dB Emission Bandwidth is 11.83 MHz
- c) Channel 11: 6 dB Emission Bandwidth is 12.00 MHz

B. 802.11g

- a) Channel 01: 6 dB Emission Bandwidth is 16.83 MHz
- b) Channel 06: 6 dB Emission Bandwidth is 16.92 MHz
- c) Channel 11: 6 dB Emission Bandwidth is 16.75 MHz

Note: 1. Please see appendix 2 for Plotted Data

2. The expanded uncertainty of the emission bandwidth tests is 1500Hz.

8 OUTPUT POWER MEASUREMENT

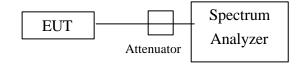
8.1 Standard Applicable

For direct sequence system, according to 15.247(b), the maximum peak output power of the transmitter shall not exceed 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Measurement Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Position the EUT as shown in figure 5 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- 3. Set RBW of spectrum analyzer to 1 MHz and VBW to 1 MHz.
- 4. Use channel power function and record the level displayed.
- 5. Repeat above procedures until all frequencies measured were complete.

Figure 5: Output power and measurement configuration.



Equipment	Manufacturer	Model No.	Next Cal. Due	
RF Test Receiver	Rohde & Schwarz	ESBI	05/31/2004	
Plotter	Hewlett-Packard	7440A	N/A	
Attenuator	Weinschel Engineering	AS3667	N/A	

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8.4 Measurement Data

Test Date : Sep 12, 2003 Temperature : 23 Humidity: 65 %

A. 802.11b

- a) Channel 01 : Output Peak Power is 17.5 dBm or 56.2 mW
- b) Channel 06: Output Peak Power is 16.7 dBm or 57.5 mW
- c) Channel 11: Output Peak Power is 15.5 dBm or 35.5 mW

B. 802.11g

- a) Channel 01: Output Peak Power is 13.1 dBm or 20.4 mW
- b) Channel 06: Output Peak Power is 13.5 dBm or 22.4 mW
- c) Channel 11: Output Peak Power is 13.9 dBm or 24.5 mW

Note: 1. Please see appendix 3 for Plotted Data

2. The expanded uncertainty of the output power tests is 2dB.

9 100 kHz BANDWIDTH OF BAND EDGES MEASUREMENT

9.1 Standard Applicable

According to 15.247(c), if any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified in § 15.209(a), whichever results in the lesser attenuation.

9.2 Measurement Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Position the EUT as shown in figure 5 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- 3. Set both RBW of spectrum analyzer to 100kHz and VBW to 1 MHz with a convenient frequency span including 100kHz bandwidth from band edge.
- 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- 5. Repeat above procedures until all measured frequencies were complete.

Equipment	Manufacturer	Model No.	Next Cal. Due
RF Test Receiver	Rohde & Schwarz	ESBI	05/31/2004
Attenuator	Weinschel Engineering	1	N/A
Plotter	Hewlett-Packard	7440A	N/A

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9.4 Measurement Data

Test Date : Sep 12, 2003 Temperature : 23 Humidity: 65 %

A. 802.11b

- a) Lower Band Edge: maximum value is -37.50 dBm that is attenuated more than 20 dB
- b) Upper Band Edge: maximum value is -44.33 dBm that is attenuated more than 20 dB

B. 802.11g

- a) Lower Band Edge: maximum value is -39.33 dBm that is attenuated more than 20 dB
- b) Upper Band Edge: maximum value is -41.50 dBm that is attenuated more than 20 dB

Note: 1. Please see appendix 4 for Plotted Data

2. The expanded uncertainty of the 100 khz bandwidth of band edges tests is 2dB.

10 POWER DENSITY MEASUREMENT

10.1 Standard Applicable

According to 15.247(d), for direct sequence systems, the transmitted power density averaged over any 1 second interval shall not be greater than 8 dBm in any 3 kHz bandwidth within these bands.

10.2 Measurement Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set EUT to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- 3. Adjust the center frequency of spectrum analyzer on highest level appearing on spectral display within a 300 kHz frequency span.
- 4. Set the spectrum analyzer on a 3 kHz resolution bandwidth and 300 kHz video bandwidth as well as max hold function.
- 5. Repeat above procedures until all measured frequencies were complete.

Equipment	Manufacturer	Model No.	Next Cal. Due
RF Test Receiver	Rohde & Schwarz	ESBI	05/31/2004
Attenuator	Weinschel Engineering	1	N/A
Plotter	Hewlett-Packard	7440A	N/A

10.4 Measurement Data

Test Date : Sep 12, 2003 Temperature : 23 Humidity: 65 %

A. 802.11b

- a) Channel 01: Maximun Power Density of 3 kHz Bandwidth is -13.17 dBm
- b) Channel 06: Maximun Power Density of 3 kHz Bandwidth is -13.50 dBm
- c) Channel 11: Maximun Power Density of 3 kHz Bandwidth is -15.33 dBm

B. 802.11g

- a) Channel 01: Maximun Power Density of 3 kHz Bandwidth is -15.33 dBm
- b) Channel 06: Maximun Power Density of 3 kHz Bandwidth is -16.50 dBm
- c) Channel 11: Maximun Power Density of 3 kHz Bandwidth is –16.67 dBm

Note: 1. Please see appendix 5 for Plotted Data

2. The expanded uncertainty of the power density tests is 2dB.

11. OUT-OF-BAND CONDUCTED EMISSION MEASUREMENT

11.1 Standard Applicable

According to 15.247(c), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.

11.2 Measurement Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- 3. Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz

VBW > RBW

Sweep = auto

Detector function = peak

Trace = max hold.

- 4. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. Plot the result on the screen of spectrum analyzer.
- 5. Repeat above procedures until all measured frequencies were complete.

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Hewlett-Packard	8564E	08/14/2004
Attenuator	Weinschel Engineering	1	N/A
Plotter	Hewlett-Packard	7440A	N/A

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11.4 Measurement Data

A. 802.11b

Mode: CH 01

Test Date : Sep. 12, 2003 Temperature : 23 Humidity: 65 %

- a) 1 GHz to 5 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- b) 5 GHz to 40 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

Mode: CH 06

Test Date : Sep. 12, 2003 Temperature : 23 Humidity: 65 %

- a) 1 GHz to 5 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- b) 5 GHz to 40 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

Mode: CH 11

Test Date : Sep 12, 2003 Temperature : 23 Humidity: 65 %

- c) 1 GHz to 5 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- d) 5 GHz to 40 GHz frequency band: All emissions are attenuated more than 20dB from the carrier

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B. 802.11g

Mode: CH 01

Test Date : Sep 12, 2003 Temperature : 23 Humidity: 65 %

c) 1 GHz to 5 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

d) 5 GHz to 40 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

Mode: CH 06

Test Date : Sep 12, 2003 Temperature : 23 Humidity: 65 %

e) 1 GHz to 5 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

f) 5 GHz to 40 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.

Mode: CH 11

Test Date : Sep 12, 2003 Temperature : 23 Humidity: 65 %

- g) 1 GHz to 5 GHz frequency band: All emissions are attenuated more than 20dB from the carrier.
- h) 5 GHz to 40 GHz frequency band: All emissions are attenuated more than 20dB from the carrier

Note: 1. Please see appendix 6 for Plotted Data

2. The expanded uncertainty of the out-of-band conducted emission tests is 2dB.