



## Test Report

Product Name : USB Wireless Lan

Model No. : WN1102, WBU1000

FCC ID.: PX91102

Applicant : WinMate Communications, Inc.

Address : 9F, No.175, Ta-Tung Rd., Sec.1, Hsi-Chih, Taipei

Hsien, Taiwan, R.O.C. Zip:221

Date of Receipt : March 22, 2001

Date of Test : August 14, 2001

Report No. : 013T040FI

The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

# Test Report Certification

Test Date : August 14, 2001

Report No. : 013T040FI



Accredited by NIST (NVLAP)

NVLAP Lab Code: 200347-0

Product Name : USB Wireless Lan  
Applicant : WinMate Communications, Inc.  
Address : 9F, No.175, Ta-Tung Rd., Sec.1, Hsi-Chih, Taipei  
Hsien, Taiwan, R.O.C. Zip:221  
Manufacturer : WinMate Communications, Inc.  
Model No. : WN1102, WBU1000  
FCC ID. : PX91102  
Rated Voltage : Power by PC  
Trade Name : WinMate, AboCom  
Measurement Standard : FCC Part 15 Subpart C Paragraph 15.247  
Measurement Procedure : ANSI C63.4:1992  
Test Result : Complied

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Documented By : \_\_\_\_\_  
( Lisa Chen )

Tested By : \_\_\_\_\_  
( Calien Kang )

Approved By : \_\_\_\_\_  
( Gene Chang )

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	: USB Wireless Lan	
Trade Name	: WinMate, AboCom	
FCC ID.	: PX91102	
Model No.	: WN1102, WBU1000	
Frequency Range	: 2400MHz to 2483.5MHz	
Channel Number	: 11	
Frequency of Each Channel	: Channel 01: 2412MHz	Channel 07: 2442MHz
(Working Frequency)	Channel 02: 2417 MHz	Channel 08: 2447MHz
	Channel 03: 2422 MHz	Channel 09: 2452MHz
	Channel 04: 2427MHz	Channel 10: 2457MHz
	Channel 05: 2432MHz	Channel 11: 2462MHz
	Channel 06: 2437MHz	
Type of Modulation	: Direct Sequence Spread Spectrum	
Selection of		
Operating Frequency	: By software	
USB Cable	: Shielded, 1.2m	

Note:

1. This device is a 2.4GHz USB Wireless Lan with USB interface included a 2.4GHz receiving function, a 2.4GHz transmitting function.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. The variation of model name is for different OEM (AboCom).
4. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 013T040F under Verification.

### 1.2. EUT Description

EUT is an USB 1.1 interface 2.4GHz wireless LAN with 11 channels. The spreading code of EUT is 11 chip barker sequence. The antenna is soldered on the PCB directly. CCK, DQSK ,DBPSK modulation scheme are used to modulate printed. The USB port provides the connection to PC for data transmission.

### Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards ) are:

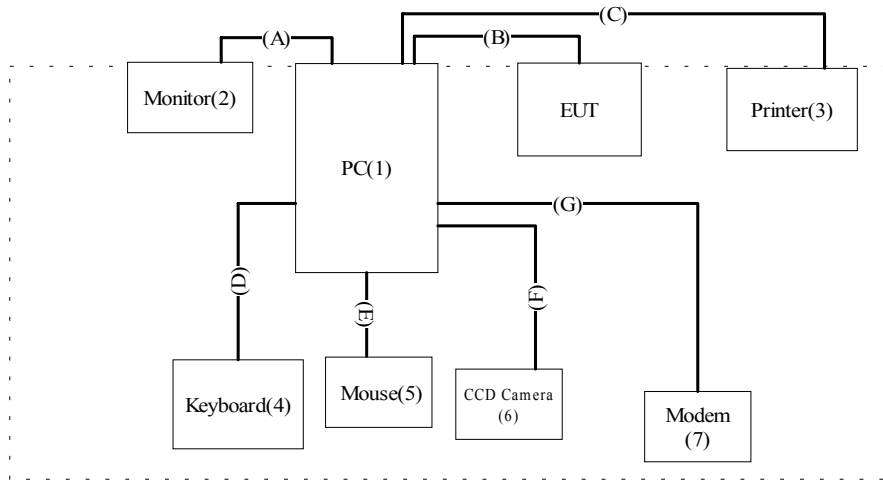
	Product	Manufacturer	Model No.	Serial No.	FCC ID
(1)	PC	IBM	16W	BNL6767	DoC
(2)	Monitor	HITACHI	CM752ET-311	T8D003312	DoC
(3)	Printer	HP	C2642A	MY75J1D1D2	B94C2642X
(4)	Keyboard	ACER	6311-TW4C	916590704C91F24436	DoC
(5)	Mouse	Logitech	M-S35	LZA75102600	DZL211029
(6)	USB Video Camera	Mustek	Vcam 3X	N/A	DZL211029
(7)	Modem	ACEEX	1414	980033036	FAXDM1414

Note:

1. The power cord of The device. (2) is Shielded power cord.
2. The power cord of The device. (1) 、 (2) are Non-shielded power cord.

	Signal Cable Type	Signal cable Description
A.	Modem Cable	Shielded, 1.8m, two ferrite cores bonded.
B.	USB Cable	Shielded, 1.2m
C.	Printer Cable	Shielded, 1.5m
D.	Keyboard Cable	Shielded, 1.8m
E.	Mouse Cable	Shielded, 1.8m
F.	CCD Camera Cable	Shielded, 1.5m
G.	Modem Cable	Shielded, 1.5m

### 1.3. Configuration of tested System



**1.4. EUT Exercise Software**

- 1.4.1 Setup the EUT and simulators as shown on 1.3.
- 1.4.2 Turn on the power of all equipment.
- 1.4.3 Personal Computer reads data from disk.
- 1.4.4 Data will be transmitted through EUT.
- 1.4.5 The transmission status will be shown on the monitor.
- 1.4.6 Repeat the above procedure 1.4.4 to 1.4.5

**1.5. Test Facility**

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: November 3, 1998 File on  
 Federal Communications Commission  
 FCC Engineering Laboratory  
 7435 Oakland Mills Road  
 Columbia, MD 21046  
 Reference 31040/SIT1300F2  
 September 30, 1998 Accreditation on NVLAP  
 NVLAP Lab Code: 200347-0



Site Name: Quietek Corporation

Site Address: N0.75-1, Wang-Yeh Valley, Yung-Hsing,  
 Chiung-Lin, Hsin-Chu County,  
 Taiwa, R.O.C.



## 2. Conducted Emission

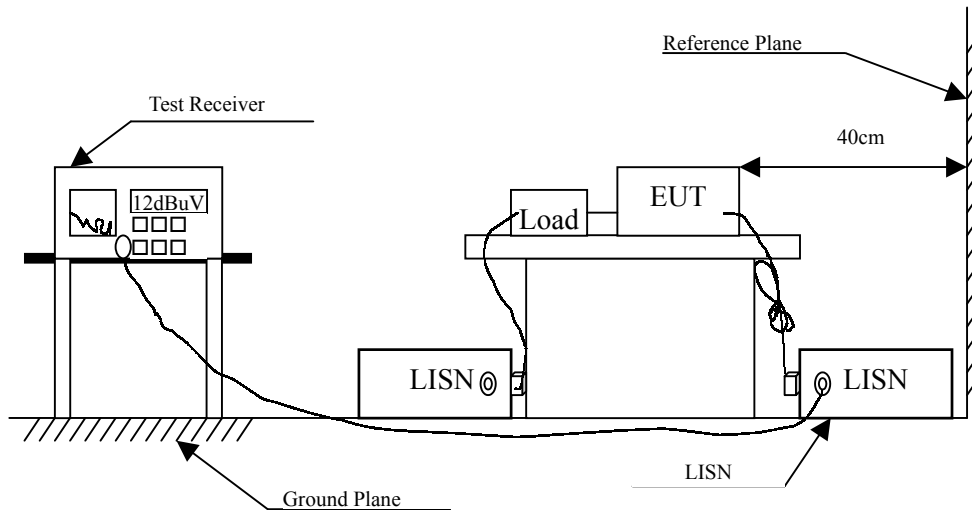
### 2.1. Test Equipment List

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2001	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2001	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2001	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	N/A	
5	N0.2 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

### 2.2. Test Setup



### 2.3. Limits

FCC Part 15 Paragraph 15.207 (dBuV)		
Frequency MHz	Limits	
	uV	dBuV
0.45 - 30	250	48.0

## 2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4:1992 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.45MHz to 30MHz using a receiver bandwidth of 9kHz.

## 2.5. Test Result of Conducted Emission

Product : USB Wireless Lan  
 Test Item : Conducted Emission Test  
 Test Mode : Normal Operation

Frequency	Cable	LISN	Reading Level	Measurement Level	Limits
MHz	Loss	Factor	dBuV	dBuV	dBuV
	dB	dB			

### Line 1

#### Quasi-Peak:

* 0.591	0.07	0.10	39.34	39.51	48.00
0.983	0.10	0.10	36.62	36.82	48.00
1.473	0.12	0.12	35.88	36.12	48.00
2.357	0.15	0.14	33.28	33.57	48.00
12.681	0.30	0.29	30.29	30.88	48.00
22.220	0.37	0.49	36.67	37.53	48.00

### Line 2

#### Quasi-Peak:

* 0.591	0.07	0.10	39.32	39.49	48.00
0.981	0.10	0.10	36.14	36.34	48.00
1.473	0.12	0.12	35.82	36.06	48.00
2.259	0.15	0.14	34.67	34.96	48.00
13.170	0.31	0.30	33.06	33.67	48.00
22.501	0.37	0.50	37.65	38.51	48.00

Remarks :

1. “ \* ” means that this data is the worst emission level.
2. The average measurement was not performed when the peak measured data under the limit of average detection.

### 3. Peak Power Output

#### 3.1. Test Equipment

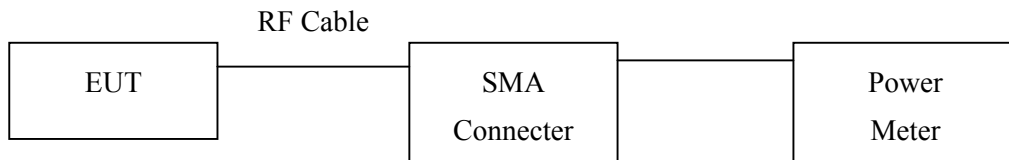
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Advantest	R3272 / 72421194	May, 2001
X	Power Meter	HP	EPM-441A	May, 2001

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.  
 2. Mark "X" test instruments are used to measure the final test results.

#### 3.2. Test Setup

##### Conduction Power Measurement



#### 3.3. Test Condition

Standard Temperature and Humidity, Standard Test Voltage

#### 3.4. Minimum Standard

The maximum peak power shall be less 1 Watt.

### 3.5. Test Result of Peak Power Output

Product : USB Wireless Lan  
 Test Item : Peak Power Output Data  
 Test Site : No.1 OATS  
 Test Mode : Normal Operation

#### Data Speed: 1Mbps

Channel No.	Frequency(MHz)	Measurement	Required Limit	Result
1	2412	14.18 dBm	1 Watt= 30 dBm	Pass
6	2437	14.25dBm	1 Watt= 30 dBm	Pass
11	2462	14.15dBm	1 Watt= 30 dBm	Pass

#### Data Speed: 11Mbps

Channel No.	Frequency(MHz)	Measurement	Required Limit	Result
1	2412	17.52dBm	1 Watt= 30 dBm	Pass
6	2437	17.47dBm	1 Watt= 30 dBm	Pass
11	2462	17.39dBm	1 Watt= 30 dBm	Pass

#### 4. RF Exposure Evaluation

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)  
 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

##### 4.1. Friis Formula

$$\text{Friis transmission formula: } P_d = (P_{out} * G) / (4 * \pi * r^2)$$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

$R$  = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance  $r$  where the MPE limit is reached.

##### 4.2. EUT Operation condition

A software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

### 4.3. Test Result of RF Exposure Evaluation

Product : USB Wireless Lan  
 Test Item : RF Exposure Evaluation Data  
 Test Site : No.1 OATS  
 Test Mode : Normal Operation

#### 4.3.1 Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.6dBi or 1.45in linear scale.

#### 4.3.2 Output Power Into Antenna & RF Exposure Evaluation Distance

Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Minimum Allowable Distance ® From Skin(cm)
1 (1Mbps)	2412	14.18	1.29
1 (11Mbps)	2412	17.52	1.90
6 (1Mbps)	2437	14.25	1.30
6 (11Mbps)	2437	17.47	1.89
11 (1Mbps)	2462	14.15	1.29
11 (11Mbps)	2462	17.39	1.89

The distance r (4<sup>th</sup> column) calculated from the Friis transmission formula is far shorter than 20 cm separation requirement. So, RF exposure limit warning or SAR test are not required.

## 5. Radiated Emission

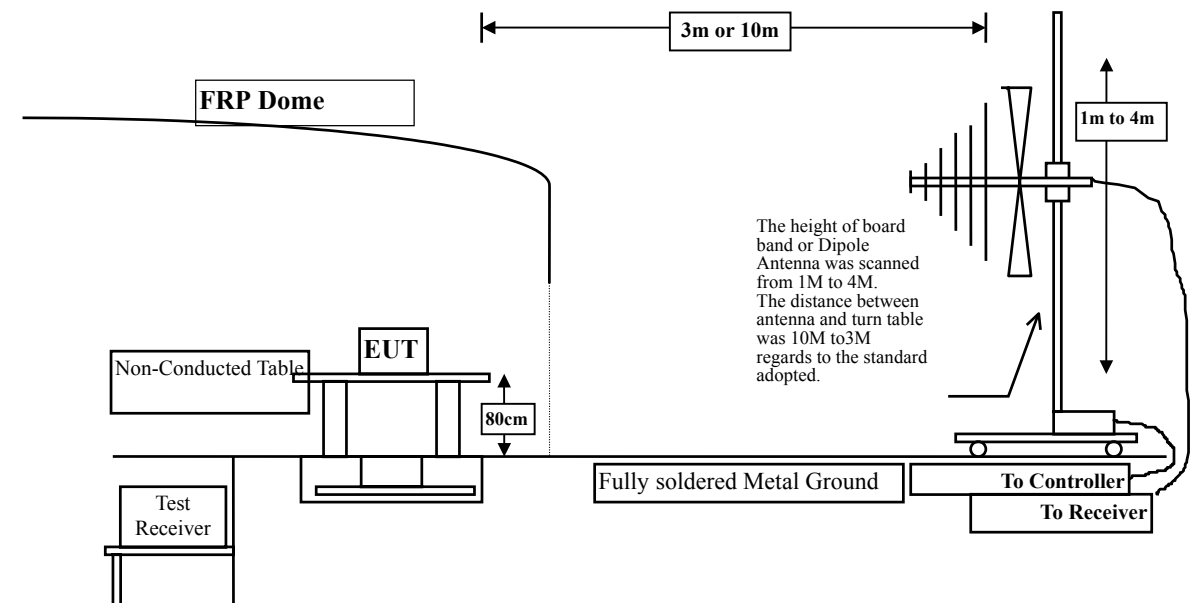
### 5.1. Test Equipment

The following test equipment are used during the radiated emission test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 1	X Test Receiver	R & S	ESCS 30 / 825442/14	May, 2001
	Spectrum Analyzer	Advantest	R3261C / 71720140	May, 2001
	Pre-Amplifier	HP	8447D/3307A01812	May, 2001
	X Bilog Antenna	Chase	CBL6112B / 12452	Sep., 2000
Site # 1	X Horn Antenna	EM	EM6917 / 103325	May, 2001
	X Test Receiver	R & S	ESCS 30 / 825442/17	May, 2001
Site # 2	Spectrum Analyzer	Advantest	R3261C / 71720609	May, 2001
	Pre-Amplifier	HP	8447D/3307A01814	May, 2001
	X Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2000
	X Horn Antenna	EM	EM6917 / 103325	May, 2001

- Note:
1. All equipments that need to calibrate are with calibration period of 1 year.
  2. Mark "X" test instruments are used to measure the final test results.

### 5.2. Test Setup



Spurious Emissions  
(Band Edge Antenna Radiated)



### 5.3. Test Condition

Standard Temperature and Humidity, Standard Test Voltage

### 5.4. Limits

#### ► General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

Frequency MHz	50dB below of the fundamental (dBuV/m @3m)	15.209 Limits (dBuV/m @3m)	General Radiated Limits (dBuV/m @3m)
30-88	40	40	40
88-216	43.5	43.5	43.5
216-960	44	46	46
Above 960	44	54	54

- Remarks :
1. RF Line Voltage (dBuV) = 20 log RF Line Voltage (uV)
  2. In the Above Table, the tighter limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

## 5.5. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:1992 on radiated measurement.

The additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30 )is 120 kHz, above 1GHz are 1 MHz.

The frequency range from **30MHz to 10th harmonics** is checked.

## 5.6. Test Result of Radiated Emission

Product : USB Wireless Lan  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Channel 1(1Mbps)

Freq.	Cable	Probe	PreAMP	Reading	Measurement	Margin	Limit
MHz	Loss	Factor	Level				
	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m

### Peak Detector (Horizontal)

4823.610	6.27	33.50	0.00	19.08	58.85	15.15	74.00
7236.170	8.32	36.24	0.00	17.48	< 62.04	11.96	74.00
9648.090	10.18	37.43	0.00	17.30	< 64.91	9.09	74.00
12060.09	11.90	39.12	0.00	17.64	< 68.66	5.34	74.00

### Average Detector (Horizontal)

4824.020	6.27	33.50	0.00	7.62	47.39	6.61	54.00
7236.060	8.32	36.24	0.00	1.26	< 45.82	8.18	54.00
9648.020	10.18	37.43	0.00	1.41	< 49.02	4.98	54.00
12060.06	11.90	39.12	0.00	1.91	< 52.93	1.07	54.00

### Peak Detector (Vertical)

4824.130	6.27	33.50	0.00	19.78	59.55	14.45	74.00
7236.020	8.32	36.24	0.00	16.98	< 61.54	12.46	74.00
9647.910	10.18	37.43	0.00	16.83	< 64.44	9.56	74.00
12060.13	11.90	39.12	0.00	18.82	< 69.84	4.16	74.00

### Average Detector (Vertical)

4823.940	6.27	33.50	0.00	7.08	46.85	7.15	54.00
7236.090	8.32	36.24	0.00	1.21	< 45.77	8.23	54.00
9648.020	10.18	37.43	0.00	1.50	< 49.11	4.89	54.00
12060.09	11.90	39.12	0.00	1.87	< 52.89	1.11	54.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Measurement = Reading Level + Probe Factor + Cable loss.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : USB Wireless Lan  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Channel 6(1Mbps)

Freq.	Cable	Probe	PreAMP	Reading	Measurement	Margin	Limit
MHz	Loss	Factor	dB	Level	dBuV/m	dB	dBuV/m
	dB	dB/m		dBuV			

**Peak Detector (Horizontal)**

4873.760	6.32	33.56	0.00	19.34	59.22	14.78	74.00
7309.060	8.38	36.31	0.00	17.30	< 61.98	12.02	74.00
9748.280	10.24	37.45	0.00	18.83	< 66.52	7.48	74.00
12184.98	11.99	39.17	0.00	17.96	< 69.13	4.87	74.00

**Average Detector (Horizontal)**

4874.020	6.32	33.56	0.00	7.06	46.94	7.06	54.00
7311.060	8.38	36.31	0.00	1.31	< 45.99	8.01	54.00
9748.060	10.24	37.45	0.00	1.67	< 49.36	4.64	54.00
12185.02	11.99	39.17	0.00	1.19	< 52.36	1.64	54.00

**Peak Detector (Vertical)**

4873.870	6.32	33.56	0.00	18.63	58.51	15.49	74.00
7311.020	8.38	36.31	0.00	17.68	< 62.36	11.64	74.00
9747.910	10.24	37.45	0.00	17.88	< 65.57	8.43	74.00
12185.38	11.99	39.17	0.00	18.77	< 69.94	4.06	74.00

**Average Detector (Vertical)**

4874.090	6.32	33.56	0.00	6.66	46.54	7.46	54.00
7311.090	8.38	36.31	0.00	4.42	< 49.10	4.90	54.00
9748.060	10.24	37.45	0.00	1.64	< 49.33	4.67	54.00
12185.06	11.99	39.17	0.00	1.17	< 52.34	1.66	54.00

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Measurement = Reading Level + Probe Factor + Cable loss.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : USB Wireless Lan  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Channel 11(1Mbps)

Freq. MHz	Cable Loss dB	Probe Factor dB/m	PreAMP Reading		Measurement Margin Limit		
			dB	Level dBuV	dBuV/m	dB	dBuV/m

**Peak Detector (Horizontal)**

4924.000	6.37	33.62	0.00	18.86	58.85	15.15	74.00
7385.990	8.45	36.39	0.00	17.29	< 62.13	11.87	74.00
9848.030	10.32	37.47	0.00	17.34	< 65.12	8.88	74.00
12310.03	12.07	39.22	0.00	17.93	< 69.22	4.78	74.00

**Average Detector (Horizontal)**

4923.980	6.37	33.62	0.00	6.12	46.11	7.89	54.00
7386.020	8.45	36.39	0.00	1.40	< 46.24	7.76	54.00
9847.980	10.32	37.47	0.00	1.65	< 49.43	4.57	54.00
12310.06	12.07	39.22	0.00	1.24	< 52.53	1.47	54.00

**Peak Detector (Vertical)**

4923.940	6.37	33.62	0.00	19.53	59.52	14.48	74.00
7386.210	8.45	36.39	0.00	18.08	< 62.92	11.08	74.00
9847.980	10.32	37.47	0.00	17.20	< 64.98	9.02	74.00
12310.02	12.07	39.22	0.00	17.58	< 68.87	5.13	74.00

**Average Detector (Vertical)**

4924.090	6.37	33.62	0.00	5.78	45.77	8.23	54.00
7386.020	8.45	36.39	0.00	1.41	< 46.25	7.75	54.00
9848.060	10.32	37.47	0.00	1.66	< 49.44	4.56	54.00
12310.02	12.07	39.22	0.00	1.54	< 52.83	1.17	54.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Measurement = Reading Level + Probe Factor + Cable loss.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : USB Wireless Lan  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Channel 1(11Mbps)

Freq. MHz	Cable Loss dB	Probe Factor dB/m	PreAMP Reading		Measurement Margin Limit		
			dB	dBuV	dBuV/m	dB	dBuV/m

**Peak Detector (Horizontal)**

4824.020	6.27	33.50	0.00	17.19	56.96	17.04	74.00
7235.870	8.32	36.24	0.00	17.71	< 62.27	11.73	74.00
9648.090	10.18	37.43	0.00	17.27	< 64.88	9.12	74.00
12060.13	11.90	39.12	0.00	17.30	< 68.32	5.68	74.00

**Average Detector (Horizontal)**

4823.980	6.27	33.50	0.00	4.63	44.40	9.60	54.00
7236.020	8.32	36.24	0.00	1.21	< 45.77	8.23	54.00
9648.130	10.18	37.43	0.00	1.41	< 49.02	4.98	54.00
12060.06	11.90	39.12	0.00	1.94	< 52.96	1.04	54.00

**Peak Detector (Vertical)**

4823.980	6.27	33.50	0.00	18.14	57.91	16.09	74.00
7236.060	8.32	36.24	0.00	16.69	< 61.25	12.75	74.00
9647.910	10.18	37.43	0.00	17.90	< 65.51	8.49	74.00
12060.06	11.90	39.12	0.00	17.78	< 68.80	5.20	74.00

**Average Detector (Vertical)**

4823.980	6.27	33.50	0.00	4.48	44.25	9.75	54.00
7236.090	8.32	36.24	0.00	1.21	< 45.77	8.23	54.00
9648.060	10.18	37.43	0.00	1.46	< 49.07	4.93	54.00
12060.06	11.90	39.12	0.00	1.91	< 52.93	1.07	54.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Measurement = Reading Level + Probe Factor + Cable loss.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : USB Wireless Lan  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Channel 6(11Mbps)

Freq.	Cable	Probe	PreAMP	Reading	Measurement	Margin	Limit
MHz	Loss	Factor		Level			
	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m

**Peak Detector (Horizontal)**

4874.210	6.32	33.56	0.00	18.88	58.76	15.24	74.00
7310.830	8.38	36.31	0.00	17.32	< 62.00	12.00	74.00
9748.090	10.24	37.45	0.00	17.77	< 65.46	8.54	74.00
12185.13	11.99	39.17	0.00	17.80	< 68.97	5.03	74.00

**Average Detector (Horizontal)**

4874.060	6.32	33.56	0.00	5.10	44.98	9.02	54.00
7311.020	8.38	36.31	0.00	1.34	< 46.02	7.98	54.00
9748.060	10.24	37.45	0.00	1.62	< 49.31	4.69	54.00
12185.02	11.99	39.17	0.00	1.19	< 52.36	1.64	54.00

**Peak Detector (Vertical)**

4874.090	6.32	33.56	0.00	18.87	58.75	15.25	74.00
7311.130	8.38	36.31	0.00	17.44	< 62.12	11.88	74.00
9748.096	10.24	37.45	0.00	17.65	< 65.34	8.66	74.00
12185.21	11.99	39.17	0.00	18.48	< 69.65	4.35	74.00

**Average Detector (Vertical)**

4874.020	6.32	33.56	0.00	5.13	45.01	8.99	54.00
7311.020	8.38	36.31	0.00	1.24	< 45.92	8.08	54.00
9748.060	10.24	37.45	0.00	1.55	< 49.24	4.76	54.00
12185.02	11.99	39.17	0.00	1.13	< 52.30	1.70	54.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Measurement = Reading Level + Probe Factor + Cable loss.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : USB Wireless Lan  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Channel 11(11Mbps)

Freq.	Cable	Probe	PreAMP	Reading	Measurement	Margin	Limit
MHz	Loss	Factor		Level			
	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m

**Peak Detector (Horizontal)**

4923.940	6.37	33.62	0.00	19.25	59.24	14.76	74.00
7385.940	8.45	36.39	0.00	17.76	< 62.60	11.40	74.00
9848.130	10.32	37.47	0.00	17.63	< 65.41	8.59	74.00
12309.94	12.07	39.22	0.00	18.02	< 69.31	4.69	74.00

**Average Detector (Horizontal)**

4924.020	6.37	33.62	0.00	6.12	46.11	7.89	54.00
7386.020	8.45	36.39	0.00	1.44	< 46.28	7.72	54.00
9848.060	10.32	37.47	0.00	1.80	< 49.58	4.42	54.00
12310.02	12.07	39.22	0.00	1.28	< 52.57	1.43	54.00

**Peak Detector (Vertical)**

4923.940	6.37	33.62	0.00	19.72	59.71	14.29	74.00
7385.830	8.45	36.39	0.00	17.58	< 62.42	11.58	74.00
9848.060	10.32	37.47	0.00	17.19	< 64.97	9.03	74.00
12310.13	12.07	39.22	0.00	18.68	< 69.97	4.03	74.00

**Average Detector (Vertical)**

4924.020	6.37	33.62	0.00	5.55	45.54	8.46	54.00
7386.060	8.45	36.39	0.00	1.40	< 46.24	7.76	54.00
9847.980	10.32	37.47	0.00	1.50	< 49.28	4.72	54.00
12310.02	12.07	39.22	0.00	1.24	< 52.53	1.47	54.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Measurement = Reading Level + Probe Factor + Cable loss.
3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product : USB Wireless Lan  
 Test Item : General Radiated Emission Data  
 Test Mode : Channel 1(1Mbps)

Freq. MHz	Cable Loss dB	Probe Factor dB/m	PreAMP Reading		Measurement Margin Limit		
			dB	Level dBuV	dBuV/m	dB	dBuV/m

**Horizontal:**

66.860	1.19	0.00	0.00	23.10	24.29	15.71	40.00
132.820	1.53	0.00	0.00	28.13	29.66	13.84	43.50
143.490	1.59	0.00	0.00	25.57	27.16	16.34	43.50
181.320	1.78	0.00	0.00	28.08	29.86	13.64	43.50
* 288.020	2.33	0.00	0.00	32.42	34.75	11.25	46.00
322.940	2.51	0.00	0.00	26.55	29.06	16.94	46.00

**Vertical:**

180.350	1.78	0.00	0.00	24.94	26.72	16.78	43.50
253.100	2.15	0.00	0.00	23.18	25.33	20.67	46.00
*359.800	2.70	0.00	0.00	28.73	31.43	14.57	46.00
395.690	2.89	0.00	0.00	27.49	30.37	15.63	46.00
429.640	3.06	0.00	0.00	26.33	29.39	16.61	46.00
498.510	3.42	0.00	0.00	26.32	29.73	16.27	46.00

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ”, means this data is the worst emission leve-Amplifier.
3. Measurement = Reading Level + Probe Factor + Cable loss.

Product : USB Wireless Lan  
 Test Item : General Radiated Emission Data  
 Test Mode : Channel 6(1Mbps)

Freq. MHz	Cable Loss dB	Probe Factor dB/m	PreAMP Reading		Measurement Margin Limit		
			dB	Level dBuV	dBuV/m	dB	dBuV/m

**Horizontal:**

131.850	1.53	0.00	0.00	27.03	28.55	14.95	43.50
180.350	1.78	0.00	0.00	27.14	28.92	14.58	43.50
* 286.080	2.32	0.00	0.00	32.40	34.72	11.28	46.00
299.660	2.39	0.00	0.00	27.38	29.77	16.23	46.00
323.910	2.52	0.00	0.00	26.95	29.46	16.54	46.00
359.800	2.70	0.00	0.00	25.33	28.03	17.97	46.00

**Vertical:**

122.150	1.48	0.00	0.00	26.90	28.37	15.13	43.50
180.350	1.78	0.00	0.00	25.74	27.52	15.98	43.50
* 359.800	2.70	0.00	0.00	28.93	31.63	14.37	46.00
396.660	2.89	0.00	0.00	27.41	30.30	15.70	46.00
430.610	3.07	0.00	0.00	27.15	30.22	15.78	46.00
498.510	3.42	0.00	0.00	26.32	29.73	16.27	46.00

## Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ”, means this data is the worst emission level-Amplifier.
3. Measurement = Reading Level + Probe Factor + Cable loss.

Product : USB Wireless Lan  
 Test Item : General Radiated Emission Data  
 Test Mode : Channel 11(1Mbps)

Freq.	Cable Loss	Probe Factor	PreAMP	Reading Level	Measurement	Margin	Limit
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m

**Horizontal:**

132.820	1.53	0.00	0.00	27.73	29.26	14.24	43.50
180.350	1.78	0.00	0.00	27.74	29.52	13.98	43.50
263.770	2.21	0.00	0.00	24.67	26.88	19.12	46.00
* 287.050	2.33	0.00	0.00	32.80	35.12	10.88	46.00
323.910	2.52	0.00	0.00	26.75	29.26	16.74	46.00
359.800	2.70	0.00	0.00	24.93	27.63	18.37	46.00

**Vertical:**

181.320	1.78	0.00	0.00	25.48	27.26	16.24	43.50
287.050	2.33	0.00	0.00	22.40	24.72	21.28	46.00
* 358.830	2.70	0.00	0.00	28.80	31.50	14.50	46.00
396.660	2.89	0.00	0.00	27.21	30.10	15.90	46.00
430.610	3.07	0.00	0.00	24.95	28.02	17.98	46.00
496.570	3.41	0.00	0.00	25.99	29.40	16.60	46.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ”, means this data is the worst emission level-Amplifier.
3. Measurement = Reading Level + Probe Factor + Cable loss.

Product : USB Wireless Lan  
 Test Item : General Radiated Emission Data  
 Test Site : Chamber  
 Test Mode : Channel 1(11Mbps)

Freq. MHz	Cable Loss dB	Probe Factor dB/m	PreAMP dB	Reading Level dBuV	Measurement Margin Limit		
					dBuV/m	dB	dBuV/m

**Horizontal:**

131.850	1.53	0.00	0.00	26.63	28.15	15.35	43.50
179.380	1.77	0.00	0.00	27.60	29.37	14.13	43.50
* 286.080	2.32	0.00	0.00	32.20	34.52	11.48	46.00
322.940	2.51	0.00	0.00	26.95	29.46	16.54	46.00
359.800	2.70	0.00	0.00	25.33	28.03	17.97	46.00
396.660	2.89	0.00	0.00	24.41	27.30	18.70	46.00

**Vertical:**

164.830	1.70	0.00	0.00	25.57	27.26	16.24	43.50
238.550	2.08	0.00	0.00	24.34	26.41	19.59	46.00
*359.800	2.70	0.00	0.00	28.33	31.03	14.97	46.00
396.660	2.89	0.00	0.00	27.81	30.70	15.30	46.00
497.540	3.41	0.00	0.00	24.90	28.31	17.69	46.00
542.160	3.64	0.00	0.00	24.96	28.60	17.40	46.00

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ”, means this data is the worst emission level-Amplifier.
3. Measurement = Reading Level + Probe Factor + Cable loss.

Product : USB Wireless Lan  
 Test Item : General Radiated Emission Data  
 Test Site : Chamber  
 Test Mode : Channel 6(11Mbps)

Freq.	Cable	Probe	PreAMP	Reading	Measurement	Margin	Limit
MHz	Loss	Factor	dB	Level	dBuV/m	dB	dBuV/m
	dB	dB/m		dBuV			

**Horizontal:**

132.820	1.53	0.00	0.00	28.53	30.06	13.44	43.50
180.350	1.78	0.00	0.00	27.74	29.52	13.98	43.50
262.800	2.20	0.00	0.00	25.25	27.45	18.55	46.00
* 288.020	2.33	0.00	0.00	32.22	34.55	11.45	46.00
323.910	2.52	0.00	0.00	26.35	28.86	17.14	46.00
359.800	2.70	0.00	0.00	25.73	28.43	17.57	46.00

**Vertical:**

181.320	1.78	0.00	0.00	27.91	29.69	13.81	43.50
268.620	2.23	0.00	0.00	27.91	30.14	15.86	46.00
*359.800	2.70	0.00	0.00	31.25	33.95	12.05	46.00
396.660	2.89	0.00	0.00	30.08	32.97	13.03	46.00
430.610	3.07	0.00	0.00	27.97	31.04	14.96	46.00
498.510	3.42	0.00	0.00	27.50	30.91	15.09	46.00

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ”, means this data is the worst emission level-Amplifier.
3. Measurement = Reading Level + Probe Factor + Cable loss.

Product : USB Wireless Lan  
 Test Item : General Radiated Emission Data  
 Test Site : Chamber  
 Test Mode : Channel 11(11Mbps)

Freq.	Cable	Probe	PreAMP	Reading	Measurement	Margin	Limit
MHz	Loss	Factor	dB	Level	dBuV/m	dB	dBuV/m
	dB	dB/m	dB	dBuV			

**Horizontal:**

132.820	1.53	0.00	0.00	27.53	29.06	14.44	43.50
179.380	1.77	0.00	0.00	28.20	29.97	13.53	43.50
* 288.020	2.33	0.00	0.00	32.62	34.95	11.05	46.00
323.910	2.52	0.00	0.00	27.75	30.26	15.74	46.00
359.800	2.70	0.00	0.00	25.93	28.63	17.37	46.00
396.660	2.89	0.00	0.00	25.21	28.10	17.90	46.00

**Vertical:**

* 133.790	1.54	0.00	0.00	29.13	30.66	12.84	43.50
181.320	1.78	0.00	0.00	25.68	27.46	16.04	43.50
241.460	2.09	0.00	0.00	26.51	28.60	17.40	46.00
359.800	2.70	0.00	0.00	28.13	30.83	15.17	46.00
396.660	2.89	0.00	0.00	27.41	30.30	15.70	46.00
498.510	3.42	0.00	0.00	26.32	29.73	16.27	46.00

**Note:**

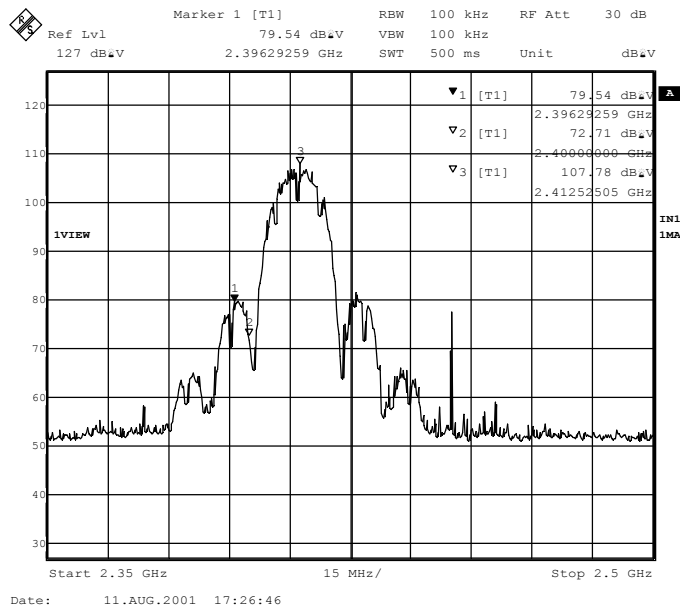
1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ”, means this data is the worst emission level-Amplifier.
3. Measurement = Reading Level + Probe Factor + Cable loss.

### 5.7. Test Result of Band Edge

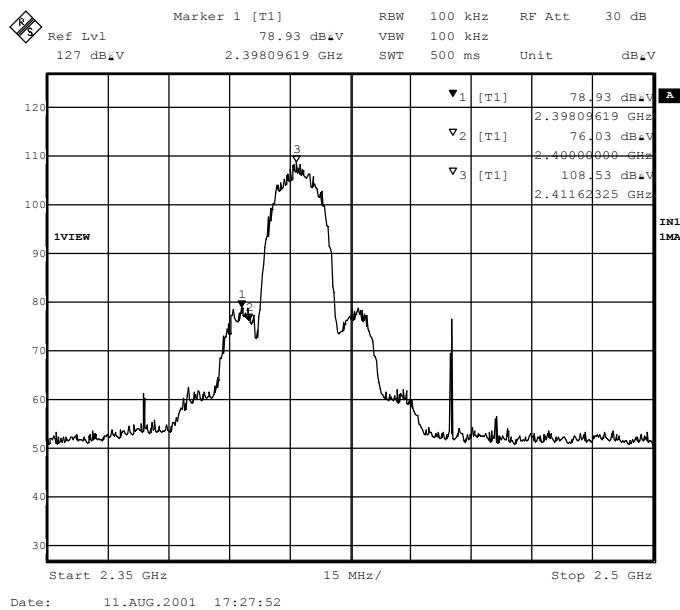
Product : USB Wireless Lan  
 Test Item : Band Edge Data  
 Test Site : No.1 OATS  
 Test Mode : Channel 1

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
1 (1Mbps)	<2400	>20	Pass
1 (11Mbps)	<2400	>20	Pass

**Figure Channel 1: 1Mbps**



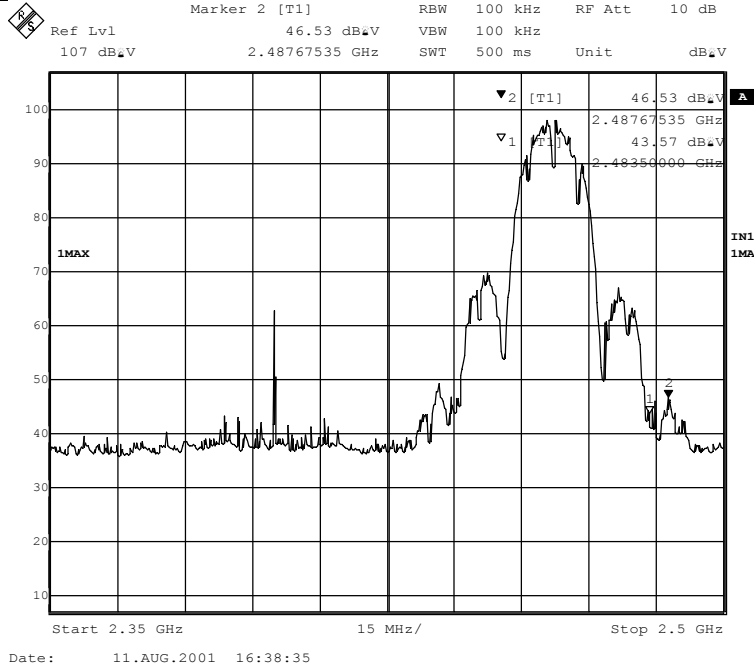
**Figure Channel 1:11Mbps**



Product : USB Wireless Lan  
 Test Item : Band Edge Data  
 Test Site : No.1 OATS  
 Test Mode : Channel 1

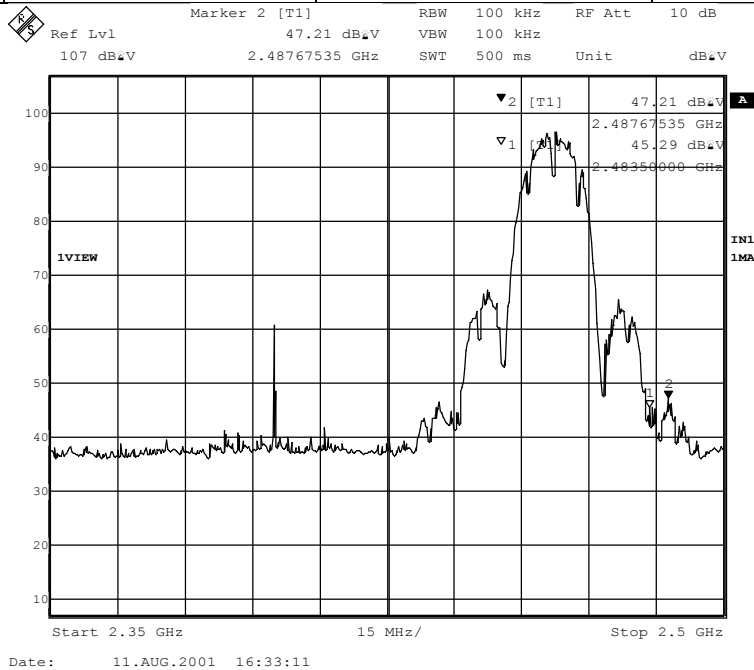
**Band Edge-1 Mbps (Horizontal)**

Frequency (MHz).	Reading (dBuV)	Measure (dBuV/m)	Result
2487.68	46.53	45.04	Pass



**Band Edge-1 Mbps (Vertical)**

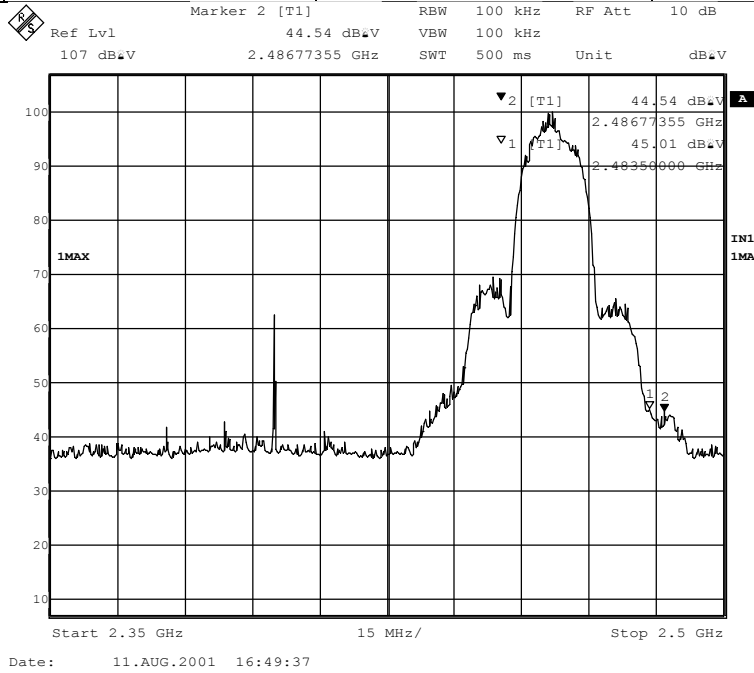
Frequency (MHz).	Reading (dBuV)	Measure (dBuV/m)	Result
2487.68	47.21	45.72	Pass





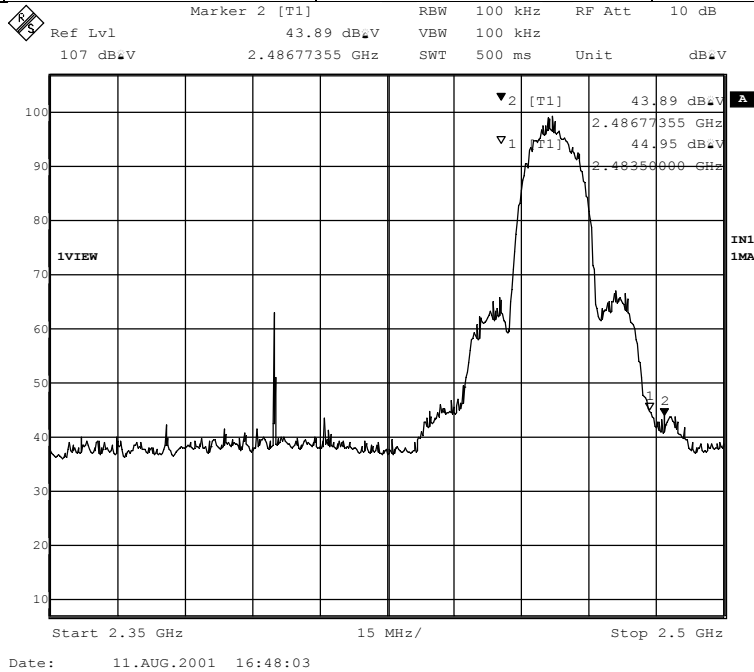
**Band Edge-11 Mbps (Horizontal)**

Frequency (MHz).	Reading (dBuV)	Measure (dBuV/m)	Result
2486.77	44.54	42.99	Pass



**Band Edge-11 Mbps (Vertical)**

Frequency (MHz).	Reading (dBuV)	Measure (dBuV/m)	Result
2486.77	43.89	42.34	Pass



## 6. Occupied Bandwidth

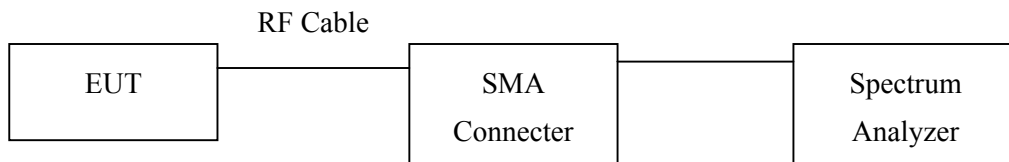
### 6.1. Test Equipment

The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Advantest	R3272 / 72421194	May, 2001
X	Horn Antenna	EM	EM6917 / 103325	May, 2001

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.  
 2. Mark "X" test instruments are used to measure the final test results.

### 6.2. Test Setup



### 6.3. Test Condition

Standard Temperature and Humidity, Standard Test Voltage

### 6.4. Standard Requirement

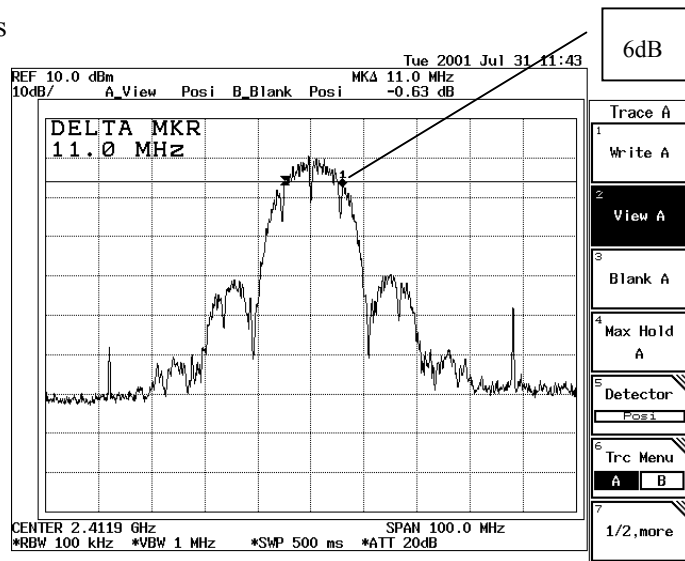
The minimum bandwidth shall be at least 500kHz.

### 6.5. Test Result of Occupied Bandwidth

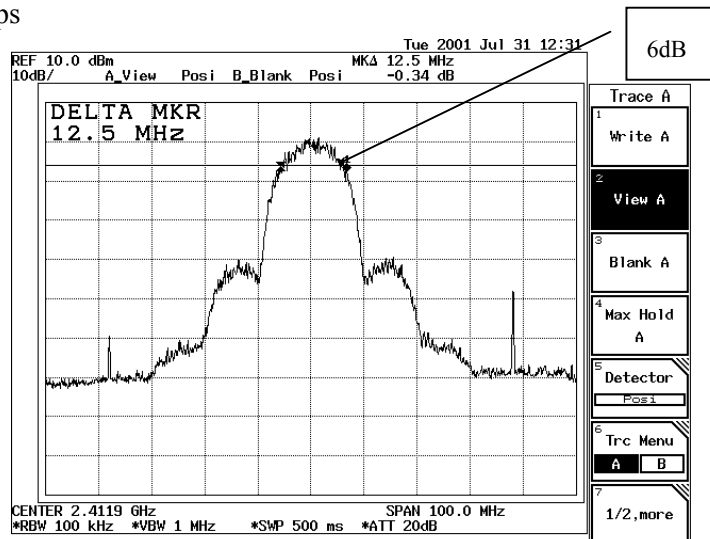
Product : USB Wireless Lan  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.1 OATS  
 Test Mode : Channel 1

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (1Mbps)	2412	11000	>500	Pass
1 (11Mbps)	2412	12500	>500	Pass

**Figure Channel 1: 1Mbps**



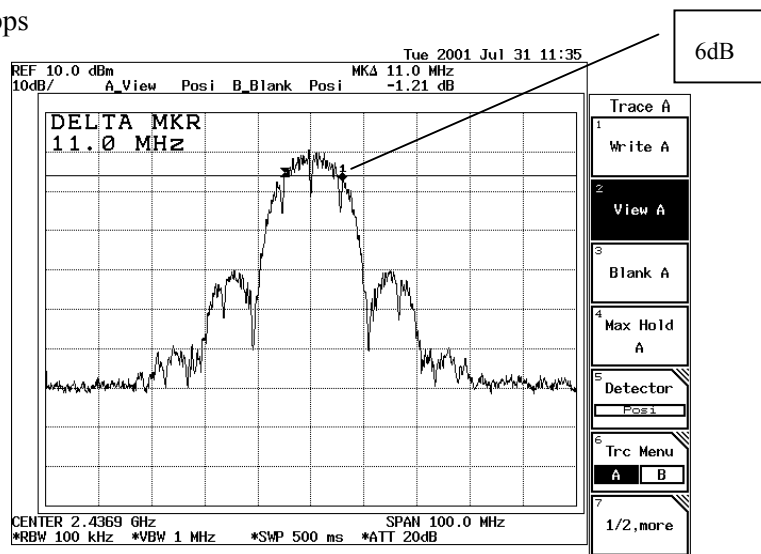
**Figure Channel 1: 11Mbps**



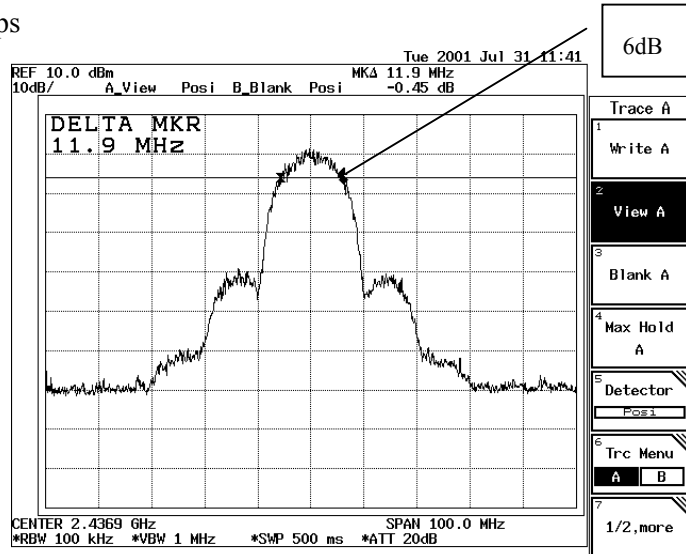
Product : USB Wireless Lan  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.1 OATS  
 Test Mode : Channel 6

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6 (1Mbps)	2437	11000	>500	Pass
6 (11Mbps)	2437	11900	>500	Pass

**Figure Channel 6: 1Mbps**



**Figure Channel 6: 11Mbps**



Product : USB Wireless Lan  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.1 OATS  
 Test Mode : Channel 11

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11 (1Mbps)	2462	9700	>500	Pass
11 (11Mbps)	2462	116000	>500	Pass

Figure Channel 11: 1Mbps

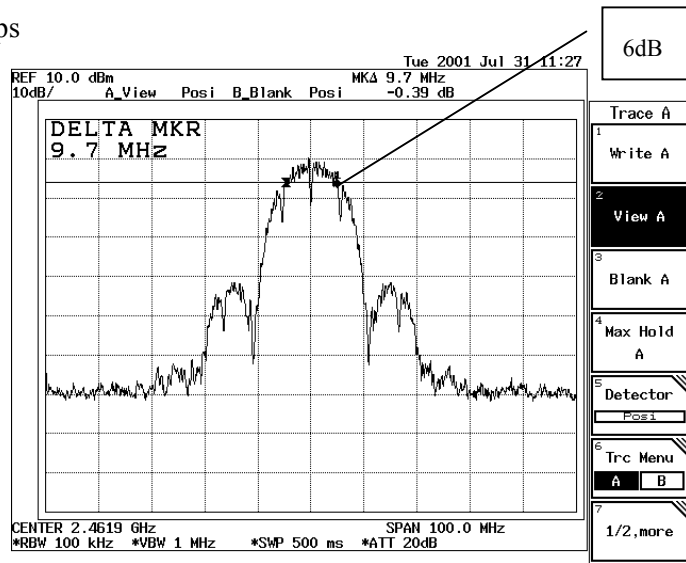
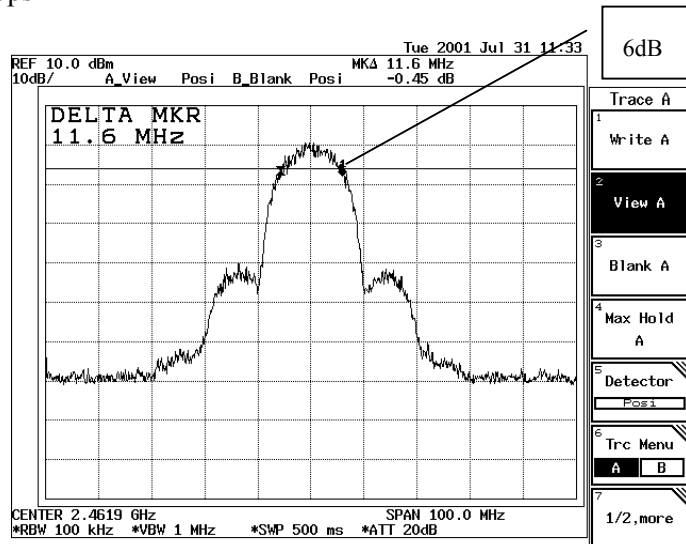


Figure Channel 11: 11Mbps



**7. Transmitter Power Density**

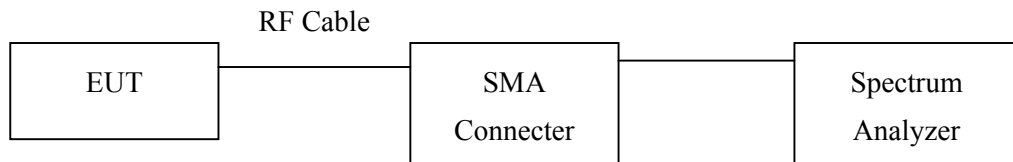
**7.1. Test Equipment**

The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Advantest	R3272 / 72421194	May, 2001
X	Attenuator	HP		May, 2001
X	Horn Antenna	EM	EM6917 / 103325	May, 2001

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.  
 2. Mark "X" test instruments are used to measure the final test results.

**7.2. Test Setup**



**7.3. Test Condition**

Standard Temperature and Humidity, Standard Test Voltage

**7.4. Standard Requirement**

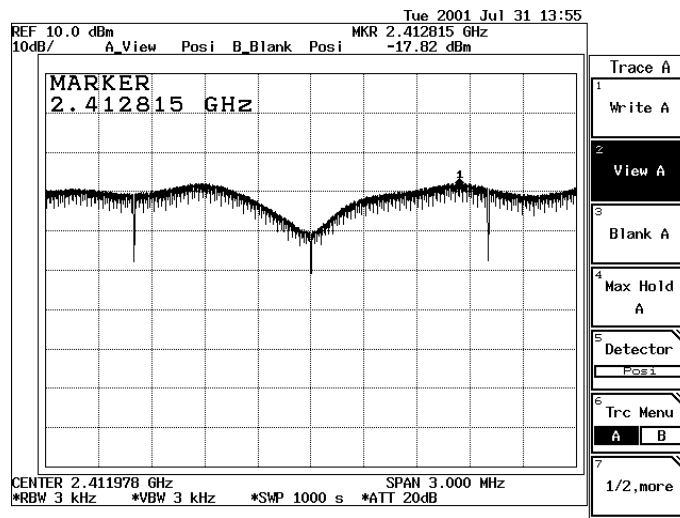
The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

### 7.5. Test Result of Transmitter Power Density

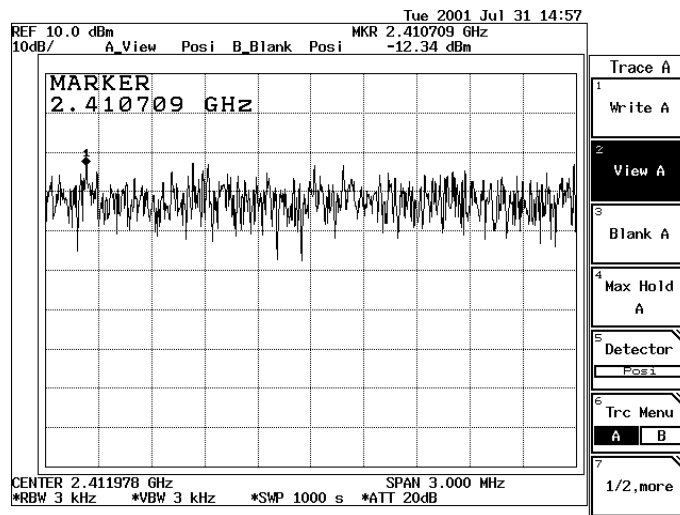
Product : USB Wireless Lan  
 Test Item : Transmitter Power Density Data  
 Test Site : No.1 OATS  
 Test Mode : Normal Operation

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
1 (1Mbps)	2411.978	-17.82dBm	< 8dBm	Pass
1 (11Mbps)	2411.978	-12.34dBm	< 8dBm	Pass

1Mbps



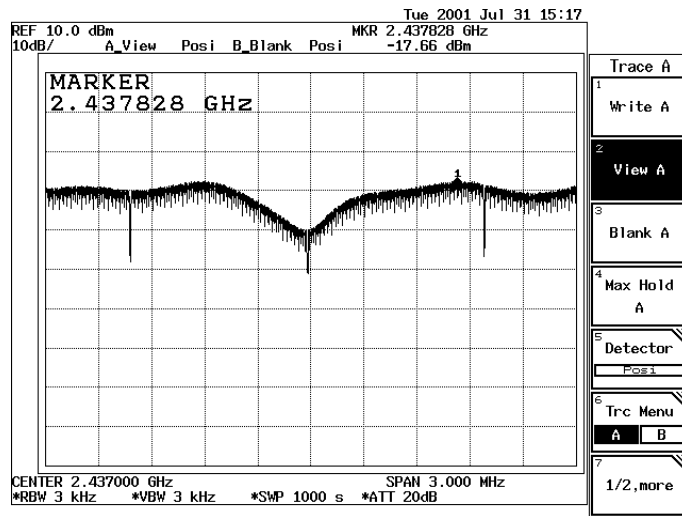
11Mbps



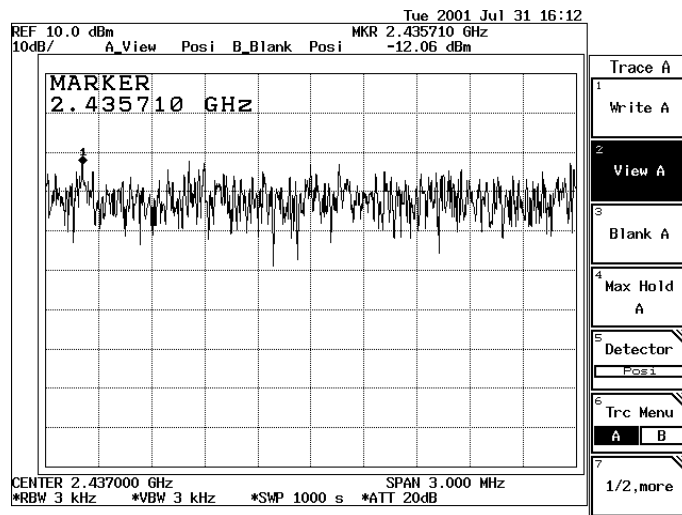
Product : USB Wireless Lan  
 Test Item : Transmitter Power Density Data  
 Test Site : No.1 OATS  
 Test Mode : Normal Operation

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6 (1Mbps)	2437.000	-17.66dBm	< 8dBm	Pass
6 (11Mbps)	2437.000	-12.06dBm	< 8dBm	Pass

1Mbps



11Mbps

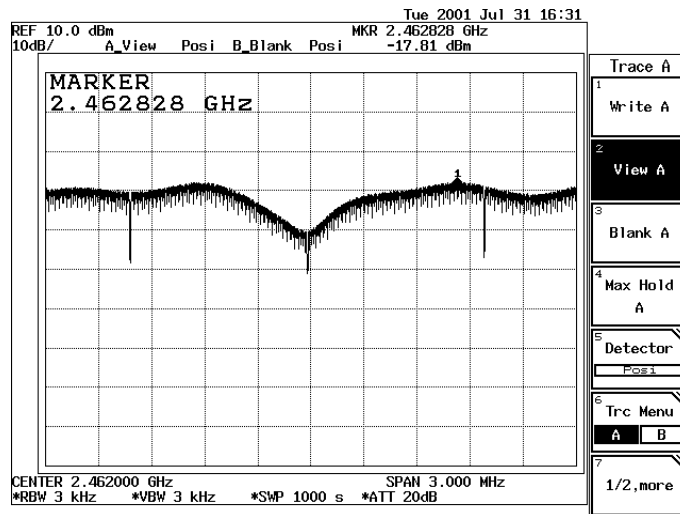




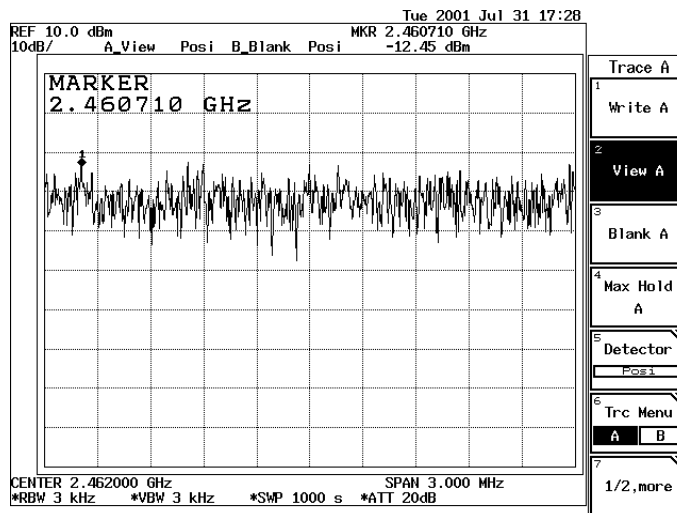
Product : USB Wireless Lan  
 Test Item : Transmitter Power Density Data  
 Test Site : No.1 OATS  
 Test Mode : Normal Operation

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11 (1Mbps)	2462.000	-17.81dBm	< 8dBm	Pass
11 (11Mbps)	2462.000	-12.45dBm	< 8dBm	Pass

1Mbps



11Mbps



## 8. Processing Gain

### 8.1. Test Condition

Standard Temperature and Humidity, Standard Test Voltage

### 8.2. Minimum Standard

The processing gain shall be at least 10 dB.

### 8.3. Method of Measurement

The processing gain of this spread spectrum was measured the CW jamming method. The Section 9.1 illustrates the measurement setup. The output power of the spread spectrum transmitter is fixed and the output power of jammer is adjustable. The frequency of jammer was stepped through the pass band of nominal channel in 50kHz steps. In each frequency step of the jammer, the output power of jammer is adjusted to cause the Bit Error Rate (BER) to be  $1.0 \times 10^{-6}$ . The power levels are recorded to calculate the J/S as shown in Table 1.

### 8.4. Calculation of Processing Gain:

The processing gain was determined by measuring the jamming margin of the EUT and using the following formula:

$$G_p = (S/N)_o + M_j + L_{sys}$$

Where  $(S/N)_o$  is the required signal to noise ratio at the receiver output

$M_j$  is the jammer to signal ratio (J/S)

$L_{sys}$  is the system loss

The  $(S/N)_o$  is calculated from:

$$P_e = 1/2 \exp(-1/2(S/N)_o) \quad ; \quad P_e = \text{probability of error (BER)}$$

For the  $P_e(\text{BER}) = 1.0 \times 10^{-6}$ , the required  $(S/N)_o$  is 16.4dB

From Measurement, the minimum J/S( $M_j$ ) is  $\geq -8.4\text{dB}$

We assume the system loss is 2dB.

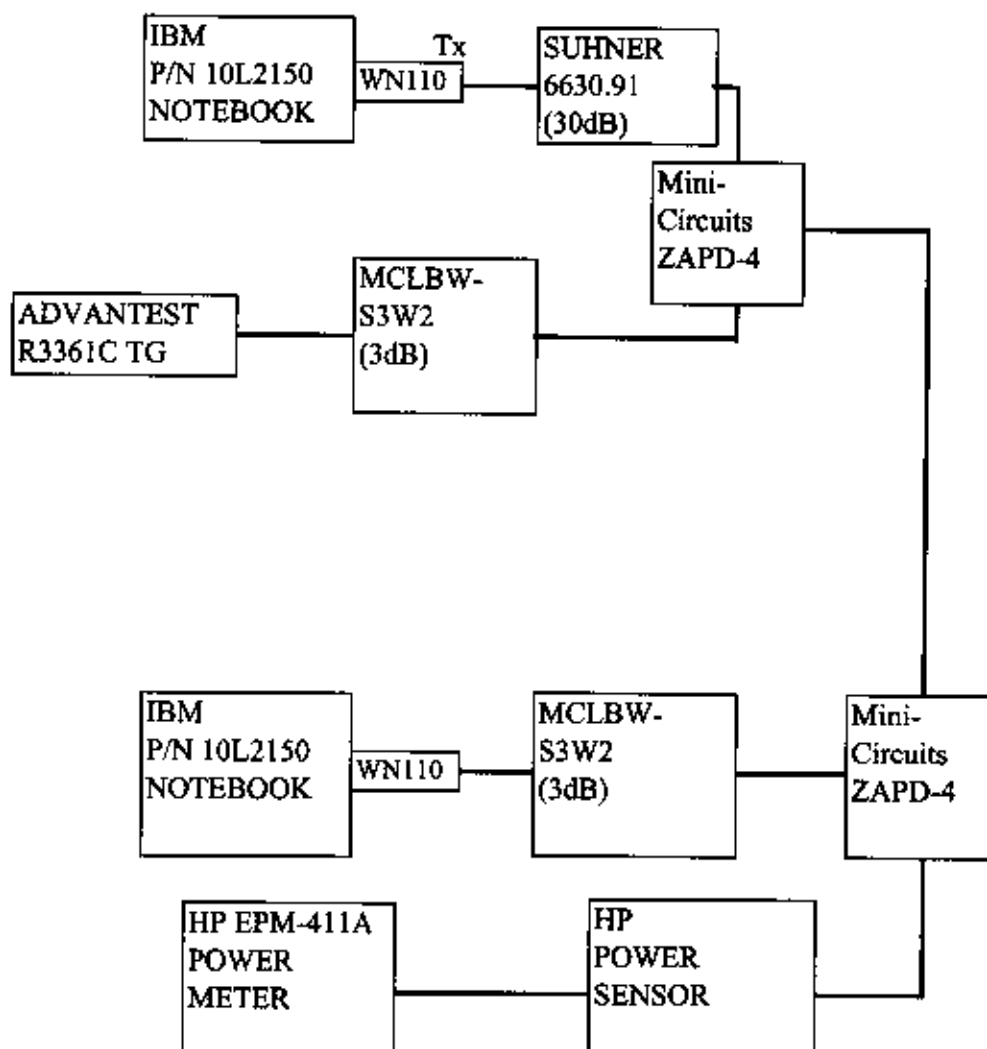
Therefore the processing gain is calculated below:

$$G_p = (S/N)_o + M_j + L_{sys} = 16.4 + (-8.4) + 2 = 10 \text{ (dB)}$$

## 8.5. Test Result of Processing Gain

Product : USB Wireless Lan  
Test Item : Processing Gain Data  
Test Site : No.1 OATS  
Test Mode : Normal Operation

## Processing Gain Test Set Up



### Test Conditions

Wireless LAN card : WN1102
Transmitter Signal Level at Rx = -50.1 dBm
Firmware = 1.4f.8
Transmit Data rate = 11Mbps @CH1=2412MHz, CH6=2437MHz, CH11=2462MHz
Measure Range = central frequency +- 4MHz
Packet size = 1000 bytes
Intersil Chip versions on card : AT76C503 , HFA3683A , HFA3783 , HFA3861B
AT76C510
All Test Data is under 8% Frame Error Rate

## 11 Mbps CHANNEL 1 Processing Gain

$$G_p = (S/N)_o + M_j + L_{sys}$$

Freq. (GHz)	Gp (dB)	(S/N) <sub>o</sub> (dB)	M <sub>j</sub> =J/S (dB)	L <sub>sys</sub> (dB)	Jammer (dBm)
2.408	14.35	16.4	-3.05	1	-53.15
2.40805	14.34	16.4	-3.06	1	-53.16
2.4081	13.85	16.4	-3.55	1	-53.65
2.40815	14.84	16.4	-2.56	1	-52.66
2.4082	9.89	16.4	-7.51	1	-57.61
2.40825	13.88	16.4	-3.52	1	-53.62
2.4083	13.88	16.4	-3.52	1	-53.62
2.40835	13.89	16.4	-3.51	1	-53.61
2.4084	13.86	16.4	-3.54	1	-53.64
2.40845	14.35	16.4	-3.05	1	-53.15
2.4085	13.83	16.4	-3.57	1	-53.67
2.40855	9.84	16.4	-7.56	1	-57.66
2.4086	12.99	16.4	-4.41	1	-54.51
2.40865	12.95	16.4	-4.45	1	-54.55
2.4087	14.35	16.4	-3.05	1	-53.15
2.40875	14.35	16.4	-3.05	1	-53.15
2.4088	14.35	16.4	-3.05	1	-53.15
2.40885	14.9	16.4	-2.5	1	-52.6
2.4089	6.89	16.4	-10.51	1	-60.61
2.40895	8.88	16.4	-8.52	1	-58.62
2.409	9.87	16.4	-7.53	1	-57.63
2.40905	14.84	16.4	-2.56	1	-52.66
2.4091	14.35	16.4	-3.05	1	-53.15
2.40915	14.35	16.4	-3.05	1	-53.15
2.4092	14.35	16.4	-3.05	1	-53.15
2.40925	12.93	16.4	-4.47	1	-54.57
2.4093	12.99	16.4	-4.41	1	-54.51
2.40935	12.95	16.4	-4.45	1	-54.55
2.4094	12.94	16.4	-4.46	1	-54.56
2.40945	12.98	16.4	-4.42	1	-54.52
2.4095	13.84	16.4	-3.56	1	-53.66
2.40955	14.34	16.4	-3.06	1	-53.16
2.4096	14.35	16.4	-3.05	1	-53.15
2.40965	14.36	16.4	-3.04	1	-53.14
2.4097	13.84	16.4	-3.56	1	-53.66
2.40975	14.35	16.4	-3.05	1	-53.15
2.4098	13.84	16.4	-3.56	1	-53.66
2.40985	13.86	16.4	-3.54	1	-53.64
2.4099	14.35	16.4	-3.05	1	-53.15
2.40995	14.35	16.4	-3.05	1	-53.15
2.41	14.38	16.4	-3.02	1	-53.12

2.41005	12.95	16.4	-4.45	1	-54.55
2.4101	12.99	16.4	-4.41	1	-54.51
2.41015	12.95	16.4	-4.45	1	-54.55
2.4102	14.35	16.4	-3.05	1	-53.15
2.41025	13.99	16.4	-3.41	1	-53.51
2.4103	12.95	16.4	-4.45	1	-54.55
2.41035	12.98	16.4	-4.42	1	-54.52
2.4104	14.36	16.4	-3.04	1	-53.14
2.41045	14.35	16.4	-3.05	1	-53.15
2.4105	12.95	16.4	-4.45	1	-54.55
2.41055	14.35	16.4	-3.05	1	-53.15
2.4106	14.34	16.4	-3.06	1	-53.16
2.41065	12.98	16.4	-4.42	1	-54.52
2.4107	12.98	16.4	-4.42	1	-54.52
2.41075	12.99	16.4	-4.41	1	-54.51
2.4108	14.89	16.4	-2.51	1	-52.61
2.41085	14.84	16.4	-2.56	1	-52.66
2.4109	13.86	16.4	-3.54	1	-53.64
2.41095	14.84	16.4	-2.56	1	-52.66
2.411	14.36	16.4	-3.04	1	-53.14
2.41105	14.35	16.4	-3.05	1	-53.15
2.4111	14.35	16.4	-3.05	1	-53.15
2.41115	14.83	16.4	-2.57	1	-52.67
2.4112	13.86	16.4	-3.54	1	-53.64
2.41125	13.84	16.4	-3.56	1	-53.66
2.4113	14.36	16.4	-3.04	1	-53.14
2.41135	14.35	16.4	-3.05	1	-53.15
2.4114	14.35	16.4	-3.05	1	-53.15
2.41145	12.98	16.4	-4.42	1	-54.52
2.4115	12.99	16.4	-4.41	1	-54.51
2.41155	14.35	16.4	-3.05	1	-53.15
2.4116	13	16.4	-4.4	1	-54.5
2.41165	12.98	16.4	-4.42	1	-54.52
2.4117	14.35	16.4	-3.05	1	-53.15
2.41175	14.34	16.4	-3.06	1	-53.16
2.4118	13.84	16.4	-3.56	1	-53.66
2.41185	14.35	16.4	-3.05	1	-53.15
2.4119	13.9	16.4	-3.5	1	-53.6
2.41195	14.38	16.4	-3.02	1	-53.12
2.412	13.84	16.4	-3.56	1	-53.66
2.41205	13.89	16.4	-3.51	1	-53.61
2.4121	13.9	16.4	-3.5	1	-53.6
2.41215	13.89	16.4	-3.51	1	-53.61
2.4122	14.35	16.4	-3.05	1	-53.15
2.41225	14.35	16.4	-3.05	1	-53.15
2.4123	13.89	16.4	-3.51	1	-53.61
2.41235	13.83	16.4	-3.57	1	-53.67

2.4124	14.38	16.4	-3.02	1	-53.12
2.41245	14.35	16.4	-3.05	1	-53.15
2.4125	14.34	16.4	-3.06	1	-53.16
2.41255	12.95	16.4	-4.45	1	-54.55
2.4126	14.35	16.4	-3.05	1	-53.15
2.41265	14.34	16.4	-3.06	1	-53.16
2.4127	12.99	16.4	-4.41	1	-54.51
2.41275	14.35	16.4	-3.05	1	-53.15
2.4128	14.35	16.4	-3.05	1	-53.15
2.41285	12.98	16.4	-4.42	1	-54.52
2.4129	13	16.4	-4.4	1	-54.5
2.41295	13.89	16.4	-3.51	1	-53.61
2.413	13.17	16.4	-4.23	1	-54.33
2.41305	14.19	16.4	-3.21	1	-53.31
2.4131	14.17	16.4	-3.23	1	-53.33
2.41315	14.2	16.4	-3.2	1	-53.3
2.4132	15.23	16.4	-2.17	1	-52.27
2.41325	15.22	16.4	-2.18	1	-52.28
2.4133	11.97	16.4	-5.43	1	-55.53
2.41335	11.44	16.4	-5.96	1	-56.06
2.4134	13.06	16.4	-4.34	1	-54.44
2.41345	14	16.4	-3.4	1	-53.5
2.4135	14	16.4	-3.4	1	-53.5
2.41355	12.13	16.4	-5.27	1	-55.37
2.4136	12.13	16.4	-5.27	1	-55.37
2.41365	10.82	16.4	-6.58	1	-56.68
2.4137	9.6	16.4	-7.8	1	-57.9
2.41375	10.7	16.4	-6.7	1	-56.8
2.4138	10.68	16.4	-6.72	1	-56.82
2.41385	12.29	16.4	-5.11	1	-55.21
2.4139	13.99	16.4	-3.41	1	-53.51
2.41395	13.31	16.4	-4.09	1	-54.19
2.414	12	16.4	-5.4	1	-55.5
2.41405	12	16.4	-5.4	1	-55.5
2.4141	10.8	16.4	-6.6	1	-56.7
2.41415	10.79	16.4	-6.61	1	-56.71
2.4142	10.8	16.4	-6.6	1	-56.7
2.41425	15.1	16.4	-2.3	1	-52.4
2.4143	14.76	16.4	-2.64	1	-52.74
2.41435	10.78	16.4	-6.62	1	-56.72
2.4144	10.79	16.4	-6.61	1	-56.71
2.41445	10.78	16.4	-6.62	1	-56.72
2.4145	10.76	16.4	-6.64	1	-56.74
2.41455	10.08	16.4	-7.32	1	-57.42
2.4146	12.88	16.4	-4.52	1	-54.62
2.41465	13.33	16.4	-4.07	1	-54.17
2.4147	13.31	16.4	-4.09	1	-54.19

2.41475	14.22	16.4	-3.18	1	-53.28
2.4148	14.34	16.4	-3.06	1	-53.16
2.41485	12.98	16.4	-4.42	1	-54.52
2.4149	12.99	16.4	-4.41	1	-54.51
2.41495	12.94	16.4	-4.46	1	-54.56
2.415	12.99	16.4	-4.41	1	-54.51
2.41505	12.98	16.4	-4.42	1	-54.52
2.4151	12.42	16.4	-4.98	1	-55.08
2.41515	12.99	16.4	-4.41	1	-54.51
2.4152	12.99	16.4	-4.41	1	-54.51
2.41525	12.95	16.4	-4.45	1	-54.55
2.4153	14.36	16.4	-3.04	1	-53.14
2.41535	14.35	16.4	-3.05	1	-53.15
2.4154	14.35	16.4	-3.05	1	-53.15
2.41545	14.95	16.4	-2.45	1	-52.55
2.4155	14.89	16.4	-2.51	1	-52.61
2.41555	14.92	16.4	-2.48	1	-52.58
2.4156	14.34	16.4	-3.06	1	-53.16
2.41565	14.35	16.4	-3.05	1	-53.15
2.4157	14.35	16.4	-3.05	1	-53.15
2.41575	14.36	16.4	-3.04	1	-53.14
2.4158	12.98	16.4	-4.42	1	-54.52
2.41585	13.02	16.4	-4.38	1	-54.48
2.4159	12.99	16.4	-4.41	1	-54.51
2.41595	14.35	16.4	-3.05	1	-53.15
2.416	14.36	16.4	-3.04	1	-53.14
2.41605	13.89	16.4	-3.51	1	-53.61
2.4161	13.85	16.4	-3.55	1	-53.65
2.41615	13.93	16.4	-3.47	1	-53.57
2.4162	13.86	16.4	-3.54	1	-53.64
2.41625	13.85	16.4	-3.55	1	-53.65
2.4163	13.85	16.4	-3.55	1	-53.65
2.41635	14.91	16.4	-2.49	1	-52.59
2.4164	13.89	16.4	-3.51	1	-53.61
2.41645	14.35	16.4	-3.05	1	-53.15
2.4165	12.99	16.4	-4.41	1	-54.51
2.41655	14.35	16.4	-3.05	1	-53.15
2.4166	14.35	16.4	-3.05	1	-53.15
2.41665	12.98	16.4	-4.42	1	-54.52
2.4167	14.34	16.4	-3.06	1	-53.16
2.41675	13.89	16.4	-3.51	1	-53.61
2.4168	13.87	16.4	-3.53	1	-53.63
2.41685	13.89	16.4	-3.51	1	-53.61
2.4169	13.89	16.4	-3.51	1	-53.61
2.41695	14.86	16.4	-2.54	1	-52.64
2.417	14.89	16.4	-2.51	1	-52.61
2.41705	14.92	16.4	-2.48	1	-52.58



2.4171	14.84	16.4	-2.56	1	-52.66
2.41715	14.91	16.4	-2.49	1	-52.59
2.4172	13.86	16.4	-3.54	1	-53.64
2.41725	14.35	16.4	-3.05	1	-53.15
2.4173	13.82	16.4	-3.58	1	-53.68
2.41735	13.84	16.4	-3.56	1	-53.66
2.4174	13.91	16.4	-3.49	1	-53.59
2.41745	13.86	16.4	-3.54	1	-53.64
2.4175	13.84	16.4	-3.56	1	-53.66
2.41755	13.84	16.4	-3.56	1	-53.66
2.4176	15.87	16.4	-1.53	1	-51.63
2.41765	16.88	16.4	-0.52	1	-50.62
2.4177	16.92	16.4	-0.48	1	-50.58
2.41775	16.84	16.4	-0.56	1	-50.66
2.4178	16.85	16.4	-0.55	1	-50.65
2.41785	16.92	16.4	-0.48	1	-50.58
2.4179	16.87	16.4	-0.53	1	-50.63
2.41795	16.89	16.4	-0.51	1	-50.61
2.418	16.84	16.4	-0.56	1	-50.66

Processing gain 13.743

### 11 Mbps CHANNEL 6 Processing Gain

$$G_p = (S/N)_o + M_j + L_{sys}$$

Freq. (GHz)	Gp (dB)	(S/N) <sub>o</sub> (dB)	M <sub>j</sub> =J/S (dB)	L <sub>sys</sub> (dB)	Jammer (dBm)
2.432	13.89	16.4	-3.51	1	-53.61
2.43205	13.84	16.4	-3.56	1	-53.66
2.4321	13.86	16.4	-3.54	1	-53.64
2.43215	13.88	16.4	-3.52	1	-53.62
2.4322	14.35	16.4	-3.05	1	-53.15
2.43225	14.35	16.4	-3.05	1	-53.15
2.4323	13.88	16.4	-3.52	1	-53.62
2.43235	13.84	16.4	-3.56	1	-53.66
2.4324	12.99	16.4	-4.41	1	-54.51
2.43245	13.88	16.4	-3.52	1	-53.62
2.4325	13.84	16.4	-3.56	1	-53.66
2.43255	13.88	16.4	-3.52	1	-53.62
2.4326	14.35	16.4	-3.05	1	-53.15
2.43265	14.34	16.4	-3.06	1	-53.16
2.4327	14.35	16.4	-3.05	1	-53.15
2.43275	12.98	16.4	-4.42	1	-54.52
2.4328	12.95	16.4	-4.45	1	-54.55
2.43285	12.96	16.4	-4.44	1	-54.54
2.4329	14.35	16.4	-3.05	1	-53.15
2.43295	14.35	16.4	-3.05	1	-53.15
2.433	14.33	16.4	-3.07	1	-53.17
2.43305	14.35	16.4	-3.05	1	-53.15

2.4331	14.34	16.4	-3.06	1	-53.16
2.43315	12.99	16.4	-4.41	1	-54.51
2.4332	12.95	16.4	-4.45	1	-54.55
2.43325	12.94	16.4	-4.46	1	-54.56
2.4333	13.88	16.4	-3.52	1	-53.62
2.43335	13.84	16.4	-3.56	1	-53.66
2.4334	12.98	16.4	-4.42	1	-54.52
2.43345	13.88	16.4	-3.52	1	-53.62
2.4335	14.35	16.4	-3.05	1	-53.15
2.43355	14.35	16.4	-3.05	1	-53.15
2.4336	14.36	16.4	-3.04	1	-53.14
2.43365	14.35	16.4	-3.05	1	-53.15
2.4337	12.95	16.4	-4.45	1	-54.55
2.43375	14.38	16.4	-3.02	1	-53.12
2.4338	13.84	16.4	-3.56	1	-53.66
2.43385	13.88	16.4	-3.52	1	-53.62
2.4339	14.35	16.4	-3.05	1	-53.15
2.43395	14.36	16.4	-3.04	1	-53.14
2.434	14.34	16.4	-3.06	1	-53.16
2.43405	14.35	16.4	-3.05	1	-53.15
2.4341	13.9	16.4	-3.5	1	-53.6
2.43415	12.98	16.4	-4.42	1	-54.52
2.4342	12.95	16.4	-4.45	1	-54.55
2.43425	12.97	16.4	-4.43	1	-54.53
2.4343	13.84	16.4	-3.56	1	-53.66
2.43435	13.86	16.4	-3.54	1	-53.64
2.4344	12.98	16.4	-4.42	1	-54.52
2.43445	14.35	16.4	-3.05	1	-53.15
2.4345	14.35	16.4	-3.05	1	-53.15
2.43455	13.99	16.4	-3.41	1	-53.51
2.4346	14.35	16.4	-3.05	1	-53.15
2.43465	14.35	16.4	-3.05	1	-53.15
2.4347	14.34	16.4	-3.06	1	-53.16
2.43475	13.86	16.4	-3.54	1	-53.64
2.4348	13.84	16.4	-3.56	1	-53.66
2.43485	13.88	16.4	-3.52	1	-53.62
2.4349	13.85	16.4	-3.55	1	-53.65
2.43495	14.35	16.4	-3.05	1	-53.15
2.435	14.38	16.4	-3.02	1	-53.12
2.43505	14.35	16.4	-3.05	1	-53.15
2.4351	12.99	16.4	-4.41	1	-54.51
2.43515	13.01	16.4	-4.39	1	-54.49
2.4352	12.97	16.4	-4.43	1	-54.53
2.43525	12.95	16.4	-4.45	1	-54.55
2.4353	14.35	16.4	-3.05	1	-53.15
2.43535	14.33	16.4	-3.07	1	-53.17
2.4354	14.4	16.4	-3	1	-53.1

2.43545	14.35	16.4	-3.05	1	-53.15
2.4355	14.33	16.4	-3.07	1	-53.17
2.43555	14.4	16.4	-3	1	-53.1
2.4356	13.88	16.4	-3.52	1	-53.62
2.43565	13.84	16.4	-3.56	1	-53.66
2.4357	13.93	16.4	-3.47	1	-53.57
2.43575	13.89	16.4	-3.51	1	-53.61
2.4358	13.83	16.4	-3.57	1	-53.67
2.43585	13.96	16.4	-3.44	1	-53.54
2.4359	12.95	16.4	-4.45	1	-54.55
2.43595	12.9	16.4	-4.5	1	-54.6
2.436	14.33	16.4	-3.07	1	-53.17
2.43605	13.02	16.4	-4.38	1	-54.48
2.4361	14.39	16.4	-3.01	1	-53.11
2.43615	14.35	16.4	-3.05	1	-53.15
2.4362	13.88	16.4	-3.52	1	-53.62
2.43625	13.84	16.4	-3.56	1	-53.66
2.4363	13.86	16.4	-3.54	1	-53.64
2.43635	13.84	16.4	-3.56	1	-53.66
2.4364	14.35	16.4	-3.05	1	-53.15
2.43645	13.9	16.4	-3.5	1	-53.6
2.4365	13.89	16.4	-3.51	1	-53.61
2.43655	12.96	16.4	-4.44	1	-54.54
2.4366	12.99	16.4	-4.41	1	-54.51
2.43665	12.95	16.4	-4.45	1	-54.55
2.4367	13	16.4	-4.4	1	-54.5
2.43675	12.4	16.4	-5	1	-55.1
2.4368	12.35	16.4	-5.05	1	-55.15
2.43685	12.33	16.4	-5.07	1	-55.17
2.4369	12.36	16.4	-5.04	1	-55.14
2.43695	12.4	16.4	-5	1	-55.1
2.437	12.35	16.4	-5.05	1	-55.15
2.43705	12.34	16.4	-5.06	1	-55.16
2.4371	12.98	16.4	-4.42	1	-54.52
2.43715	11.95	16.4	-5.45	1	-55.55
2.4372	12.95	16.4	-4.45	1	-54.55
2.43725	12.94	16.4	-4.46	1	-54.56
2.4373	12.97	16.4	-4.43	1	-54.53
2.43735	12.99	16.4	-4.41	1	-54.51
2.4374	13.88	16.4	-3.52	1	-53.62
2.43745	13.89	16.4	-3.51	1	-53.61
2.4375	13.84	16.4	-3.56	1	-53.66
2.43755	13.91	16.4	-3.49	1	-53.59
2.4376	12.95	16.4	-4.45	1	-54.55
2.43765	12.99	16.4	-4.41	1	-54.51
2.4377	14.35	16.4	-3.05	1	-53.15
2.43775	14.35	16.4	-3.05	1	-53.15

2.4378	12.98	16.4	-4.42	1	-54.52
2.43785	12.37	16.4	-5.03	1	-55.13
2.4379	12.39	16.4	-5.01	1	-55.11
2.43795	12.34	16.4	-5.06	1	-55.16
2.438	12.94	16.4	-4.46	1	-54.56
2.43805	12.95	16.4	-4.45	1	-54.55
2.4381	12.97	16.4	-4.43	1	-54.53
2.43815	12.95	16.4	-4.45	1	-54.55
2.4382	12.39	16.4	-5.01	1	-55.11
2.43825	12.41	16.4	-4.99	1	-55.09
2.4383	12.36	16.4	-5.04	1	-55.14
2.43835	14.36	16.4	-3.04	1	-53.14
2.4384	14.35	16.4	-3.05	1	-53.15
2.43845	14.35	16.4	-3.05	1	-53.15
2.4385	12.95	16.4	-4.45	1	-54.55
2.43855	12.99	16.4	-4.41	1	-54.51
2.4386	12.94	16.4	-4.46	1	-54.56
2.43865	13	16.4	-4.4	1	-54.5
2.4387	14.33	16.4	-3.07	1	-53.17
2.43875	12.4	16.4	-5	1	-55.1
2.4388	12.34	16.4	-5.06	1	-55.16
2.43885	12.4	16.4	-5	1	-55.1
2.4389	12.39	16.4	-5.01	1	-55.11
2.43895	12.4	16.4	-5	1	-55.1
2.439	12.36	16.4	-5.04	1	-55.14
2.43905	12.37	16.4	-5.03	1	-55.13
2.4391	12.4	16.4	-5	1	-55.1
2.43915	12.4	16.4	-5	1	-55.1
2.4392	12.95	16.4	-4.45	1	-54.55
2.43925	12.97	16.4	-4.43	1	-54.53
2.4393	12.95	16.4	-4.45	1	-54.55
2.43935	14.35	16.4	-3.05	1	-53.15
2.4394	14.35	16.4	-3.05	1	-53.15
2.43945	14.34	16.4	-3.06	1	-53.16
2.4395	14.35	16.4	-3.05	1	-53.15
2.43955	13.9	16.4	-3.5	1	-53.6
2.4396	13.88	16.4	-3.52	1	-53.62
2.43965	13.84	16.4	-3.56	1	-53.66
2.4397	13.88	16.4	-3.52	1	-53.62
2.43975	13.86	16.4	-3.54	1	-53.64
2.4398	13.84	16.4	-3.56	1	-53.66
2.43985	14.35	16.4	-3.05	1	-53.15
2.4399	14.38	16.4	-3.02	1	-53.12
2.43995	14.35	16.4	-3.05	1	-53.15
2.44	14.4	16.4	-3	1	-53.1
2.44005	14.38	16.4	-3.02	1	-53.12
2.4401	14.35	16.4	-3.05	1	-53.15

2.44015	14.35	16.4	-3.05	1	-53.15
2.4402	13	16.4	-4.4	1	-54.5
2.44025	12.99	16.4	-4.41	1	-54.51
2.4403	12.95	16.4	-4.45	1	-54.55
2.44035	12.98	16.4	-4.42	1	-54.52
2.4404	14.35	16.4	-3.05	1	-53.15
2.44045	14.35	16.4	-3.05	1	-53.15
2.4405	14.36	16.4	-3.04	1	-53.14
2.44055	13.88	16.4	-3.52	1	-53.62
2.4406	13.84	16.4	-3.56	1	-53.66
2.44065	13.89	16.4	-3.51	1	-53.61
2.4407	13.9	16.4	-3.5	1	-53.6
2.44075	13.88	16.4	-3.52	1	-53.62
2.4408	13.84	16.4	-3.56	1	-53.66
2.44085	14.35	16.4	-3.05	1	-53.15
2.4409	12.4	16.4	-5	1	-55.1
2.44095	12.39	16.4	-5.01	1	-55.11
2.441	13.84	16.4	-3.56	1	-53.66
2.44105	13.85	16.4	-3.55	1	-53.65
2.4411	13.84	16.4	-3.56	1	-53.66
2.44115	13	16.4	-4.4	1	-54.5
2.4412	12.99	16.4	-4.41	1	-54.51
2.44125	12.95	16.4	-4.45	1	-54.55
2.4413	12.99	16.4	-4.41	1	-54.51
2.44135	12.97	16.4	-4.43	1	-54.53
2.4414	13.89	16.4	-3.51	1	-53.61
2.44145	13.9	16.4	-3.5	1	-53.6
2.4415	13.86	16.4	-3.54	1	-53.64
2.44155	13.84	16.4	-3.56	1	-53.66
2.4416	12.38	16.4	-5.02	1	-55.12
2.44165	12.36	16.4	-5.04	1	-55.14
2.4417	12.39	16.4	-5.01	1	-55.11
2.44175	12.4	16.4	-5	1	-55.1
2.4418	13.84	16.4	-3.56	1	-53.66
2.44185	13.84	16.4	-3.56	1	-53.66
2.4419	13.86	16.4	-3.54	1	-53.64
2.44195	13.84	16.4	-3.56	1	-53.66
2.442	13.85	16.4	-3.55	1	-53.65

Processing gain 13.6264

### 11 Mbps CHANNEL 11 Processing Gain

$$G_p = (S/N)_o + M_j + L_{sys}$$

Freq. (GHz)	Gp (dB)	(S/N) <sub>o</sub> (dB)	M <sub>j</sub> =I/S (dB)	L <sub>sys</sub> (dB)	Jammer (dBm)
2.457	14.89	16.4	-3.51	2	-53.61
2.45705	14.89	16.4	-3.51	2	-53.61
2.4571	14.87	16.4	-3.53	2	-53.63

2.45715	14.89	16.4	-3.51	2	-53.61
2.4572	14.9	16.4	-3.5	2	-53.6
2.45725	13.99	16.4	-4.41	2	-54.51
2.4573	13.99	16.4	-4.41	2	-54.51
2.45735	13.98	16.4	-4.42	2	-54.52
2.4574	13.95	16.4	-4.45	2	-54.55
2.45745	15.35	16.4	-3.05	2	-53.15
2.4575	15.35	16.4	-3.05	2	-53.15
2.45755	15.36	16.4	-3.04	2	-53.14
2.4576	14.88	16.4	-3.52	2	-53.62
2.45765	14.84	16.4	-3.56	2	-53.66
2.4577	14.86	16.4	-3.54	2	-53.64
2.45775	13.39	16.4	-5.01	2	-55.11
2.4578	13.4	16.4	-5	2	-55.1
2.45785	13.38	16.4	-5.02	2	-55.12
2.4579	13.89	16.4	-4.51	2	-54.61
2.45795	13.88	16.4	-4.52	2	-54.62
2.458	14	16.4	-4.4	2	-54.5
2.45805	13.38	16.4	-5.02	2	-55.12
2.4581	13.37	16.4	-5.03	2	-55.13
2.45815	13.38	16.4	-5.02	2	-55.12
2.4582	13.99	16.4	-4.41	2	-54.51
2.45825	13.9	16.4	-4.5	2	-54.6
2.4583	13.88	16.4	-4.52	2	-54.62
2.45835	13.87	16.4	-4.53	2	-54.63
2.4584	13.84	16.4	-4.56	2	-54.66
2.45845	13.88	16.4	-4.52	2	-54.62
2.4585	13.89	16.4	-4.51	2	-54.61
2.45855	15.35	16.4	-3.05	2	-53.15
2.4586	15.36	16.4	-3.04	2	-53.14
2.45865	15.35	16.4	-3.05	2	-53.15
2.4587	13.89	16.4	-4.51	2	-54.61
2.45875	13.9	16.4	-4.5	2	-54.6
2.4588	13.98	16.4	-4.42	2	-54.52
2.45885	14	16.4	-4.4	2	-54.5
2.4589	13.89	16.4	-4.51	2	-54.61
2.45895	13.37	16.4	-5.03	2	-55.13
2.459	13.36	16.4	-5.04	2	-55.14
2.45905	13.4	16.4	-5	2	-55.1
2.4591	13.38	16.4	-5.02	2	-55.12
2.45915	13.4	16.4	-5	2	-55.1
2.4592	13.39	16.4	-5.01	2	-55.11
2.45925	13.98	16.4	-4.42	2	-54.52
2.4593	13.39	16.4	-5.01	2	-55.11
2.45935	13.98	16.4	-4.42	2	-54.52
2.4594	13.99	16.4	-4.41	2	-54.51
2.45945	15.35	16.4	-3.05	2	-53.15

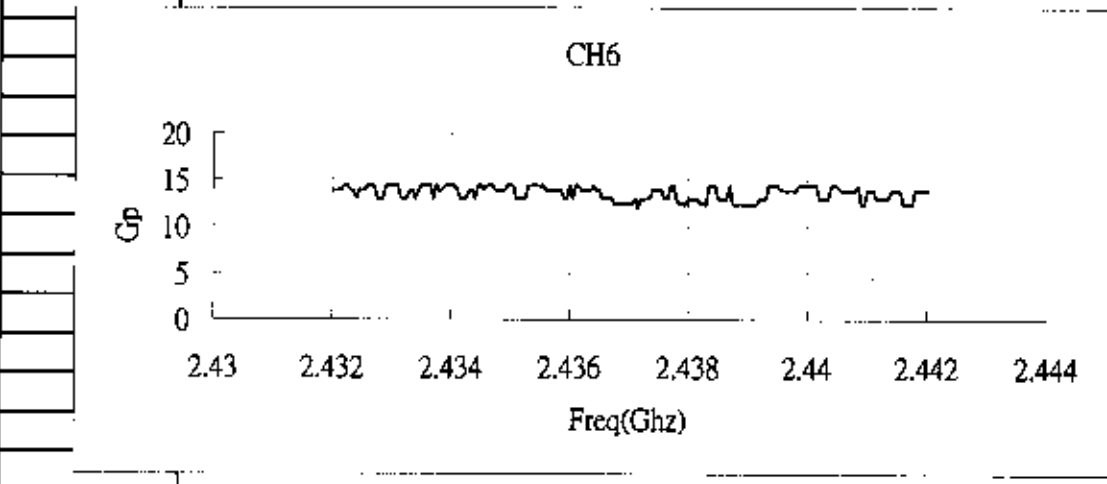
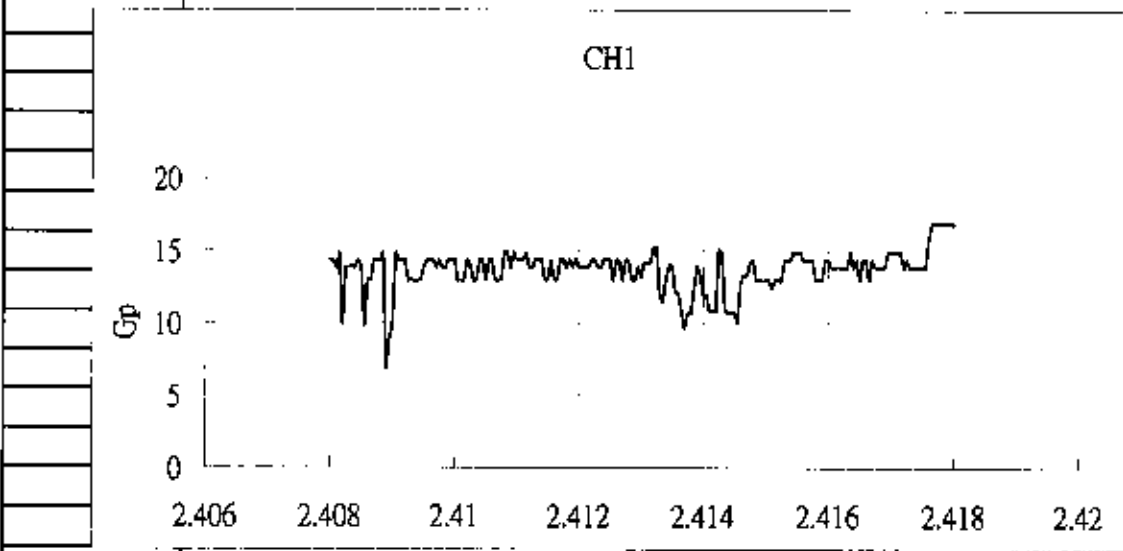
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2.45955	13.9	16.4	-4.5	2	-54.6
2.4596	13.88	16.4	-4.52	2	-54.62
2.45965	13.9	16.4	-4.5	2	-54.6
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2.45975	13.84	16.4	-4.56	2	-54.66
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2.45985	13.99	16.4	-4.41	2	-54.51
2.4599	13.97	16.4	-4.43	2	-54.53
2.45995	14	16.4	-4.4	2	-54.5
2.46	13.95	16.4	-4.45	2	-54.55
2.46005	13.97	16.4	-4.43	2	-54.53
2.4601	13.84	16.4	-4.56	2	-54.66
2.46015	13.89	16.4	-4.51	2	-54.61
2.4602	13.39	16.4	-5.01	2	-55.11
2.46025	13.37	16.4	-5.03	2	-55.13
2.4603	13.36	16.4	-5.04	2	-55.14
2.46035	13.88	16.4	-4.52	2	-54.62
2.4604	13.9	16.4	-4.5	2	-54.6
2.46045	14.85	16.4	-3.55	2	-53.65
2.4605	14.89	16.4	-3.51	2	-53.61
2.46055	14.9	16.4	-3.5	2	-53.6
2.4606	14.9	16.4	-3.5	2	-53.6
2.46065	13.95	16.4	-4.45	2	-54.55
2.4607	13.98	16.4	-4.42	2	-54.52
2.46075	13.95	16.4	-4.45	2	-54.55
2.4608	14	16.4	-4.4	2	-54.5
2.46085	13.89	16.4	-4.51	2	-54.61
2.4609	13.88	16.4	-4.52	2	-54.62
2.46095	13.84	16.4	-4.56	2	-54.66
2.461	13.95	16.4	-4.45	2	-54.55
2.46105	13.37	16.4	-5.03	2	-55.13
2.4611	13.39	16.4	-5.01	2	-55.11
2.46115	13.4	16.4	-5	2	-55.1
2.4612	13.4	16.4	-5	2	-55.1
2.46125	13.9	16.4	-4.5	2	-54.6
2.4613	13.89	16.4	-4.51	2	-54.61
2.46135	15.36	16.4	-3.04	2	-53.14
2.4614	15.35	16.4	-3.05	2	-53.15
2.46145	15.35	16.4	-3.05	2	-53.15
2.4615	15.37	16.4	-3.03	2	-53.13
2.46155	15.35	16.4	-3.05	2	-53.15
2.4616	13.98	16.4	-4.42	2	-54.52
2.46165	14	16.4	-4.4	2	-54.5
2.4617	14.35	16.4	-4.05	2	-54.15
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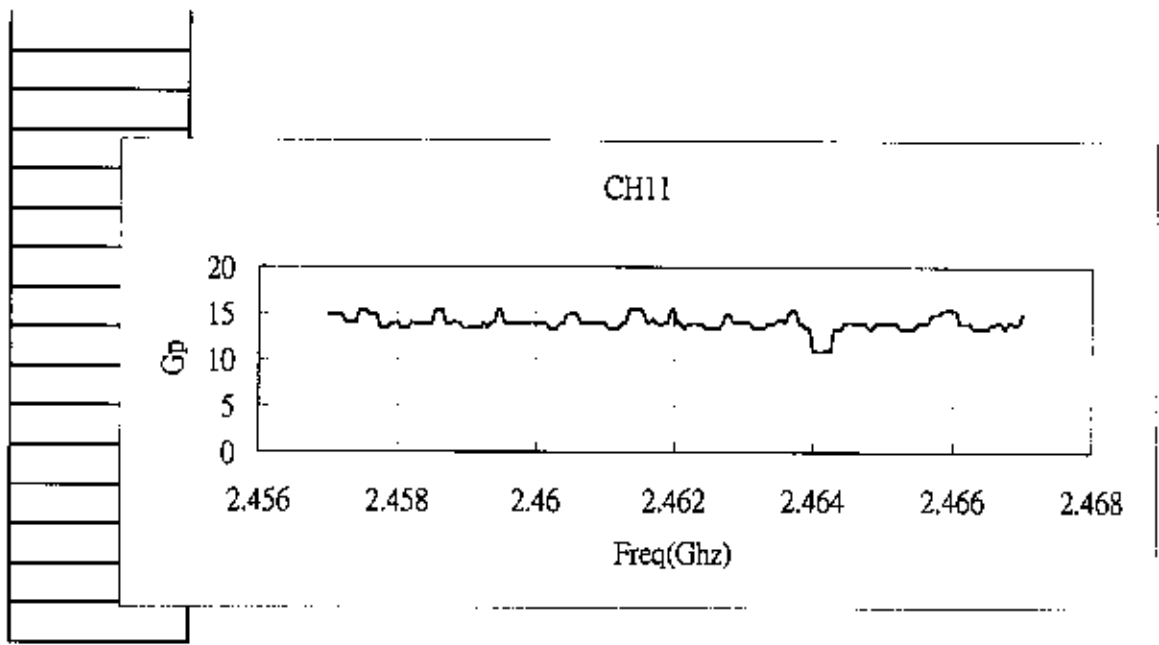
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2.462	15.4	16.4	-3	2	-53.1
2.46205	13.9	16.4	-4.5	2	-54.6
2.4621	13.88	16.4	-4.52	2	-54.62
2.46215	13.36	16.4	-5.04	2	-55.14
2.4622	13.88	16.4	-4.52	2	-54.62
2.46225	13.89	16.4	-4.51	2	-54.61
2.4623	13.92	16.4	-4.48	2	-54.58
2.46235	13.84	16.4	-4.56	2	-54.66
2.4624	13.87	16.4	-4.53	2	-54.63
2.46245	13.37	16.4	-5.03	2	-55.13
2.4625	13.39	16.4	-5.01	2	-55.11
2.46255	13.4	16.4	-5	2	-55.1
2.4626	13.38	16.4	-5.02	2	-55.12
2.46265	13.4	16.4	-5	2	-55.1
2.4627	13.98	16.4	-4.42	2	-54.52
2.46275	14.84	16.4	-3.56	2	-53.66
2.4628	14.88	16.4	-3.52	2	-53.62
2.46285	14	16.4	-4.4	2	-54.5
2.4629	14	16.4	-4.4	2	-54.5
2.46295	13.99	16.4	-4.41	2	-54.51
2.463	14	16.4	-4.4	2	-54.5
2.46305	14	16.4	-4.4	2	-54.5
2.4631	13.97	16.4	-4.43	2	-54.53
2.46315	13.39	16.4	-5.01	2	-55.11
2.4632	13.4	16.4	-5	2	-55.1
2.46325	13.36	16.4	-5.04	2	-55.14
2.4633	13.4	16.4	-5	2	-55.1
2.46335	13.9	16.4	-4.5	2	-54.6
2.4634	13.89	16.4	-4.51	2	-54.61
2.46345	13.89	16.4	-4.51	2	-54.61
2.4635	14.35	16.4	-4.05	2	-54.15
2.46355	14.35	16.4	-4.05	2	-54.15
2.4636	13.98	16.4	-4.42	2	-54.52
2.46365	14.89	16.4	-3.51	2	-53.61
2.4637	15.35	16.4	-3.05	2	-53.15
2.46375	15.35	16.4	-3.05	2	-53.15
2.4638	13.89	16.4	-4.51	2	-54.61
2.46385	13.89	16.4	-4.51	2	-54.61
2.4639	13.39	16.4	-5.01	2	-55.11
2.46395	13.4	16.4	-5	2	-55.1
2.464	10.88	16.4	-7.52	2	-57.62
2.46405	10.9	16.4	-7.5	2	-57.6
2.4641	10.87	16.4	-7.53	2	-57.63
2.46415	10.89	16.4	-7.51	2	-57.61



2.4642	10.9	16.4	-7.5	2	-57.6
2.46425	10.9	16.4	-7.5	2	-57.6
2.4643	13.34	16.4	-5.06	2	-55.16
2.46435	13.36	16.4	-5.04	2	-55.14
2.4644	13.36	16.4	-5.04	2	-55.14
2.46445	13.9	16.4	-4.5	2	-54.6
2.4645	14	16.4	-4.4	2	-54.5
2.46455	13.99	16.4	-4.41	2	-54.51
2.4646	13.99	16.4	-4.41	2	-54.51
2.46465	13.94	16.4	-4.46	2	-54.56
2.4647	13.89	16.4	-4.51	2	-54.61
2.46475	13.89	16.4	-4.51	2	-54.61
2.4648	13.36	16.4	-5.04	2	-55.14
2.46485	13.39	16.4	-5.01	2	-55.11
2.4649	13.9	16.4	-4.5	2	-54.6
2.46495	13.95	16.4	-4.45	2	-54.55
2.465	13.99	16.4	-4.41	2	-54.51
2.46505	14	16.4	-4.4	2	-54.5
2.4651	13.88	16.4	-4.52	2	-54.62
2.46515	13.89	16.4	-4.51	2	-54.61
2.4652	13.9	16.4	-4.5	2	-54.6
2.46525	13.39	16.4	-5.01	2	-55.11
2.4653	13.39	16.4	-5.01	2	-55.11
2.46535	13.38	16.4	-5.02	2	-55.12
2.4654	13.4	16.4	-5	2	-55.1
2.46545	13.39	16.4	-5.01	2	-55.11
2.4655	13.89	16.4	-4.51	2	-54.61
2.46555	13.95	16.4	-4.45	2	-54.55
2.4656	13.97	16.4	-4.43	2	-54.53
2.46565	13.97	16.4	-4.43	2	-54.53
2.4657	14.89	16.4	-3.51	2	-53.61
2.46575	14.89	16.4	-3.51	2	-53.61
2.4658	14.9	16.4	-3.5	2	-53.6
2.46585	15.35	16.4	-3.05	2	-53.15
2.4659	15.35	16.4	-3.05	2	-53.15
2.46595	15.39	16.4	-3.01	2	-53.11
2.466	15.35	16.4	-3.05	2	-53.15
2.46605	15.34	16.4	-3.06	2	-53.16
2.4661	13.88	16.4	-4.52	2	-54.62
2.46615	13.89	16.4	-4.51	2	-54.61
2.4662	13.88	16.4	-4.52	2	-54.62
2.46625	13.9	16.4	-4.5	2	-54.6
2.4663	13.39	16.4	-5.01	2	-55.11
2.46635	13.39	16.4	-5.01	2	-55.11
2.4664	13.4	16.4	-5	2	-55.1
2.46645	13.36	16.4	-5.04	2	-55.14
2.4665	13.37	16.4	-5.03	2	-55.13

2.46655	13.84	16.4	-4.56	2	-54.66
2.4666	13.89	16.4	-4.51	2	-54.61
2.46665	13.98	16.4	-4.42	2	-54.52
2.4667	13.9	16.4	-4.5	2	-54.6
2.46675	13.39	16.4	-5.01	2	-55.11
2.4668	14	16.4	-4.4	2	-54.5
2.46685	13.97	16.4	-4.43	2	-54.53
2.4669	13.84	16.4	-4.56	2	-54.66
2.46695	13.88	16.4	-4.52	2	-54.62
2.467	14.81	16.4	-3.59	2	-53.69
<b>Processing gain</b>	14.02735				





## 9. EMI Reduction Method During Compliance Testing

No modification was made during testing.

## 10. Attachment

Attachment 1: EUT Test Photographs      Number of Pages :    3

Attachment 2: EUT Detailed Photographs      Number of Pages :    6

## Attachment 1 : EUT Test Photographs

## Attachment 2 : EUT Detailed Photographs