Test Report
Application for Certification
On Behalf Of

PRIME ELECTRONICS & SATELLITICS INC.

EUT:
Wireless LAN USB adapter

Model Number:
WU210G

FCC ID:
PQP-WU210G

Prepared for:

PRIME ELECTRONICS & SATELLITICS INC.

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1. CERTIFICATION

Applicant : PRIME ELECTRONICS & SATELLITICS INC.

EUT Description	: Wireless LAN USB adapter
Model Number	: WU210G
Serial Number	: N/A
Brade Name	: Pesi
FCC ID	: PQP-WU210G
Tested Power Supply	: 110V/60Hz

MEASUREMENT PROCEDURES USED:

☑ **CFR 47, Part 15**	Radio Frequency Device Subpart C Intentional Radiators :2000
☑ **ANSI C63.4**	Methods of Measurements of Radio-Noise Emissions from Low- Voltage Electrical and Electronic Equipment in the range of 9kHz To 40GHz. 2001

THE MEASUREMENT SHOWN IN THE ATTACHMENT WAS MADE IN ACCORDANCE WITH THE PROCEDURES INDICATED, AND THE MAXIMUM ENERGY EMITTED BY THE EQUIPMENT WAS FOUND TO BE WITHIN THE ABOVE LIMITS APPLICABLE.

Sample Received Date : **December 21, 2003**
Final Test Date : **December 30, 2003**

In order to ensure the quality and accuracy of this document, the contents have been thoroughly reviewed by the following qualified personnel from GesTek Lab.

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This test data shown below is traceable to National or international standard such as NIST/USA, etc. The laboratory's NVLAP accreditation in no way constitutes or implies product certification, approval, or endorsement by NVLAP or the United States government.

2. GENERAL INFORMATION

2.1 PRODUCTION DESCRIPTION

Product Name : Wireless LAN USB adapter
Model Number : WU210G
Serial Number : N/A
Brade Name : Pesi
FCC ID : PQP-WU210G
Modulation Type : DBPSK DQPSK CCK OFDM
Antenna Gain : 0dBi
Antenna Type : Printed
Soldered on PCB
Frequencg Range : 2412~2462 MHz
Channel Number 11 Channel
Data Rate 1.2, 5.5, 11, 6, 9, 12, 18, 24, 36, 48, 54Mbps
Channel Control Auto
Working Voltage : DV 5V
USB Cable : 1.0m

Frequency of Each Channel:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447		

Note:

1. This device is a 2.4GHz Wireless LAN USB adapter included 802.11b and 802.11g 2.4GH transceiver function.

2. Test of channel was included the lowest、middle and highest frequency in highest data rate and to perform the test, then record on this report.

3. 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.

4. The device is a transceiver equipement to accordance with Part 15 regulations. The function receiving was under Declaration of Conformity and record of measurment in test report that the report number is 0312042FCC DOC.

2.2 OPERATIONAL DESCRIPTION

The Transmitter of EUT is a Wireless LAN USB adapter and powered by host equipment. This device have two antenna one is printed another is sold on PCB. The other instruction, please look at user manual.

This is Digital transmission System(DTS) and have four type of modulation DBPSK DQPSK CCK & OFDM. The data rate are 1,2,5.5,11,6,9,12,18,24,36,48.54 Mbps.

The equipment enables high-speed access without wires to network assets. This adapter uses the IEEE 802.11 & 802.11g protocol to enable wireless communications between the host computer and other computers, in the same way that the computer would use an Ethernet adapter.

2.3 TEST MODES & EUT COMPONENTS DESCRIPTION

EUT: Wireless LAN USB adapter, M/N: WU210G **The EUT tested with Notebook PC. (DELL, M/N: PP05L)**		
Test Mode	**Mode 1**	**Mode 2**
RF output power	802.11b 17dBm (avg)	802.11g 12dBm (avg)
USB Cable	1.0m	

2.3 CONFIGURATION OF THE TESTED SYSTEM

The FCC IDs/Types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

Device	No.	Configuration
Headset & Earphone	**E01-052**	Manufacturer : TOKYO Model Number : SX-M1 Serial Number : N/A Data Cable : Non-Shielded, Undetachable, 1.8 m Power Cord : N/A Purchase Date : 2/22/1999
USB Mouse	**M02-261**	Manufacturer : Logitech Model Number : M-U48A BSMI ID : 4882A177 FCC ID : JNZ211360 Data Cable : Shielded, Undetachable, 1.5m
Digital Video Camera Recorder (Digital 8)	**V01-003**	Manufacturer : SONY CORPORATION Model Number : DCR-TRV230 Serial Number : 380331 BSMI ID : N/A AC Power Adaptor : M/N:AC-L10A, S/N:36880927 Input:AC IN:100-240V 50/60Hz 23W Output:DC 8.4V/1.5A Battery Pack(Li-ion): M/N:NP-FM30 Input :DC 7.2V/5.0Wh
Modem	**M03-010**	Manufacturer : ACEEX Model Number : 1414 Serial Number : 960018043 BSMI ID : N/A FCC ID : IFAXDM1414 Data Cable : Type:RS232, Shielded, Detachable, 1.2m Power Cord : Non-Shielded, Detachable, 1.5m Line : Type:RJ11(4P2C), Detachable, 1.8m Phone : Type:RJ11(4P2C), Detachable, 1.8m
Printer	**P01-016**	Manufacturer : Hewlett Packard Model Number : 2225C Serial Number : 2548S40426 BSMI ID : 3892A957 FCC ID : BS46XU2225C Data Cable : Shielded, Detachable, 1.2m, Parallel Cable Power Cord : Non-Shielded, Detachable, 1.8m
Monitor	**----**	Manufacturer : DELL COMPUTER Model Number : 828FI Data Cable : Shielded, Undetachable, 1.8m, VGA Cable Power Cord : Non-Shielded, Detachable, 2m
Wireless LAN Card	**----**	Manufacturer : PRIME ELECTRONICS & SATELLITICS INC. Model Number : CPWUA001

Device	No.	Configuration
Notebook PC	**----**	Manufacturer : IBM Model Number : R50 BSMI ID : R33026 FCC ID : N/A Power Cord : Non-Shielded, Detachable, 1.5m
Notebook PC	**----**	Manufacturer : DELL COMPUTER Model Number : PP05L BSMI ID : R33002 FCC ID : N/A Power Cord : Non-Shielded, Detachable, 1.5m.
Far End Network Server	**-----**	Manufacturer : ASUS Model Number : AP160R Power Cord : Non- Shielded, Detachable, 1.8m
Electronic Private Automatic Branch Exchange	**-----**	Manufacturer : Sun Moon Star Model Number : SMS-4 Serial Number : 9708006 FCC ID : N/A Data Cable to EUT : Type:RJ11(4P2C), Detachable, 1.5m Power Cord : Non-Shielded, Detachable, 1.5m

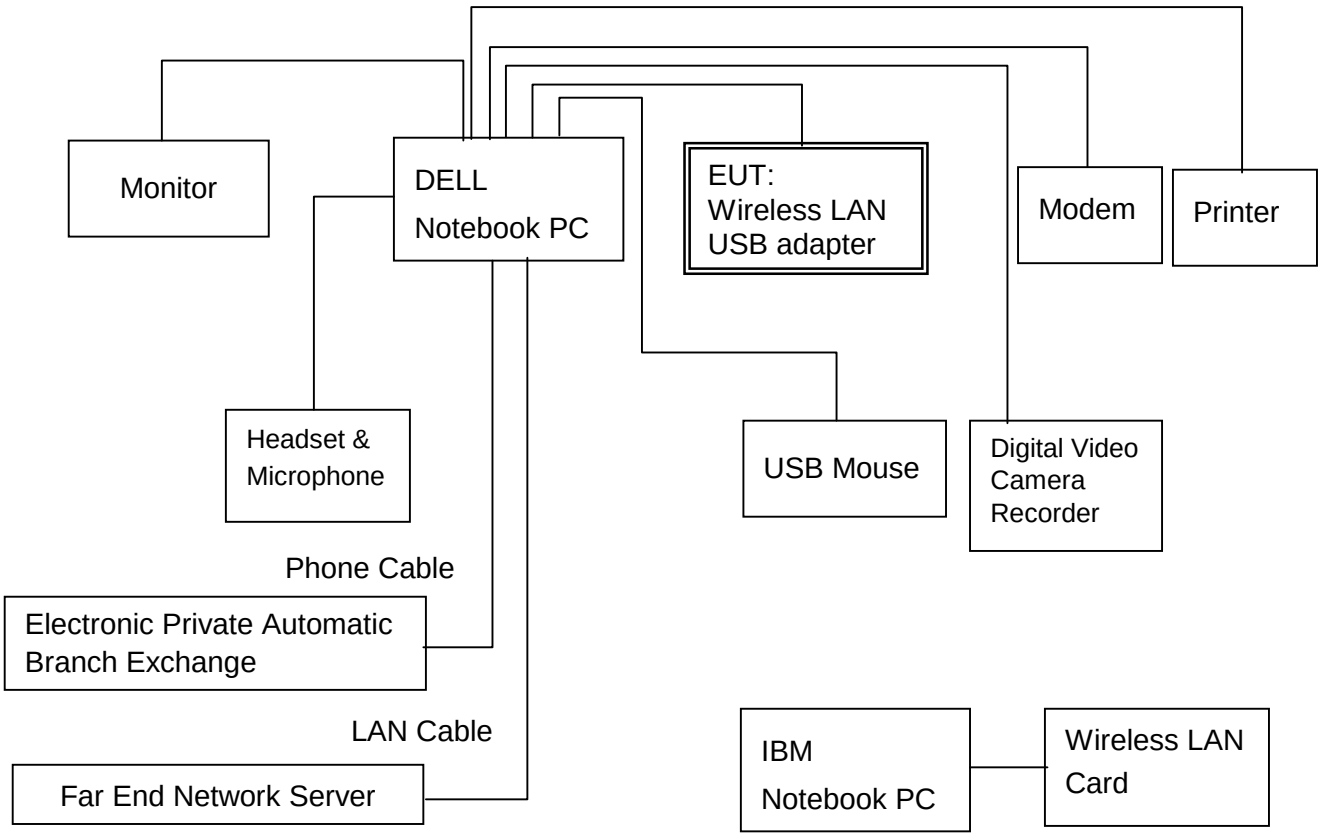
2.4 TEST FACILITY

Ambient conditions in the laboratory:

ITEMS	REQIORED(IEC 68-1)	ACTUAL
TEMPERATURE (°C)	15-35	24-27
HUMIDITY (%RH)	25-75	50-65
BAROMETRIC PRESSURE (mbar)	860-1060	950-1000
FCC SITE DESCRIPTION	Aug. 10, 1995 /Aug. 25, 1998 File on FCC Engineering Laboratory Federal Communication Commission 7435 Oakland Mills Road Columbia, MD 21046 Reference 31040/SIT1300F2	
NVLAP LAB. CODE	200085-0 United Stated Department of commerce National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program Accreditation on NVLAP effective through Sep. 30,2004 For CISPR 22, FCC Method and AS/NZS 3548 Measurement.	
Chinese National Laboratory Accreditation Certificate R.O.C.	Recognized by the Council of Chinese National Laboratory Accreditation and confirmed to meet the requirements of ISO/IEC 17025 also has been registered for fifteen items, and meet the requirements of the Article 4 of Measures Governing the Recognition both Approval of Designated Laboratory for Commodities Inspection and has been registered for four items within the field of Electrical Testing. Registration No.: 1082 Registration on CNLA effective through April 30, 2006.	

2.5 TEST SETUP

2.5.1 BLOCK DIAGRAM OF CONNECTIONS BETWEEN EUT AND SIMULATORS



2.6 EUT OPERATING CONDITIONS

The EUT exercise program used during conducted testing was designed to exercise the EUT in a manner similar to a typical use. The exercise sequence is listed as below:

1. Setup the EUT and simulators as shown on 2.5.
2. Turn on the power of all equipments.
3. The EUT ping with the wireless lan card.
4. Repeat the above steps.

3. CONDUCTION EMISSION DATA

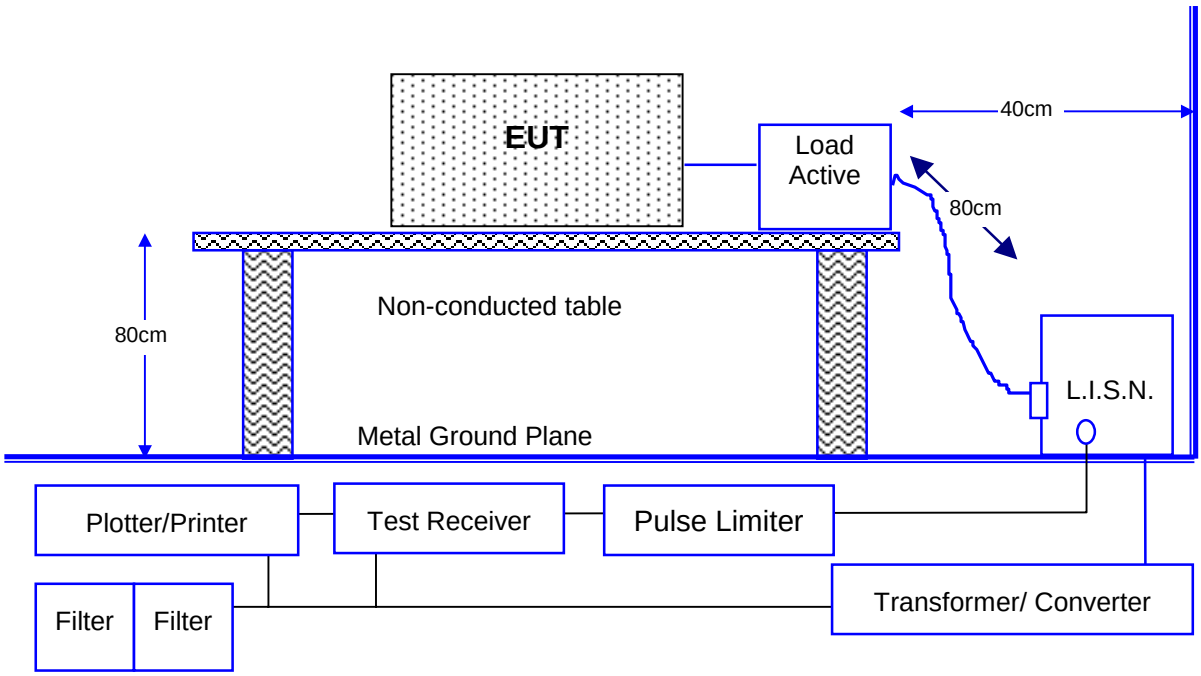
3.1 TEST EQUIPMENTS

The following test equipment are used during the conducted power line tests:

Item	Instrument	Manufacturer	Type	Serial No.	Last Cal.
1	Test Receiver	Rohde & Schwarz	ESHS 30	828109/010	01/02/03
2	L.I.S.N.	KYORISTU	KNW-407	8-1345-10	11/20/03
3	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	357.8810.52	08/07/03
4	RF CABLE	GesTek	N/A	GTK-E-A152-01	12/30/03
5	50 Ohm Terminator	GesTek	N/A	GTK-E-A124-01	10/10/03
6	Shielded Room	GesTek	N/A	B5	N/A

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

3.2 BLOCK DIAGRAM OF TEST SETUP



Note: This is a reprehensive setup diagram for Table-top EUT.
For Floor-standing EUT, the table will be removed with all others setup condition remain the same.

3.3 CONDUCTED EMISSION LIMIT

☒FCC Limit

Frequency	Maximum RF Line Voltage dB(μV)			
	Class A		Class B	
MHz	QUASI-PEAK	AVERAGE	QUASI-PEAK	AVERAGE
0.15 to 0.50	79	66	66 to 56	56 to 46
0.50 to 5.0	73	60	56	46
5.0 to 30	73	60	60	50

Remarks : In the Above Table, the tighter limit applies at the band edges.

3.4 OPERATING CONDITION OF EUT

Same as section 2.6.

3.5 EUT CONFIGURATION ON MEASUREMENT

The equipments that are listed 3.2 are installed on Conducted Power Line Test to meet the Commission requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

The device under test, installed in a representative system as described in section 3.2, was placed on a non-conductive table whose total height equal to 80cm. Powered from one L.I.S.N. which signal output to receiver, and the other peripherals was powered from another L.I.S.N. which signal output was terminated by 50Ω.

3.6 CONDUCTED EMISSION DATA

The measurement range of conducted emission, which is from **0.15 MHz to 30 MHz**, was investigated. All readings are quasi-peak and average values with a resolution Bandwidth of 9 KHz. The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range for all the test modes. Then the worst modes were reported the following data pages.

3.7 CONDUCTED EMISSIONS MEASUREMENT RESULTS

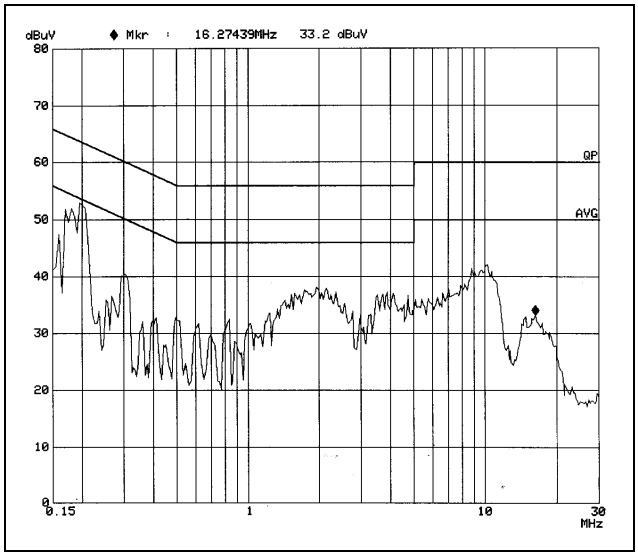
Date of Test	December 30, 2003	Temperature	20 ℃
EUT	Wireless LAN USB adapter	Humidity	60 %
Test Mode	802.11g	Display Pattern	H Pattern

No.	FREQUENCY	READING LEVEL dBµV				LIMIT	
	MHz	LINE1 Q.P.	LINE1 AV.	LINE2 Q.P.	LINE2 AV.	Q.P.	AV.
1	**0.20609	50.6	38.8	48.1	37.9	63.3	53.3
2	0.30739	37.6	27.3	37.1	29.6	60.0	50.0
3	0.83242	29.8	16.1	31.7	16.8	56.0	46.0
4	2.14699	34.3	23.2	33.6	20.8	56.0	46.0
5	10.24799	37.3	31.8	36.6	31.2	60.0	50.0
6	16.27439	27.3	21.6	27.8	22.6	60.0	50.0

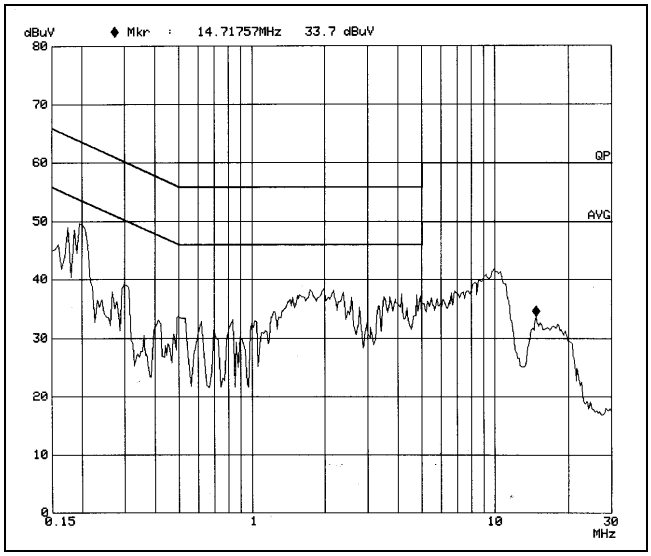
Remarks :

1. All readings are Quasi-peak and Average..
2. " * " means that the quasi-peak reading level is lower than the average limits; it is not necessary to measure the average level.
3. " ** " means that this data is the worse case emission level.
4. Final measurement = (Receiver reading) + (Correction factor if available).

Line 1



Line 2



4. RADIATION EMISSION DATA

4.1 TEST EQUIPMENT

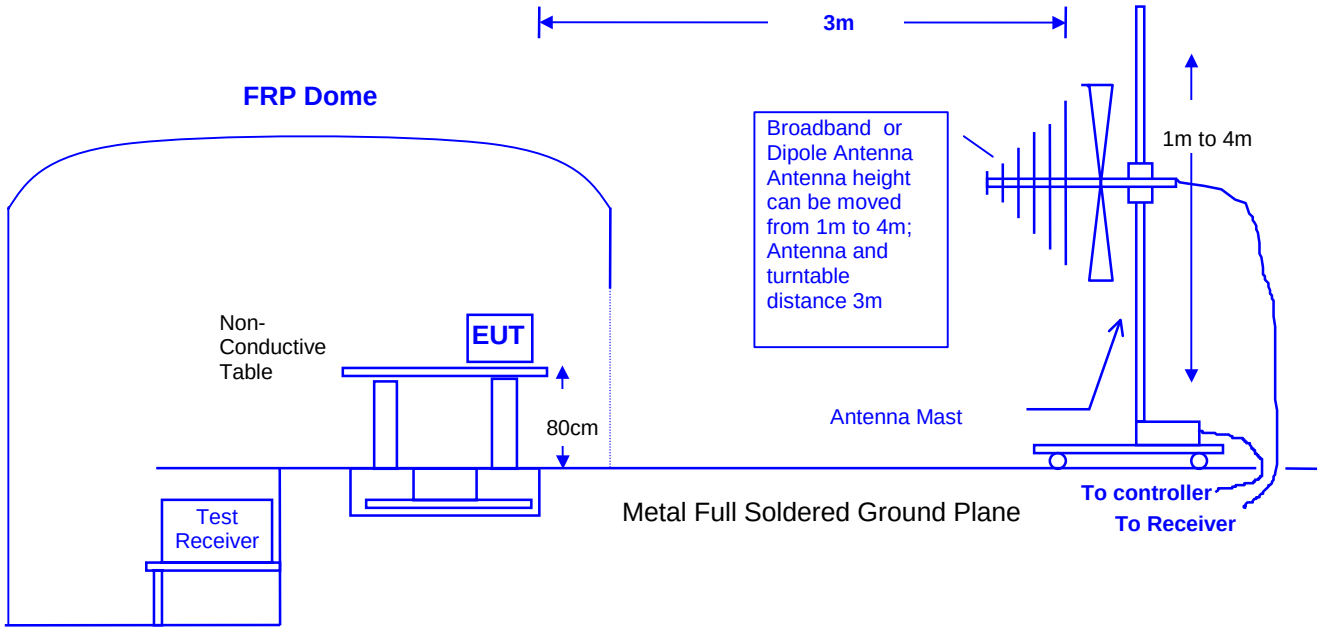
The following test equipments are used during the radiated emission tests:
Radiated test was performed on: ☐Site #1 ☒Site #2 ☒Site #3 ☐Site #4

Item	Instrument	Manufacturer	Type	Serial No.	Last Cal.
1	Test Receiver	Rohde & Schwarz	ESVS30	829007/014	12/13/03
2	Spectrum Analyzer	Advantest	R3272	82420232	02/14/03
3	Spectrum Analyzer	HP	E4407B	39240339	08/16/03
4	Power Meter	Rohde & Schwarz	NRVS	100666	02/26/03
5	Power Sensor	Rohde & Schwarz	NRV-Z32	8360191058	05/19/03
6	Pre-Amplifier	HP	8447D	2944A08273	10/11/03
7	BILOG ANTENNA	SCHAFFNER	CBL6112B	2833	12/01/03
8	Horn Antenna	Electro-Metrics	EM-6961	103318	05/30/03
9	Horn Antenna	Schwarzbeck	BBHA 9120	D243	12/18/03
10	RF Cable	GesTek	N/A	GTK-E-A149-01	12/26/03
11	Open Site	GesTek	N/A	A2	12/10/03
12	Test Program Software	GesTek	N/A	GTK-E-S001-01	N/A

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

4.2 OPEN TEST SITE SETUP DIAGRAM

Note: This is a reprehensive setup diagram for Table-top EUT.
For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



4.3 RADIATED EMISSION LIMIT

☒FCC Class C Limit at 3m

Frequency	Distance	Field Strength	
MHz	Meter	μV/M	dBμV/M
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
Above 960	3	500	54.0

Note：The frequencies above 1000MHz, as measured using instrumentation with a peak detector function was corresponding to 20dB above the maximum permitted average limit.

4.4 EUT CONFIGURATION

The equipment which is listed 2.6 are installed on Radiated Emission Test to meet the Commission requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

The device under test, installed in a representative system as described in section 4.2, was placed on a non-conductive table whose total height equaled 80 cm. This table can be rotated 360 degree. The measurement antenna was mounted to a non-conductive mast capable of moving the antenna vertically. Antenna height was varied from 1 meter to 4 meters and the system under test was rotated from 0 degree through 360 degrees relative to the antenna position and polarization (Horizontal and Vertical). Also the I/O cable position was investigated to find the maximum emission condition.

4.5 OPERATING CONDITION OF EUT

Same as section 2.6.

4.6 RADIATED EMISSION DATA

The measurement range of radiated emission, which is from **30 MHz to 10 Harminics,** was investigated. All readings below 1GHz are quasi-peak values with a resolution bandwidth of 120 KHz. Above 1GHz are peak and avg. values with a resolution bandwidth of 1MHz. The initial step in collecting radiated emission data is a spectrum analyzer peak scans of the measurement range for all the test modes and then use test receiver for final measurement. Then the worst modes were reported the following data pages.

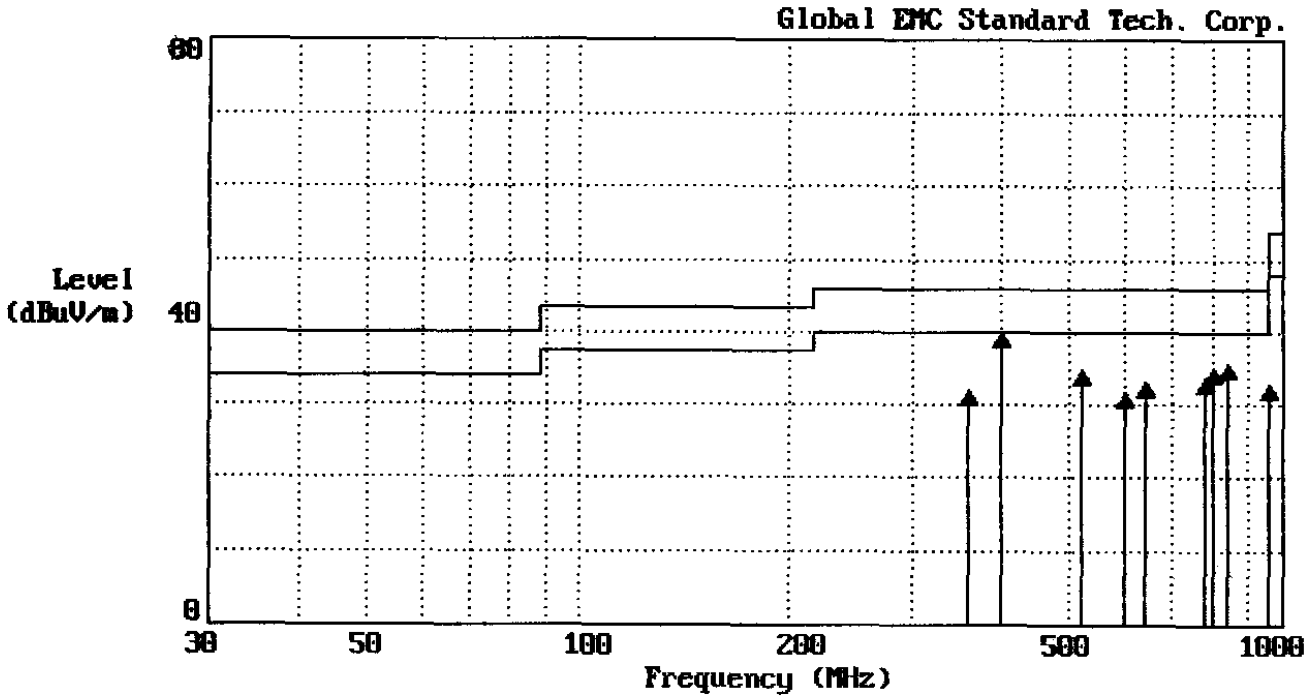
4.7 RADIATED EMISSIONS MEASUREMENT RESULTS

Date of Test	December 30, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	30-1000MHz

No.	Frequency [MHz]	Cable Loss [dB]	Antenna Factor [dB/m]	Reading Level [dB(uV)]	Emission Level [dB(uV/m)]	Amp. Factor [dB]	Limit [dB(uV/m)]	Margin [dB]
1	359.999	4.16	15.54	12.40	32.10	0.00	46.00	-13.90
2	400.000	4.42	16.50	19.00	39.92	0.00	46.00	-6.08
3	519.998	5.15	18.03	11.80	34.98	0.00	46.00	-11.02
4	599.998	5.68	18.99	7.20	31.87	0.00	46.00	-14.13
5	639.997	5.85	19.27	8.00	33.12	0.00	46.00	-12.88
6	779.997	6.62	20.18	7.10	33.90	0.00	46.00	-12.10
7	799.997	6.71	20.29	8.10	35.10	0.00	46.00	-10.90
8	839.997	6.97	20.70	8.00	35.67	0.00	46.00	-10.33
9	959.996	7.56	21.60	3.78	32.94	0.00	46.00	-13.06

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have ±0.01 tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

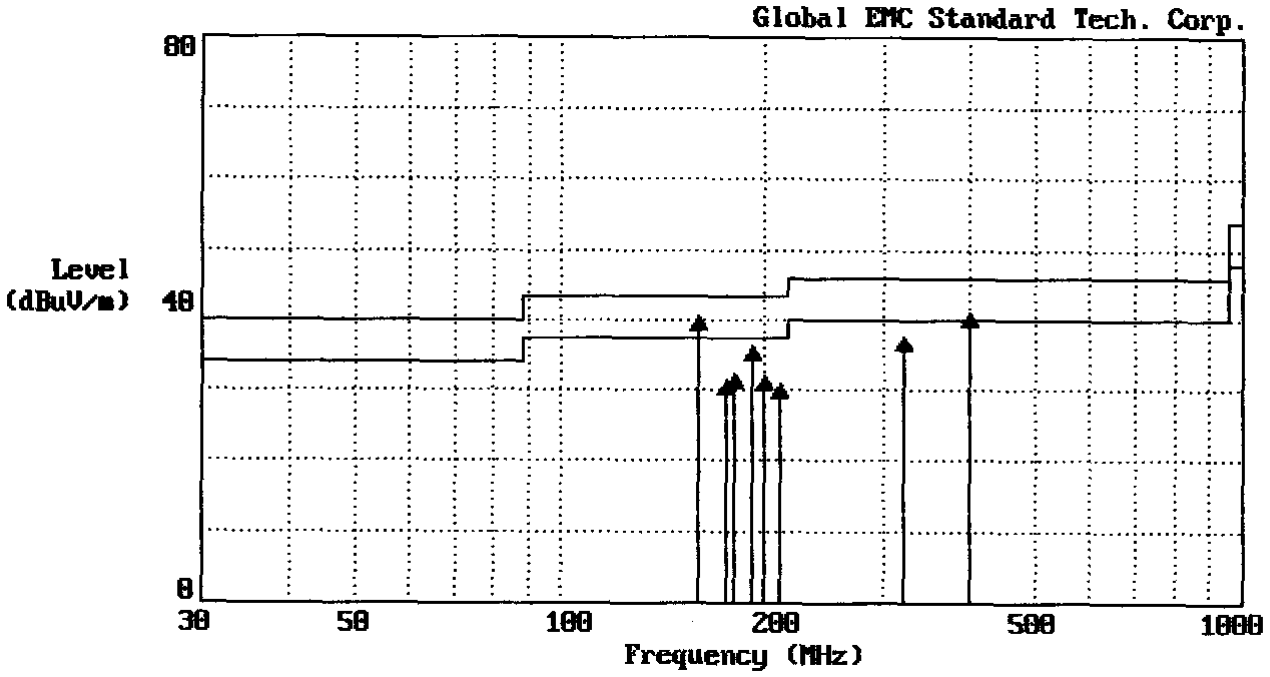


Date of Test	December 30, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	30-1000MHz

No.	Frequency [MHz]	Cable Loss [dB]	Antenna Factor [dB/m]	Reading Level [dB(uV)]	Emission Level [dB(uV/m)]	Amp. Factor [dB]	Limit [dB(uV/m)]	Margin [dB]
1	160.003	2.31	11.10	27.20	40.61	0.00	43.50	-2.89
2	176.001	2.44	10.25	18.70	31.39	0.00	43.50	-12.11
3	180.059	2.47	10.03	19.90	32.40	0.00	43.50	-11.10
4	191.753	2.57	10.21	23.60	36.38	0.00	43.50	-7.12
5	200.000	2.66	10.40	19.10	32.16	0.00	43.50	-11.34
6	210.067	2.74	10.85	17.30	30.89	0.00	43.50	-12.61
7	320.000	3.79	14.57	19.30	37.66	0.00	46.00	-8.34
8	400.000	4.42	16.50	20.22	41.14	0.00	46.00	-4.86

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have ±0.01 tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

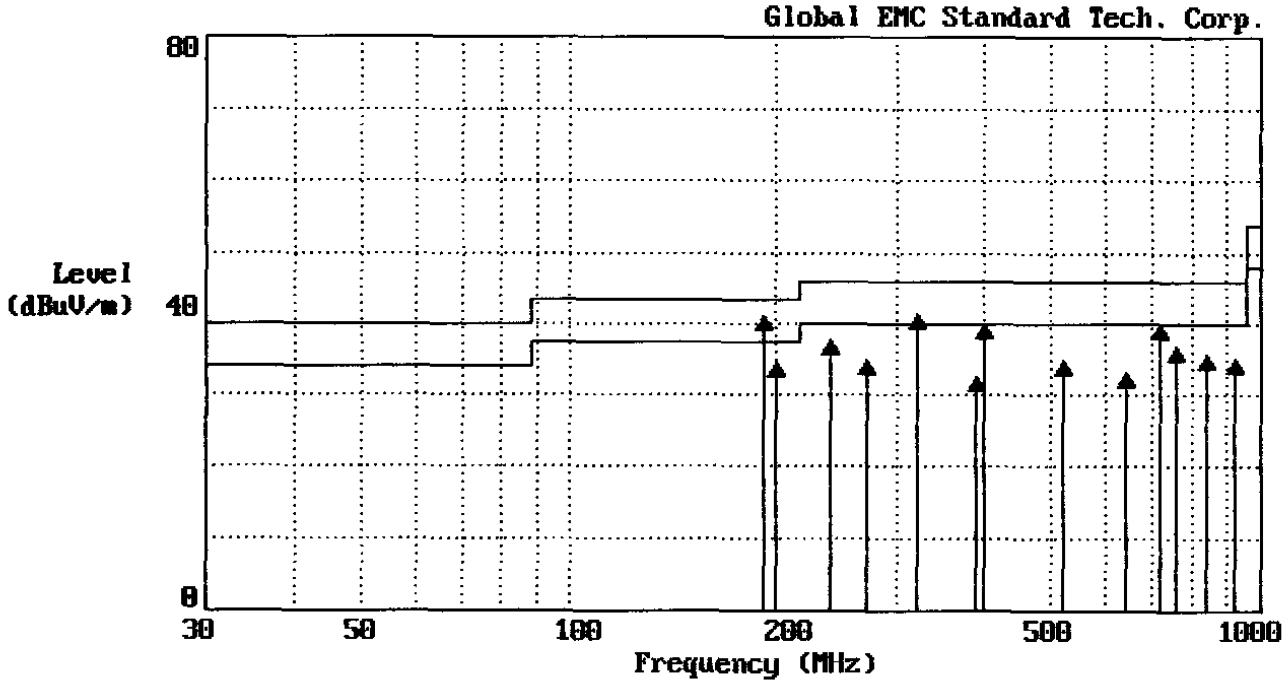


Date of Test	December 30, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Channel 6	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	30-1000MHz

No.	Frequency [MHz]	Cable Loss [dB]	Antenna Factor [dB/m]	Reading Level [dB(uV)]	Emission Level [dB(uV/m)]	Amp. Factor [dB]	Limit [dB(uV/m)]	Margin [dB]
1	191.753	2.57	10.21	28.35	41.13	0.00	43.50	-2.37
2	200.000	2.66	10.40	21.50	34.56	0.00	43.50	-8.94
3	240.000	2.97	12.23	22.60	37.80	0.00	46.00	-8.20
4	270.087	3.26	13.24	18.40	34.90	0.00	46.00	-11.10
5	320.000	3.79	14.57	23.00	41.36	0.00	46.00	-4.64
6	390.123	4.36	16.27	11.90	32.53	0.00	46.00	-13.47
7	400.000	4.42	16.50	19.00	39.92	0.00	46.00	-6.08
8	519.998	5.15	18.03	11.80	34.98	0.00	46.00	-11.02
9	639.997	5.85	19.27	8.00	33.12	0.00	46.00	-12.88
10	719.997	6.25	19.82	14.04	40.11	0.00	46.00	-5.89
11	758.831	6.55	20.05	10.20	36.80	0.00	46.00	-9.20
12	839.997	6.97	20.70	8.00	35.67	0.00	46.00	-10.33
13	919.997	7.42	21.40	6.36	35.18	0.00	46.00	-10.82

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have ±0.01 tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

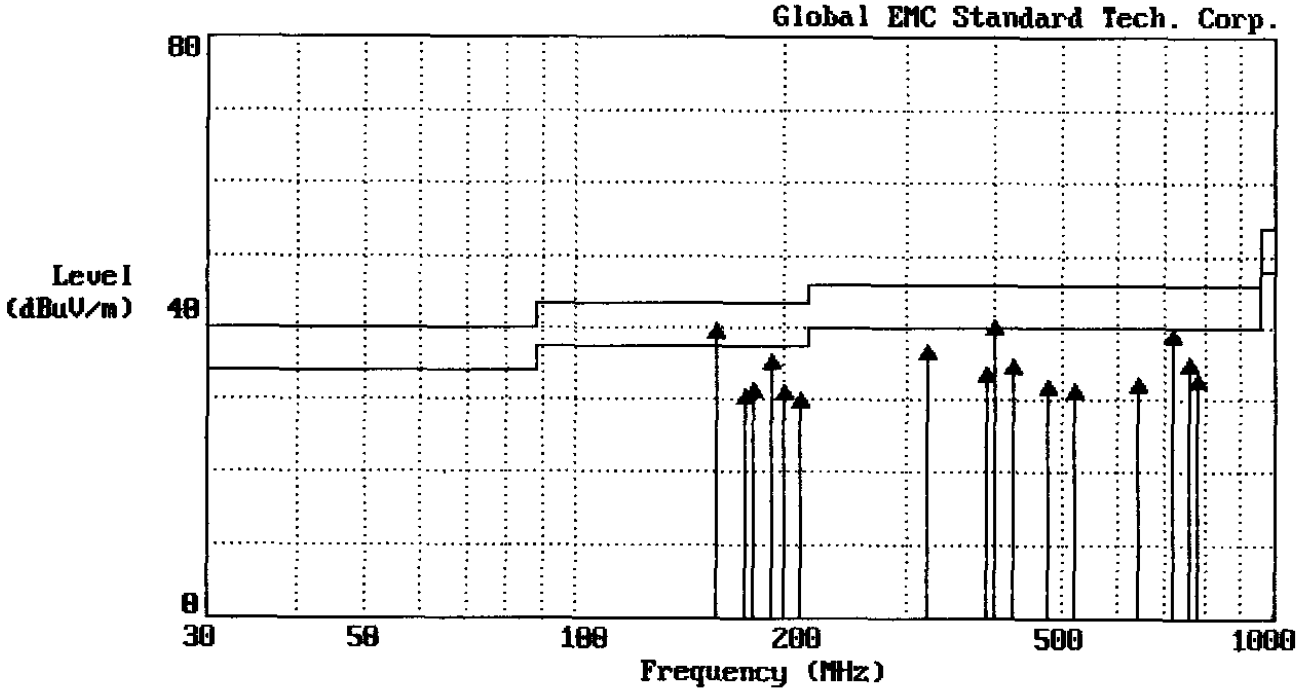


Date of Test	December 30, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Channel 6	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	30-1000MHz

No.	Frequency [MHz]	Cable Loss [dB]	Antenna Factor [dB/m]	Reading Level [dB(uV)]	Emission Level [dB(uV/m)]	Amp. Factor [dB]	Limit [dB(uV/m)]	Margin [dB]
1	160.003	2.31	11.10	27.20	40.61	0.00	43.50	-2.89
2	176.001	2.44	10.25	18.70	31.39	0.00	43.50	-12.11
3	180.059	2.47	10.03	19.90	32.40	0.00	43.50	-11.10
4	191.753	2.57	10.21	23.60	36.38	0.00	43.50	-7.12
5	200.000	2.66	10.40	19.10	32.16	0.00	43.50	-11.34
6	210.067	2.74	10.85	17.30	30.89	0.00	43.50	-12.61
7	320.000	3.79	14.57	19.30	37.66	0.00	46.00	-8.34
8	390.124	4.36	16.27	14.05	34.68	0.00	46.00	-11.32
9	400.000	4.42	16.50	20.22	41.14	0.00	46.00	-4.86
10	425.003	4.56	16.83	14.39	35.78	0.00	46.00	-10.22
11	475.008	4.94	17.47	10.60	33.01	0.00	46.00	-12.99
12	520.000	5.15	18.03	9.23	32.41	0.00	46.00	-13.59
13	640.000	5.85	19.27	8.07	33.19	0.00	46.00	-12.81
14	720.000	6.25	19.82	14.00	40.07	0.00	46.00	-5.93
15	758.833	6.55	20.05	9.50	36.10	0.00	46.00	-9.90
16	780.000	6.62	20.18	7.10	33.90	0.00	46.00	-12.10

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have ±0.01 tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

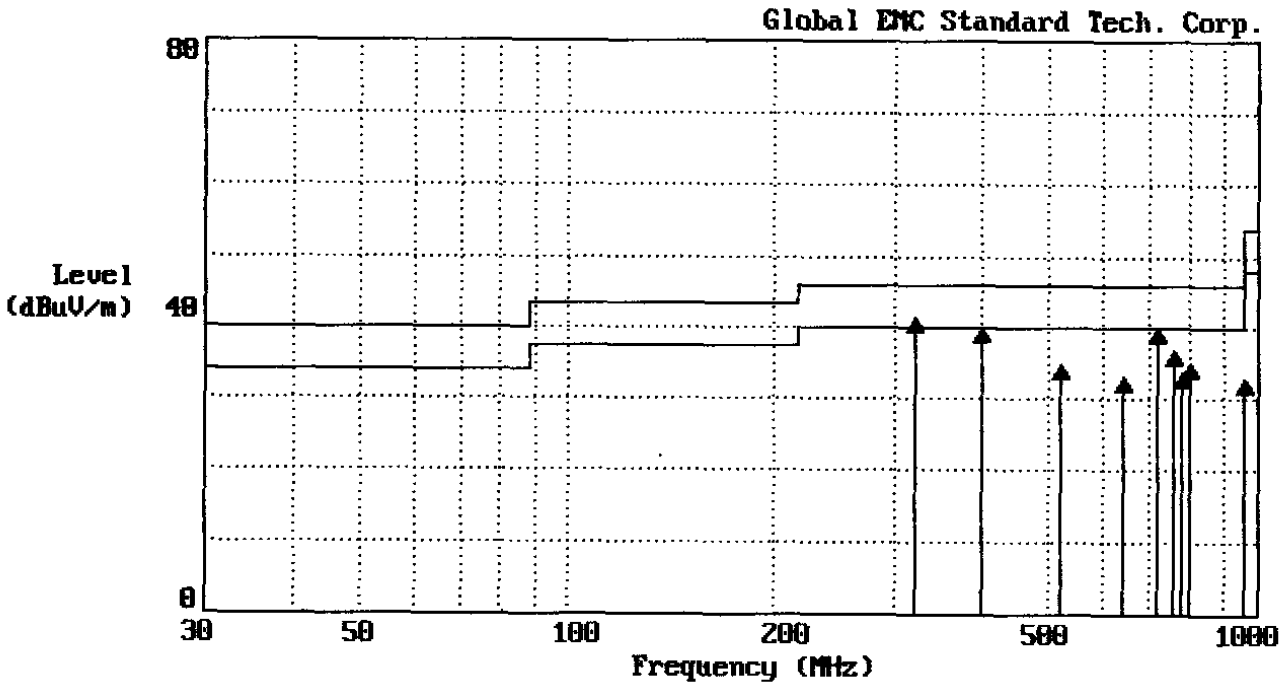


Date of Test	January 05, 2004	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Channel 11	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	30-1000MHz

No.	Frequency [MHz]	Cable Loss [dB]	Antenna Factor [dB/m]	Reading Level [dB(uV)]	Emission Level [dB(uV/m)]	Amp. Factor [dB]	Limit [dB(uV/m)]	Margin [dB]
1	320.000	3.79	14.57	23.00	41.36	0.00	46.00	-4.64
2	400.000	4.42	16.50	19.00	39.92	0.00	46.00	-6.08
3	519.998	5.15	18.03	11.80	34.98	0.00	46.00	-11.02
4	639.997	5.85	19.27	8.00	33.12	0.00	46.00	-12.88
5	719.997	6.25	19.82	14.04	40.11	0.00	46.00	-5.89
6	758.831	6.55	20.05	10.20	36.80	0.00	46.00	-9.20
7	779.997	6.62	20.18	7.10	33.90	0.00	46.00	-12.10
8	799.997	6.71	20.29	8.10	35.10	0.00	46.00	-10.90
9	959.996	7.56	21.60	3.78	32.94	0.00	46.00	-13.06

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have ±0.01 tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.

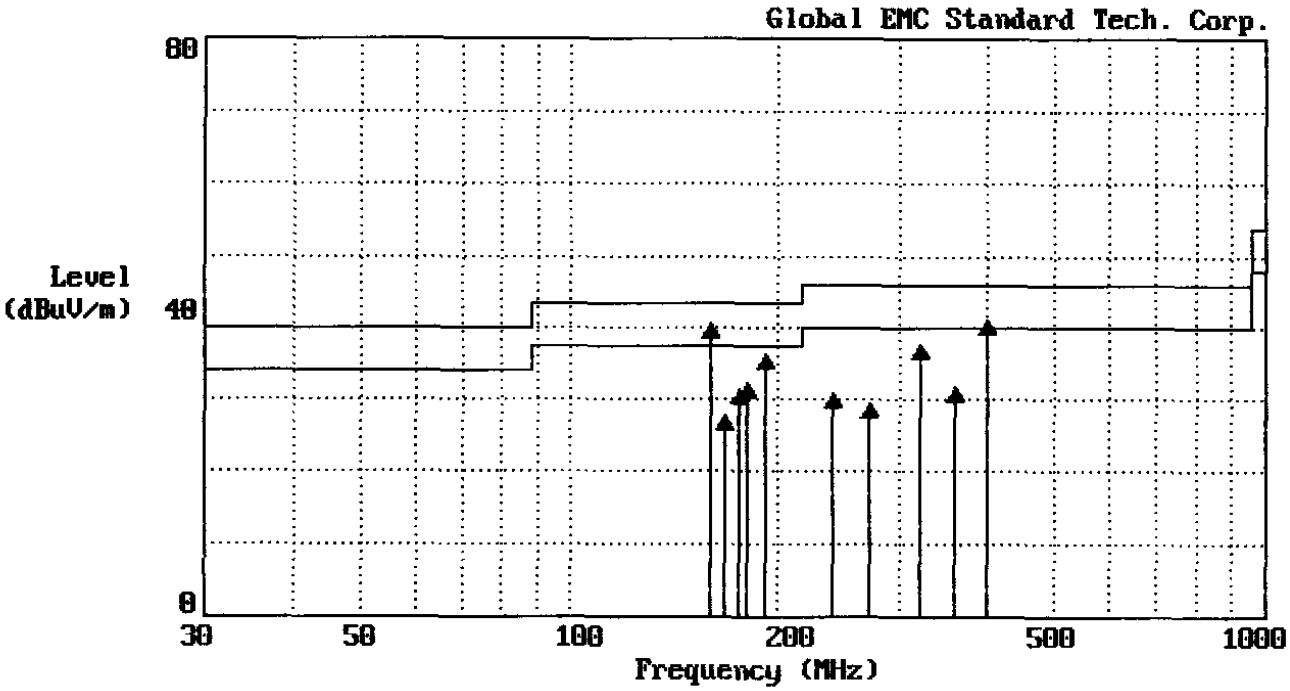


Date of Test	January 05, 2004	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Channel 11	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	30-1000MHz

No.	Frequency [MHz]	Cable Loss [dB]	Antenna Factor [dB/m]	Reading Level [dB(uV)]	Emission Level [dB(uV/m)]	Amp. Factor [dB]	Limit [dB(uV/m)]	Margin [dB]
1	160.003	2.31	11.10	27.20	40.61	0.00	43.50	-2.89
2	167.267	2.35	10.73	14.70	27.78	0.00	43.50	-15.72
3	176.001	2.44	10.25	18.70	31.39	0.00	43.50	-12.11
4	180.059	2.47	10.03	19.90	32.40	0.00	43.50	-11.10
5	191.753	2.57	10.21	23.60	36.38	0.00	43.50	-7.12
6	240.001	2.97	12.23	15.70	30.90	0.00	46.00	-15.10
7	270.087	3.26	13.24	12.90	29.40	0.00	46.00	-16.60
8	320.000	3.79	14.57	19.30	37.66	0.00	46.00	-8.34
9	360.001	4.16	15.54	12.10	31.80	0.00	46.00	-14.20
10	400.000	4.42	16.50	20.22	41.14	0.00	46.00	-4.86

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have ±0.01 tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The gray shadow means this data is the worse case emission level.



Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 1 (802.11b) Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4824.17	48.67	4.73	53.40	74.00	-20.60
2	7236.12	45.15	11.25	< 56.40	74.00	-17.60
3	9647.85	47.00	14.09	< 61.09	74.00	-12.91

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	7236.00	34.12	11.25	< 45.37	54.00	-8.63
2	9647.97	37.18	14.09	< 51.27	54.00	-2.73

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 1 (802.11b) Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4824.02	49.67	4.63	54.30	74.00	-19.70
2	7235.97	46.71	13.28	< 59.99	74.00	-14.01
3	9648.10	47.33	14.51	< 61.84	74.00	-12.16

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4823.98	37.75	4.63	42.38	54.00	-11.62
2	7236.00	33.95	13.28	< 47.23	54.00	-6.77
3	9648.00	37.50	14.51	< 52.01	54.00	-1.99

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 1 (802.11b) Channel 6	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4874.10	49.21	4.79	54.00	74.00	-20.00
2	7310.95	46.37	11.67	< 58.04	74.00	-15.96
3	9748.07	46.05	14.09	< 60.14	74.00	-13.86

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4874.05	41.83	4.79	46.62	54.00	-7.38
2	7310.85	34.56	11.67	< 46.23	54.00	-7.77
3	9748.02	35.73	14.09	< 49.82	54.00	-4.18

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 1 (802.11b) Channel 6	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4874.07	51.06	5.00	56.06	74.00	-17.94
2	7310.70	46.81	13.60	< 60.41	74.00	-13.59
3	9747.57	47.06	14.56	< 61.62	74.00	-12.38
4	12185.15	46.08	18.56	< 64.64	74.00	-9.36

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4874.02	40.76	5.00	45.76	54.00	-8.24
2	7311.07	34.70	13.60	< 48.30	54.00	-5.70
3	9747.97	37.44	14.56	< 52.00	54.00	-2.00
4	12185.15	34.13	18.56	< 52.69	54.00	-1.31

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 1 (802.11b) Channel 11	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4923.80	50.37	4.85	55.22	74.00	-18.78
2	7386.02	45.91	12.09	< 58.00	74.00	-16.00
3	9848.22	46.12	14.08	< 60.20	74.00	-13.80

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4924.07	42.92	4.85	47.77	54.00	-6.23
2	7385.90	34.14	12.09	< 46.23	54.00	-7.77
3	9848.22	34.31	14.80	< 48.39	54.00	-5.61

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 1 (802.11b) Channel 11	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4923.87	51.62	5.36	56.98	74.00	-17.02
2	7386.32	46.37	13.93	< 60.30	74.00	-13.70
3	9848.07	45.91	14.61	< 60.52	74.00	-13.48

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4924.02	42.22	5.36	47.58	54.00	-6.42
2	7386.02	34.24	13.92	< 48.16	54.00	-5.84
3	9848.02	35.91	14.61	< 50.52	54.00	-3.48

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 2 (802.11g) Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4824.25	47.6	4.73	52.33	74.00	-21.67
2	7235.92	45.34	11.25	< 56.59	74.00	-17.41
3	9648.12	46.22	14.09	< 60.31	74.00	-13.69

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	7236.12	34.04	11.25	< 45.29	54.00	-8.71
2	9648.10	36.42	14.09	< 50.51	54.00	-3.49

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 2 (802.11g) Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4823.62	47.78	4.63	52.41	74.00	-21.59
2	7236.02	45.31	13.28	< 58.59	74.00	-15.41
3	9648.15	46.82	14.51	< 61.33	74.00	-12.67

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	7236.00	33.98	13.28	< 47.26	54.00	-6.74
2	9647.95	38.46	14.51	< 52.97	54.00	-1.03

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 2 (802.11g) Channel 6	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4874.40	49.16	4.79	53.95	74.00	-20.05
2	7311.40	46.85	11.67	< 58.52	74.00	-15.48
3	9747.82	45.27	14.09	< 59.36	74.00	-14.64

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	7310.92	34.63	11.67	< 46.30	54.00	-7.70
2	9747.92	35.40	14.09	< 49.49	54.00	-4.51

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 2 (802.11g) Channel 6	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4873.77	47.65	5.00	52.65	74.00	-21.35
2	7311.02	46.18	13.60	< 59.78	74.00	-14.22
3	9747.87	46.78	14.56	< 61.34	74.00	-12.66

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	7310.97	34.66	13.60	< 48.26	54.00	-5.74
2	9747.97	37.10	14.56	< 51.66	54.00	-2.34

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 2 (802.11g) Channel 11	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4924.22	48.50	4.85	53.35	74.00	-20.65
2	7386.00	45.20	12.09	< 57.29	74.00	-16.71
3	9848.25	45.84	14.08	< 59.92	74.00	-14.08

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	7385.90	34.12	12.09	< 46.21	54.00	-7.79
2	9848.25	34.60	14.08	< 48.68	54.00	-5.32

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 2 (802.11g) Channel 11	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4924.25	48.73	5.36	54.09	74.00	-19.91
2	7386.12	45.46	13.92	< 59.38	74.00	-14.62
3	9848.22	45.77	14.61	< 60.38	74.00	-13.62

Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4924.02	37.61	5.36	42.97	54.00	-11.03
2	7386.00	34.18	13.92	< 48.10	54.00	-5.90
3	9848.07	35.89	14.61	< 50.50	54.00	-3.50

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ, Span=20MHz.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

5. PEAK POWER OUTPUT

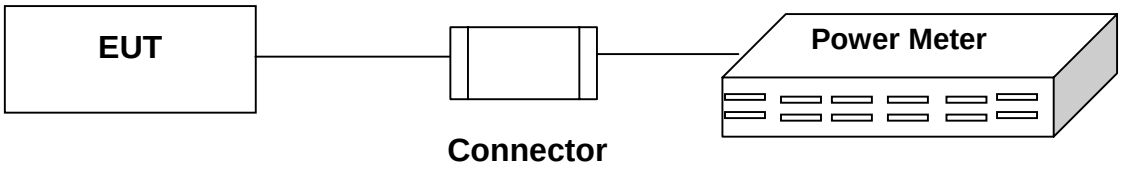
5.1 TEST EQUIPMENT

The following test equipments are used during the Conduct tests:

Item	Instrument	Manufacturer	Type	Serial No.	Last Cal.
1	Spectrum Analyzer	Advantest	R3272	82420232	02/14/03
	Spectrum Analyzer	HP	E4407B	39240339	08/16/03
2	Power Meter	Rohde & Schwarz	NRVS	100666	02/26/03
3	Peak Power Sensor	Rohde & Schwarz	NRV-Z32	8360191058	05/19/03

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

5.2 BLOCK DIAGRAM OF TEST SETUP



5.3 PEAK POWER OUTPUT LIMIT

The maximum peak power shall be less 1 Watt.

5.4 TEST RESULT

Date of Test	December 22, 2003
EUT	Wireless LAN USB adapter
Test Mode	Mode 1 (802.11b)

Channel No.	Frequency(MHz)	Measurement (dBm)	Required Limit	Result
1	2412	20.34	1W(30dBm)	Pass
6	2437	20.52	1W(30dBm)	Pass
11	2462	20.88	1W(30dBm)	Pass

Date of Test	December 22, 2003
EUT	Wireless LAN USB adapter
Test Mode	Mode 2 (802.11g)

Channel No.	Frequency(MHz)	Measurement (dBm)	Required Limit	Result
1	2412	18.95	1W(30dBm)	Pass
6	2437	19.06	1W(30dBm)	Pass
11	2462	19.36	1W(30dBm)	Pass

6. BAND EDGE

6.1 TEST EQUIPMENT

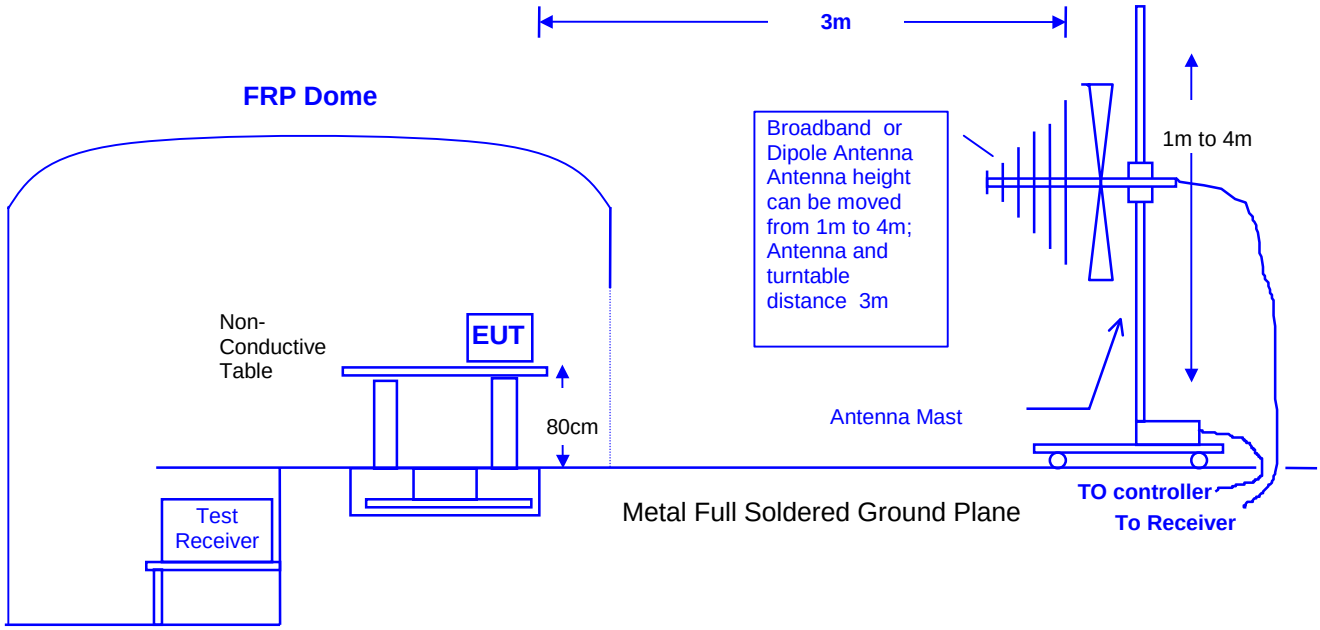
The following test equipments are used during the radiated emission tests:
Radiated test was performed on: ☐Site #1 ☒Site #2 ☐Site #3 ☐Site #4

Item	Instrument	Manufacturer	Type	Serial No.	Last Cal.
1	Test Receiver	Rohde & Schwarz	ESVS30	829007/014	12/13/03
2	Spectrum Analyzer	Advantest	R3272	82420232	02/14/03
3	Spectrum Analyzer	HP	E4407B	39240339	08/16/03
4	Power Meter	Rohde & Schwarz	NRVS	100666	02/26/03
5	Power Sensor	Rohde & Schwarz	NRV-Z32	8360191058	05/19/03
6	Pre-Amplifier	HP	8447D	2944A08273	10/11/03
7	Horn Antenna	Electro-Metrics	EM-6961	103318	05/30/03
8	Horn Antenna	Schwarzbeck	BBHA 9120	D243	12/18/03
9	RF Cable	GesTek	N/A	GTK-E-A149-01	12/26/03
10	Open Site	GesTek	N/A	A2	12/10/03
11	Test Program Software	GesTek	N/A	GTK-E-S001-01	N/A

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

6.2 BLOCK DIAGRAM OF TEST SETUP

◉ RF Radiated Measurement: ◉



6.3 BAND EDGE LIMIT

In any 100KHz bandwidth outside the frequency band in which the spread spectrum 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 100KHz 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. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209 (a) (see Section 15.205(c)).

6.4 EUT CONFIGURATION

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 C63.4:2000 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120KHz, above 1GHz are 1MHz.

6.5 OPERATING CONDITION OF EUT

Same as section 2.6.

6.6 TEST RELULT

Date of Test	December 26, 2003
EUT	Wireless LAN USB adapter
Working Cond.	Mode 1 (802.11b)

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

Horizontal

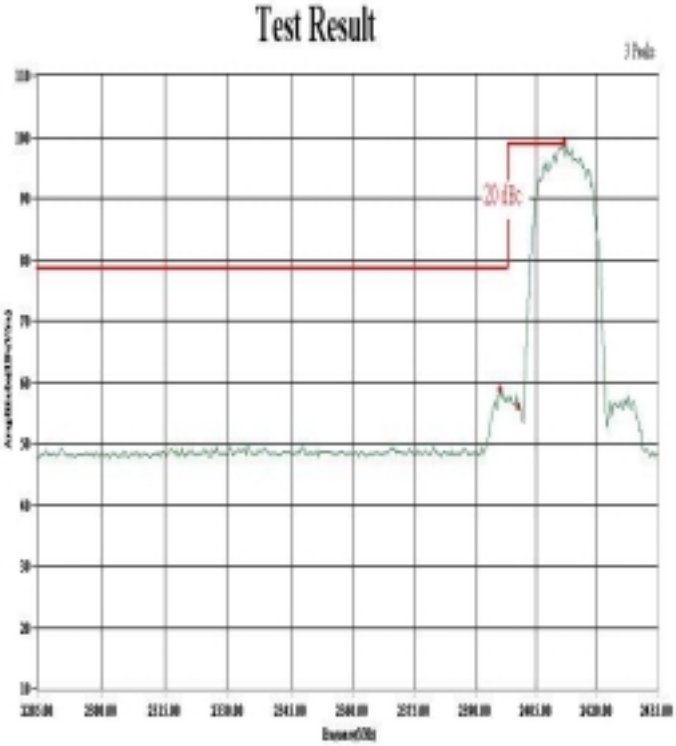
No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	2396.00	58.50	0.27	58.77	0.00	58.77
2	2400.50	55.63	0.27	55.90	0.00	55.90
3	2411.75	98.75	0.26	99.01	0.00	99.01

Vertical

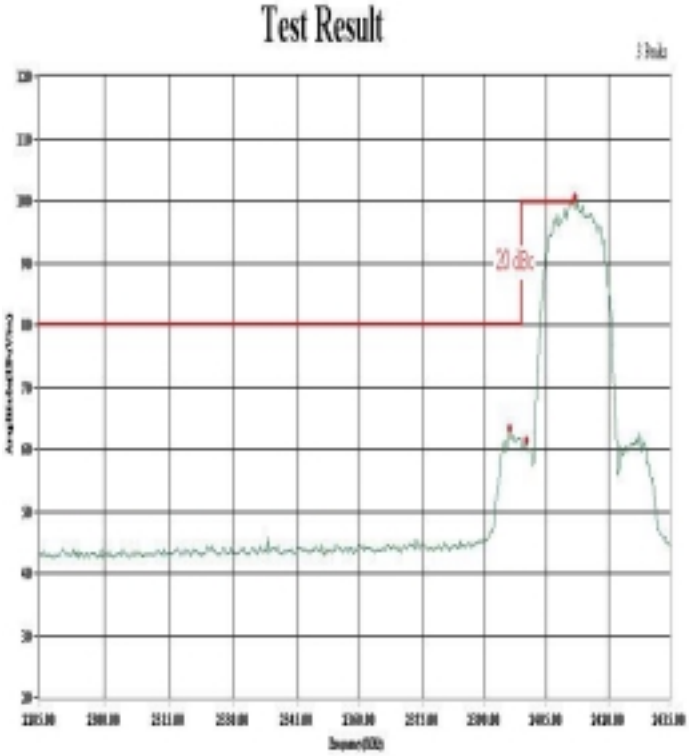
No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	2396.00	67.83	-4.57	63.26	0.00	63.26
2	2400.12	66.07	-4.57	61.50	0.00	61.50
3	2411.75	105.25	-4.58	100.67	0.00	100.67

Note: RBW=100kHz, VBW=100kHz

Horizontal



Vertical



Date of Test	December 26, 2003
EUT	Wireless LAN USB adapter
Working Cond.	Mode 2 (802.11g)

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

Horizontal

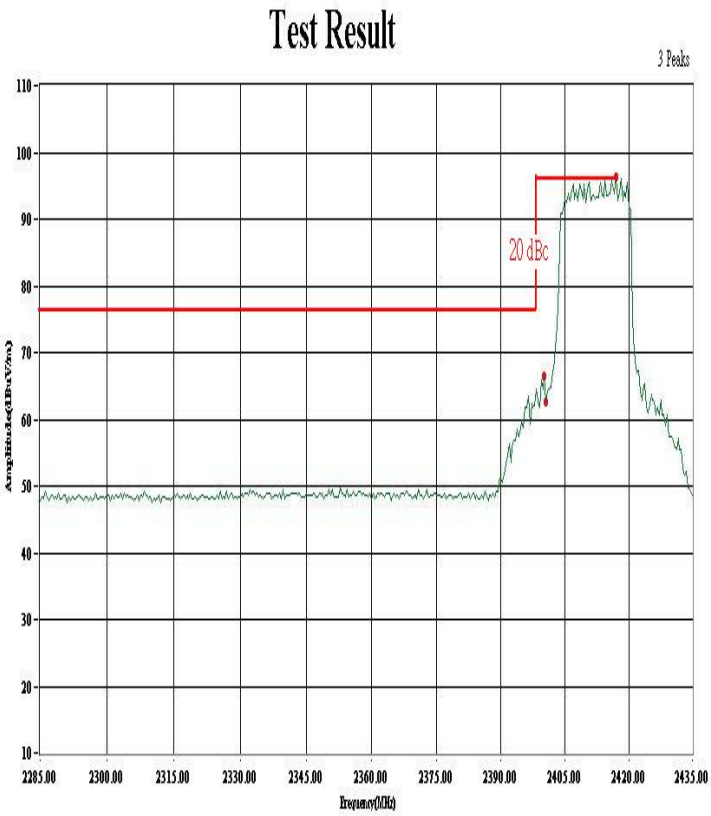
No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	2400.12	66.23	0.27	66.50	0.00	66.50
2	2400.50	62.40	0.27	62.67	0.00	62.67
3	2417.00	96.12	0.26	96.38	0.00	96.38

Vertical

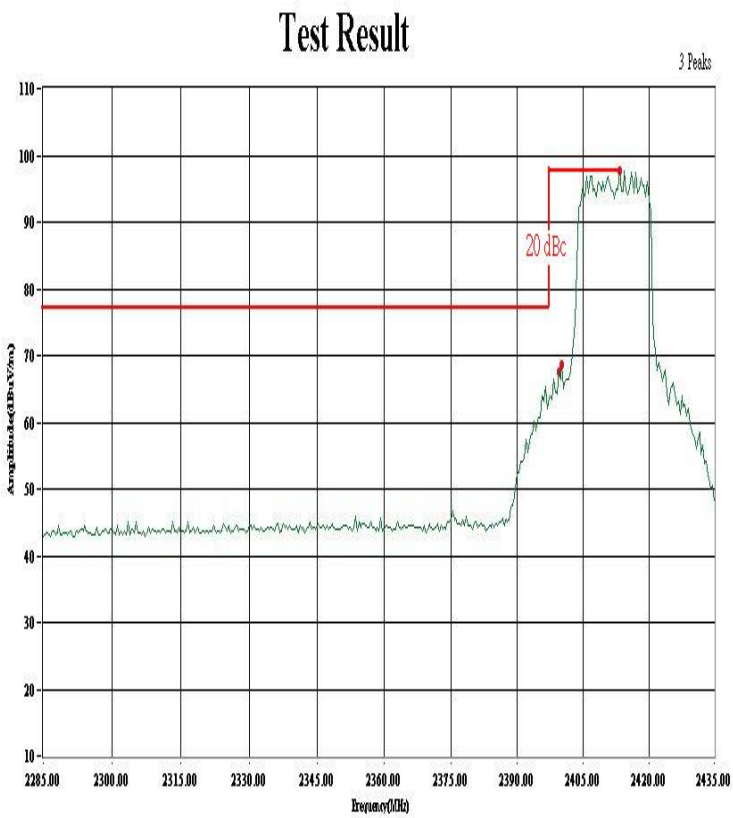
No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	2399.37	72.07	-4.57	67.50	0.00	67.50
2	2400.12	73.17	-4.57	68.60	0.00	68.60
3	2413.25	102.33	-4.58	97.75	0.00	97.75

Note:RBW=100kHz, VBW=100kHz

Horizontal



Vertical



Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 1 (802.11b) Channel 11	**Data Rate**	11Mbps
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Result
1	2463.25	107.04	0.21	107.25	74.00	N/A
2	2483.50	57.84	0.19	58.03	74.00	PASS
3	2488.50	58.85	0.19	59.04	74.00	PASS
4	2500.00	56.98	0.18	57.16	74.00	PASS

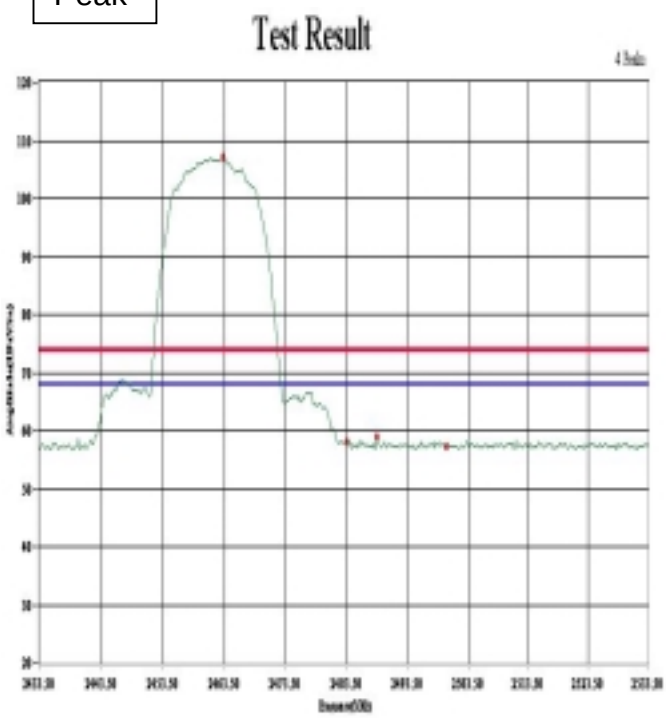
Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Result
1	2463.25	99.14	0.21	99.35	54.00	N/A
2	2483.50	42.57	0.19	42.76	54.00	PASS
3	2484.50	41.82	0.19	42.01	54.00	PASS
4	2500.00	41.67	0.18	41.85	54.00	PASS

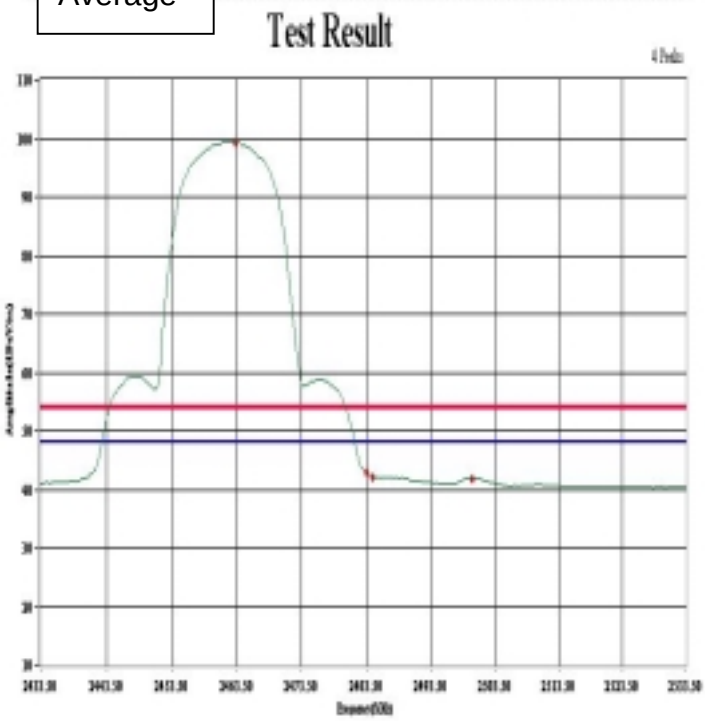
Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Peak



Average



Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 1 (802.11b) Channel 11	**Data Rate**	11Mbps
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Result
1	2463.50	112.80	-4.59	108.21	74.00	N/A
2	2483.50	60.09	-4.60	55.49	74.00	PASS
3	2487.75	60.24	-4.60	55.64	74.00	PASS
4	2500.00	59.91	-4.60	55.31	74.00	PASS

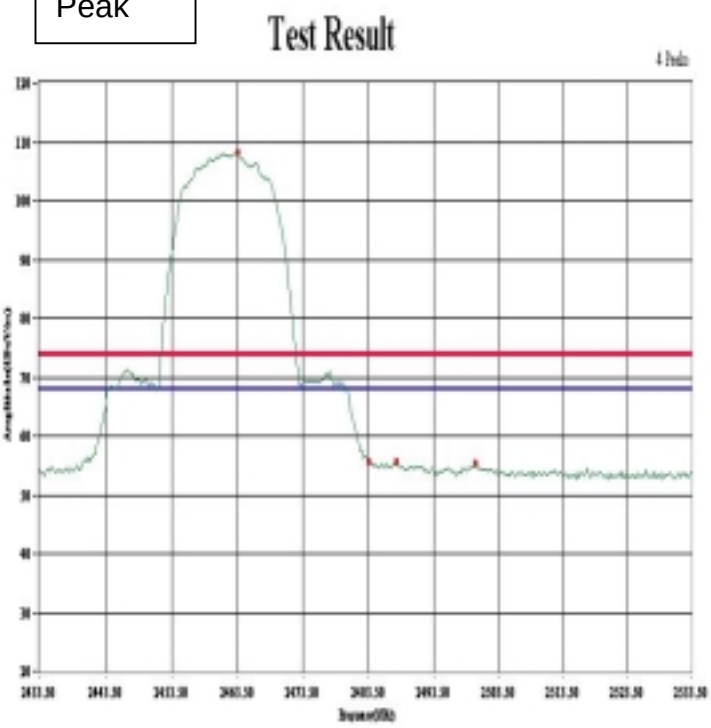
Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Result
1	2462.75	105.01	-4.59	100.42	54.00	N/A
2	2483.50	50.34	-4.60	45.74	54.00	PASS
3	2489.00	46.69	-4.60	45.09	54.00	PASS
4	2500.00	49.47	-4.60	44.87	54.00	PASS

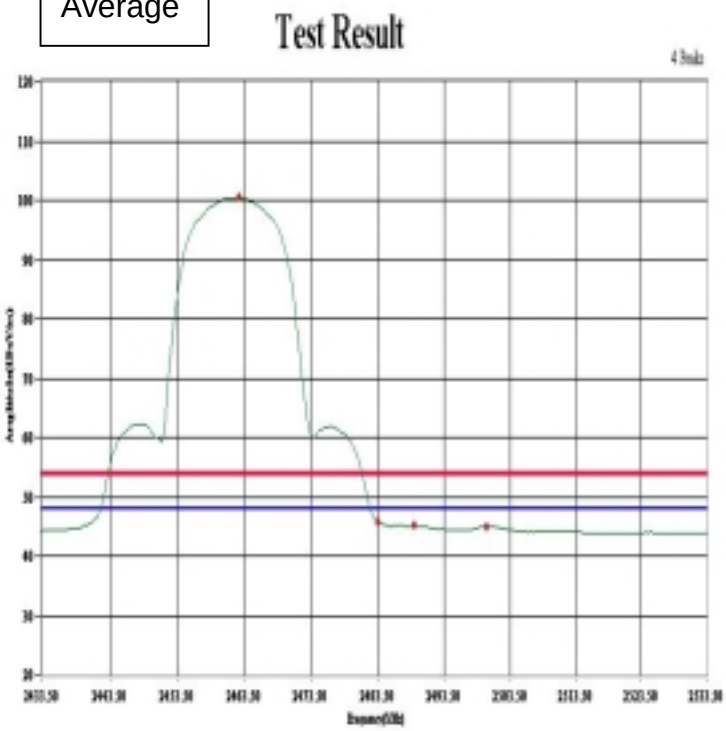
Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Peak



Average



Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 2 (802.11g) Channel 11	**Data Rate**	54Mbps
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Result
1	2463.75	106.40	0.21	106.61	74.00	N/A
2	2483.50	66.08	0.19	66.27	74.00	PASS
3	2484.75	68.20	0.19	68.39	74.00	PASS
4	2500.00	53.28	0.18	53.46	74.00	PASS

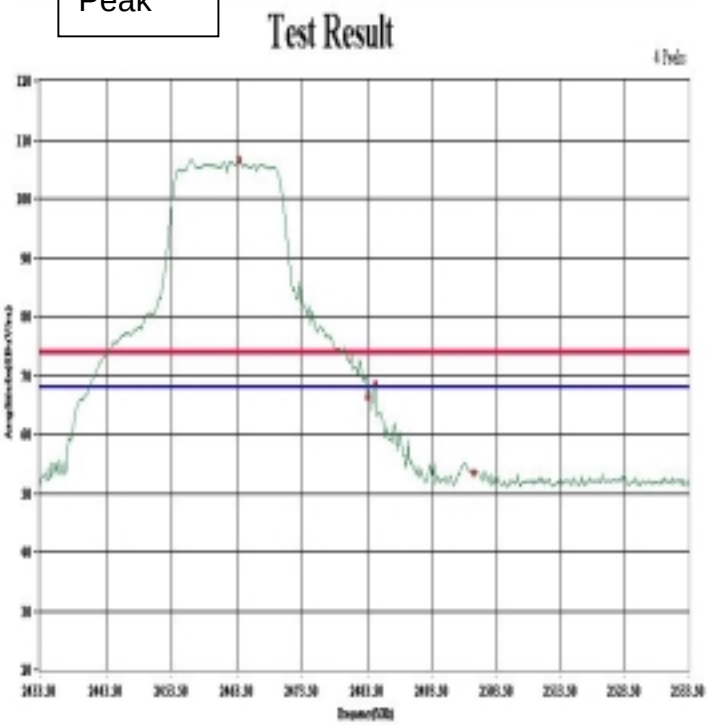
Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Result
1	2468.50	95.59	0.21	95.80	54.00	N/A
2	2483.50	50.41	0.19	50.60	54.00	PASS
3	2483.75	49.50	0.19	46.69	54.00	PASS
4	2500.00	42.93	0.18	43.11	54.00	PASS

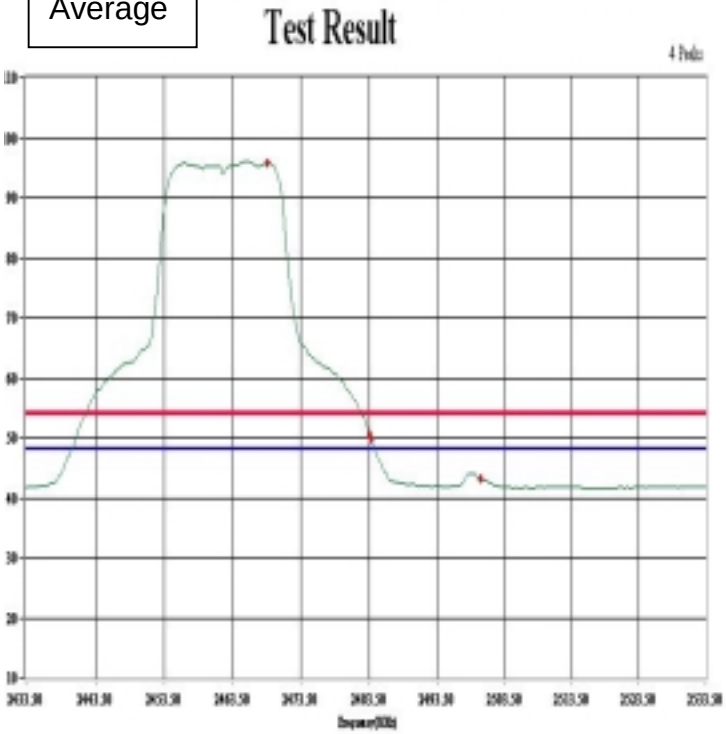
Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Peak



Average



Date of Test	December 26, 2003	**Temperature**	21 deg/C
EUT	Wireless LAN USB adapter	**Humidity**	60 %RH
Working Cond.	Mode 2 (802.11g) Channel 11	**Data Rate**	54Mbps
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Result
1	2463.75	111.78	-4.59	107.19	74.00	N/A
2	2483.50	72.34	-4.60	67.74	74.00	PASS
3	2484.75	71.39	-4.60	66.79	74.00	PASS
4	2500.00	59.64	-4.60	55.04	74.00	PASS

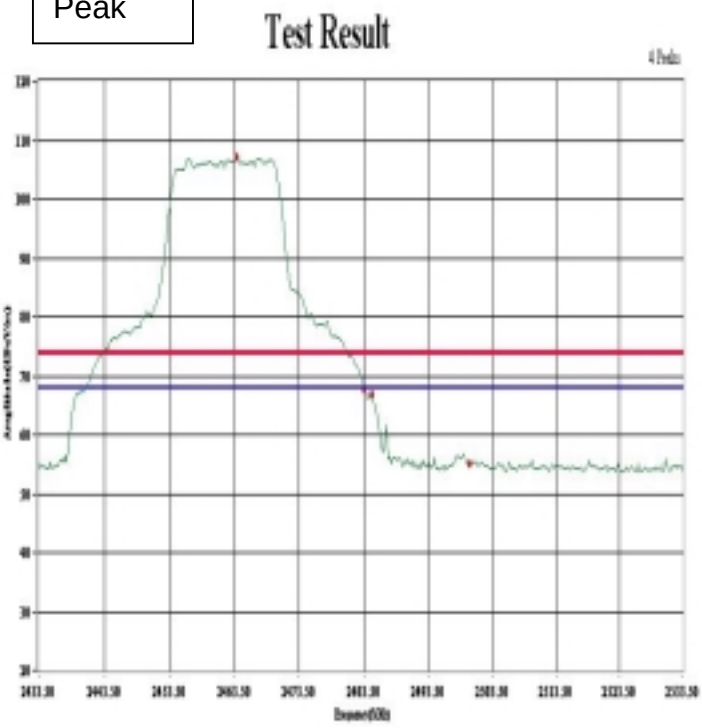
Average

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Result
1	2465.50	101.94	-4.59	97.35	54.00	N/A
2	2483.50	56.34	-4.60	51.74	54.00	PASS
3	2483.75	55.74	-4.60	51.14	54.00	PASS
4	2500.00	50.34	-4.60	45.74	54.00	PASS

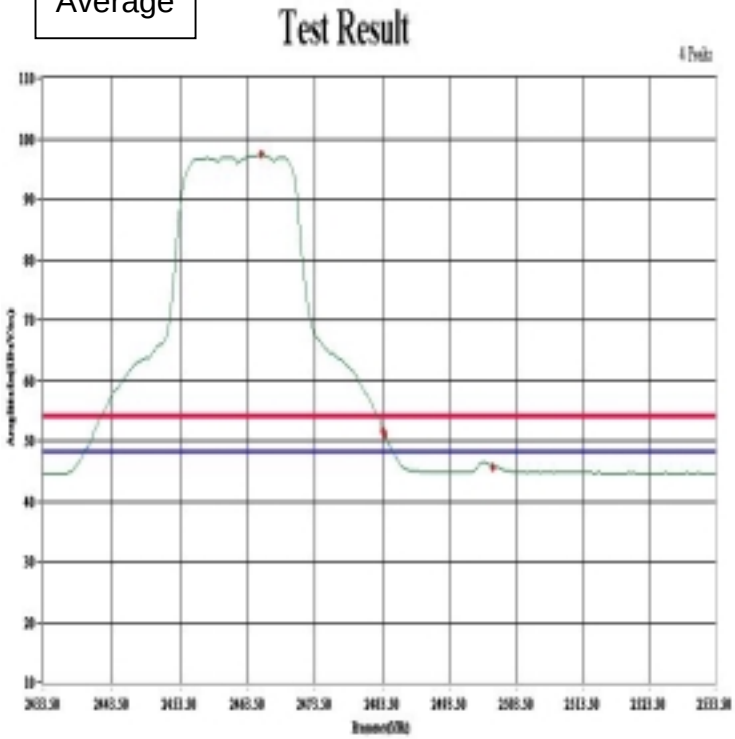
Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Peak



Average



7. OCCUPIED BANDWIDTH

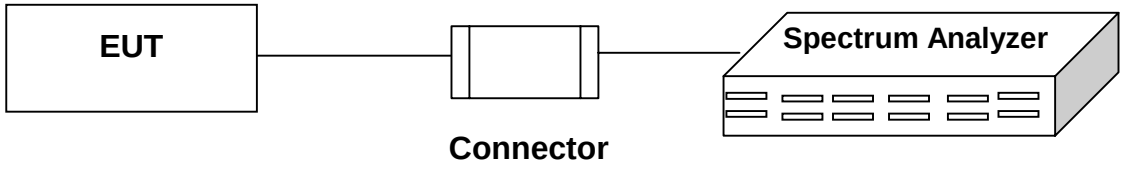
7.1 TEST EQUIPMENT

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

Item	Instrument	Manufacturer	Type	Serial No.	Last Cal.
2	Spectrum Analyzer	Advantest	R3272	82420232	02/14/03
3	Spectrum Analyzer	HP	E4407B	39240339	08/16/03

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

7.2 BLOCK DIAGRAM OF TEST SETUP



7.3 LIMIT

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

7.4 TEST RESULT

Date of Test	December 22, 2003
EUT	Wireless LAN USB adapter
Working Cond.	Mode 1 (802.11b)

Channel No.	Frequency (MHz)	Measurement Level (MHz)	Required limit (KHz)	Result
1	2412	12.15	>500	Pass
6	2437	12.15	>500	Pass
11	2462	12.18	>500	Pass

Figure Channel 1:

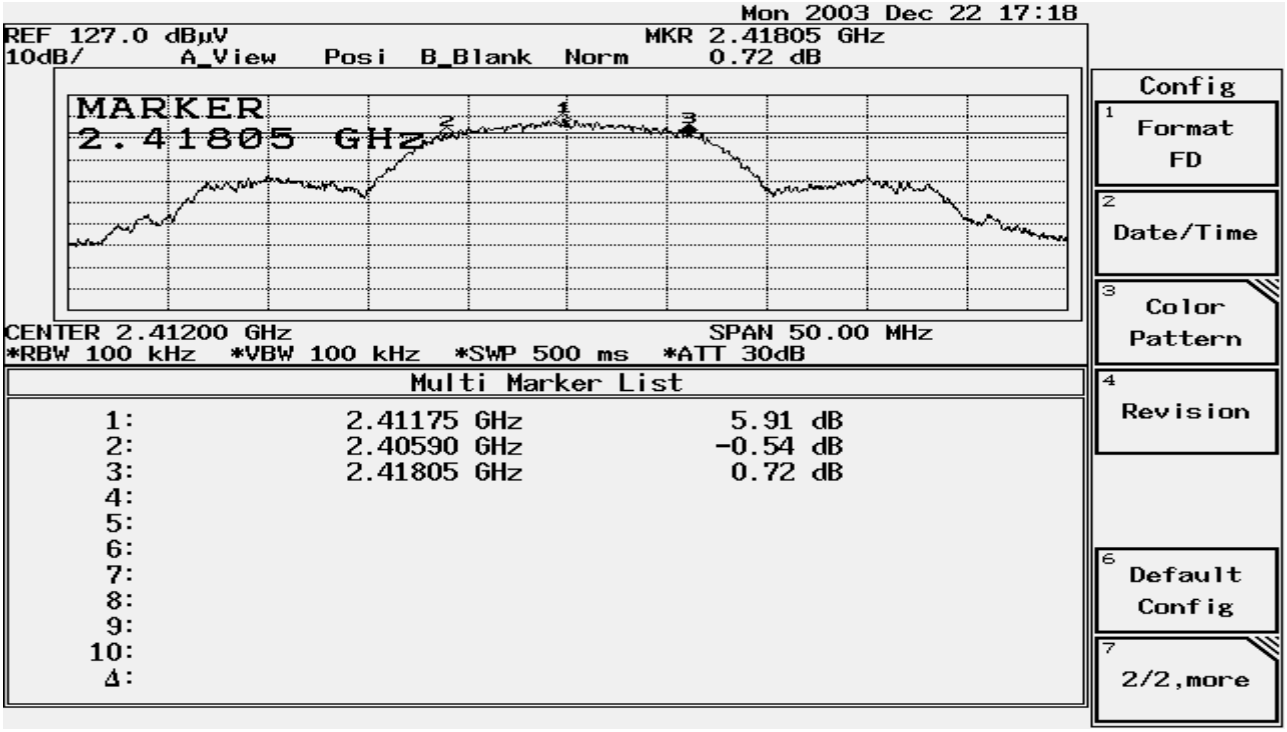


Figure Channel 6:

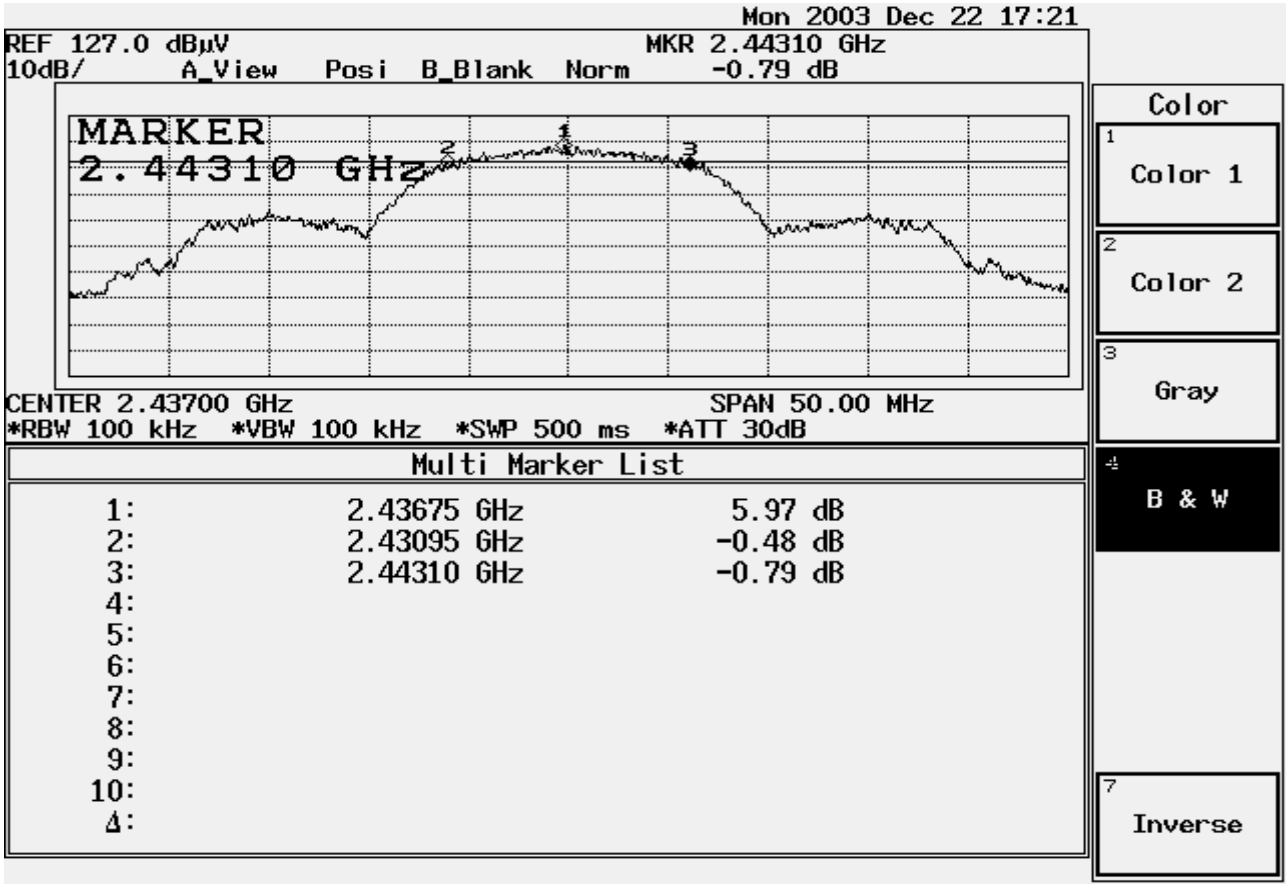
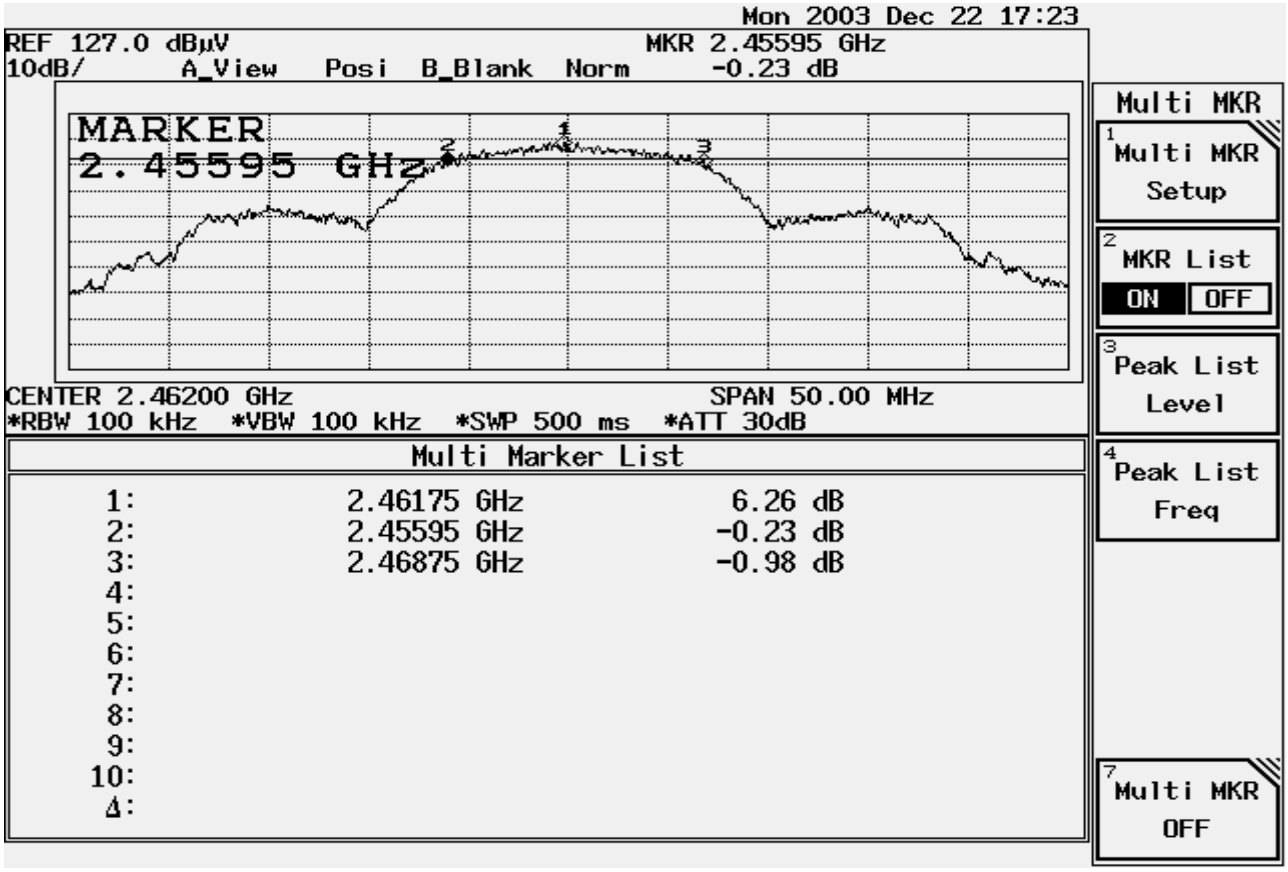


Figure Channel 11:



Date of Test	December 22, 2003
EUT	Wireless LAN USB adapter
Working Cond.	Mode 2 (802.11g)

Channel No.	Frequency (MHz)	Measurement Level (MHz)	Required limit (KHz)	Result
1	2412	16.15	>500	Pass
6	2437	16.45	>500	Pass
11	2462	16.45	>500	Pass

Figure Channel 1:

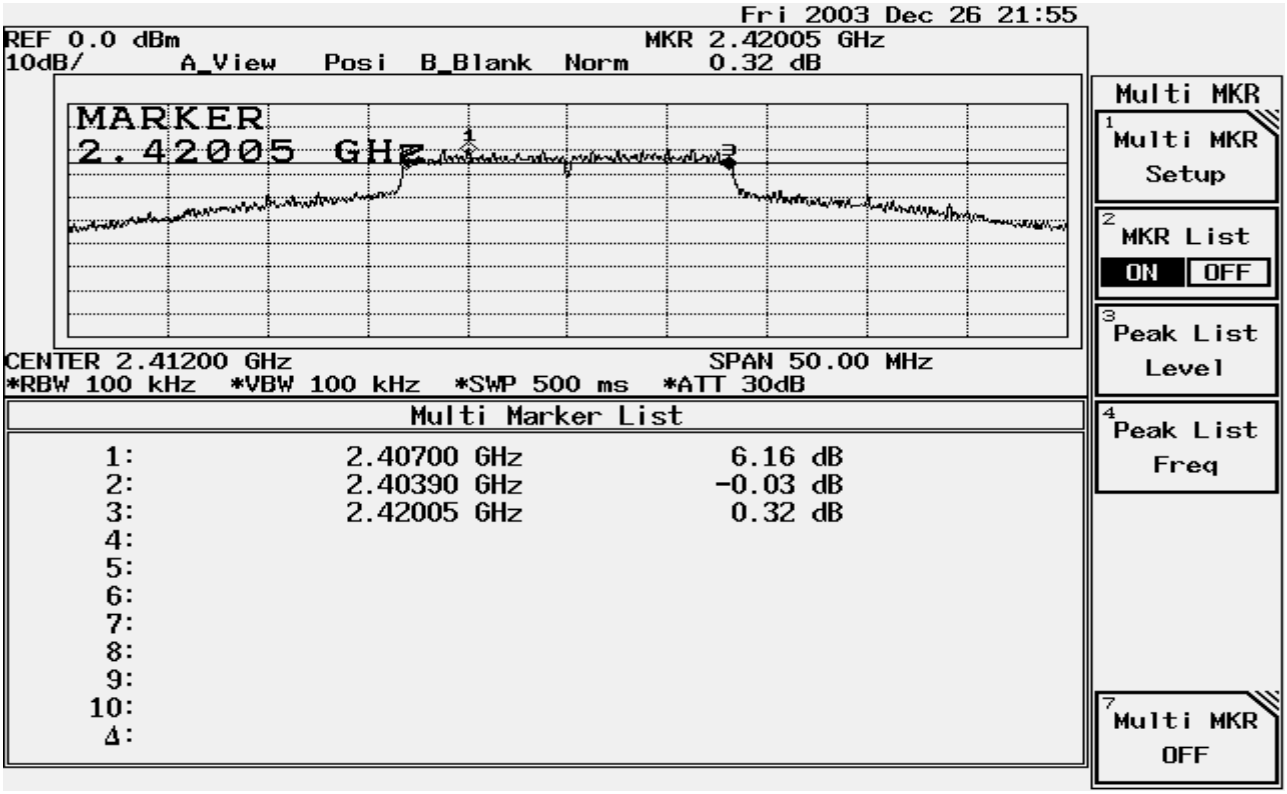


Figure Channel 6:

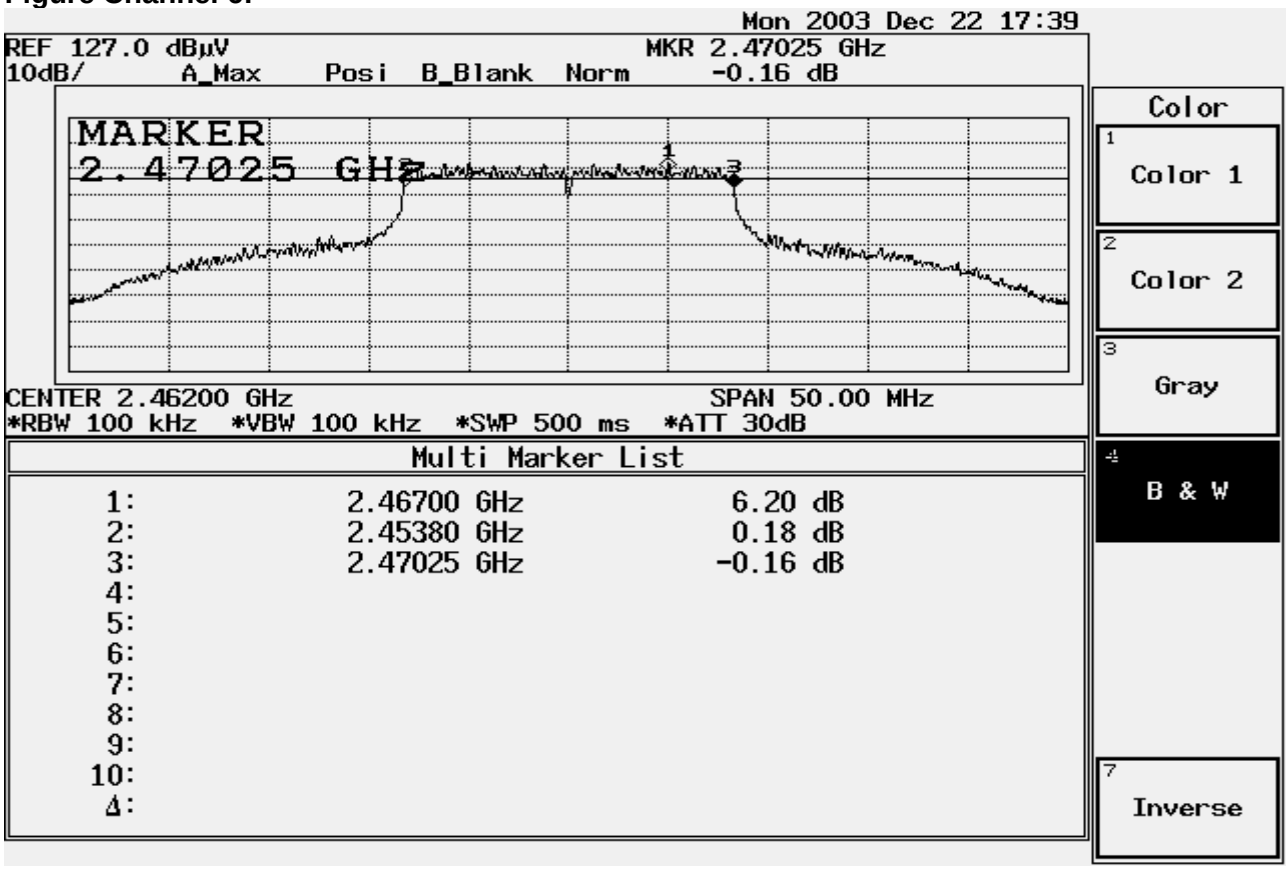
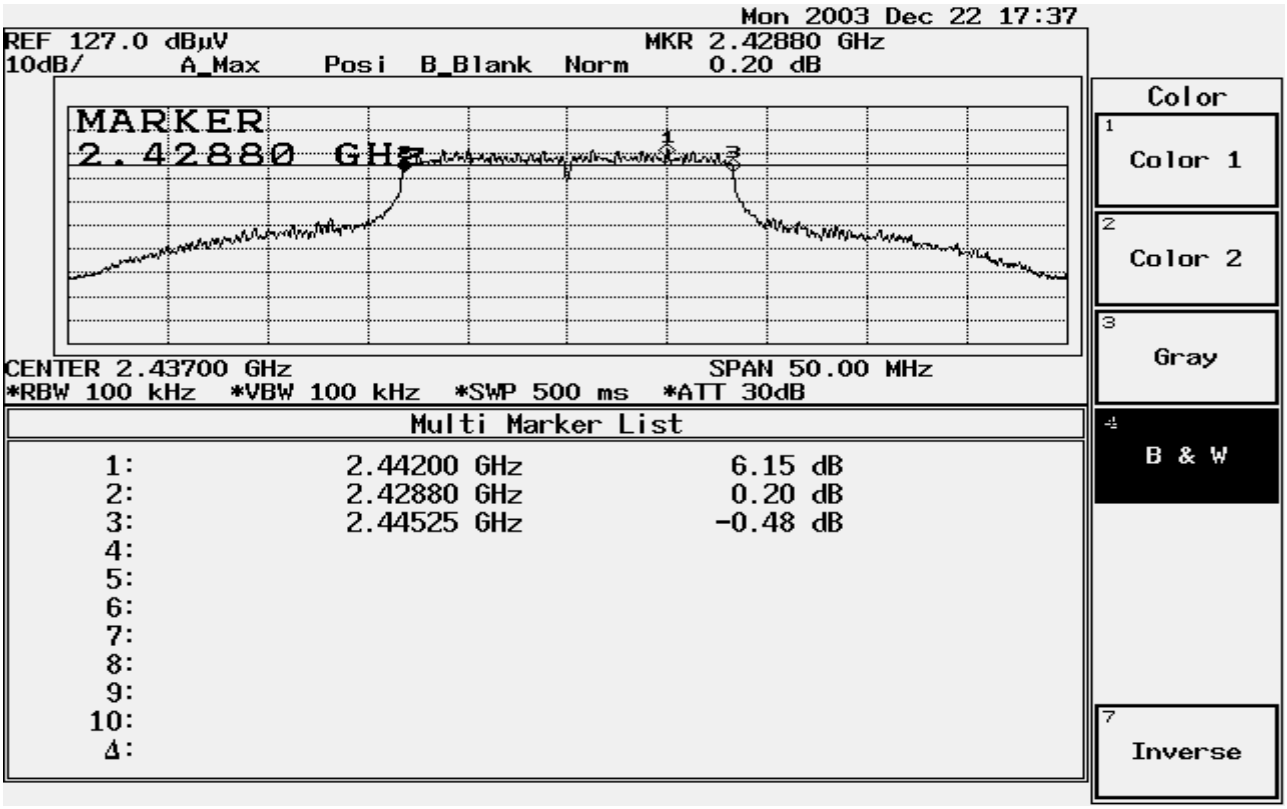


Figure Channel 11:



8. POWER DENSITY

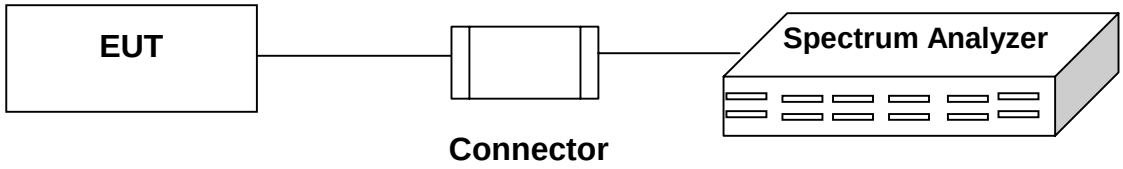
8.1 TEST EQUIPMENT

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

Item	Instrument	Manufacturer	Type	Serial No.	Last Cal.
1	Spectrum Analyzer	Advantest	R3272	82420232	02/14/03
2	Spectrum Analyzer	HP	E4407B	39240339	08/16/03

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

8.2 BLOCK DIAGRAM OF TEST SETUP



8.3 LIMIT

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

8.4 TEST RESULT

Date of Test	December 22, 2003
EUT	Wireless LAN USB adapter
Working Cond.	Mode 1 (802.11b)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required limit (dBm)	Result
1	2411.99	-5.91	<8dBm	Pass
6	2437.00	-5.57	<8dBm	Pass
11	2461.99	-5.35	<8dBm	Pass

Figure Channel 1:

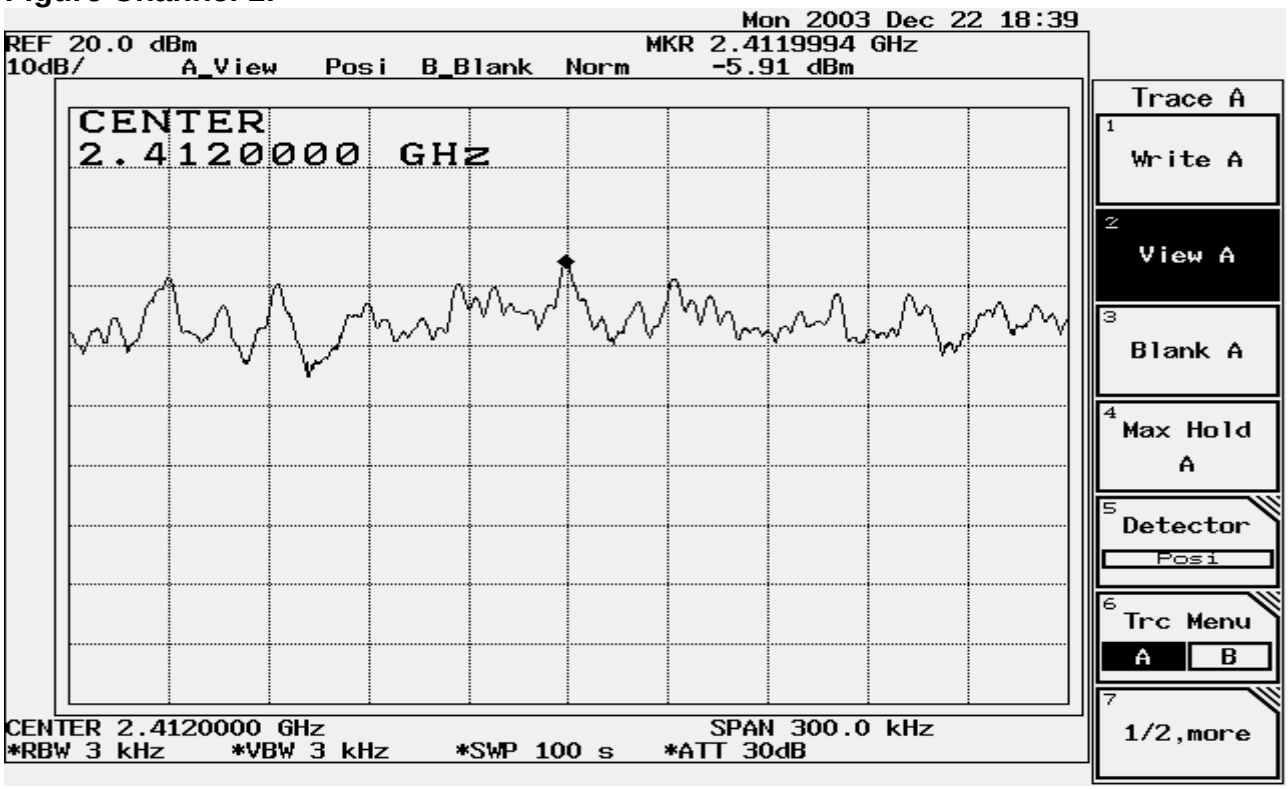


Figure Channel 6:

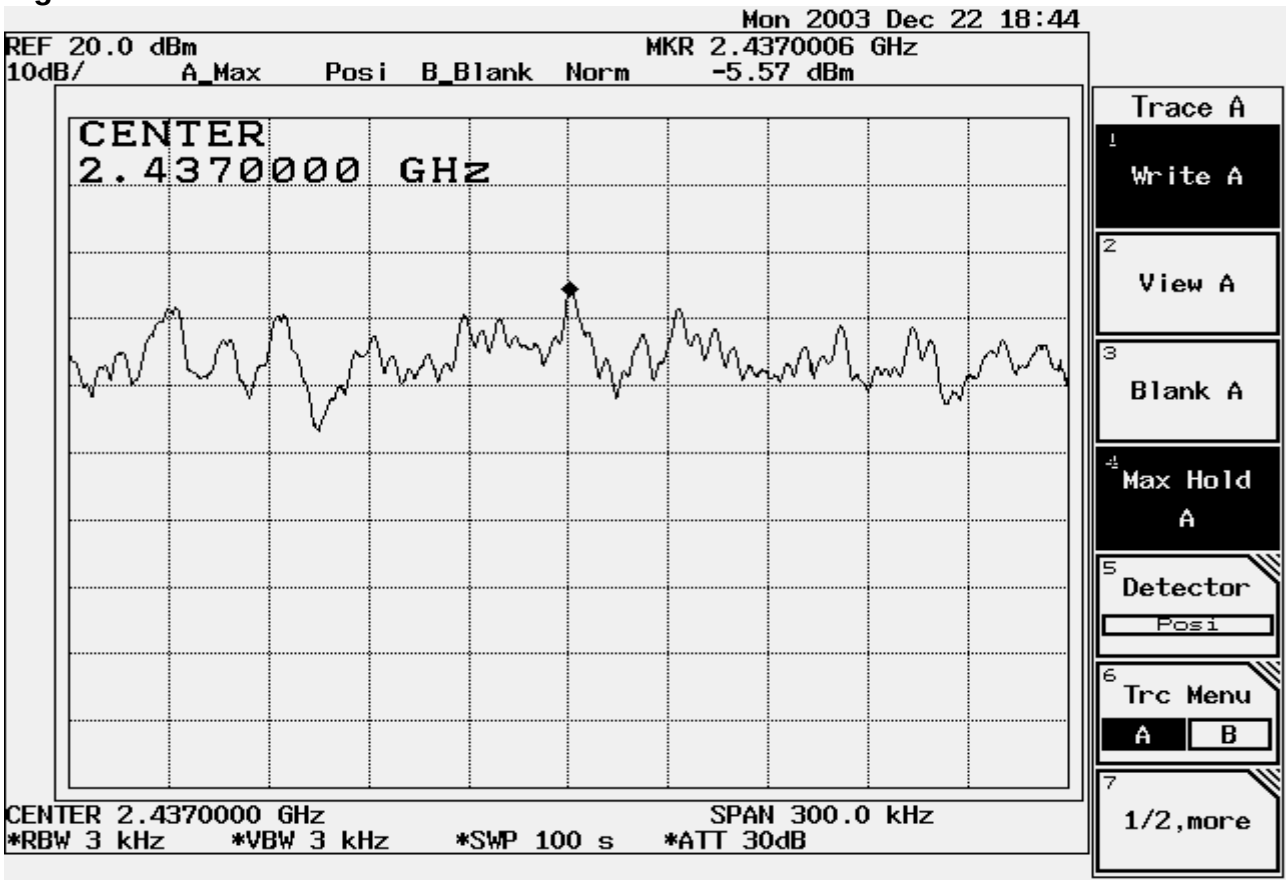
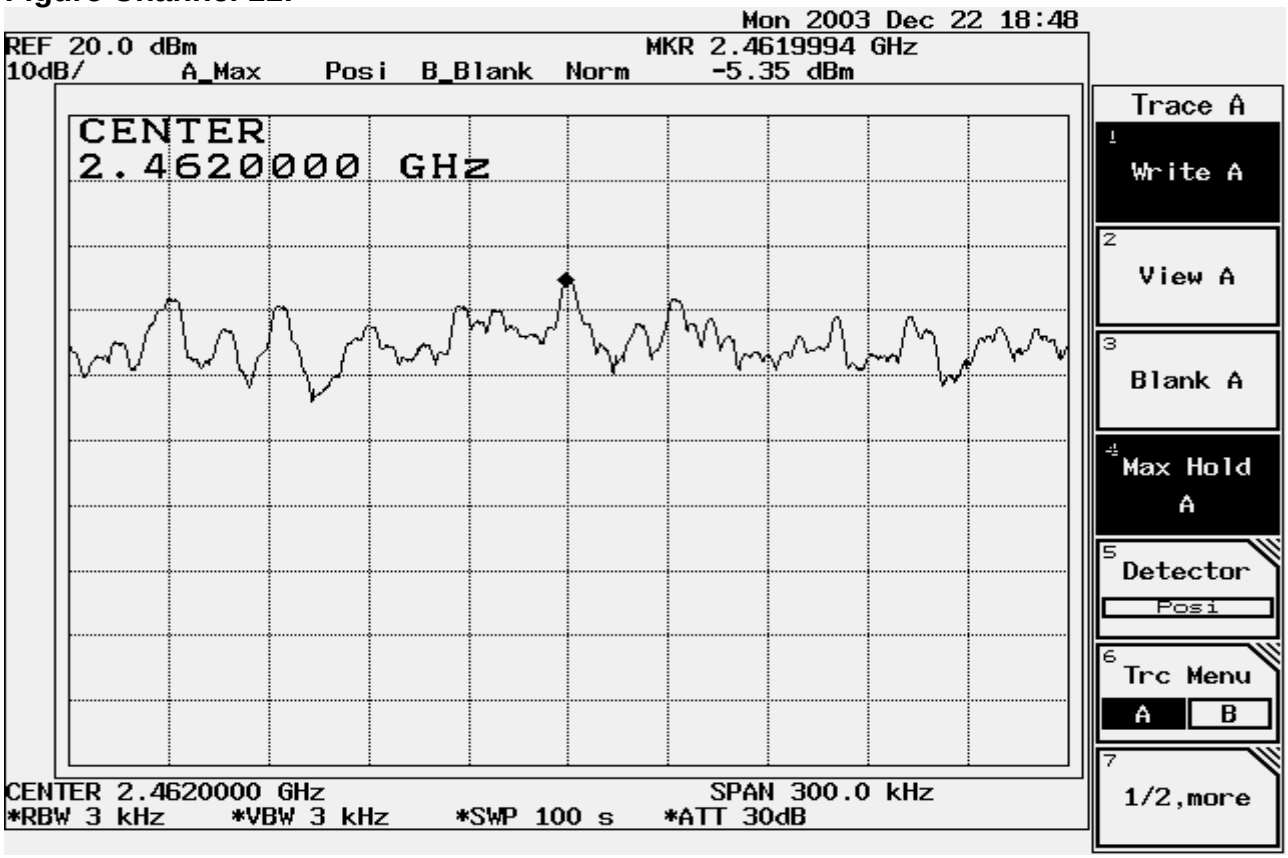


Figure Channel 11:



Date of Test	December 22, 2003
EUT	Wireless LAN USB adapter
Working Cond.	Mode 2 (802.11g)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required limit (dBm)	Result
1	2412.13	-21.84	<8dBm	Pass
6	2437.13	-21.84	<8dBm	Pass
11	2462.13	-21.50	<8dBm	Pass

Figure Channel 1:

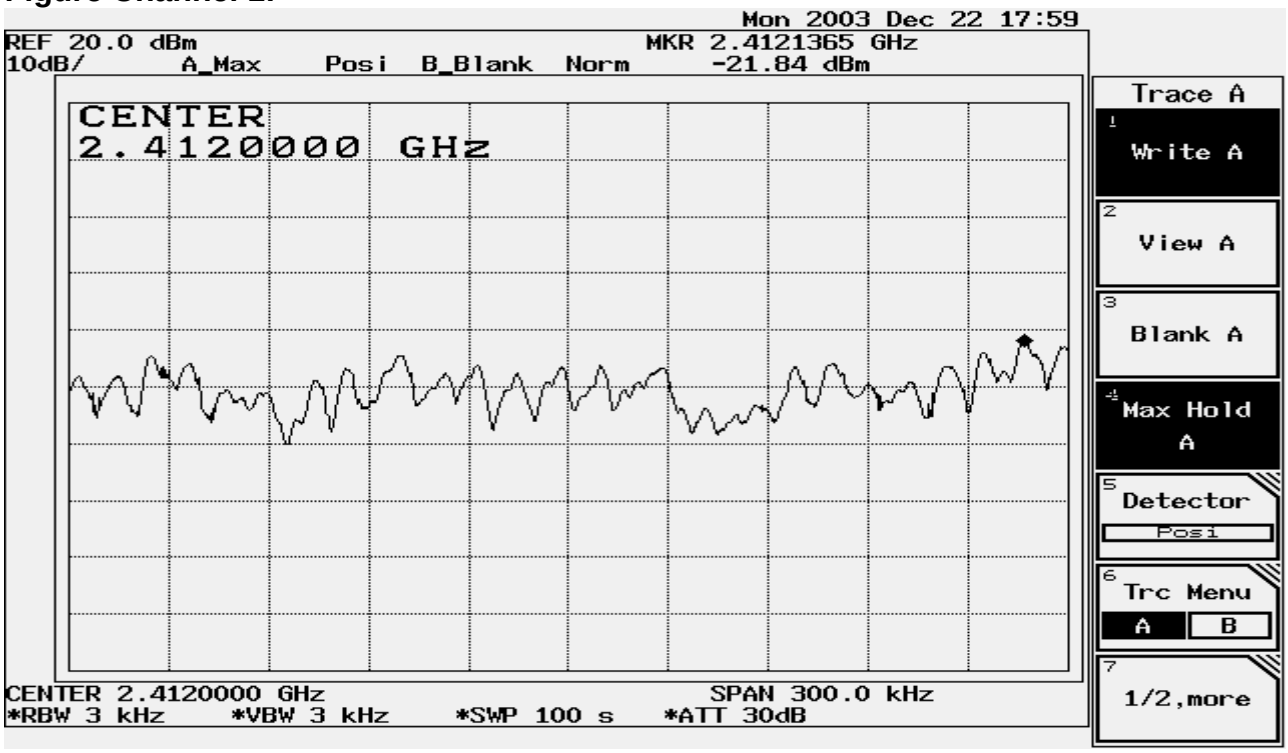


Figure Channel 6:

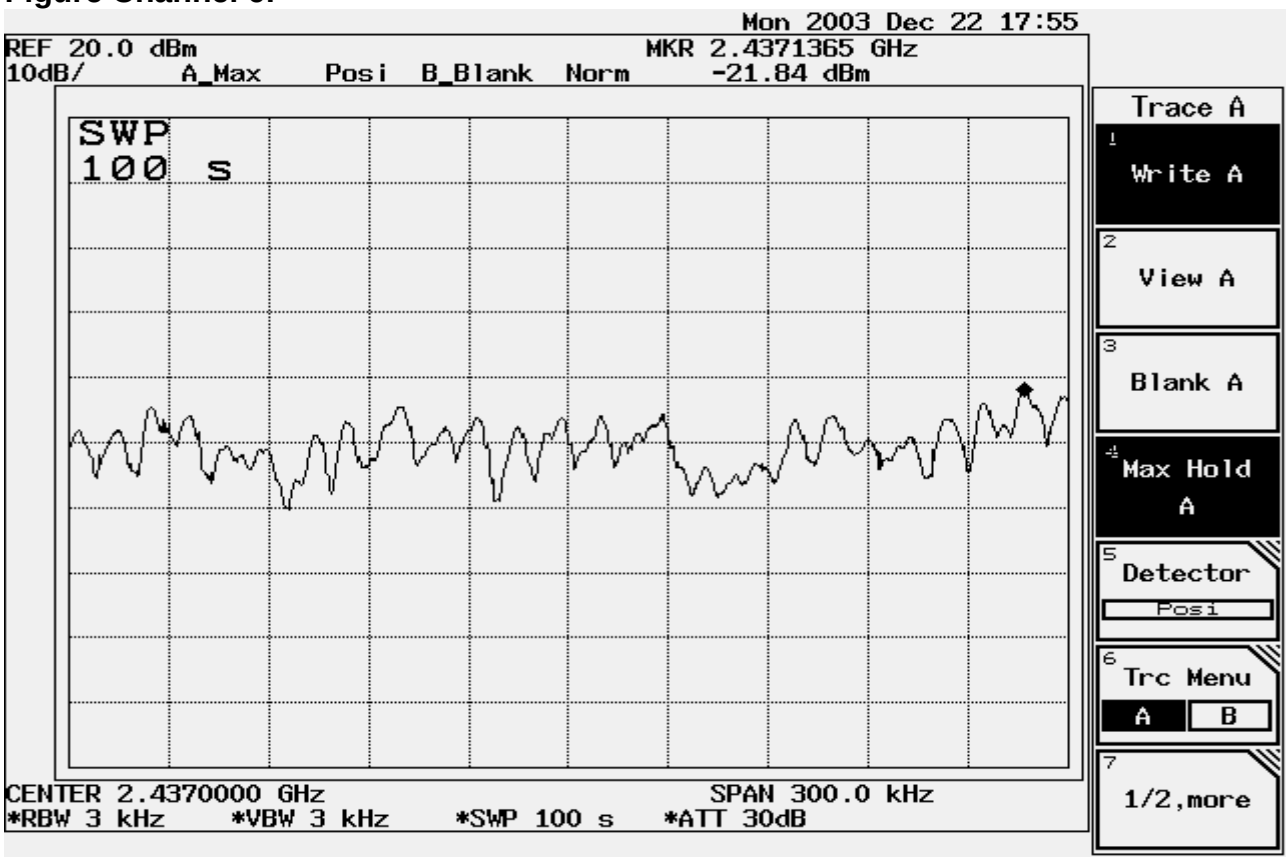
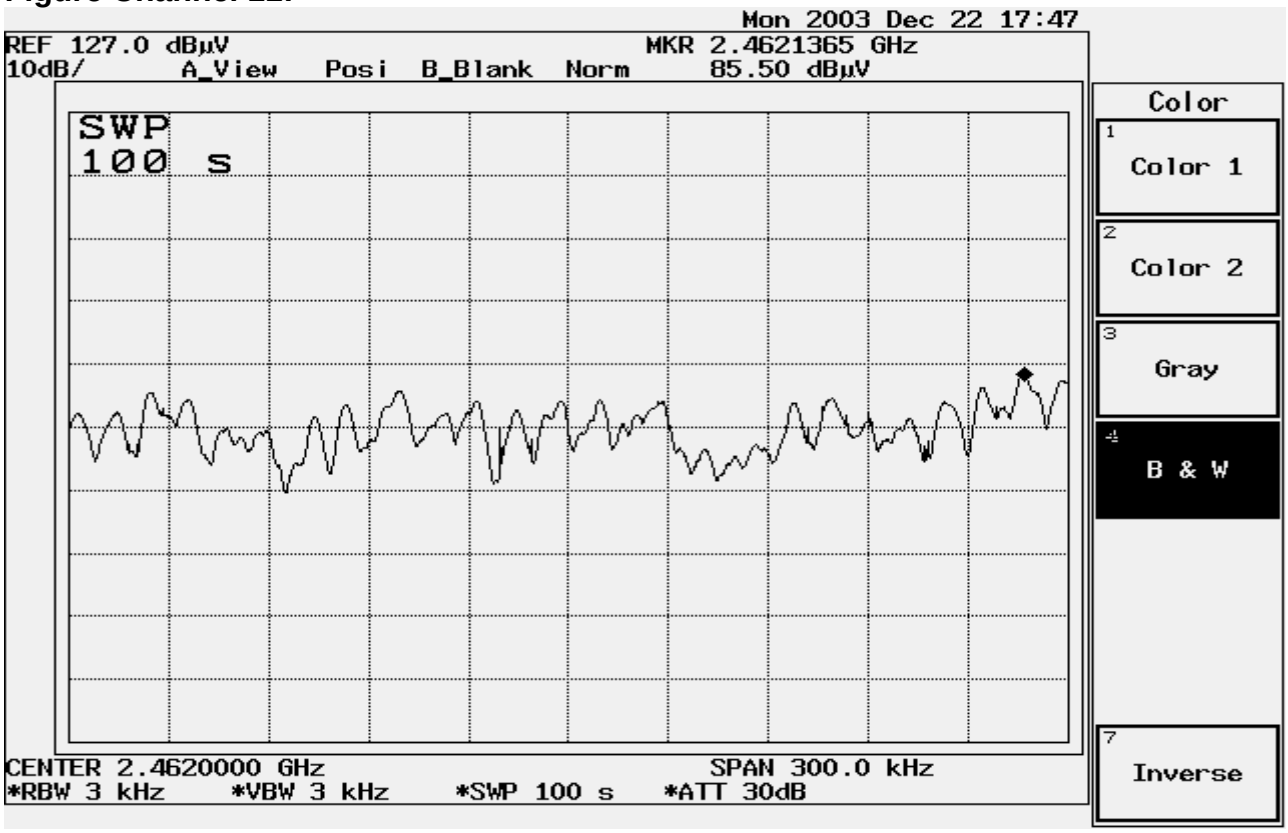


Figure Channel 11:



11. EMI REDUCTION METHOD DURING COMPLIANCE TESTING

No modification was made during testing.

Appendix A

Circuit (Block) Diagram

(Shall be added by Applicant)

Appendix B

User Manual

(Shall be added by Applicant)