



Test Report

Product Name : Access Point

Model No.: MS-6809

FCC ID.: I4L-MS6809

Applicant : MICRO-STAR INT'L Co., LTD

Address : No 69, Li-De st., Jung-He City, Taipei Hsien,
Taiwan, R.O.C

Date of Receipt : June 10, 2003

Date of Test : June 13, 2003

Report No. : 036L117FI

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 : June 13, 2003

Report No. : 036L117FI



Accredited by NIST (NVLAP)

NVLAP Lab Code: 200347-0

Product Name : Access Point

Applicant : MICRO-STAR INT'L Co., LTD

Address : No 69, Li-De st., Jung-He City, Taipei Hsien,
Taiwan, R.O.C

Manufacturer : MICRO-STAR INT'L Co., LTD

Model No. : MS-6809

FCC ID. : I4L-MS6809

Rated Voltage : AC 120V/60Hz

Trade Name : MICRO-STAR

Measurement Standard : FCC Part 15 Subpart C Paragraph 15.247

Measurement Procedure : ANSI C63.4: 1992

Test Result : Complied



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Tested By : *John Wu*
(John Wu)

Approved By : *Gene Chang*
(Gene Chang)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name : Access Point
Trade Name : MICRO-STAR
FCC ID. : I4L-MS6809
Model No. : MS-6809
Frequency Range : 2412MHz to 2462MHz
Channel Number : 11
Chip Rate : 1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Type of Modulation : Direct Sequence Spread Spectrum
Antenna type : Dipole ; Patch
Antenna Gain : 2.5dBi ; 2dBi
Operator Selection of : By software
Operating Frequency
Power Adapter : DVE, M/N: DV-1250
Cable In: AC 120V/60Hz/12W
Cable Out: DC 12V/500mA
UNE OUT:2m

Frequency of Each Channel:

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

Note:

1. This device is a 2.4GHz Access Point included a 2.4GHz receiving function, a 2.4GHz transmitting function.
2. Regards to the frequency band operation; the highest rate that was included the lowest , middle and highest frequency of channel were selected to perform the test, then shown 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. 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 036L117F under Declaration of Conformity.

EMI Mode Mode 1: Normal Operation

1.2. Operational Description

EUT is a Access Point with 11 channels. This device provided four kind of transmitting speed 1,2,5.5 and 11Mbps. The device of RF carrier is DQPSK, DB PSK and CCK.

The device adapts direct sequence spread spectrum modulation. The Connector antenna was scolded on PCB provides diversity function to improve the receiving function.

This Broadband Wireless Router is an IEEE 802.11b Wireless LAN adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without being bound to the network wires. Operation in 2.4GHz Direst Sequence Spread Spectrum (DSSS) radio transmission, the Broadband Wireless Router transfers data at speeds up to 64/128-bit Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any 802.11b network.

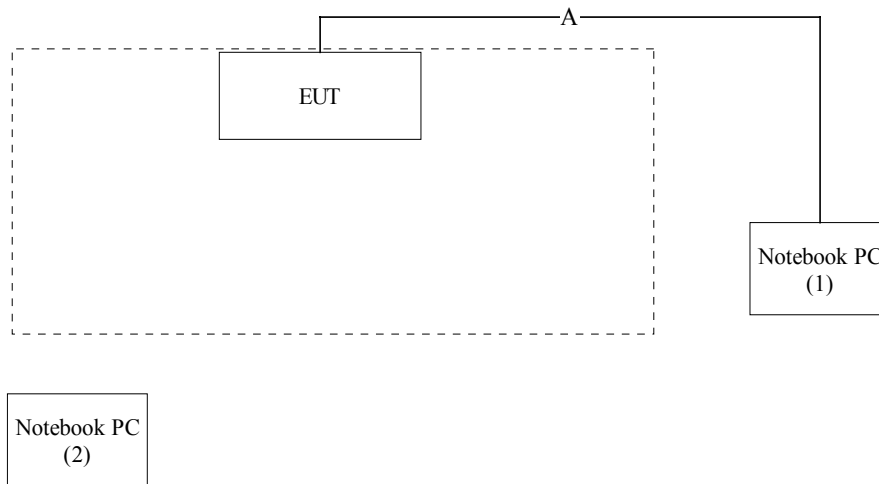
1.3. Tested System Details

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.	Power Cord
(1)	Notebook PC	ASUS	S1300	26NP018680	Non-shielded,1.8m
(2)	Notebook PC	ASUS	S1300	24NP035390	Non-shielded,1.8m

	Signal Cable Type	Signal cable Description
A.	LAN Cable	Non-shielded, 3.0m

1.4. Configuration of tested System



1.5. EUT Exercise Software

- (1) Setup the EUT and simulators as shown on 1.4
- (2) Turn on the power of all equipment.
- (3) Notebook PC reads data from disk.
- (4) Data will be transmitting through EUT.
- (5) The transmitted status will be shown on the monitor.
- (6) Repeat the above procedure 1.5.3 to 1.5.5

1.6. 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
August 30, 2001 Accreditation on NVLAP
NVLAP Lab Code: 200347-0



Site Name: Quietek Corporation

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Taiwan, R.O.C.
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E-Mail: service@quietek.com

2. Conducted Emission

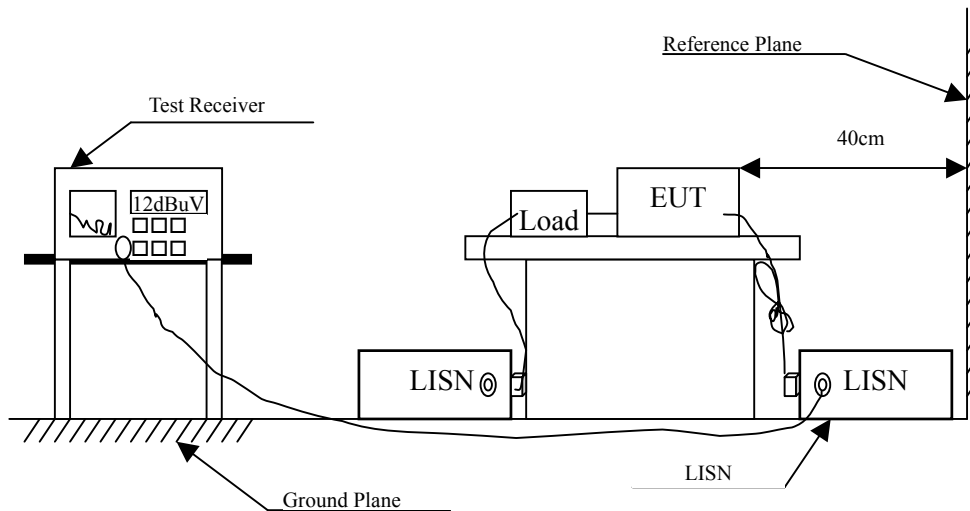
2.1. Test Equipment

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, 2003	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2003	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2003	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	N/A	
5	No.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 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

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 refer 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 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Test Result of Conducted Emission

Product : Access Point
 Test Item : Conducted Emission
 Power Line : Line 1
 Test Mode : Mode 1: Normal Operation

Frequency MHz	Cable Loss dB	Probe Factor dB	Reading Level dBuV	Emission Level dBuV	Limits dBuV
Quasi-Peak					
0.166	0.21	0.10	45.35	45.66	65.15
0.224	0.21	0.10	43.43	43.74	62.66
0.277	0.21	0.10	40.08	40.39	60.89
* 0.560	0.21	0.10	37.76	38.07	56.00
1.006	0.21	0.10	26.75	27.06	56.00
23.127	0.26	0.50	27.25	28.01	60.00
Average					
0.166	0.21	0.10	28.20	28.51	55.15
0.224	0.21	0.10	27.10	27.41	52.66
0.277	0.21	0.10	26.10	26.41	50.89
0.560	0.21	0.10	14.80	15.11	46.00
* 1.006	0.21	0.10	14.40	14.71	46.00
23.127	0.26	0.50	23.80	24.56	50.00

Note:

1. All Reading Levels are Quasi-Peak and Average value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + LISN Factor + Cable Loss.

Product : Access Point
 Test Item : Conducted Emission
 Power Line : Line 2
 Test Mode : Mode 1: Normal Operation

Frequency MHz	Cable Loss dB	Probe Factor dB	Reading Level dBuV	Emission Level dBuV	Limits dBuV
Quasi-Peak					
0.225	0.21	0.10	42.73	43.04	62.63
0.279	0.21	0.10	39.26	39.57	60.84
* 0.504	0.21	0.10	38.23	38.54	56.00
0.671	0.21	0.10	23.60	23.91	56.00
1.287	0.21	0.11	26.69	27.01	56.00
23.127	0.26	0.50	29.17	29.93	60.00
Average					
* 0.225	0.21	0.10	28.90	29.21	52.63
0.279	0.21	0.10	25.10	25.41	50.84
0.504	0.21	0.10	15.80	16.11	46.00
0.671	0.21	0.10	10.50	10.81	46.00
1.287	0.21	0.11	12.50	12.82	46.00
23.127	0.26	0.50	25.70	26.46	50.00

Note:

1. All Reading Levels are Quasi-Peak and Average value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + LISN Factor + Cable Loss.

3. Peak Power Output

3.1. Test Equipment

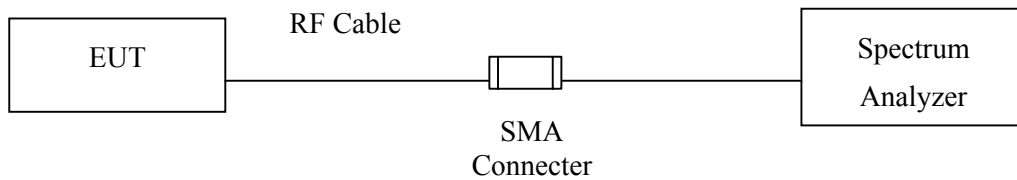
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Advantest	R3162 / 72421194	May, 2003

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. Limits

The maximum peak power shall be less 1 Watt.

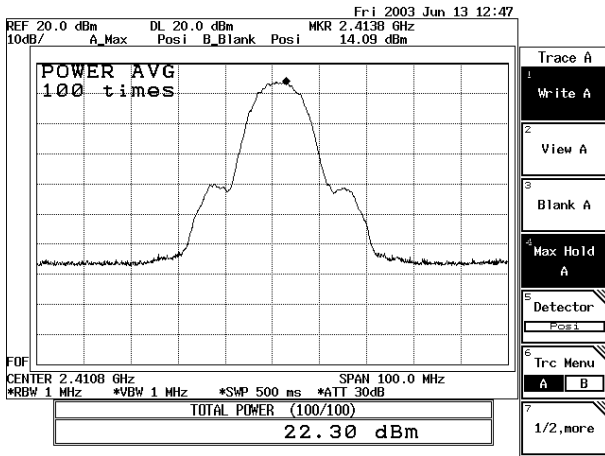
3.4. Test Result of Peak Power Output

Product : Access Point
 Test Item : Peak Power Output
 Test Site : No.1 OATS
 Test Mode : Normal Operation

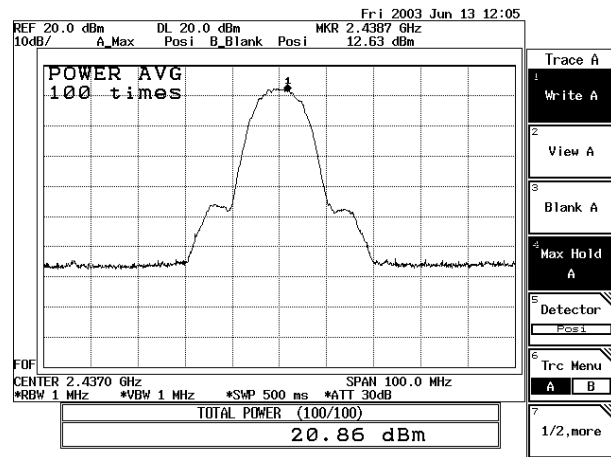
Data Speed: 1Mbps

Channel No.	Frequency(MHz)	Measurement	Required Limit	Result
1	2412	22.30dBm	1 Watt= 30 dBm	Pass
6	2437	20.06dBm	1 Watt= 30 dBm	Pass
11	2462	22.68dBm	1 Watt= 30 dBm	Pass

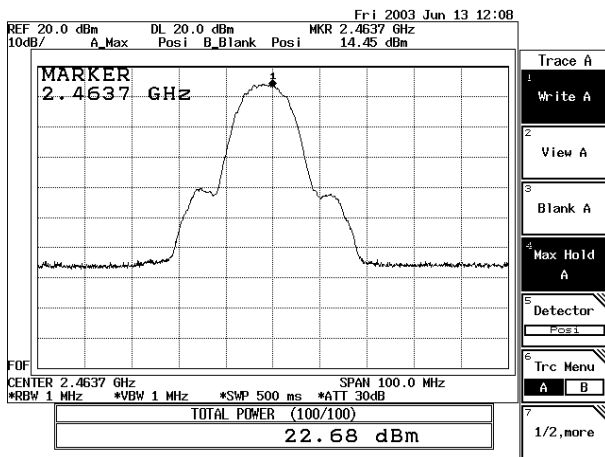
Chancel 1



Chancel 6



Chancel 11



Note:

- Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦

4. Radiated Emission

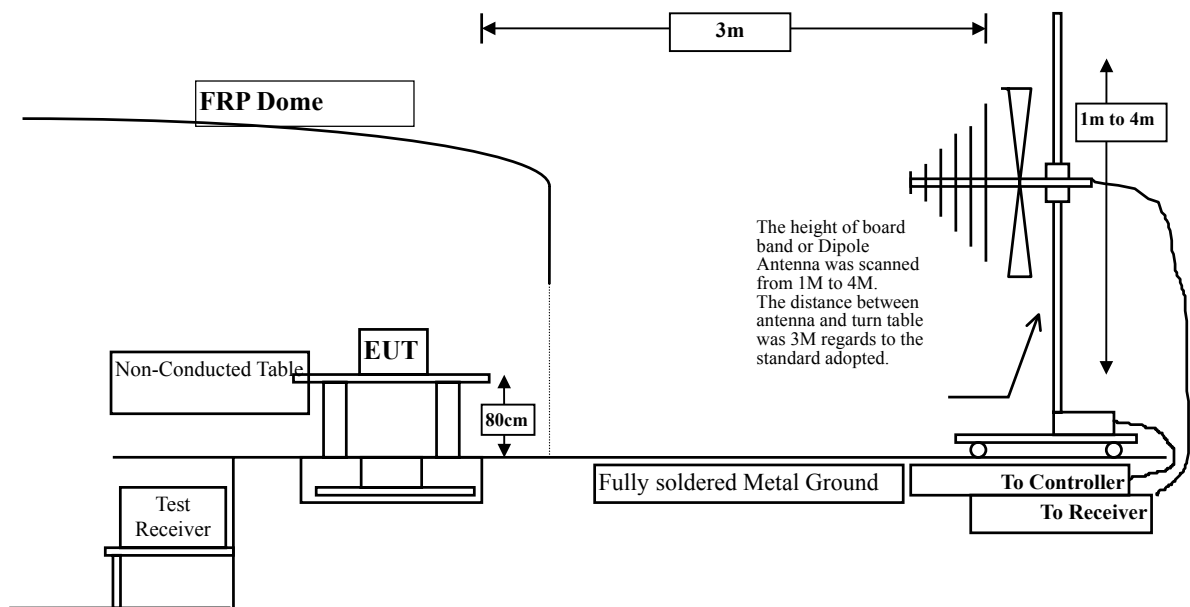
4.1. Test Equipment

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, 2003
	X Spectrum Analyzer	Advantest	R3162 / 71720140	May, 2003
	X Pre-Amplifier	HP	8447D/3307A01812	May, 2003
	X Bilog Antenna	Chase	CBL6112B / 12452	Sep., 2001
	X Horn Antenna	EM	EM6917 / 103325	May, 2003
Site # 2	Test Receiver	R & S	ESCS 30 / 825442/17	May, 2003
	Spectrum Analyzer	Advantest	R3261C / 71720609	May, 2003
	Pre-Amplifier	HP	8447D/3307A01814	May, 2003
	Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2001
	Horn Antenna	EM	EM6917 / 103325	May, 2003

- 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.

4.2. Test Setup



4.3. Limits

➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

- Remarks :
1. RF Voltage (dBuV) = 20 log RF 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.

4.4. 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.

4.5. Test Result of Radiated Emission

Product : Access Point
 Test Item : Harmonic Radiated Emission
 Test Site : No.1 OATS
 Test Mode : Channel 1

Frequency MHz	Cable Loss dB	Probe Factor dB/m	PreAMP dB	Reading Level dBuV	Emission Level dBuV/m	Margin dB	Limit dBuV/m
------------------	---------------------	-------------------------	--------------	--------------------------	-----------------------------	--------------	-----------------

Horizontal

Peak Detector:

4824.497	3.29	31.25	19.88	37.65	52.31	21.69	74.00
7236.866	4.53	35.86	21.44	34.29	53.24	20.76	74.00
* 9648.709	5.17	37.85	19.64	30.35	53.74	20.26	74.00

Average Detector:

--

Vertical

Peak Detector:

4823.763	3.29	31.25	19.88	37.82	52.48	21.52	74.00
7236.866	4.53	35.86	21.44	34.31	53.26	20.74	74.00
* 9647.799	5.17	37.85	19.64	30.37	53.76	20.24	74.00

Average Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz ◦
4. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Access Point
 Test Item : Harmonic Radiated Emission
 Test Site : No.1 OATS
 Test Mode : Channel 6

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Limit
MHz	Loss	Factor	dB	Level	Level	dB	dBuV/m
	dB	dB/m		dBuV	dBuV/m		

Horizontal

Peak Detector:

4874.320	3.33	31.35	19.86	37.74	52.56	21.44	74.00
7311.240	4.59	35.96	21.50	34.43	53.48	20.52	74.00
* 9748.962	5.32	37.92	19.43	29.77	53.59	20.41	74.00

Average Detector:

--

Vertical

Peak Detector:

4874.269	3.33	31.35	19.86	37.66	52.48	21.52	74.00
7310.336	4.59	35.96	21.50	34.21	53.26	20.74	74.00
* 9748.087	5.32	37.92	19.43	29.77	53.59	20.41	74.00

Average Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz ◦
4. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Access Point
 Test Item : Harmonic Radiated Emission
 Test Site : No.1 OATS
 Test Mode : Channel 11

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Limit
	Loss	Factor		Level	Level		
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4924.641	3.35	31.45	19.84	37.41	52.38	21.62	74.00
7386.882	4.64	36.09	21.56	34.30	53.47	20.53	74.00
* 9848.641	5.47	37.99	19.22	29.54	53.79	20.21	74.00

Average Detector:

--

Vertical

Peak Detector:

4924.302	3.35	31.45	19.84	37.45	52.42	21.58	74.00
7386.453	4.64	36.09	21.56	34.34	53.51	20.49	74.00
* 9848.605	5.47	37.99	19.22	29.39	53.64	20.36	74.00

Average Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz ◦
4. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Access Point
 Test Item : General Radiated Emission
 Test Site : No.1 OATS
 Test Mode : Mode 1: Normal Operation (Channel 1)

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Limit
MHz	Loss	Factor	dB	Level	Level	dB	dBuV/m
	dB	dB/m		dBuV	dBuV/m		

Horizontal

62.437	1.03	5.45	0.00	21.43	27.91	12.09	40.00
137.581	1.42	11.19	0.00	21.22	33.84	9.66	43.50
245.341	1.98	11.16	0.00	15.31	28.45	17.55	46.00
347.194	2.50	12.92	0.00	24.30	39.73	6.27	46.00
435.468	2.96	15.65	0.00	18.51	37.12	8.88	46.00
523.733	3.42	16.44	0.00	19.42	39.28	6.72	46.00
* 611.030	3.87	18.42	0.00	18.15	40.44	5.56	46.00
787.579	4.77	19.21	0.00	14.27	38.25	7.75	46.00
963.145	5.67	20.15	0.00	17.72	43.54	10.46	54.00

Vertical

62.384	1.03	5.58	0.00	21.35	27.97	12.03	40.00
136.487	1.42	10.25	0.00	19.17	30.84	12.66	43.50
245.329	1.98	11.40	0.00	15.40	28.78	17.22	46.00
* 347.195	2.50	13.15	0.00	25.68	41.33	4.67	46.00
435.462	2.96	17.09	0.00	17.03	37.08	8.92	46.00
523.731	3.42	16.79	0.00	16.92	37.13	8.87	46.00
611.038	3.87	19.42	0.00	13.70	36.99	9.01	46.00
787.577	4.77	19.66	0.00	12.17	36.60	9.40	46.00
963.142	5.67	20.24	0.00	10.99	36.90	17.10	54.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss.

Product : Access Point
 Test Item : General Radiated Emission
 Test Site : No.1 OATS
 Test Mode : Mode 1: Normal Operation (Channel 6)

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Limit
MHz	Loss	Factor	dB	Level	Level	dB	dBuV/m
	dB	dB/m		dBuV	dBuV/m		

Horizontal

58.659	1.01	5.72	0.00	22.85	29.58	10.42	40.00
126.598	1.37	11.57	0.00	18.64	31.58	11.92	43.50
245.689	1.98	11.26	0.00	20.33	33.58	12.42	46.00
429.927	2.93	15.69	0.00	17.59	36.21	9.79	46.00
618.268	3.90	18.77	0.00	14.91	37.58	8.42	46.00
* 787.918	4.77	19.21	0.00	15.60	39.58	6.42	46.00

Vertical

* 53.846	0.99	5.90	0.00	22.46	29.35	10.65	40.00
139.437	1.43	10.30	0.00	19.55	31.28	12.22	43.50
347.367	2.50	13.15	0.00	14.92	30.57	15.43	46.00
538.547	3.49	17.95	0.00	8.40	29.84	16.16	46.00
621.497	3.91	19.27	0.00	11.39	34.57	11.43	46.00
963.579	5.67	20.24	0.00	10.57	36.48	17.52	54.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss.

Product : Access Point
 Test Item : General Radiated Emission
 Test Site : No.1 OATS
 Test Mode : Mode 1: Normal Operation (Channel 11)

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Limit
MHz	Loss	Factor	dB	Level	Level	dB	dBuV/m
	dB	dB/m		dBuV	dBuV/m		

Horizontal

48.297	0.96	8.36	0.00	19.27	28.59	11.41	40.00
147.597	1.47	10.64	0.00	18.47	30.59	12.91	43.50
347.698	2.51	12.92	0.00	18.04	33.47	12.53	46.00
415.359	2.85	15.67	0.00	16.73	35.26	10.74	46.00
* 632.738	3.97	18.64	0.00	13.87	36.48	9.52	46.00
751.249	4.58	18.49	0.00	12.84	35.91	10.09	46.00
972.518	5.72	20.49	0.00	10.27	36.48	17.52	54.00

Vertical

72.482	1.09	6.60	0.00	23.82	31.51	8.49	40.00
148.448	1.48	9.48	0.00	22.33	33.29	10.21	43.50
218.537	1.84	8.96	0.00	23.41	34.21	11.79	46.00
349.571	2.51	13.30	0.00	21.67	37.48	8.52	46.00
* 523.684	3.42	16.79	0.00	18.40	38.61	7.39	46.00
766.429	4.66	20.32	0.00	12.43	37.41	8.59	46.00
963.517	5.67	20.24	0.00	14.35	40.26	13.74	54.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss.

5. Band Edge

5.1. Test Equipment

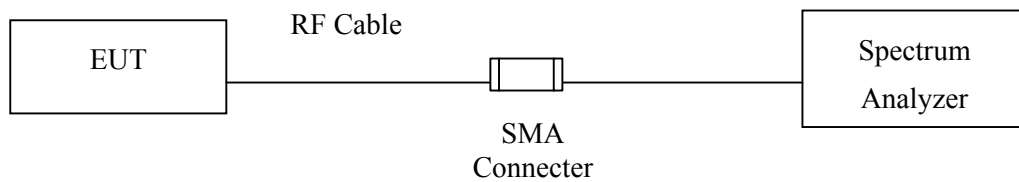
The following test equipments are used during the band edge tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Advantest	R3272 / 72421194	May, 2003
X	Test Receiver	R & S	ESCS 30 / 825442/14	May, 2003
X	Spectrum Analyzer	Advantest	R3162 / 71720140	May, 2003
X	Pre-Amplifier	HP	8447D/3307A01812	May, 2003
X	Bilog Antenna	Chase	CBL6112B / 12452	Sep., 2001
X	Horn Antenna	EM	EM6917 / 103325	May, 2003

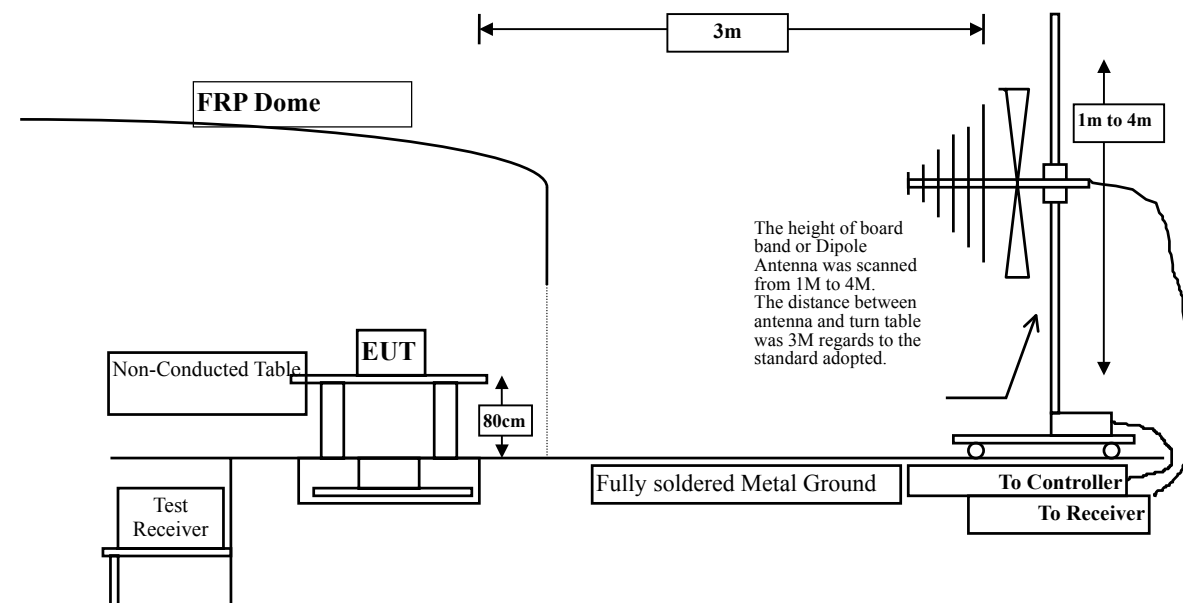
- Note:
1. All equipments that need to calibrate are with calibration period of 1 year.
 2. Mark "X" test instruments are used to measure the final test results.

5.2. Test Setup

RF Conducted Measurement:



RF Radiated Measurement:



5.3. Limits

In any 100 kHz 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 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. 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)).

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

5.5. Test Result of Band Edge

Product : Access Point
 Test Item : Band Edge
 Test Site : No.1 OATS
 Test Mode : Channel 1

RF Radiated Measurement:

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

Figure Channel 1: (Horizontal)

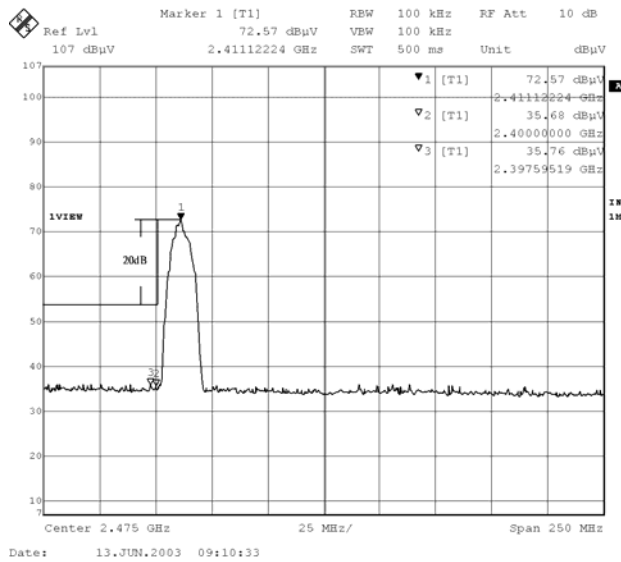
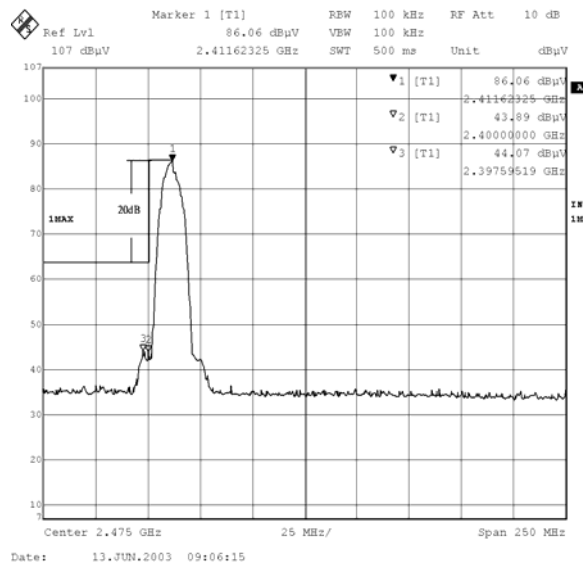


Figure Channel 1: (Vertical)



Product : Access Point
 Test Item : Band Edge
 Test Site : No.1 OATS
 Test Mode : Channel 11

RF Radiated Measurement: (Peak Detector)

Channel No.	Frequency (MHz)	Reading Level (dBUV)	Probe Factor (dB/m)	Cable Loss (dB)	PreAMP (dB)	Emission Level (dBUV/m)	Limit (dBUV/m)	Result
11(Horizontal)PK	2489.271	45.03	28.66	4.10	21.18	56.61	74	Pass
11(Horizontal)AVG	2489.271	30.26	28.66	4.10	21.18	41.84	54	Pass
11 (Vertical) PK	2493.285	45.27	28.66	4.10	21.18	56.85	74	Pass
11 (Vertical) AVG	2493.285	20.14	28.66	4.10	21.18	31.72	54	Pass

Figure Channel 11: (Horizontal)

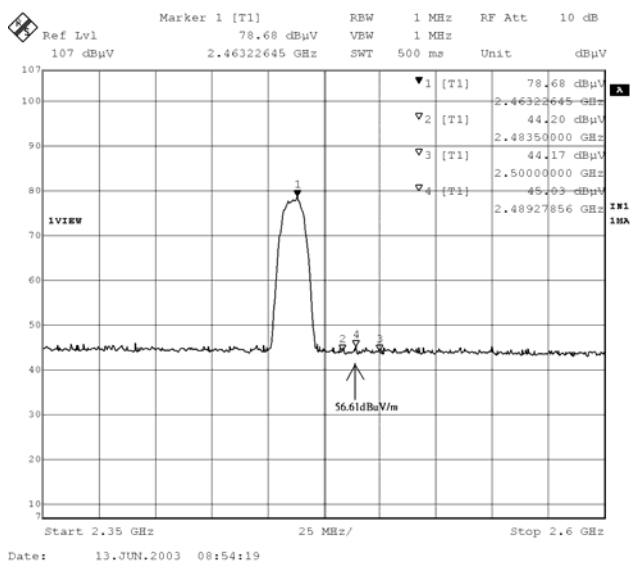
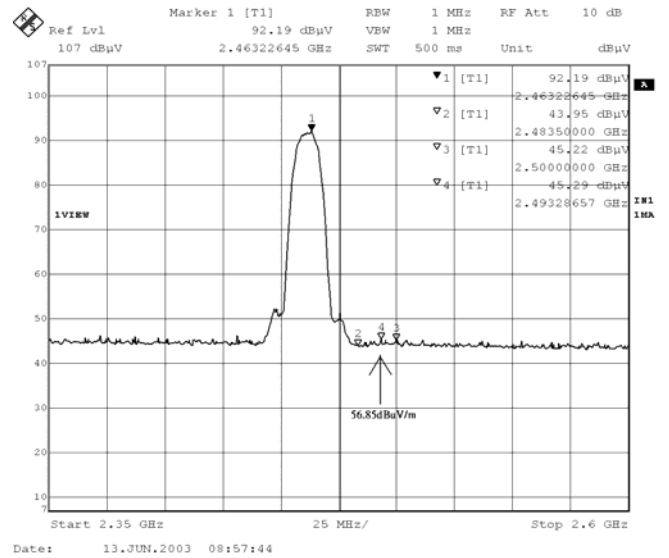


Figure Channel 11: (Vertical)



Note: The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

6. Occupied Bandwidth

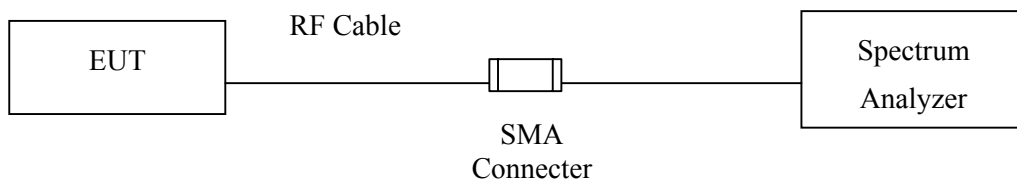
6.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Advantest	R3162/ 72421194	May, 2003

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. Limits

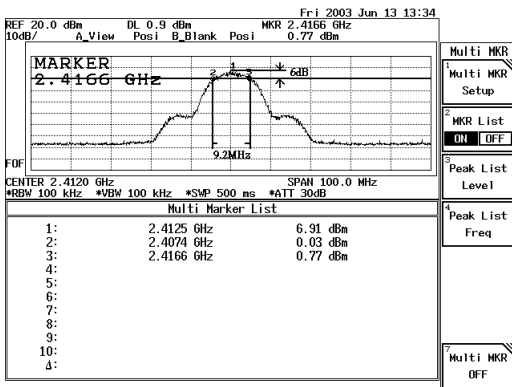
The minimum 6dB bandwidth shall be at least 500kHz.

6.4. Test Result of Occupied Bandwidth

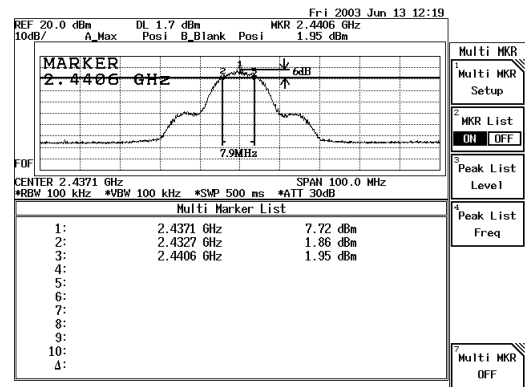
Product : Access Point
 Test Item : Occupied Bandwidth
 Test Site : No.1 OATS
 Test Mode : Normal Operation

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412	9200	>500	Pass
6	2437	7900	>500	Pass
11	2462	9700	>500	Pass

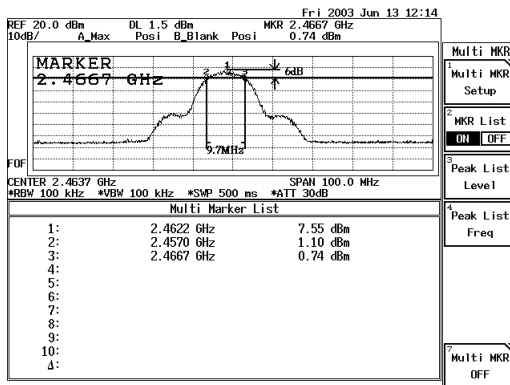
Channel 1:



Channel 6



Channel 11:



7. Power Density

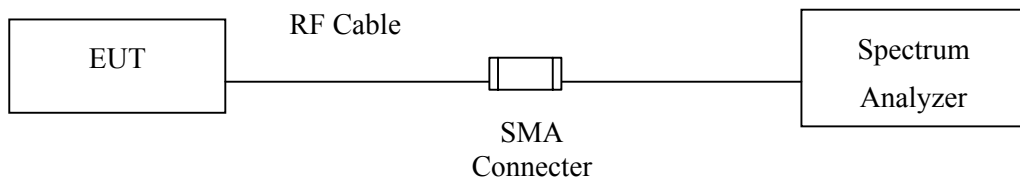
7.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Advantest	R3162 / 72421194	May, 2003

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. Limits

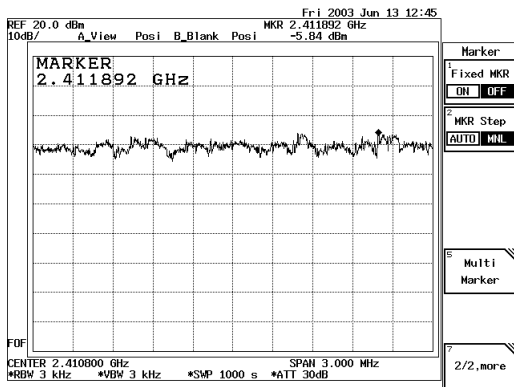
The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

7.4. Test Result of Power Density

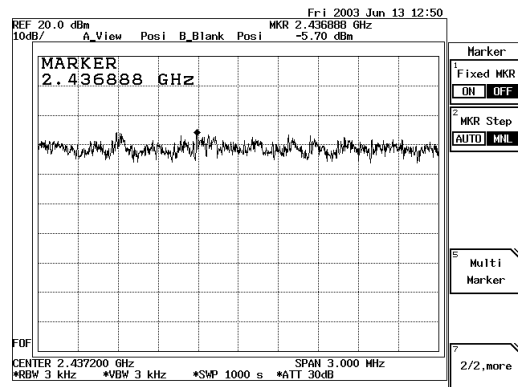
Product : Access Point
 Test Item : Power Density
 Test Site : No.1 OATS
 Test Mode : Normal Operation

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
1	2411.892	-5.84	< 8dBm	Pass
6	2436.888	-5.70	< 8dBm	Pass
11	2462.300	-9.20	< 8dBm	Pass

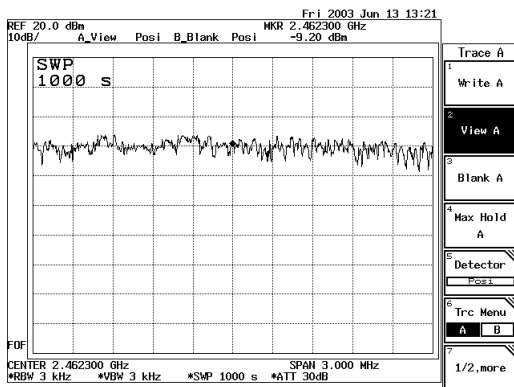
Channel 1:



Channel 6



Channel 11:



8. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs