AHD
EMC Laboratory
92723 M-152, Dowagiac, MI 49047 USA
Phone: (616) 424-7014
www.ahde.com

EXHIBIT K: REPORT OF MEASUREMENTS [2.1033(B6)]

Test Report for FCC ID: LDK102039

FCC Part 2.1043, Part 15 Subpart C(15.247)

Report #20000282F
Issued 03/10/00

MODEL MI-4800B

Prepared for: Mr. Dave Case, NCE
Aironet Wireless Communications, Inc.
3875 Embassy Parkway
Akron, OH 44333

Test Date(s): January 30 - February 2, 2000

On the basis of the measurements made, the equipment tested is capable of operation in compliance with the requirements of Part 15 of the FCC Rules under normal use and maintenance.

data recorded by

Ted Chaffee, NCE

witnessed by

Dave Case, NCE
EMC Engineer

This report prepared by:

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Statements Concerning this Report

Test Traceability:
The calibration of all measuring and test equipment and the measured data using this equipment are traceable to the National Institute for Standards and Technology (NIST).

Limitations on results:
The test results contained in this report relate only to the Item(s) tested. Any electrical or mechanical modification made to the test item subsequent to the test date shall invalidate the data presented in this report. Any electrical or mechanical modification made to the test item subsequent to this test date shall require an evaluation to verify continued compliance.

Limitations on copying:
This report shall not be reproduced, except in full, without the written approval of AHD.

Limitations of the report:
This report shall not be used to claim product endorsement by NVLAP, FCC, or any agency of the US Government.

Statement of Test Results Uncertainty: Following the guidelines of NAMAS publication NIS81 and NIST Technical Note 1297, the Measurement Uncertainty at a 95% confidence level is determined to be: ±3.6 dB

Manufacturer/Applicant [2.1033(b1)]

The manufacturer and applicant:

AIRONET WIRELESS COMMUNICATIONS, INC.
3875 Embassy Parkway
Akron, OH 44333

Measurement/Test Site Facility & Equipment

Test Site [2.948, 2.1033(b6)]

The AHD test facility is centered on 9 acres of rural property near Sister Lakes, Michigan. The mailing address is 92723 M-152, Dowagiac, Michigan 49047. This test facility is NVLAP accredited (LabCode 200129-0). It has been fully described in a report filed with the FCC and Industry Canada. The report filed with the FCC is, dated November 5, 1996, was accepted by the FCC in a letter dated January 15, 1997, (31040/SIT 1300F2). The report filed with Industry Canada, dated August 11, 1998, was accepted via a letter dated September 1, 1998, (file:IC3161).

Measurement Equipment Used [2.947(d), 15.31(b)]

Equipment	Model	S/N	Last Cal Date	Calibration Interval
HP EMI Receiver system	HP 8546A			
RF Filter Section	HP-85460A	3448A00283	22-Jun-99	12 month
RF Receiver Section	HP-85462A	3625A00342	22-Jun-99	12 month
EMCO BiconiLog Antenna	3142	1077	07-Sep-99	12 months
Solar LISN	8012-50-R-24-BNC	962138	07-Sep-99	12 months
(LCI) Double shielded 50ohm Coax	RG58/U	920809	26-Mar-99	12 months
(3-M) Type 129FF Ultra Flex LowLoss	RG58/U	9910-12	29-Oct-99	6 months
(10-M) Amelco 50ohm Coax	RG213/U	9903-10ab	26-Oct-99	6 months
from Aironet Wireless Communications, Inc.				
HP Spectrum Analyzer	8593EM	3536A00115	13-Sep-98	12 months
HP 1-26GHz RF PreAmplifier	8449B	3008A00911	09-Sep-98	12 months
ElectroMechanics Double Ridge Horn	3115	4363	10-Dec-97	12 months
3.5meter RG-442 50ohm coax	RG-442	blue	01-Feb 00	12 months

Measurement Environment

The tests were performed with the equipment under test, and measurement equipment inside the all-weather enclosure. Ambient temperature was 22deg.C., the relative humidity 40%.

Tested Configuration /Setup: [2.1033(b8)]

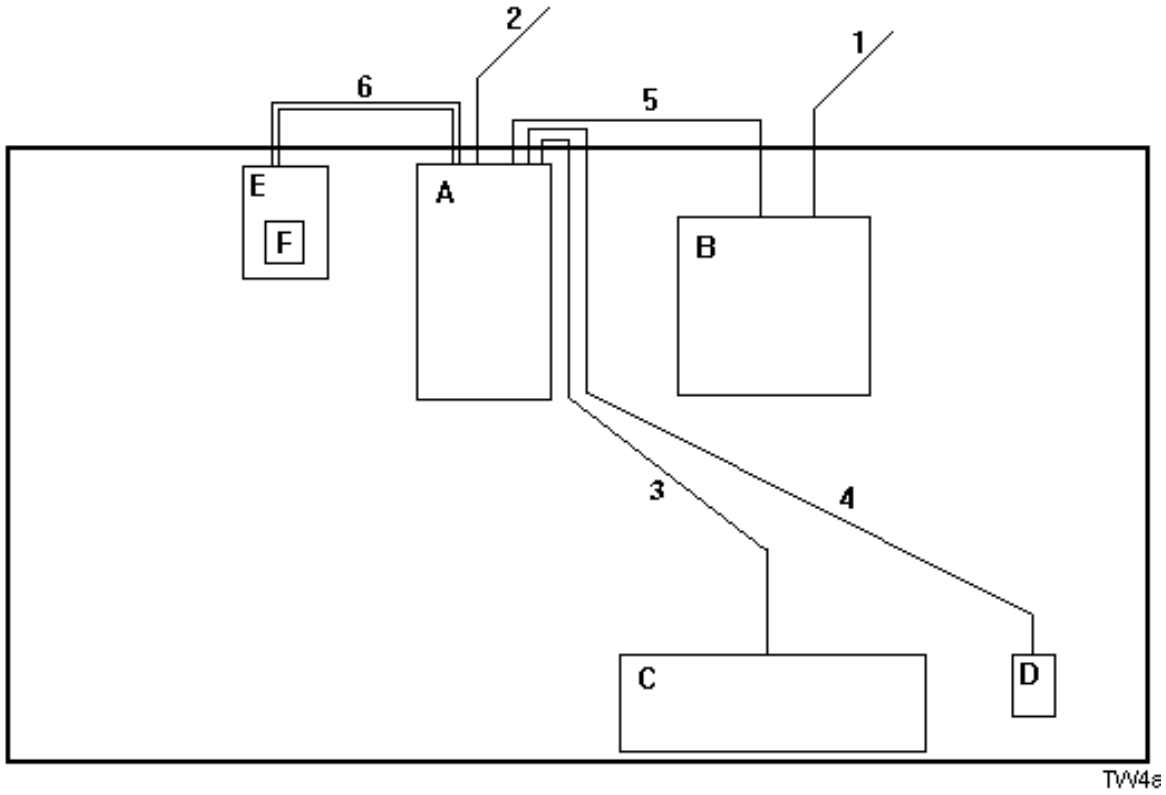
Support Equipment & Cabling

Setup Diagram Legend	Description	Model	Serial No. / Part No.	EMC Consideration
A	Host Computer Tower 366MHz	[Celeron] 366MHz	AOPENAX6BC	--
B	Monitor	[ZDS] ZCM-1492-1	1190062ROD	FCC ID: ATO90CZCM1492
C	Keyboard	[Gateway] 2196003	51182835	FCC ID: D7J2196003-xx
D	Mouse	[Microsoft] Intellimouse	1.1APS/2	FCC ID: C3KKMPS
E	Radio Module Fixture	[Aironet] Engineering	Assembly #410-004599	Foil shielded for the EUT testing.
F	[EUT] mounted in Aironet Radio Module Test Fixture	[Aironet] MI-4800B	510-884741 Rev.AA	FCC ID: LDK102039

	Device	Description	Length	EMC Consideration
1	monitor line cord	US plug to IEC	1.5 meters	Unshielded
2	Computer line cord	US plug to IEC	1.5 meters	Unshielded
3	Keyboard I/O cable	Captive to keyboard to PS2 connector	2 meters	Foil shield.
4	PS2 Mouse cable	Captive to mouse to PS2 connector	2 meters	Foil shield.
5	Video I/O cable	Captive to monitor to 15p male 'D'	1.5 meters	Coax shield. One ferrite core molded into jacket. Bundled during testing
6	ISA Ribbon cable	--	2 meters	Bundled during testing. Foil shielded for the EUT testing.

Setup Diagram

Note: Setup photographs are located in Attached Electronic File, Exhibit L.



BASIC EUT SETUP
(Legend designation is on previous page)

Summary of Results:

1. This test series evaluated the Equipment Under Test, MI-4800B, to FCC Part 15, SubPart C.
2. The system tested is compliant to the requirement of CFR 47, FCC Part 15, SubPart C for Spread Spectrum, 2.4GHz, Intentional Radiators.
3. The equipment under test was received on January 27, 2000 and this test series commenced on January 30, 2000.
4. The EUT is for portable operation only. It does not utilize the 120vac power mains. Therefore, no line conducted emission tests were performed on the unit.
5. The spectral density measurement with highest peak reading occurred with the transmitter tuned to 2.442GHz and a 2MBit data rate. It was recorded to be 17.5dB below the 15.247(d) limit of 8dBm.
6. The minimum 6dB bandwidth recorded occurred while measuring with the transmitter tuned to 2.442GHz. It was recorded as 10.5MHz. The minimum limit is 500KHz.
7. The transmitter maximum power was measured at 2.412GHGz, 2.442GHz, and 2.462GHz. The highest level occurred at 2.462GHZ and measured to be 17.8dBm which is 12.2dB below the limit of 30dBm.

2.2dBi Dipole Antenna

8. The radiated emission level nearest the limit, when measuring at the band edges only, occurred at 2.390GHz with the EUT in 11Mbut/Sec operation, vertically polarized. This signal was measured to be 471uV/m which is 0.5dB below the 500uV/m limit.
9. When measuring the transmitter harmonic emissions, the radiated emission level nearest the limit, and above the instrument floor noise, occurred at 4.924Ghz. The signal was measured to be 260.0uV/m which is 5.7dB below the 500uV/m limit.
10. The radiated level of spurious emissions nearest the limit, with the EUT in 'Receive Mode', occurred at 456MHz, horizontally polarized. This signal was measured to be 159uV/m which is 2.0dB below the 200uV/m limit.
11. The spurious emissions of the Local Oscillator, when in the receive mode, were below the noise floor of the measurement instrumentation. Three LO frequencies, 1) 2.037GHz, 2) 2.067GHz, and 2.087GHz which tune in 2.412GHz, 2.442GHz, and 2.462GHz respectively were searched and no detectable emissions were observed.

-1dBi Fujitsu Patch Antenna

12. The radiated emission level nearest the limit, when measuring at the band edges only, occurred at 2.390GHz with the EUT in 11Mbut/Sec operation, vertically polarized. This signal was measured to be 207uV/m which is 7.6dB below the 500uV/m limit.
13. When measuring the transmitter harmonic emissions, the radiated emission level nearest the limit, and above the instrument floor noise, occurred at 4.824Ghz. The signal was measured to be 312.6uV/m which is 4.1dB below the 500uV/m limit.

Changes made to achieve compliance

1. NONE

Standards Applied to Test: [2.1033(b6)]

ANSI C63.4 - 1992, Appendix I
CFR47 FCC Part 2, Part 15, SubPart C, 15.247

Test Methodology: [2.947(a), 2.1033(b6)]

For the testing, the placement of the EUT and the support equipment was selected to represent a configuration which would operate the equipment within the setup constraints of ANSI C63.4.

Because the unit is only for portable operation and does not utilize the power mains, there was no line conducted testing performed.

The radiated testing, performed at a 3 meter open field test site, was completed according to the procedures outlined in the standards.

The cables of the EUT were manipulated to produced the highest signal level relative to the limit.

The pictures, in this submittal, show the position of the equipment and cabling that produced the maximum signal level.

For radiated evaluations the 'in-house' radio module test fixture and associated ribbon cable were isolated by applying aluminum foil around the test fixture and ribbon cable. The aluminum foil was bonded to the rear of the host tower computer.

The EUT was positioned on standoffs outside the area of the aluminum shield. This arrangement allowed the EUT emitted signals to be measured at their maximum while suppressing emissions from the engineering prototype test fixture. Signal and power connections were made via a tall header of pins which mated with the connector of the EUT.

The EUT was exercised using a program which allowed the tester to turn the transmitter on and set the bit rate of modulation.

During the measurements of the transmitter, the EUT was continuously transmitting. Tests at different bit rates of 1Mbit, 2Mbit, 5.5Mbit, and 11Mbit were made to assure that the highest possible RF profile was being captured.

Radiated

The system was placed upon a 1 x 1.5 meter non-metallic table 80cm from the open field site ground plane in the prescribed setup per ANSI C63.4, Figure 9(c).

The table sits upon a remote controlled turntable. The receiving antenna, located at the appropriate standards distance of 3 or 10 meters from the table center, is also remote controlled.

Preliminary tests were done at the 3 meter open field test site. The final tests are done at the appropriate standards distance of 3 or 10 meters. The "Biconical/Log Periodic" broadband antenna connected to an EMI Receiver, meeting CISPR 16, is used throughout the testing.

The turntable was rotated 360 degrees and the receiving antenna height varied from 1 to 4 meters to search out the highest emissions. Both Vertical and Horizontal RF profiles were evaluated.

The principal settings of the EMI Receiver for radiated testing include:

Bandwidth:	120KHz for frequencies less than 1Ghz.
	1MHz for frequencies greater than 1GHz.
Detector Function:	scanning and signal search = Peak Mode
	measurements = Quasi Peak Mode for frequencies less than 1Ghz.
	Average mode for frequencies greater than 1GHz.

The cable loss of the coax used in radiated scanning is charted in this report.

The resultant Field Strength (FS) is a summation in decibels (dB) of the Indicated Receiver Level (RF), the Antenna Correction Factor (AF), and the Cable Loss Factor (CF). If a PreAmplifier (PA) is used, its gain (dB) is subtracted from the above sum.

Formula 1: $FS(dBuV/m) = RF(dBuV) + AF(dB/m) + CF(dB) - PA(dB)$

To convert the Field Strength dBuV/m term to uV/m, the dBuV/m is first divided by 20. The Base 10 AntiLog is taken of this quotient. The result is the Field Strength value in uV/m terms.

Formula 2: $FS(uV/m) = AntiLog[(FS(dBuV/m))/20]$

Test Data [2.1033(b6)]

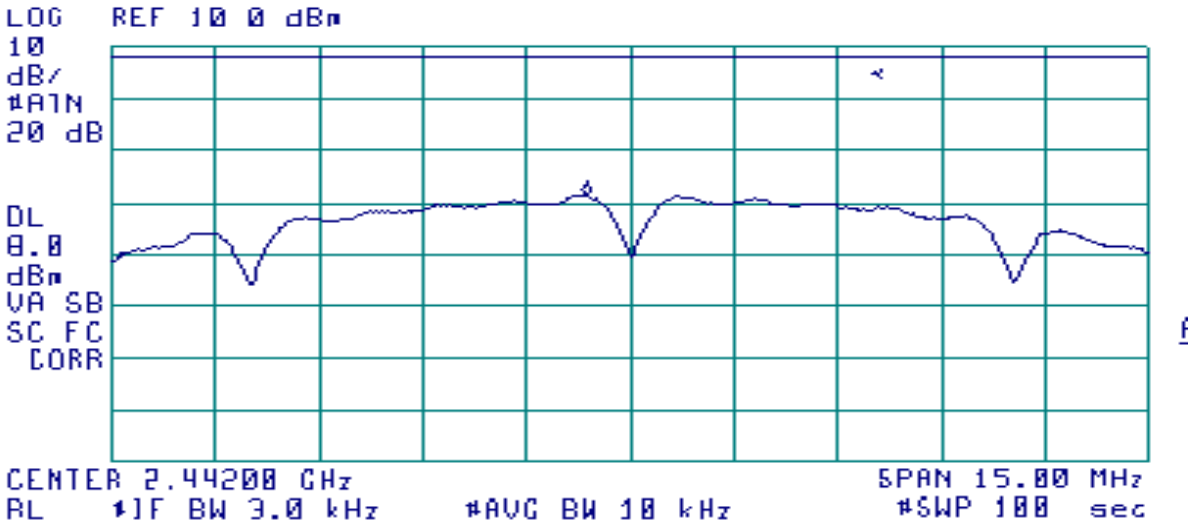
Spectral Power Density [15.247(d)]

MEASUREMENT PROCEDURE:

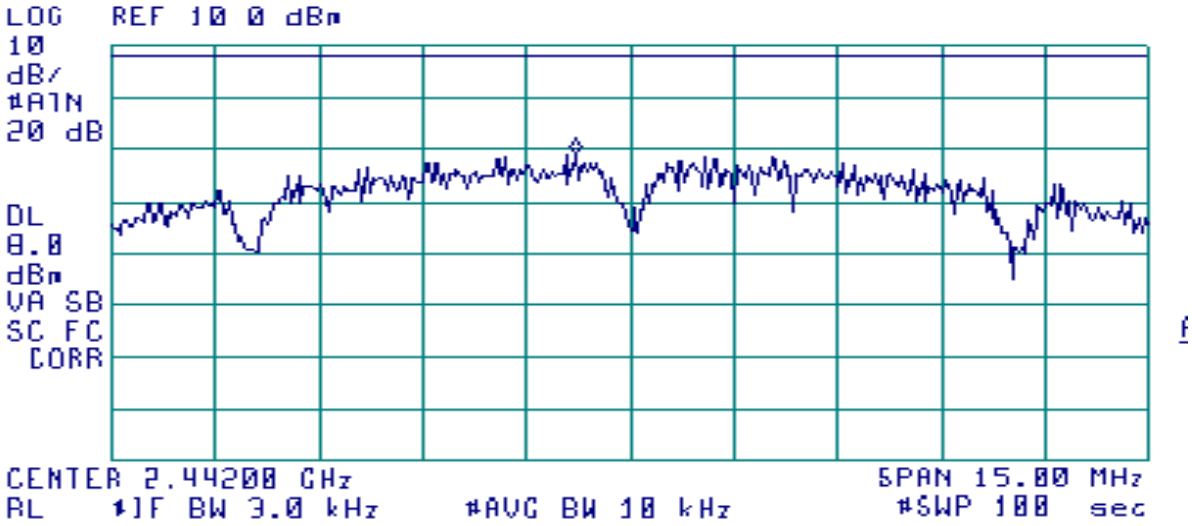
1. The EUT was setup to operate with a 2Mbit data rate and an 11MBit data rate.
2. The EMC Receiver was connected directly to the transmitter output.
3. The EMC Receiver was setup using IF BW = 3KHz, Avg BW = 10KHz, and span = 15MHz.
4. A representative transmission centered at 2.442GHz was set to continually transmit to observe the spectral density.
5. A span from 2434.5MHz to 2449.5MHz was observed.
6. The next page shows the chart of the observed RF profiles.

Mode	Tuned Frequency MHz	Measurement dBm		Cable Factor dB	Total Level dBm	15.247(d) Limit dBm
11MBit	2442	-18.8 peak		1.2	-17.6	8
2 MBit	2442	-10.7 peak		1.2	-9.5	8

Spectral Density in 11Mbit operation



Spectral density in 2Mbit operation



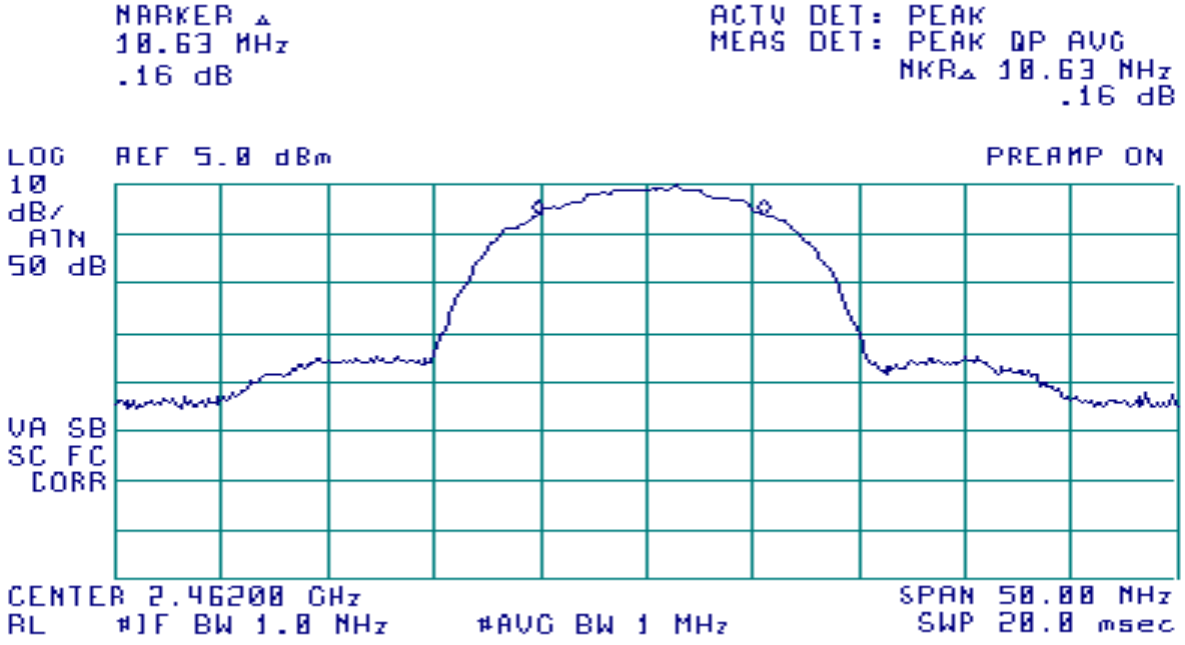
Minimum 6dB bandwidth [15.247(a2)]

MEASUREMENT PROCEDURE:

1. The EUT was setup to operate with an 11MBit data rate.
2. The EUT was measured while transmitting continuously at 2.412GHz (low), 2.442GHz (mid), and 2.462GHz (high) frequencies.
3. The EMC Receiver was connected directly to the transmitter output.
4. The EMC Receiver was setup using IF BW = 1MHz, Avg BW = 1MHz, and span = 50MHz.
5. The receiver display is recorded. A typical display is shown below.

Tuned Frequency MHz	Measured Bandwidth at 6dB points MHz		15.247(a2) Minimum KHz
2412	10.6		500
2442	10.5		500
2462	10.6		500

Chart of 6dB bandwidth measurement at 2.462GHz.



Restricted Bands: [15.205]

The following frequency bands are restricted. Only spurious emissions are permitted at levels limited by 15.209:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.25
0.490-0.510	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

Transmitter Maximum Peak Output Power: 15.247(b)(1), (b)(3)(i)

MEASUREMENT PROCEDURE:

1. The EUT was setup to operate in for an 11MBit data rate which represents worst case interference potential.
2. The EMC Receiver was connected directly to the transmitter output.
3. The EMC Receiver was setup using IF BW = 3MHz, Avg BW = 3MHz.

Justification:

The gain of the antennas designed for this unit is less than 6dBi. Hence there is no derating the transmitter output power.

The Maximum Peak Output Power is limited to 1Watt.

Calculation: 1Watt = 1000mW.

Converting to dBm: 10*LOG(1000mW) = 30dBm

Tuned Frequency MHz	Measurement dBm		Cable Factor dB	Total Field Strength dBm	15.247(b)(3)(i) Limit dBm
2412	15.97		1.17	17.14	30
2442	14.54		1.18	15.72	30
2462	16.63		1.19	17.82	30

Emissions at Band Edges [15.205(a), 15.209, 15.247(c)]

MEASUREMENT PROCEDURE:

1. The EUT was adjusted to operate at 2412MHz to evaluate the lower band edge
2. The EUT was adjusted to operate at 2462MHz to evaluate the upper band edge

Charted Field Strength at Band Edges. [Field Strength charts begin at page 27.]

3. The field strength displayed on the EMI receiver were recorded for both the high side and low side of band edges. Differing data rates from 1MBit/Sec to 11MBit/Sec were recorded.
4. The EMI Receiver settings for charting the field strength display are:
   a) Evaluating PEAK: IF Bandwidth = 1MHz, Avg Bandwidth = 1MHz, and
   b) Evaluating AVERAGE: IF Bandwidth = 1MHz, Avg Bandwidth = 10Hz.

Measurement of Radiated Emissions. [Tabulated data is on pages 25, 26.]

5. The EUT system was set upon the wooden turntable 80cm above the ground plane at a distance of 3 meters from the receiving antenna.
6. The transmitted emission level was maximized by rotating the turntable and raising and lowering the search antenna.
7. Data was recorded with the EUT at 1MBit/Sec (lowest data rate) and at 11MBit/Sec (highest data rate). The EMI Receiver settings at IF Bandwidth=1MHz, Avg Bandwidth=10Hz.
8. Both Horizontal and Vertical polarization modes were evaluated.
9. The Field Strength E(uV/m) is calculated using the formula:
   $E(uV/m) = LOG_{10}^{-1}((dBuV/m + Ant.Factor(dB) + Coax\ Loss(dB).$

1MBit/Sec operation using Dipole Antenna
Tabulated Measurements for the lower band edge.

Frequency	Measurement dBuV/m		Polarity	Cable + Antenna Factor	Total Field Strength dBuV/m		Total Field Strength uV/m	FCC Avg Limit
GHz	Peak	Average		dB+dB/m	Peak	Average	Average	uV/m
2.380	19.0	9.6	V	33.3	52.3	42.8	138.5	500
2.382	22.1	15.6	V	33.3	55.3	48.8	276.1	500
2.384	24.5	17.0	V	33.3	57.8	50.2	325.1	500
2.386	26.4	18.5	V	33.3	59.6	51.8	389.0	500
2.388	23.2	16.7	V	33.3	56.5	49.9	314.1	500
2.390	25.3	19.5	V	33.3	58.6	52.8	436.5	500
2.380	10.6	-0.7	H	33.3	43.9	32.5	42.3	500
2.382	10.2	-0.6	H	33.3	43.4	32.6	42.9	500
2.384	10.7	-0.3	H	33.3	44.0	32.9	44.3	500
2.386	12.9	4.3	H	33.3	46.2	37.6	75.9	500
2.388	12.2	1.6	H	33.3	45.5	34.9	55.5	500
2.390	12.8	4.1	H	33.3	46.1	37.4	73.8	500

1MBit/Sec operation using Dipole Antenna
Tabulated Measurements for the upper band edge.

Frequency	Measurement dBuV/m		Polarity	Cable + Antenna Factor	Total Field Strength dBuV/m		Total Field Strength uV/m	FCC Avg Limit
GHz	Peak	Average		dB+dB/m	Peak	Average	Average	uV/m
2.4835	13.9	3.3	V	33.4	47.3	36.7	68.2	500
2.485	13.0	-0.2	V	33.4	46.5	33.2	45.7	500
2.488	10.6	-2.0	V	33.4	44.0	31.5	37.4	500
2.491	10.5	-1.7	V	33.4	43.9	31.7	38.6	500
2.494	10.5	-2.2	V	33.4	44.0	31.3	36.6	500
2.497	10.2	-2.4	V	33.4	43.6	31.1	35.8	500
2.500	10.4	-2.3	V	33.4	43.9	31.1	36.0	500
2.4835	21.2	14.0	H	33.4	54.6	47.4	235.5	500
2.485	18.6	10.2	H	33.4	52.0	43.7	152.2	500
2.488	18.5	10.8	H	33.4	51.9	44.2	162.7	500
2.491	18.1	8.8	H	33.4	51.5	42.3	129.6	500
2.494	14.2	3.4	H	33.4	47.7	36.8	69.4	500
2.497	13.9	2.9	H	33.4	47.3	36.3	65.4	500
2.500	14.3	2.9	H	33.4	47.7	36.3	65.5	500

11MBit/Sec operation using Dipole Antenna
Tabulated Measurements for the lower band edge.

Frequency	Measurement dBuV/m		Polarity	Cable + Antenna Factor	Total Field Strength dBuV/m		Total Field Strength uV/m	FCC Avg Limit
GHz	Peak	Average		dB+dB/m	Peak	Average	Average	uV/m
2.380	24.3	7.4	V	33.3	57.6	40.7	108.4	500
2.382	22.2	12.1	V	33.3	55.4	45.4	186.4	500
2.384	26.2	16.5	V	33.3	59.5	49.8	307.6	500
2.386	27.3	18.4	V	33.3	60.6	51.7	383.7	500
2.388	27.3	18.6	V	33.3	60.6	51.9	393.1	500
2.390	29.8	20.2	V	33.3	63.1	53.5	471.0	500
2.380	9.0	-2.3	H	33.3	42.2	31.0	35.4	500
2.382	9.2	-1.9	H	33.3	42.5	31.4	37.0	500
2.384	10.6	-0.8	H	33.3	43.8	32.5	42.2	500
2.386	11.8	1.0	H	33.3	45.1	34.2	51.5	500
2.388	18.2	1.4	H	33.3	51.5	34.7	54.0	500
2.390	20.2	3.3	H	33.3	53.5	36.6	67.4	500

11MBit/Sec operation using Dipole Antenna
Tabulated Measurements for the upper band edge.

Frequency	Measurement dBuV/m		Polarity	Cable + Antenna Factor	Total Field Strength dBuV/m		Total Field Strength uV/m	FCC Avg Limit
GHz	Peak	Average		dB+dB/m	Peak	Average	Average	uV/m
2.4835	23.8	14.0	V	33.4	57.2	47.4	233.6	500
2.485	19.7	10.3	V	33.4	53.1	43.7	153.8	500
2.488	20.2	9.5	V	33.4	53.6	42.9	139.5	500
2.491	18.1	7.0	V	33.4	51.5	40.4	104.8	500
2.494	13.9	3.3	V	33.4	47.3	36.7	68.5	500
2.497	17.6	10.8	V	33.4	51.0	44.2	162.4	500
2.500	13.3	1.9	V	33.4	46.8	35.3	58.5	500
2.4835	12.1	0.6	H	33.4	45.5	34.0	50.1	500
2.485	9.4	-1.7	H	33.4	42.8	31.8	38.7	500
2.488	9.1	-2.4	H	33.4	42.5	31.0	35.5	500
2.491	9.1	-1.9	H	33.4	42.5	31.5	37.7	500
2.494	9.4	-2.6	H	33.4	42.8	30.9	34.9	500
2.497	10.3	1.5	H	33.4	43.8	35.0	56.0	500
2.500	8.3	-2.6	H	33.4	41.8	30.8	34.8	500

11MBit/Sec operation using Fujitsu Patch Antenna
Tabulated Measurements for the lower band edge.

Frequency	Measurement dBuV/m		Polarity	Cable + Antenna Factor	Total Field Strength dBuV/m		Total Field Strength uV/m	FCC Avg Limit
GHz	Peak	Average		dB+dB/m	Peak	Average	Average	uV/m
2.380	10.9	-1.2	V	33.3	44.2	32.1	40.3	500
2.382	14.3	3.4	V	33.3	47.6	36.6	67.9	500
2.384	18.3	9.0	V	33.3	51.6	42.3	130.0	500
2.386	20.8	11.9	V	33.3	54.1	45.2	182.0	500
2.388	20.8	12.9	V	33.3	54.1	46.2	203.7	500
2.390	21.0	13.0	V	33.3	54.3	46.3	206.8	500
2.380	10.7	-0.7	H	33.3	44.0	32.6	42.7	500
2.382	14.3	4.0	H	33.3	47.6	37.3	72.9	500
2.384	18.2	8.7	H	33.3	51.5	42.0	125.7	500
2.386	20.7	11.4	H	33.3	54.0	44.7	172.0	500
2.388	20.7	12.3	H	33.3	54.0	45.6	190.1	500
2.390	20.9	12.8	H	33.3	54.2	46.1	201.6	500

11MBit/Sec operation using Fujitsu Patch Antenna
Tabulated Measurements for the upper band edge.

Frequency	Measurement dBuV/m		Polarity	Cable + Antenna Factor	Total Field Strength dBuV/m		Total Field Strength uV/m	FCC Avg Limit
GHz	Peak	Average		dB+dB/m	Peak	Average	Average	uV/m
2.4835	16.8	6.7	V	33.4	50.2	40.1	100.8	500
2.485	13.5	4.1	V	33.4	46.9	37.5	75.2	500
2.488	13.8	3.1	V	33.4	47.3	36.6	67.3	500
2.491	11.3	0.5	V	33.4	44.8	33.9	49.4	500
2.494	9.1	-1.6	V	33.4	42.6	31.8	38.9	500
2.497	12.2	3.1	V	33.4	45.6	36.5	66.8	500
2.500	8.8	-2.0	V	33.4	42.2	31.4	37.2	500
2.4835	13.6	3.4	H	33.4	47.0	36.8	69.4	500
2.485	11.3	1.0	H	33.4	44.7	34.5	52.8	500
2.488	11.5	0.4	H	33.4	44.9	33.8	49.0	500
2.491	9.5	-1.5	H	33.4	42.9	31.9	39.5	500
2.494	9.2	-2.7	H	33.4	42.7	30.7	34.4	500
2.497	10.5	0.8	H	33.4	43.9	34.3	51.8	500
2.500	8.0	-2.6	H	33.4	41.5	30.9	35.0	500

The following pages show, in chart format, the emission profiles of the band edges with the system operating at 2MBit/Sec, and 11 MBit/Sec using the Aironet standard dipole antenna. Similar charts of the 1Bmit/Sec and 5.5Mbit/Sec are available for viewing. These charts were not included here to decrease the memory size of this report.
Also, in these pages are the emission profile charts of the band edges with system operating at 11Mbit/Sec using the Fujitsu -1dBi patch antenna.

In any 100KHz bandwidth outside the frequency band of operation, the RF power is at least 20dB below that in the highest 100KHz bandwidth within the band of operation. The charts on the pages that follow indicate this compliance by displaying a marker at the band edge greater than 20dB below the reference peak reading of the in band RF level.

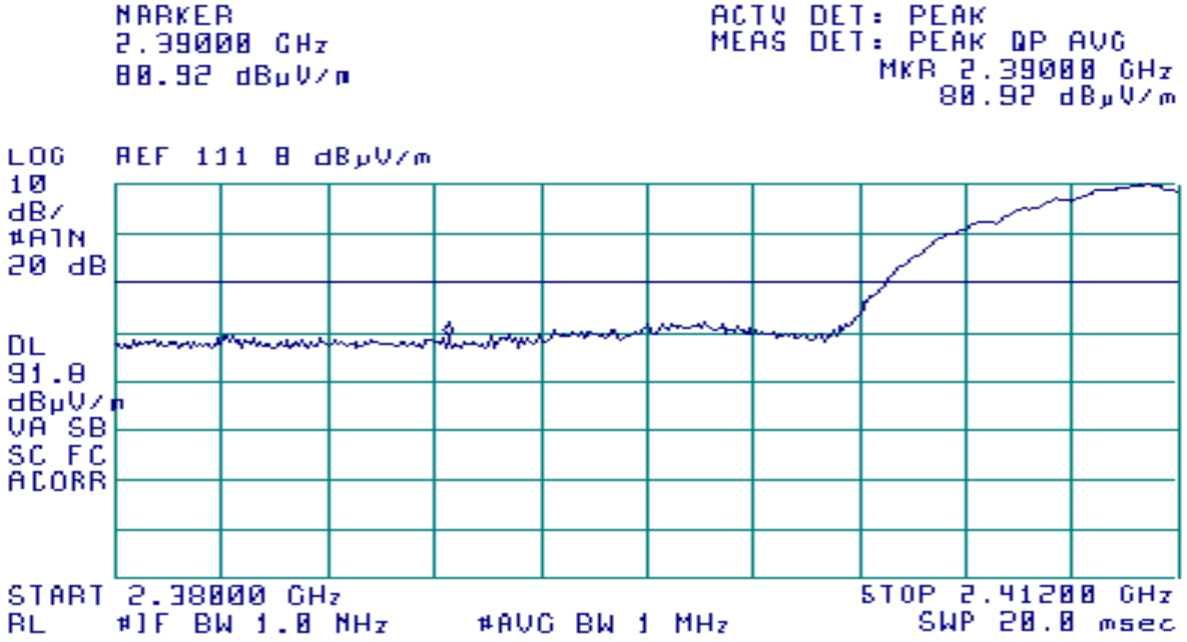
DIPOLE ANTENNA
Band Edge:

-1dBi PATCH ANTENNA
Band Edge:

Peak Evaluation: Dipole Antenna

Low Band edge, Marker at 2.39GHz

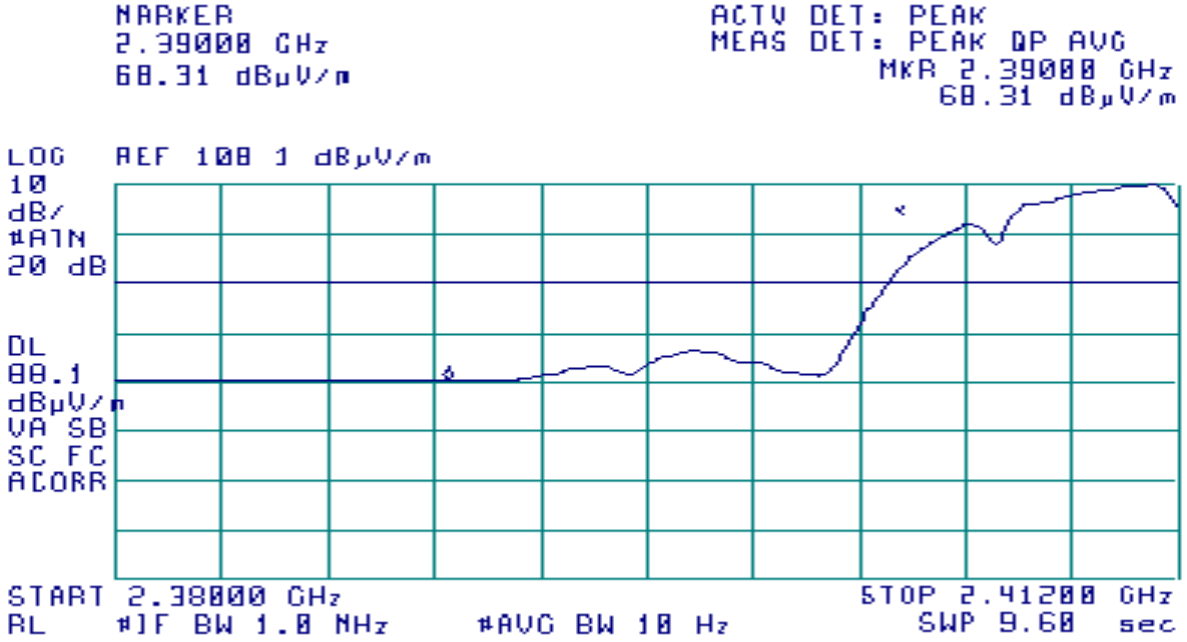
Data Rate = 2MBit/Sec



Average Evaluation: Dipole Antenna

Low Band edge, Marker at 2.39GHz

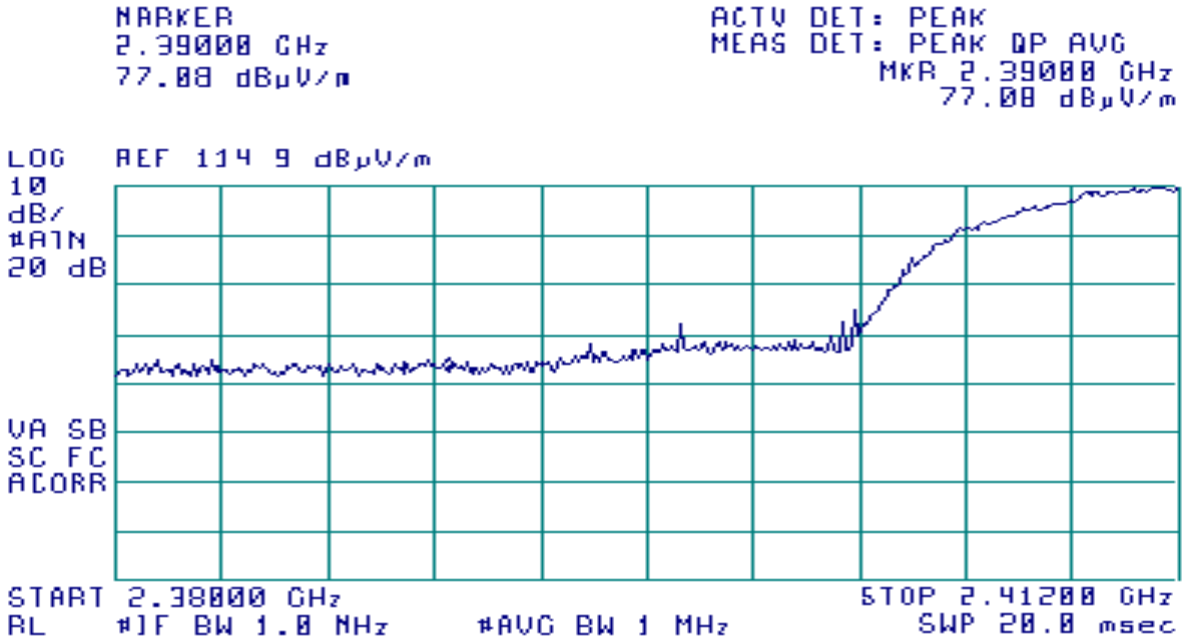
Data Rate = 2MBit/Sec



Peak Evaluation: Dipole Antenna

Low Band edge, Marker at 2.39GHz

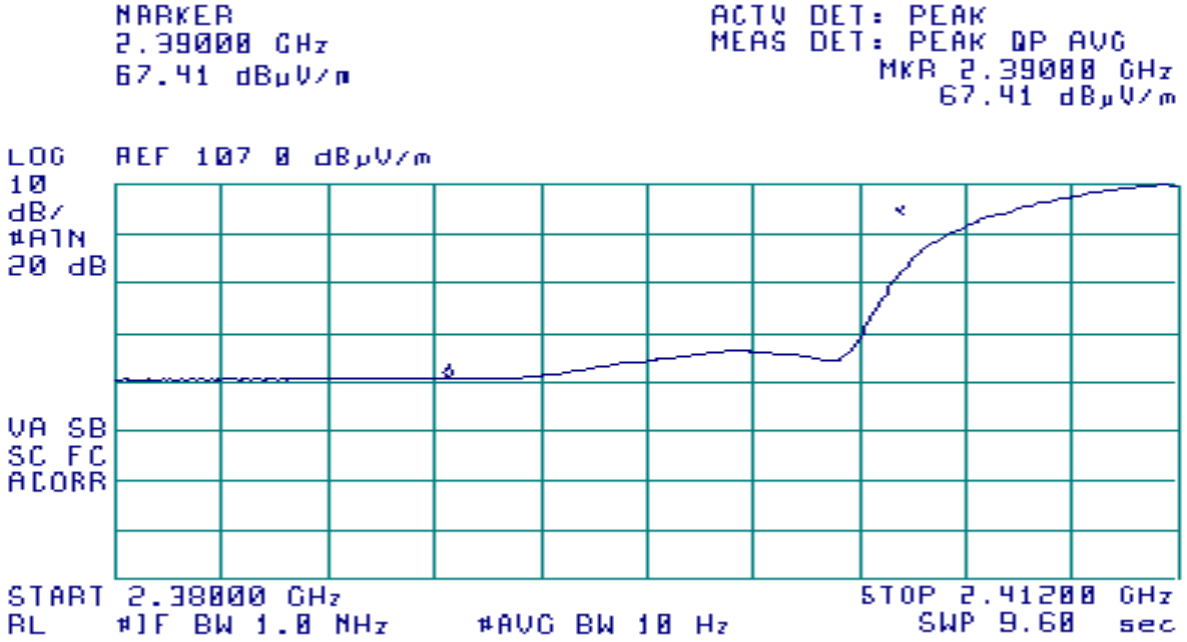
Data Rate = 11MBit/Sec



Average Evaluation: Dipole Antenna

Low Band edge, Marker at 2.39GHz

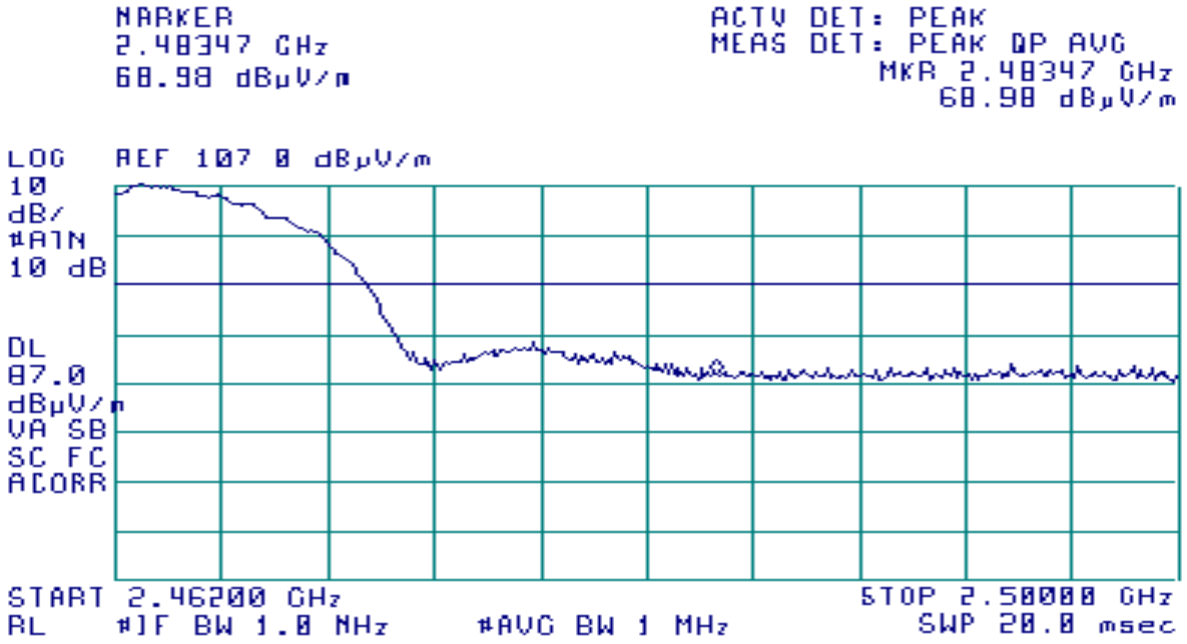
Data Rate = 11MBit/Sec



Peak Evaluation: Dipole Antenna

High Band edge, Marker at 2.4835GHz

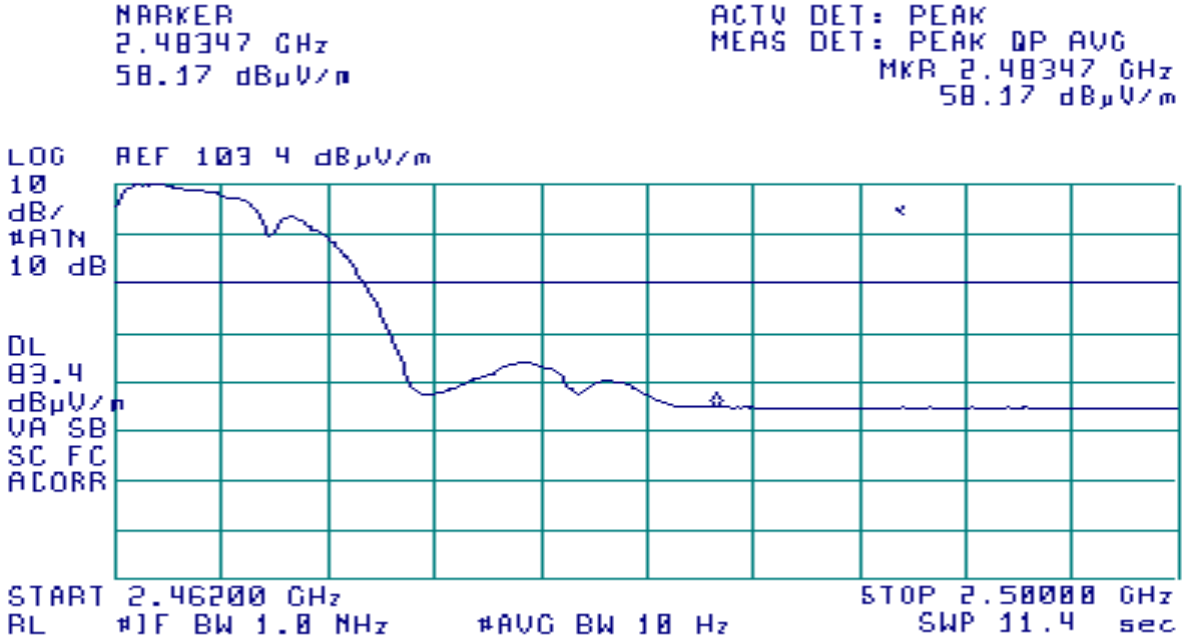
Data Rate = 2MBit/Sec



Average Evaluation: Dipole Antenna

High Band edge, Marker at 2.4835GHz

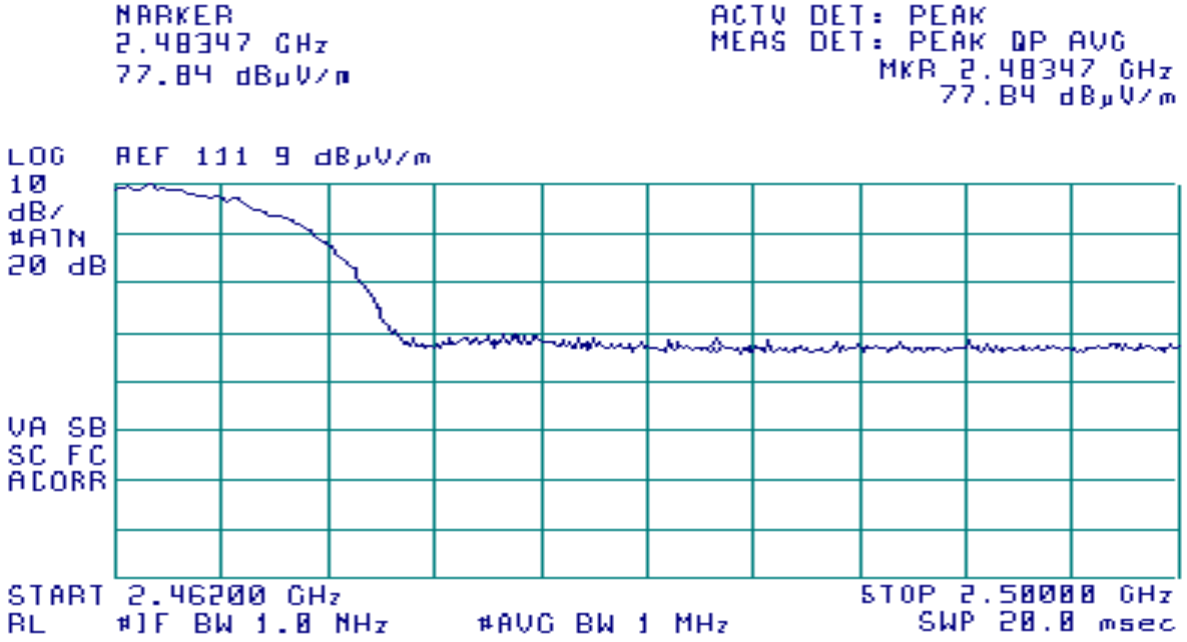
Data Rate = 2MBit/Sec



Peak Evaluation: Dipole Antenna

High Band edge, Marker at 2.4835GHz

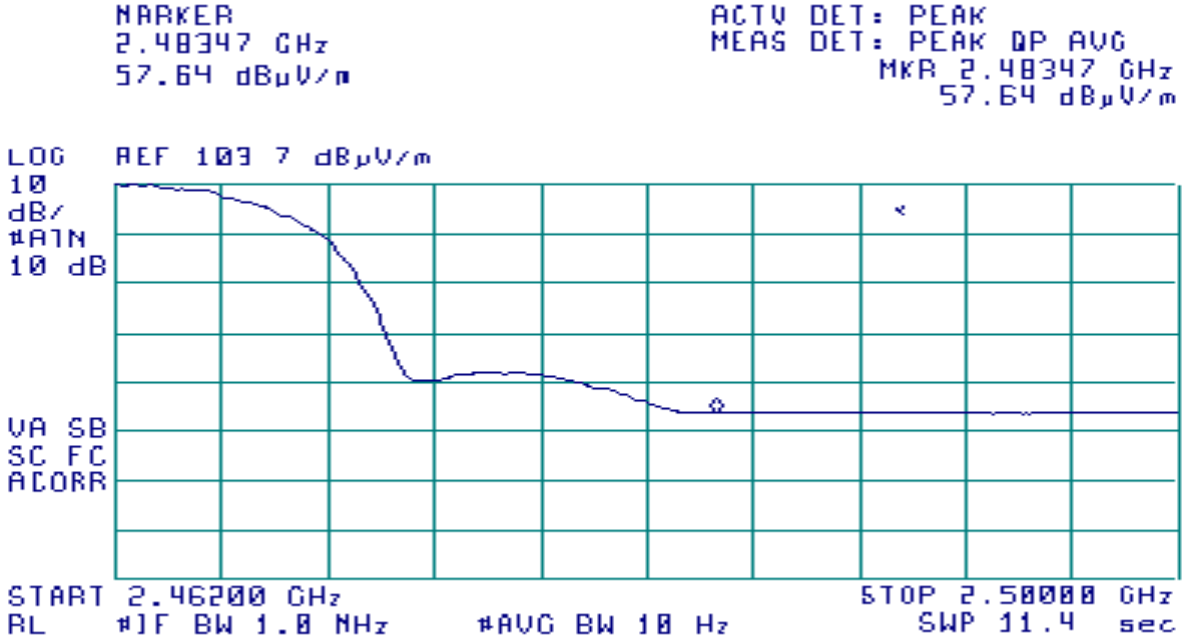
Data Rate = 11MBit/Sec



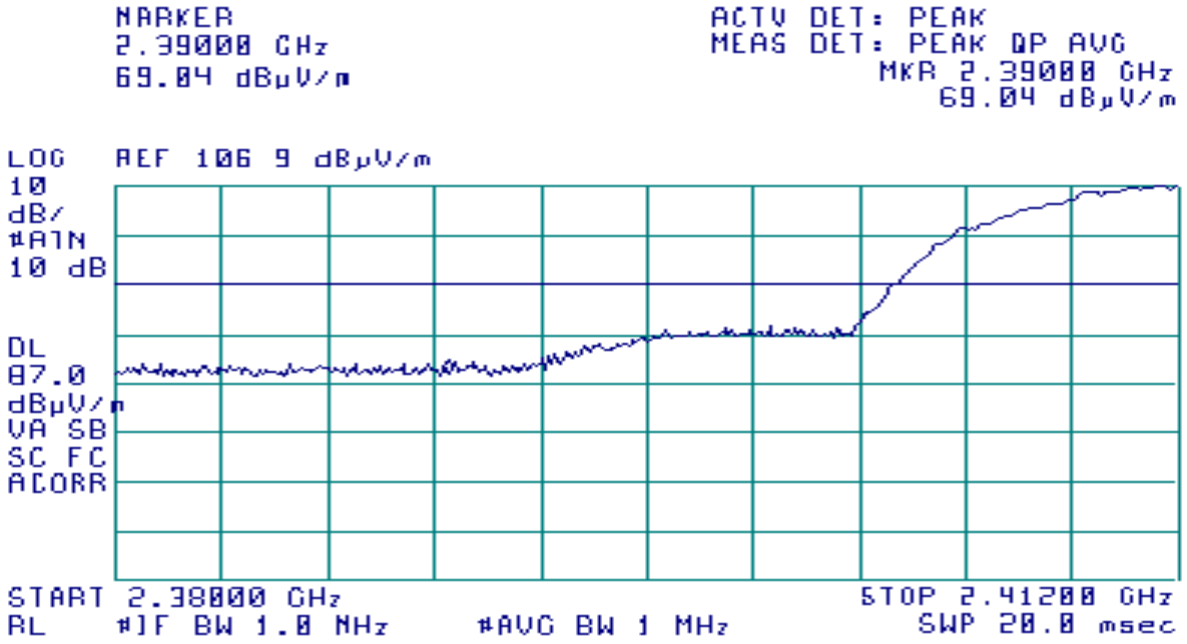
Average Evaluation: Dipole Antenna

High Band edge, Marker at 2.4835GHz

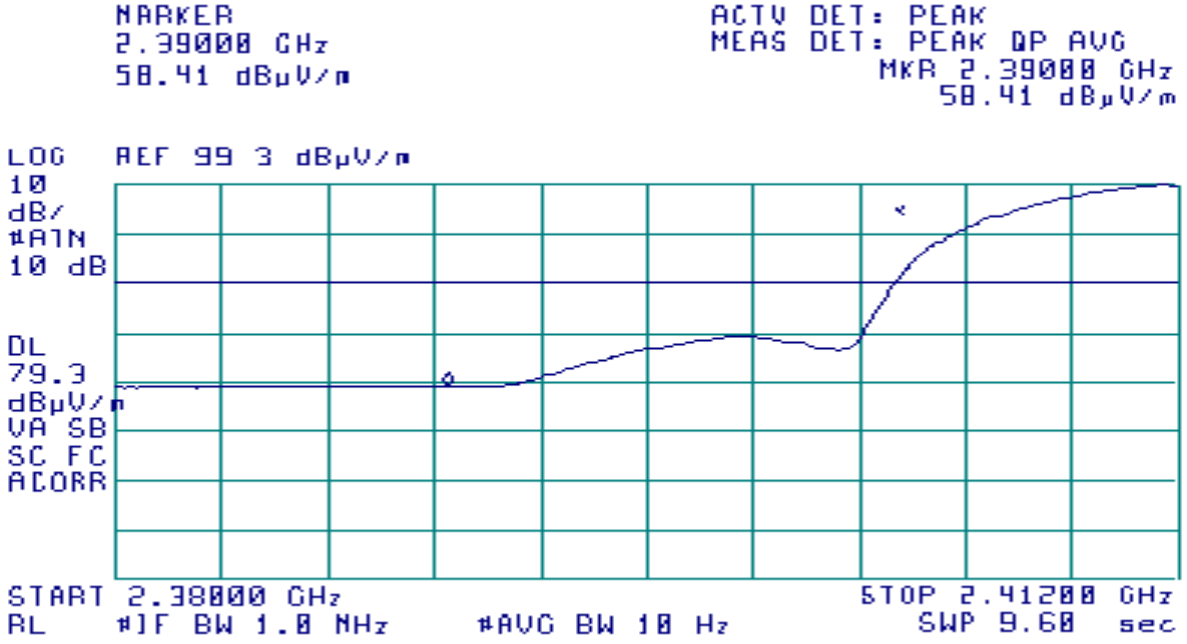
Data Rate = 11MBit/Sec



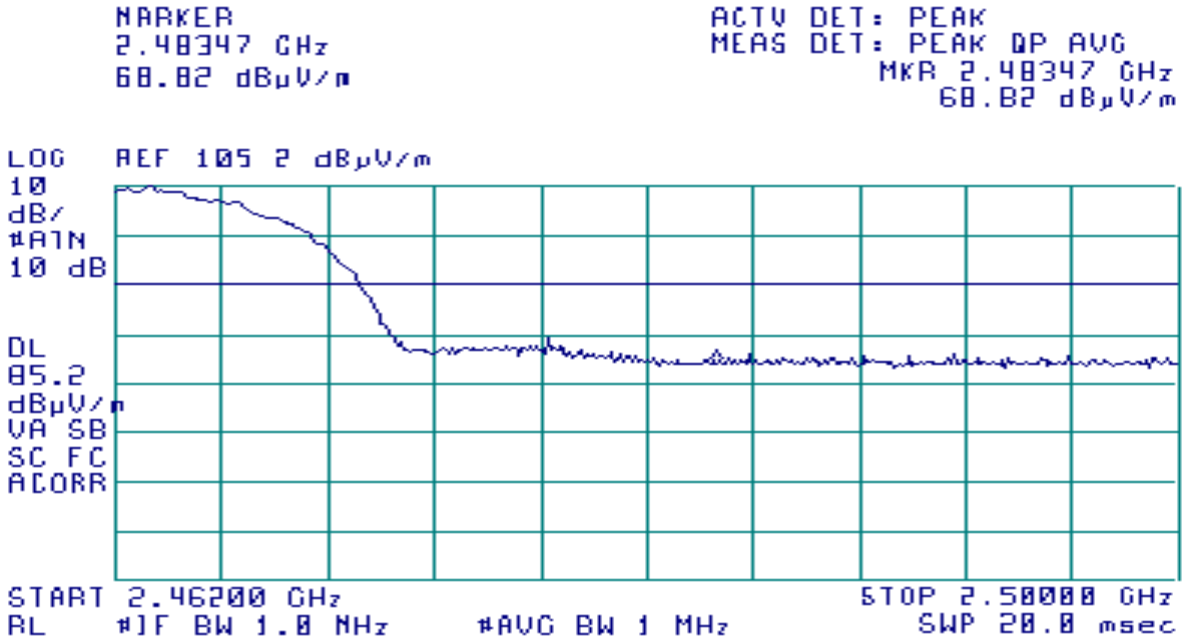
Peak Evaluation: Fujitsu -1dBi Patch Antenna
Low Band edge, Marker at 2.39GHz
Data Rate = 11MBit/Sec



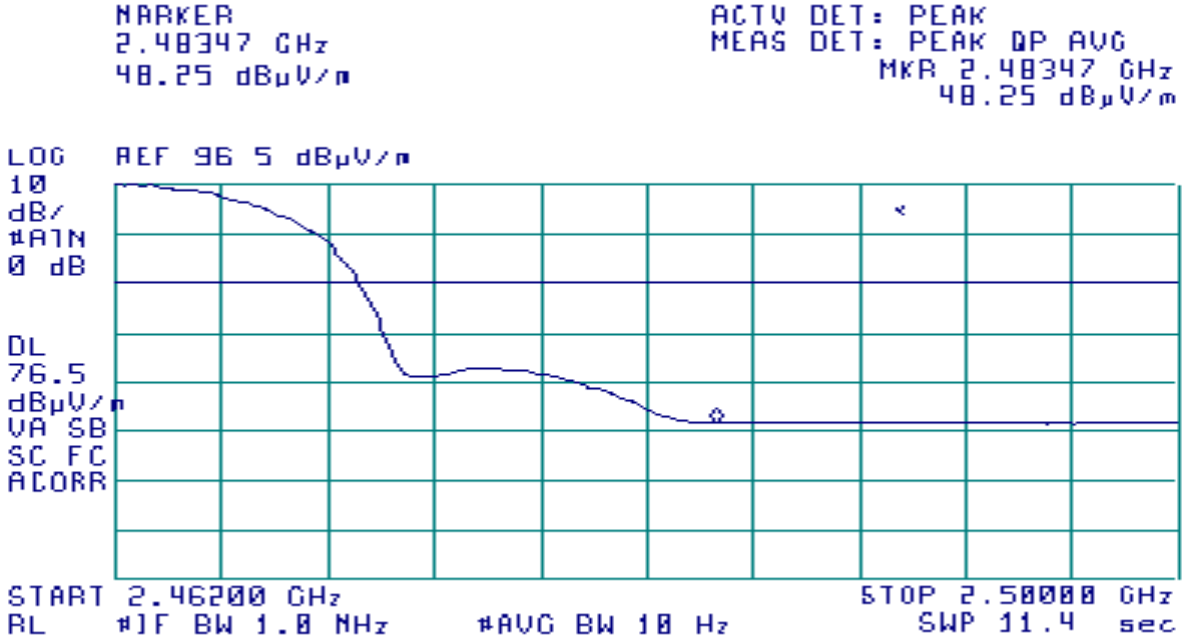
Average Evaluation: Fujitsu -1dBi Patch Antenna
Low Band edge, Marker at 2.39GHz
Data Rate = 11MBit/Sec



Peak Evaluation: Fujitsu -1dBi Patch Antenna
High Band edge, Marker at 2.4835GHz
Data Rate = 11MBit/Sec



Average Evaluation: Fujitsu -1dBi Patch Antenna
High Band edge, Marker at 2.4835GHz
Data Rate = 11MBit/Sec



Transmitter Harmonic Emissions [15.205(a), 15.209(a),(f)]

MEASUREMENT PROCEDURE:

1. The EUT was adjusted to operate at its low, mid, and high range. These frequencies are, respectively, 2412MHz, 2442MHz, and 2462MHz.
2. The EUT system was set upon the wooden turntable 80cm above the ground plane at a distance of 3 meters from the receiving antenna.
3. The EUT was setup to operate in for an 11MBit data rate which represents worst case interference potential.
4. The EMC Receiver was setup using IF BW = 1MHz, Avg BW = 300KHz.
5. The transmit harmonic emission level was maximized by rotating the turntable and raising and lowering the search antenna.
6. Both Horizontal and Vertical polarization modes were evaluated.
7. The Field Strength E(uV/m) is calculated using the formula:
   $E(uV/m) = LOG_{10}^{-1}(dBuV/m)/20)$
8. The indicated levels of the HP8593EM Spectrum Analyzer include already the Antenna factors and a 30dB factor for the PreAmp. The total field strength has been adjusted to include the attenuation factor of the coax and the difference in true PreAmp gain from 30dB at the specific frequencies of interest.

2.2dBi Dipole Antenna

Tuned Frequency	Measured Frequency	Pol	Indicated Level (dBuV/m)		Coax - PreAmp Factor not included in S.A. memory	Total Field Strength (dBuV/m)		Total Field Strength (uV/m)		FCC Limit	Antenna factor and 30dB preamp factor in S.A. memory
GHz	GHz		Peak	Avg	dB	Peak	Avg	Peak	Avg	uV/m	dB
2.412	4.824	V	50.3	42.6	3.3	53.6	45.9	478.6	197.2	500	-1.2
	7.236	V	48.9	44.6	3.2	52.1	47.8	402.7	245.5	500	4.2
	**9.642	V	49	47	4.1	<53.1	<51.1	451.8	358.9	500	9.0
	**12.05	V	49.3	47	5.5	<54.8	<52.5	549.5	421.7	500	11.6
2.442	4.884	V	48.8	44.1	3.4	52.2	47.5	407.4	237.1	500	-1.0
	7.326	V	48.6	42.3	3.2	50.9	45.5	350.8	188.4	500	4.6
	**9.768	V	49.9	47.1	4.2	<54.1	<51.3	507.0	367.3	500	9.1
	**12.210	V	50	47	5.6	<55.6	<52.6	602.6	426.6	500	11.7
2.462	4.924	V	51.2	44.9	3.4	54.6	48.3	537.0	260.0	500	-1.0
	7.386	V	49.0	43.1	3.2	52.2	46.3	407.4	206.5	500	4.8
	**9.848	V	49.5	47	4.2	<53.7	<51.2	484.2	363.1	500	9.1
	**12.310	V	50	47	5.6	<55.6	<51.6	602.6	380.2	500	11.7

* NOTE: This signal is at the system floor noise level.

** NOTE: At frequencies above 9.7GHz no EUT emissions were observed. All emissions at these frequencies are less than the floor noise of the measurement system. Only the floor noise of the measurement system was observed and recorded at the frequencies above 9.7GHz.

-1dBi Fujitsu Patch Antenna

Tuned Frequency	Measured Frequency	Pol	Indicated Level (dBuV/m)		Coax - PreAmp Factor not included in S.A. memory	Total Field Strength (dBuV/m)		Total Field Strength (uV/m)		FCC Limit	Antenna factor and 30dB preamp factor in S.A. memory
GHz	GHz		Peak	Avg	dB	Peak	Avg	Peak	Avg	uV/m	dB
2.412	4.824	V	49.3	46.6	3.3	52.6	49.9	426.6	312.6	500	-1.2
	7.236	V	48.1	45.3	3.2	51.3	48.5	367.3	266.1	500	4.2
	**9.642	V	49	47	4.1	<53.1	<51.1	451.8	358.9	500	9.0
	**12.05	V	49.2	47	5.5	<54.7	<52.5	543.2	421.7	500	11.6
2.442	4.884	V	47.2	38.5	3.4	50.6	41.9	338.8	124.4	500	-1.0
	7.326	V	47.1	43.1	3.2	50.3	46.3	327.3	206.5	500	4.6
	**9.768	V	46.5	45.0	4.2	<50.7	<49.2	342.8	288.4	500	9.1
	**12.210	V	51.0	47	5.6	<56.6	<52.6	676.1	426.6	500	11.7
2.462	4.924	V	48.2	42.3	3.4	51.6	45.7	380.2	192.8	500	-1.0
	7.386	V	48.6	44.8	3.2	51.8	48.0	389.0	251.2	500	4.8
	**9.848	V	49.6	47	4.2	<53.8	<51.2	489.8	363.1	500	9.1
	**12.310	V	50	47	5.6	<55.6	<52.6	602.6	426.6	500	11.7

* NOTE: This signal is at the system floor noise level.

** NOTE: At frequencies above 9.7GHz no EUT emissions were observed. All emissions at these frequencies are less than the floor noise of the measurement system. Only the floor noise of the measurement system was observed and recorded at the frequencies above 9.7GHz.

Spurious Field Strength Measurements: [15.33(b), 15.109(a), 15.209(a)]

MEASUREMENT PROCEDURE:

1. The EUT was setup to operate as the receiver.
2. The receiving spectrum analyzer was connected directly to the antenna terminals to identify the spurious emissions prior to taking open field radiated measurements at a 3 meter distance.
3. The EUT system was set upon the wooden turntable 80cm above the ground plane at a distance of 3 meters from the receiving antenna.
4. At each suspect frequency, the EUT system was rotated and the search antenna raised and lowered to obtain the maximum signal level.
5. A scan of 30MHz through 5GHz was made.
6. Both Horizontal and Vertical polarization modes were evaluated.
7. The Field Strength E(uV/m) is calculated using the formula:
   $E(uV/m) = LOG_{10}^{-1}((dBuV/m + Ant.Factor(dB) + Coax\ Loss(dB) - PreAmp(dB))/20)$

Tabulated Measurements

Quasi-Peak for frequencies less than 1GHz. Average for frequencies greater than 1 GHz.

Frequency MHz	Pol-arity	Quasi Peak Measurement dBuV/m	FCC Class B Limit dBuV/m	Margin dB		Included Cable + Antenna Factors dB/m
300.71	H	31.76	46.00	-14.24		14.60
334.09	H	34.48	46.00	-11.52		15.79
408.14	V	31.27	46.00	-14.73		17.31
432.09	H	31.86	46.00	-14.14		17.61
456.10	H	44.03	46.00	-1.97		18.23
465.00	V	33.69	46.00	-12.31		18.51
467.76	V	41.92	46.00	-4.08		18.59
480.10	H	35.60	46.00	-10.40		18.97
501.17	V	41.21	46.00	-4.79		19.58
504.09	V	40.90	46.00	-5.10		19.66
528.11	V	39.46	46.00	-6.54		20.32
534.59	H	42.91	46.00	-3.09		20.48
601.40	H	42.12	46.00	-3.88		21.32
758.92	V	40.97	46.00	-5.03		23.93
768.46	V	39.38	46.00	-6.62		24.02
801.86	H	39.14	46.00	-6.86		24.35
868.00	H	43.40	46.00	-2.60		24.70

All other emissions in the range 30MHz - 1GHz were greater than 15dB below the limits.

Measurements above 1GHZ are tabulated on next page.

Frequency MHz	Pol-arity	Quasi Peak Measurement dBuV/m	FCC Class B Limit dBuV/m	Margin dB		Included Cable + Antenna Factors dB/m
1002.38	V	43.97	54.00	-10.03		25.44
1069.15	V	38.71	54.00	-15.29		26.25
1136.03	V	42.18	54.00	-11.82		27.29

All other emissions in the range 30MHz - 5GHz were greater than 15dB below the limits.