FCC PART 15 SUBPART C

EMI MEASUREMENT AND TEST REPORT

For

Meru Networks

1309 S Mary, Suite 220
Sunnyvale, CA 94087

FCC ID: RE7-AP100

2003-08-21

This Report Concerns:	**Equipment Type:**
☒ Original Report	802.11b Access Point

Test Engineer: Ling Zhang

Report No.: R0308071

Test Date: 2003-08-11

Reviewed By: Hans Mellberg

Prepared By: Bay Area Compliance Laboratory Corporation (BACL)
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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

The *Meru Networks's*, model: *AP100* or the "EUT" as referred to in this report is an 802.11b access point which measures approximately 9.8"L x 6.8"W x 1.4"H. The EUT will operate at the frequency range of 2412 – 2462 MHz, with the maximum conducted output power of 23.73dBm (0.236W)

The EUT was fed by PowerDsine power over LAN Hub, M/N: PowerDsine 6001.

There are 8 antennas used with the EUT respectively. Here is the antenna list:

MBF24008
MC024005PT
NO24015
CAP2226
MP24013XFPTNF
MP24008XFPTNF
MHA2400PT
MCD2400PT

However, among these eight antennas and the original one, there are four types in total, represented by original antenna, MBF24008, MP24015PTNF and CAP22226. The test was performed with these four antennas.

** The test data gathered are from typical production samples provided by the manufacturer.*

1.2 Objective

This type approval report is prepared on behalf of. *Meru Networks* in accordance with Part 2, Subpart J, Part 15, Subparts A and C of the Federal Communication Commissions rules.

The objective of the manufacturer is to demonstrate compliance with FCC rules for Output Power, Antenna Requirements, 6 dB Bandwidth, power density, 100 kHz Bandwidth of Band Edges Measurement, Conducted and Spurious Radiated Emission.

1.3 Related Submittal(s)/Grant(s)

No related submittals or grants.

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-1992, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz and FCC97114 for Direct Sequence SS.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.5 Test Facility

The Open Area Test site used by BACL to collect radiated and conducted emission measurement data is located in the back parking lot of the building at 230 Commercial Street, Sunnyvale, California, USA.

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-1992.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The scope of the accreditation covers the FCC Method – 47 CFR Part – Digital Devices, CISPER 22: 1997: Electromagnetic Interference – Limits and Methods of Measurement of Information Technology Equipment test methods.

1.6 Test Equipment List

Manufacturer	Description	Model	Serial Number	Cal. Due Date
HP	Spectrum Analyzer	8568B	2517A01610	2003-10-30
HP	Amplifier	8447E	2944A07030	2004-06-28
HP	Quasi-Peak Adapter	85650A	2521A00718	2004-03-08
Com-Power	Biconical Antenna	AB-100	14012	2003-09-05
Com-Power	Log Periodic Antenna	AL-100	16005	2003-08-23
Com-Power	Log Periodic Antenna	AB-900	15049	2004-05-01
Agilent	Spectrum Analyzer (9KHz – 40GHz)	8564E	3943A01781	2004-08-01
Agilent	Spectrum Analyzer (9KHz – 50GHz)	8565EC	3946A00131	2004-05-03
HP	Amplifier (1-26.5GHz)	8449B	3147A00400	2004-03-14
A.H.System	Horn Antenna (700MHz-18GHz)	SAS-200/571	261	2004-05-31

*** Statement of Traceability: Bay Area Compliance Laboratory Corp.** certifies that all calibration has been performed using suitable standards traceable to the NIST.

1.7 Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Toshiba	Notebook PC	Satellite 1110-S153	92338753K	DOC
HP	Printer	2225C	N/A	DOC
PowerDsine	Power Over LAN Hub	PowerDsine 6001	A032160400001375A01	DOC

1.8 External I/O Cabling List and Details

Cable Description	Length (M)	Port/From	To
RJ-45 Cable	1.0	RJ45Port/Notebook	Power Over LAN Hub
Ethernet Cable	1.0	Power Over LAN Hub	EUT
Shielded Printer Cable	2.0	Parallel Port / Notebook PC	Printer

2 - SYSTEM TEST CONFIGURATION

2.1 Justification

The host system was configured for testing in a typical fashion (as normally used by a typical user).

The EUT was tested in the normal (native) operating mode to represent *worst*-case results during the final qualification test.

2.2 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the system components in a manner similar to a typical use. The test software, provided by the customer, is started the Windows terminal program under the Windows 98/2000/ME/XP operating system.

Once loaded, set the Tx channel to low, mid and high for testing.

2.3 Special Accessories

As shown in section 2.7, all interface cables used for compliance testing are shielded. The notebook and the peripherals featured shielded metal connectors.

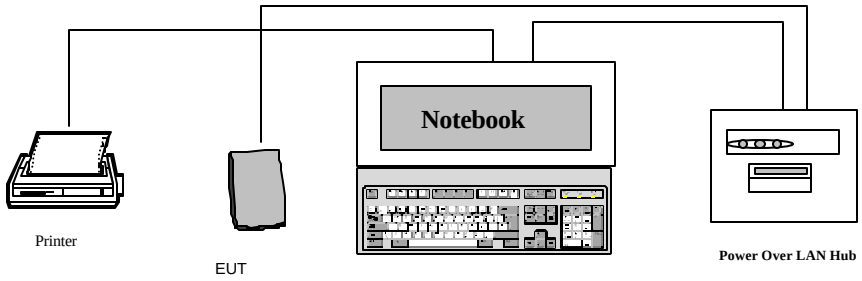
2.4 Schematics / Block Diagram

Please refer to Appendix A.

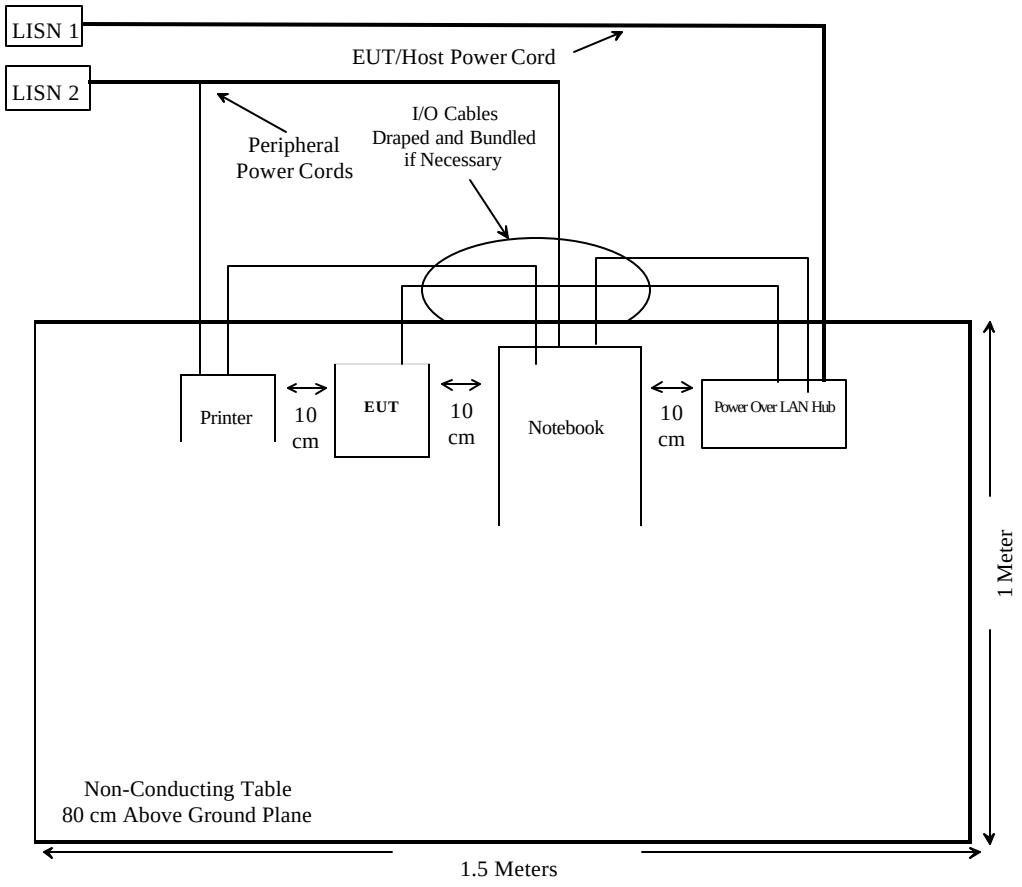
2.5 Equipment Modifications

No modifications were made by BACL to ensure the EUT to comply with the applicable limits and requirements.

2.6 Configuration of Test System



2.7 Test Setup Block Diagram



3 - SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT	REFERENCE
§15.203	Antenna Requirement	Compliant	Section 9
§ 15.205	Restricted Bands	Compliant	Section 10
§15.207 (a)	Conducted Emission	Compliant	Section 11
§15.209 (a)	Radiated Emission	Compliant	Section 10
§15.209 (a)	Spurious Emission	Compliant	Section 6
§15.247 (a) (2)	6 dB Bandwidth	Compliant	Section 5
§15.247 (b) (3)	Maximum Peak Output Power	Compliant	Section 4
§ 15.247 (c)	100 kHz Bandwidth of Frequency Band Edge	Compliant	Section 8
§15.247 (d)	Peak Power Spectral Density	Compliant	Section 7

4 - CONDUCTED OUTPUT POWER MEASUREMENT

4.1 Standard Applicable

According to §15.247(b) (3), for systems using digital modulation in 2400-2483.5 MHz: 1 Watt

4.2 Measurement Procedure

1. Place the EUT on the turntable and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.
3. The peak power will be obtained by adding the bandwidth correction factor, 10log(BW 6dB / RBW) to the peak power reading at RBW = 2.0 MHz of the spectrum analyzer.

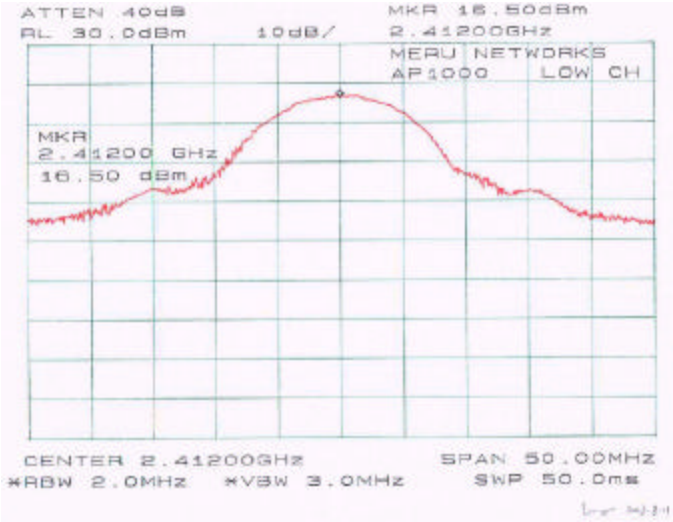
4.3 Test Equipment

Manufacturer	Model No.	Serial No.	Calibration Due Date
HP	8564E	Spectrum Analyzer	2003-12-06

4.4 Measurement Result

Frequency (MHz)	Peak Output Power (dBm)	Correction Factor (dBm)	Corrected Power (dBm)	Output Power (W)	Standard (W)	Result
2412	16.50	7.23	23.73	0.236	$\leq$ 1 W	Compliant
2436	16.33	7.23	23.56	0.227	$\leq$ 1 W	Compliant
2462	16.00	7.23	23.23	0.210	$\leq$ 1 W	Compliant

Note: Correction Factor = 10 log (BW6dB/RBW) = 10log(10.58/2) = 7.23dBm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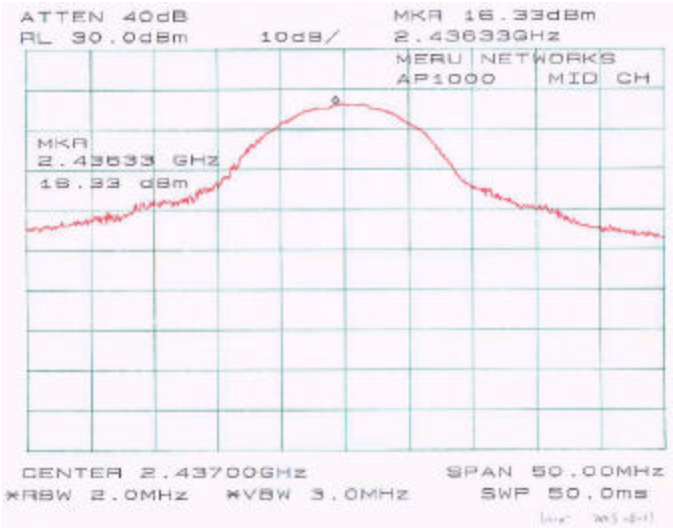
RL 30.0dBm
10dB/
MKR 16.50dBm
2.41200GHz
MERU NETWORKS
AP1000 LOW CH
MKR
2.41200 GHz
16.50 dBm
CENTER 2.41200GHz
SPAN 50.00MHz
*RBW 2.0MHz
*VBW 3.0MHz
SWP 50.0ms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10dB/
MKR 16.33dBm
2.43633GHz
MERU NETWORKS
AP1000 MID CH
MKR
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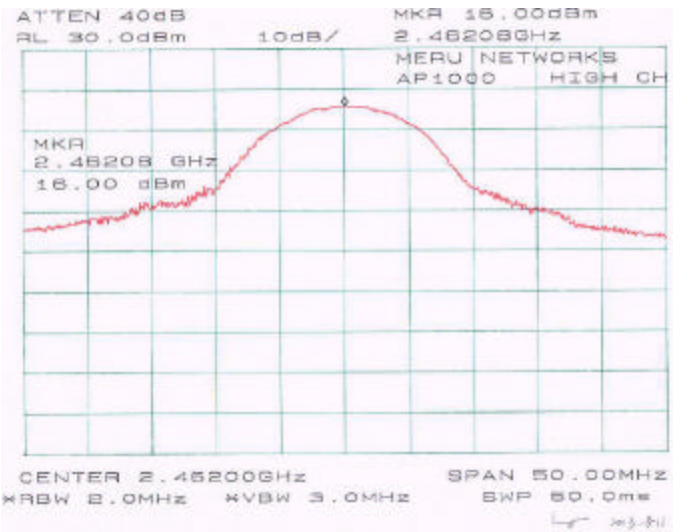
16.33 dBm
CENTER 2.43700GHz
SPAN 50.00MHz
*RBW 2.0MHz
*VBW 3.0MHz
SWP 50.0ms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10dB/
MKR 16.00dBm
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AP1000 HIGH CH
MKR
2.46208 GHz
16.00 dBm
CENTER 2.46200GHz
SPAN 50.00MHz
*RBW 2.0MHz
*VBW 3.0MHz
SWP 50.0ms

5 – 6 DB BANDWIDTH

5.1 Standard Applicable

According to §15.247(a)(2), for systems using digital modulation techniques operate in 2400 – 2483.5MHz, the minimum 6dB bandwidth shall be at least 500 kHz.

5.2 Measurement Procedure

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

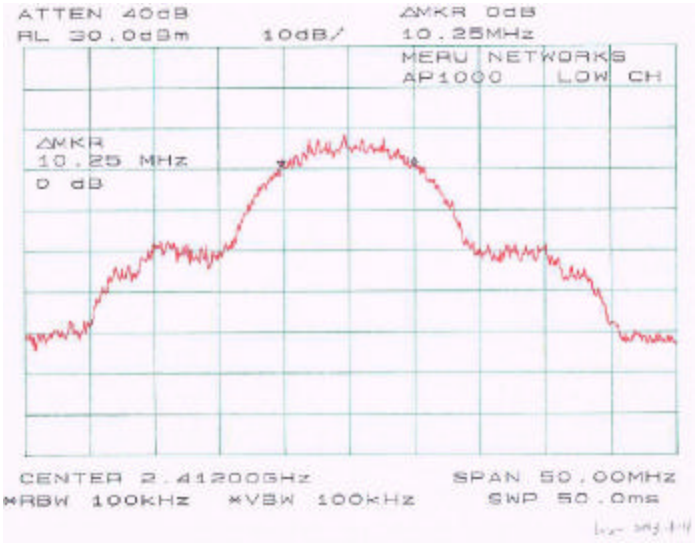
5.3 Test Equipment

Manufacturer	Model No.	Serial No.	Calibration Due Date
HP	8564E	Spectrum Analyzer	2003-12-06

5.4 Measurement Result

Please refer to following pages for plots of 6 dB Bandwidth.

Frequency (MHz)	Measured (MHz)	Standard (kHz)	Result
2412	10.25	≥ 500	Compliant
2437	10.58	≥ 500	Compliant
2462	10.58	≥ 500	Compliant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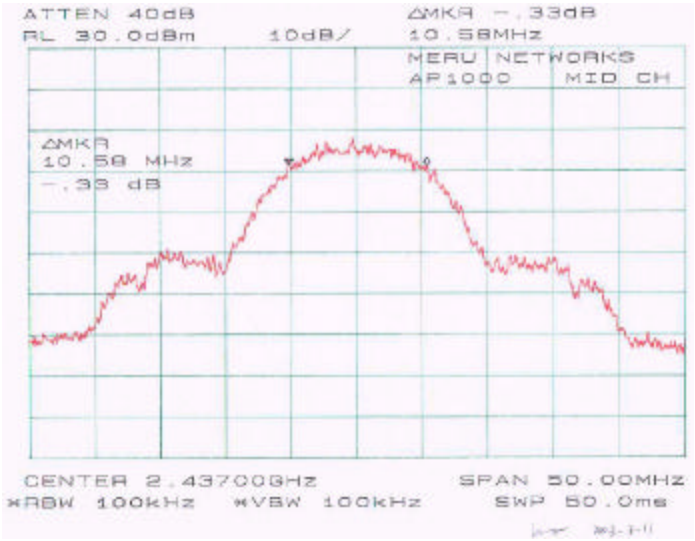
10dB/
ΔMKR 0dB
10.25MHz
MERU NETWORKS
AP1000 LOW CH
ΔMKR
10.25 MHz
0 dB
CENTER 2.412000GHz
SPAN 50.00MHz
*RBW 100kHz
*VBW 100kHz
SWP 50.0ms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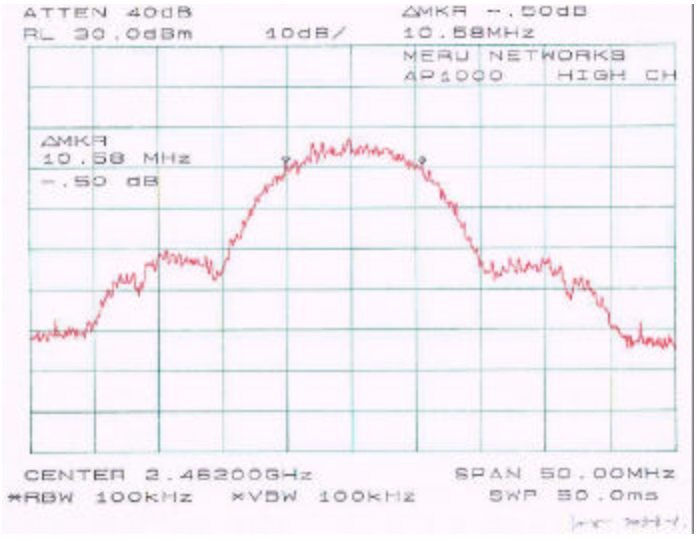
CENTER 2.437000GHz
SPAN 50.00MHz
*RBW 100kHz
*VBW 100kHz
SWP 50.0ms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10dB/
ΔMKR -.50dB
10.58MHz
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ΔMKR
10.58 MHz
-.50 dB
CENTER 2.462000GHz
SPAN 50.00MHz
*RBW 100kHz
*VBW 100kHz
SWP 50.0ms

6 - SPURIOUS EMISSION AT ANTENNA TERMINAL

6.1 Standard Applicable

According to §15.209 (a), except as provided elsewhere in the subpart of 15.209, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100 **	3
88-216	150 **	3
216-960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.

6.2 Measurement Procedure

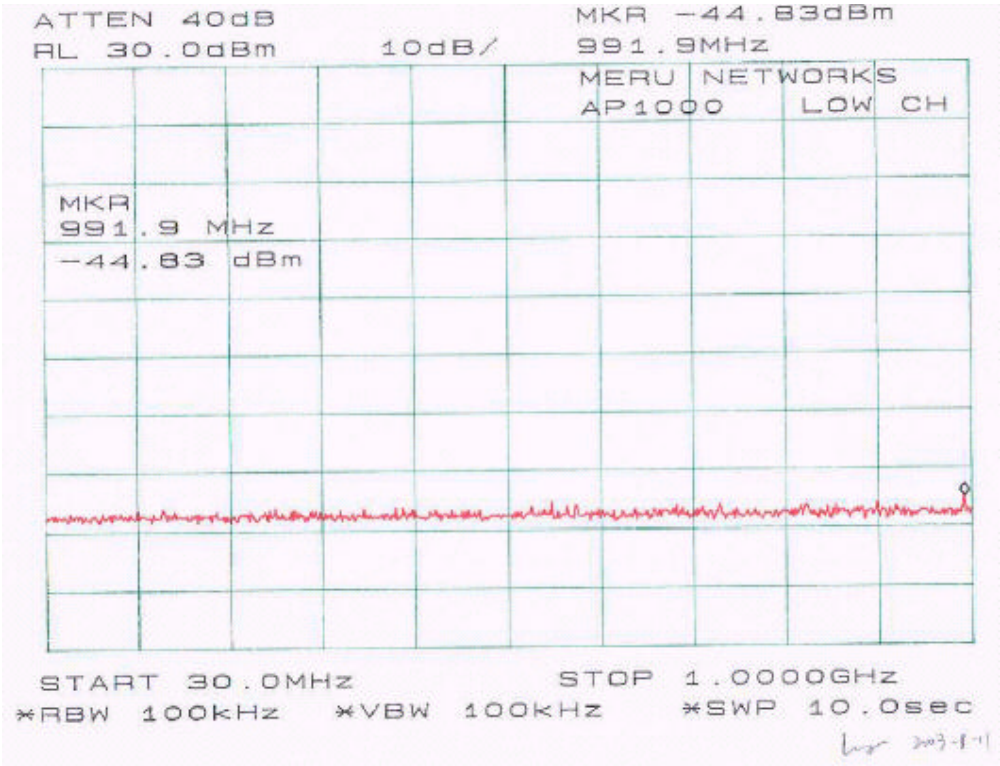
1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set the SA on Max-Hold Mode, and then keep the EUT in transmitting mode. Record all the signals from each channel until each one has been recorded.
4. Set the SA on View mode and then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

6.3 Test Equipment

Manufacturer	Model No.	Serial No.	Calibration Due Date
HP	8564E	Spectrum Analyzer	2003-12-06

6.4 Measurement Result

Please refer to following pages for plots of spurious emission.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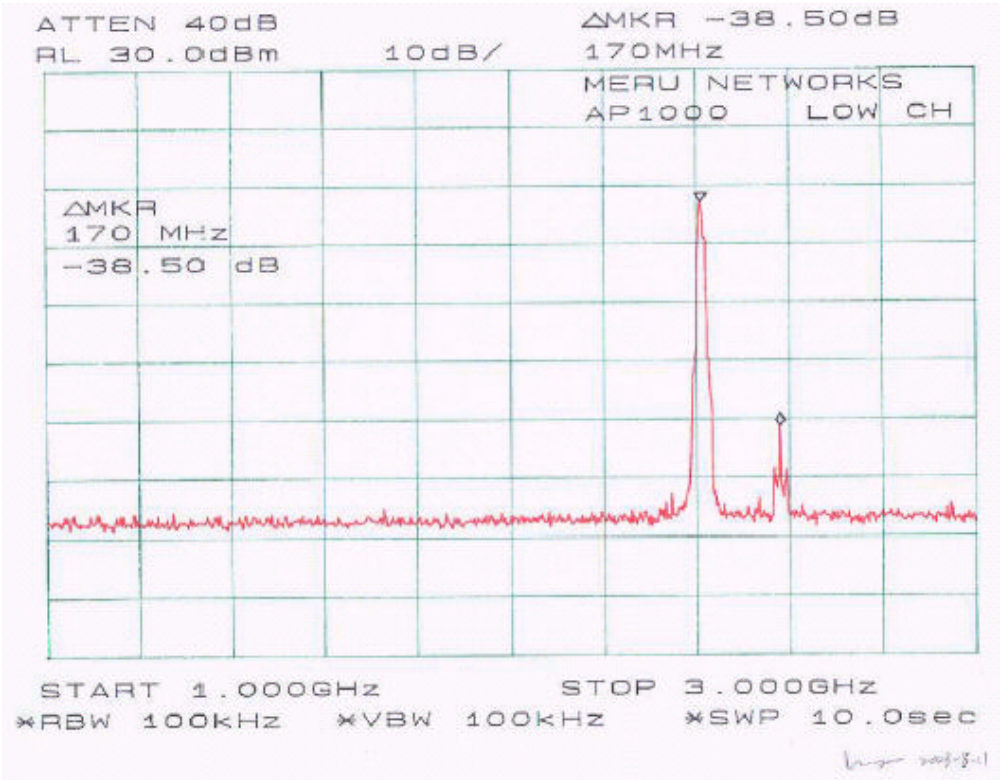
RL 30.0dBm
10dB/
MKR -44.83dBm
991.9MHz
MERU NETWORKS
AP1000 LOW CH
MKR
991.9 MHz
-44.83 dBm
START 30.0MHz
STOP 1.0000GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec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10dB/
ΔMKR -38.50dB
170MHz
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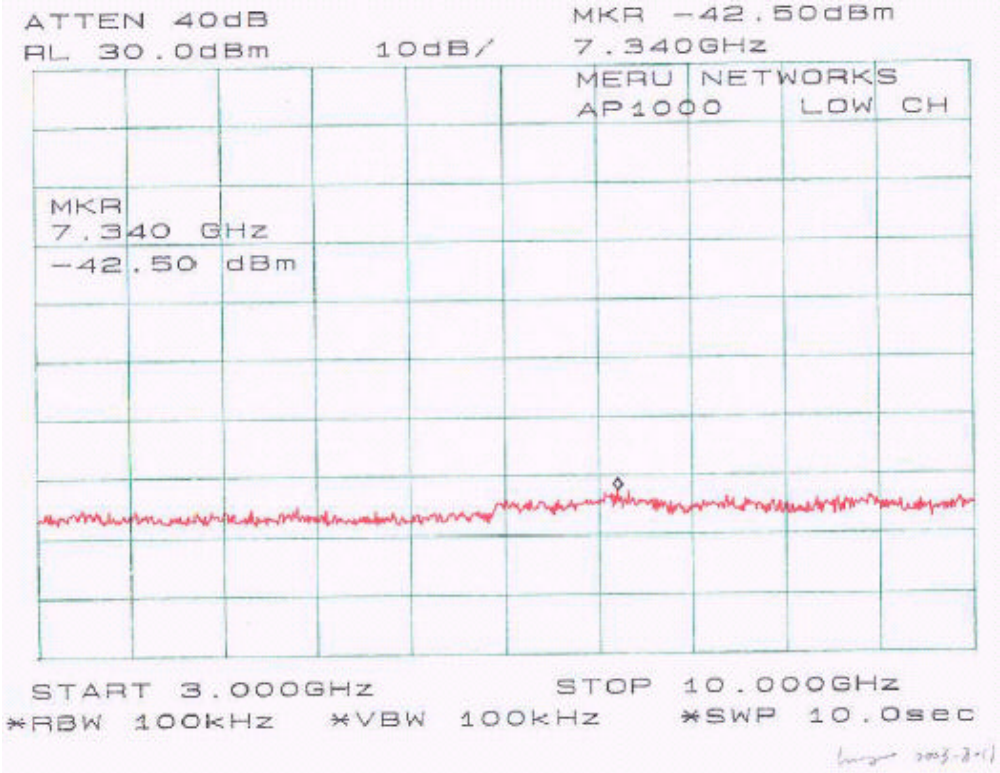
ΔMKR
170 MHz
-38.50 dB
START 1.000GHz
STOP 3.000GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec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10dB/
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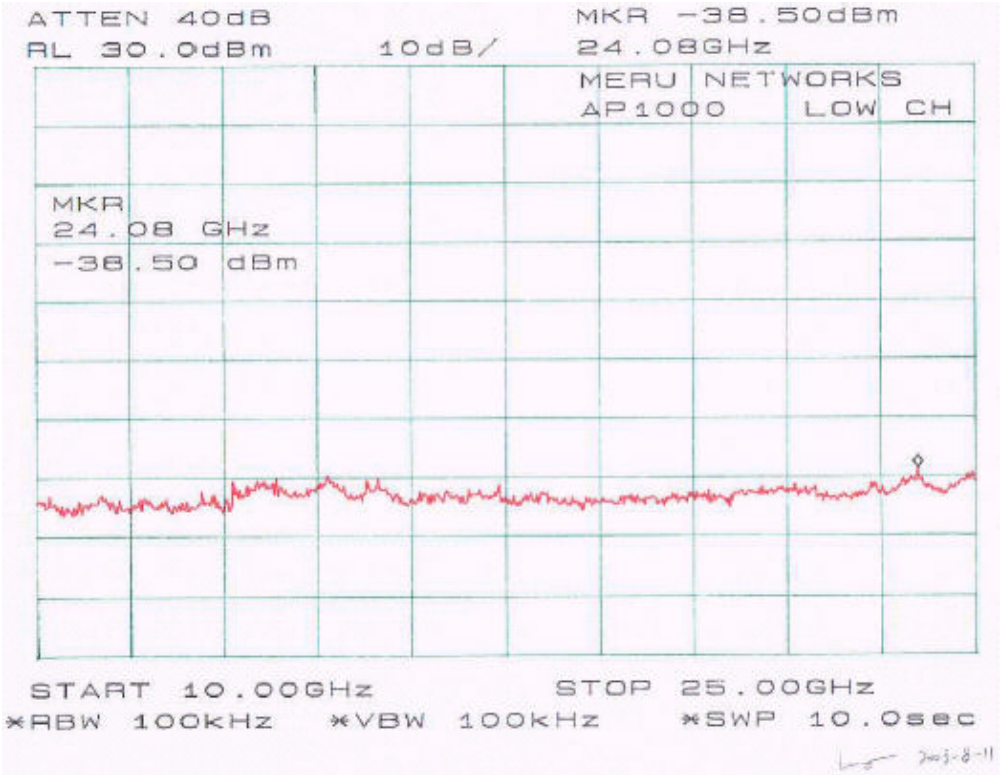
AP1000 LOW CH
MKR
7.340 GHz
-42.50 dBm
START 3.000GHz
STOP 10.000GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec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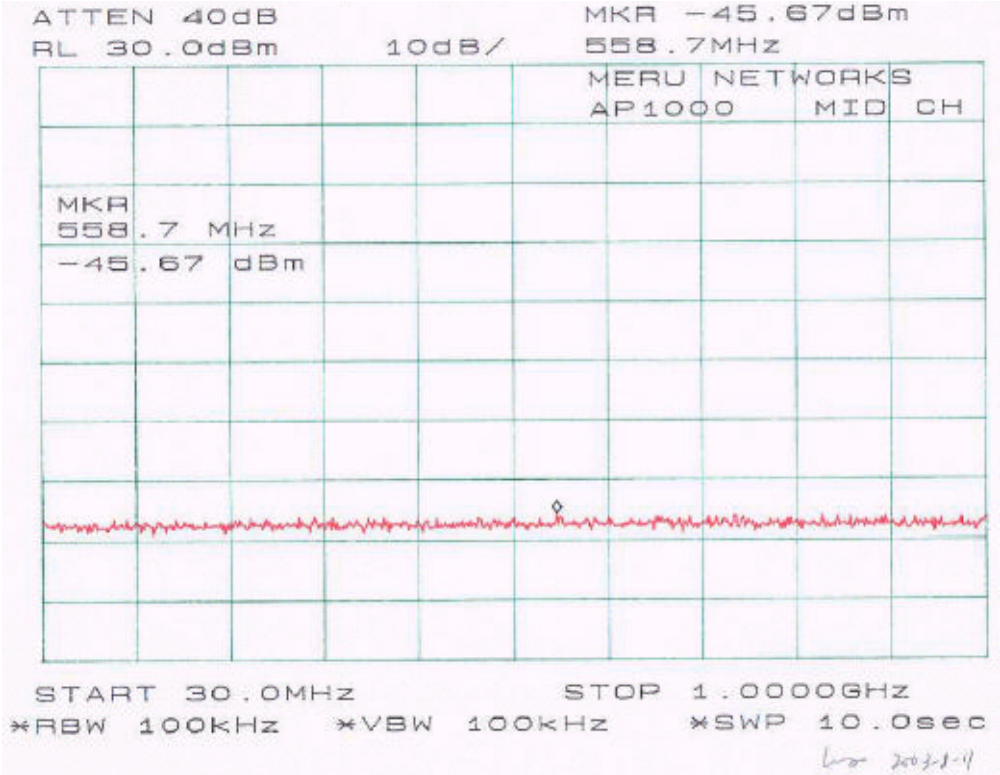
START 10.00GHz
STOP 25.00GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec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10dB/
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558.7MHz
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MKR
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-45.67 dBm
START 30.0MHz
STOP 1.0000GHz
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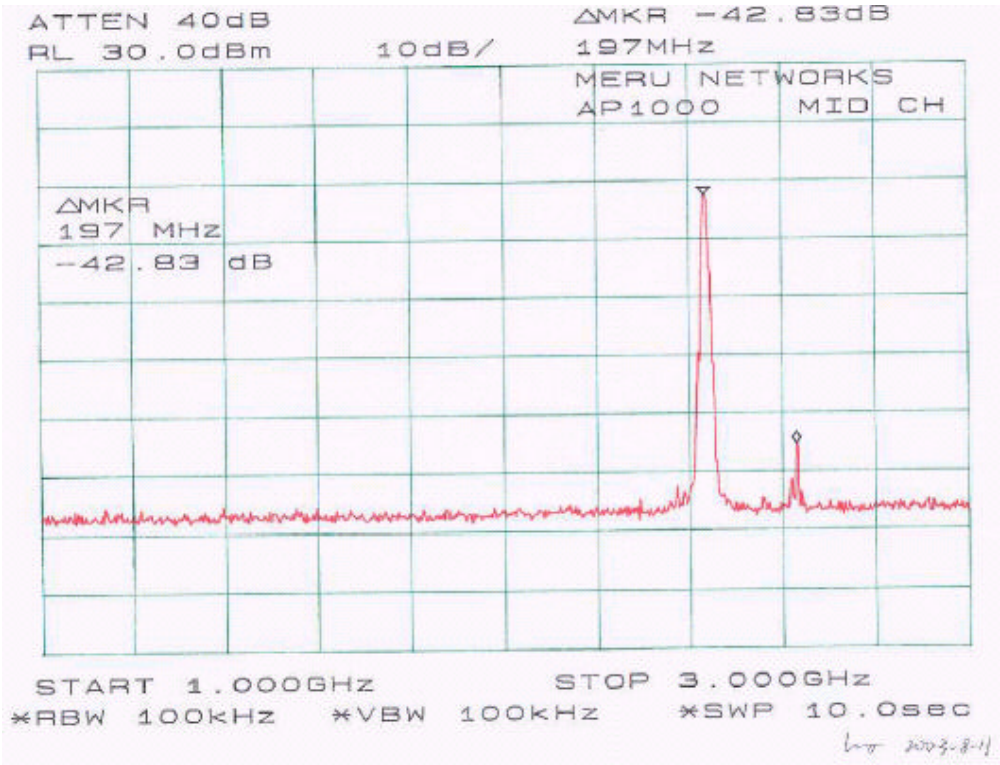
*VBW 100kHz
*SWP 10.0sec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10dB/
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197 MHz
-42.83 dB
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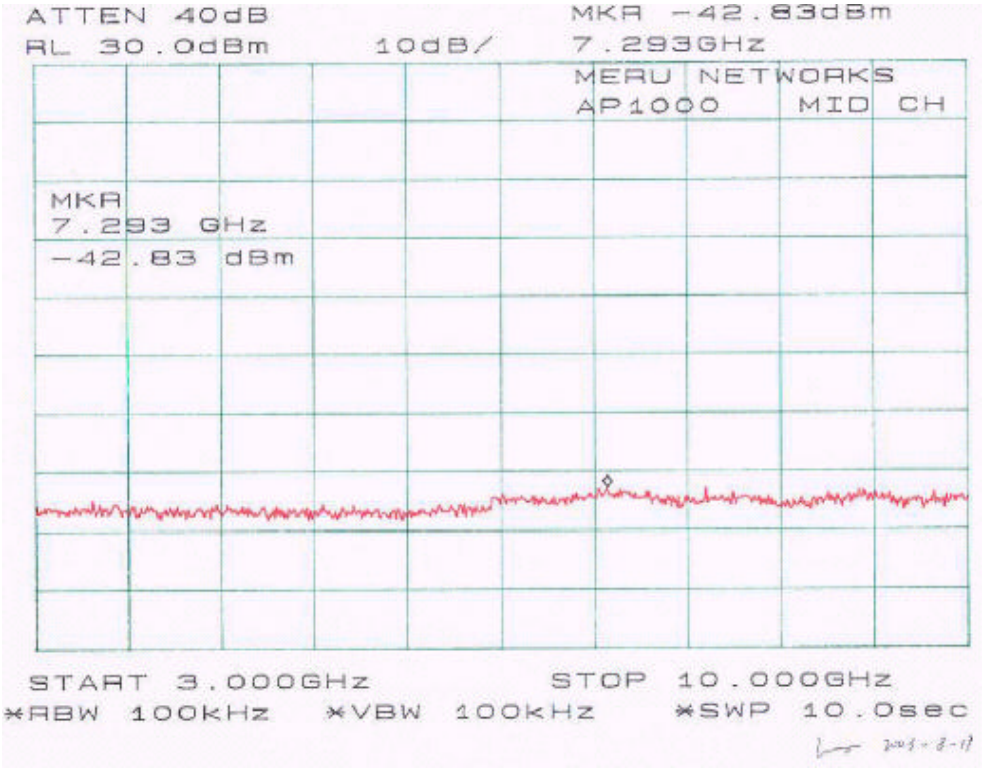
STOP 3.000GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec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10dB/
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7.293GHz
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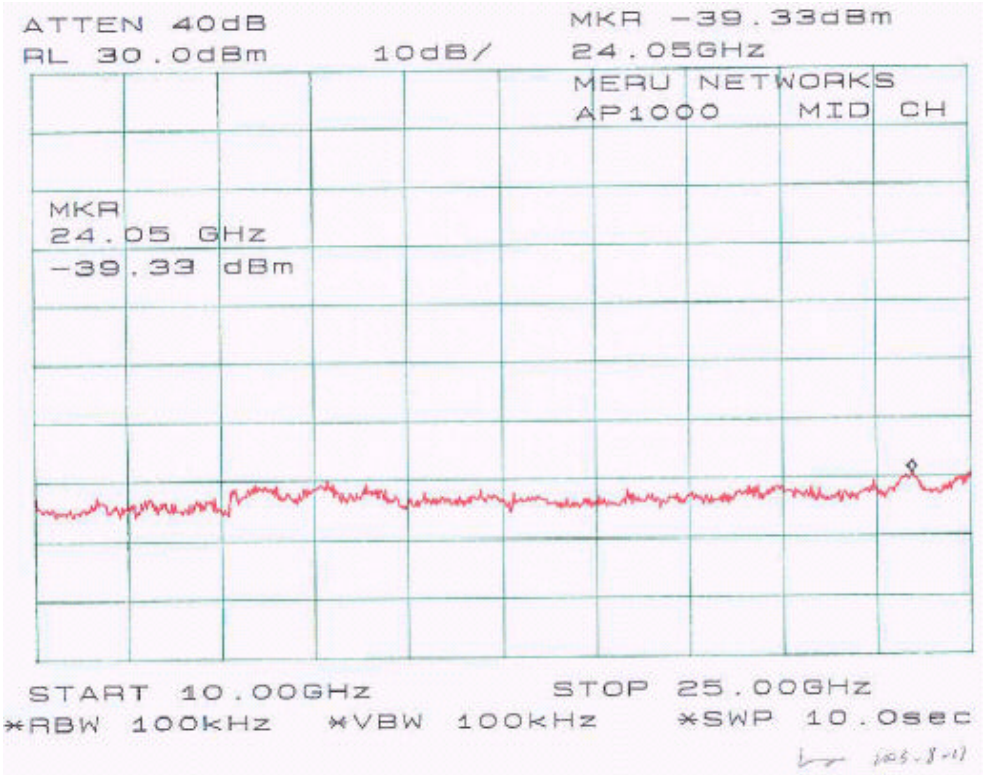
-42.83 dBm
START 3.000GHz
STOP 10.000GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec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10dB/
MKR -39.33dBm
24.05GHz
MERU NETWORKS
AP1000 MID CH
MKR
24.05 GHz
-39.33 dBm
START 10.00GHz
STOP 25.00GHz
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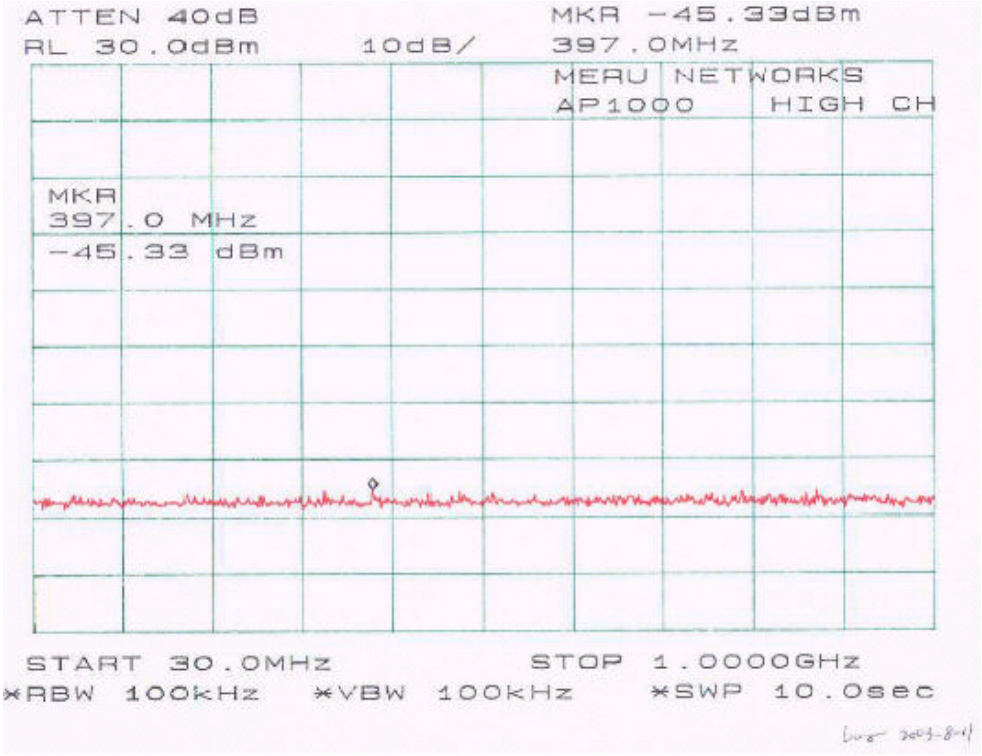
*VBW 100kHz
*SWP 10.0sec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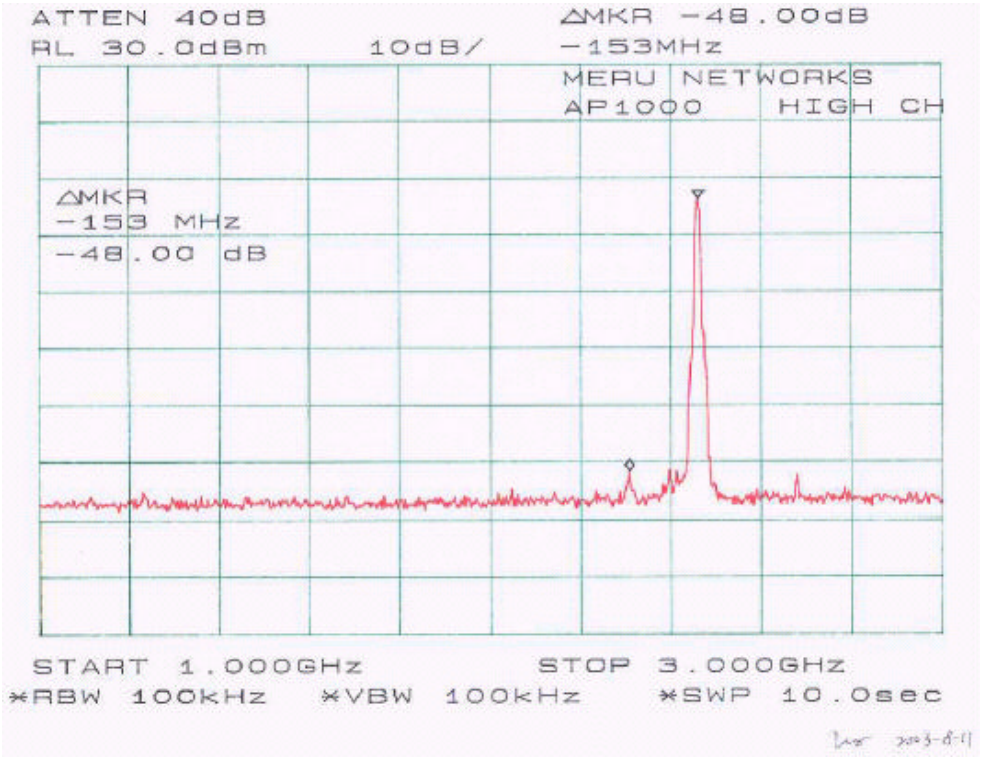
10dB/
MKR -45.33dBm
397.0MHz
MERU NETWORKS
AP1000 HIGH CH
MKR
397.0 MHz
-45.33 dBm
START 30.0MHz
STOP 1.0000GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec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-153MHz
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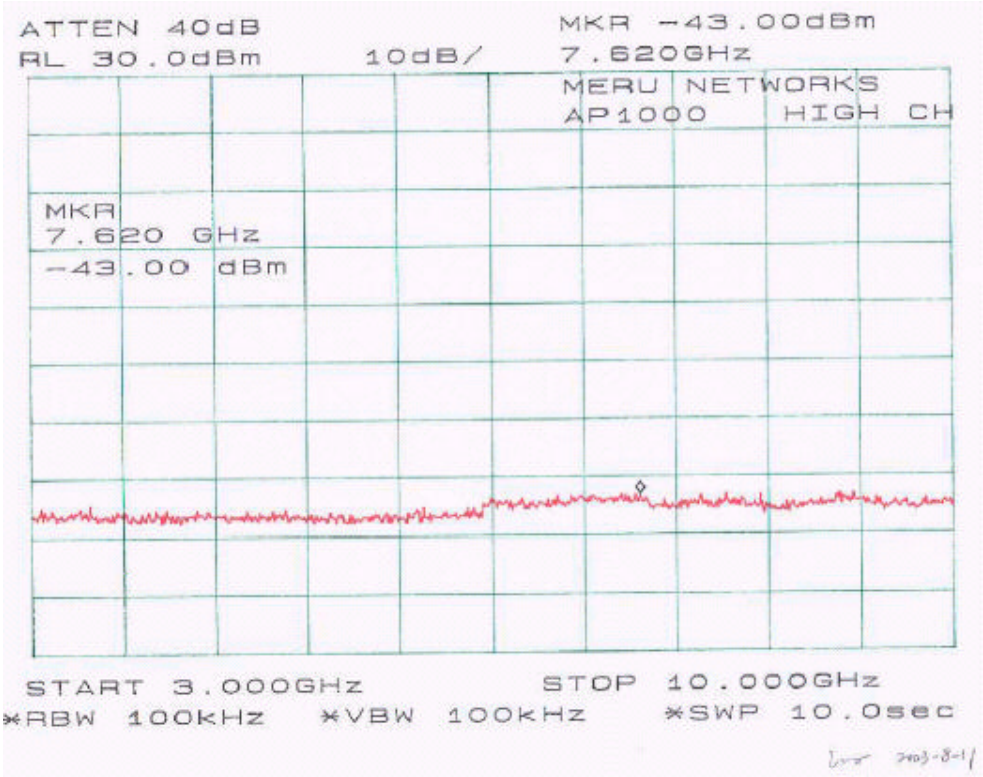
AP1000 HIGH CH
ΔMKR
-153 MHz
-48.00 dB
START 1.000GHz
STOP 3.000GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec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10dB/
MKR -43.00dBm
7.620GHz
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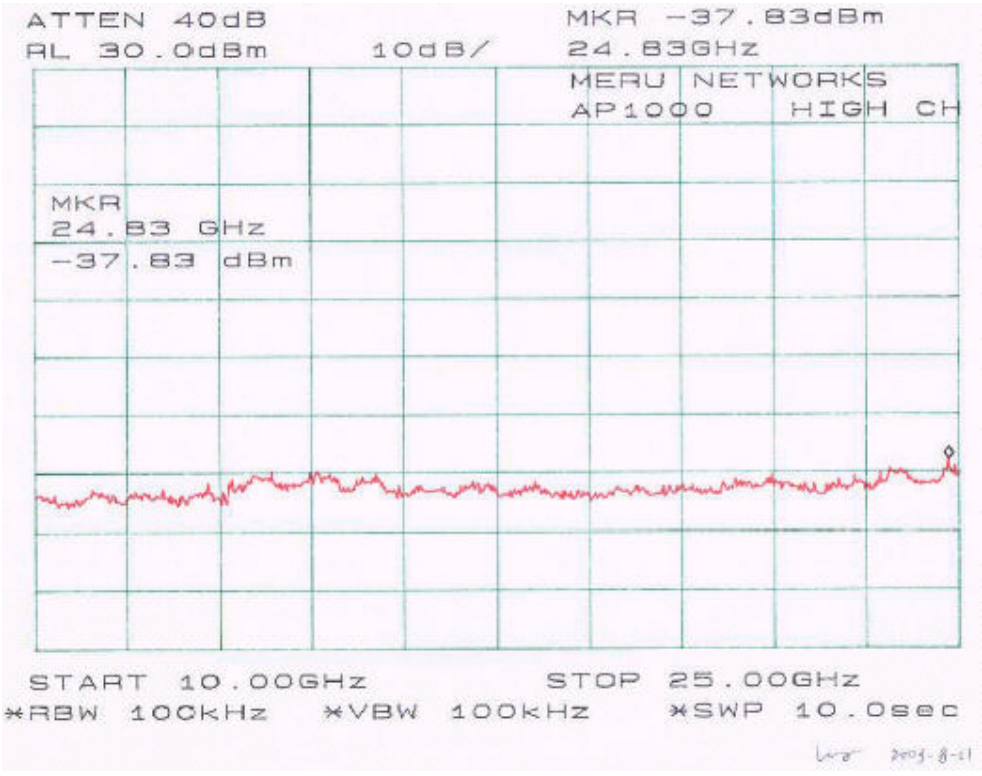
AP1000 HIGH CH
MKR
7.620 GHz
-43.00 dBm
START 3.000GHz
STOP 10.000GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec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10dB/
MKR -37.83dBm
24.83GHz
MERU NETWORKS
AP1000 HIGH CH
MKR
24.83 GHz
-37.83 dBm
START 10.00GHz
STOP 25.00GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec

7 - PEAK POWER SPECTRAL DENSITY

7.1 Standard Applicable

According to §15.247 (d), digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

7.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of SA on any frequency be measured and set SA to 6MHz span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Repeat above procedures until all frequencies measured were complete.

7.3 Test Equipment

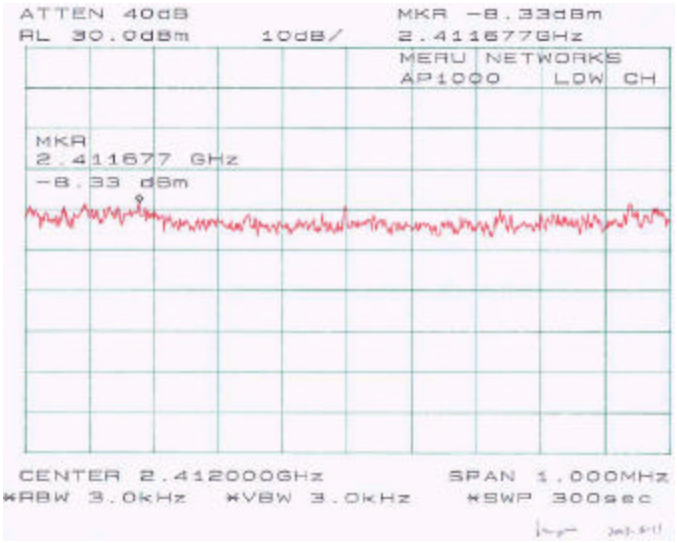
Manufacturer	Model No.	Serial No.	Calibration Due Date
HP	8564E	Spectrum Analyzer	2003-12-06

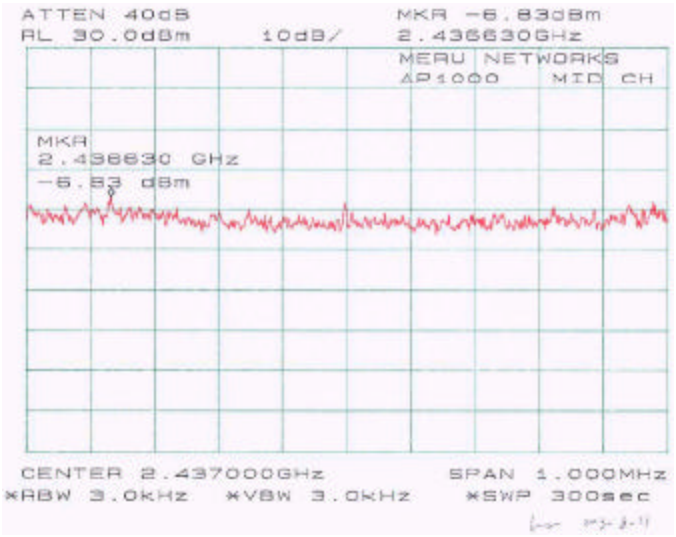
7.4 Measurement Results

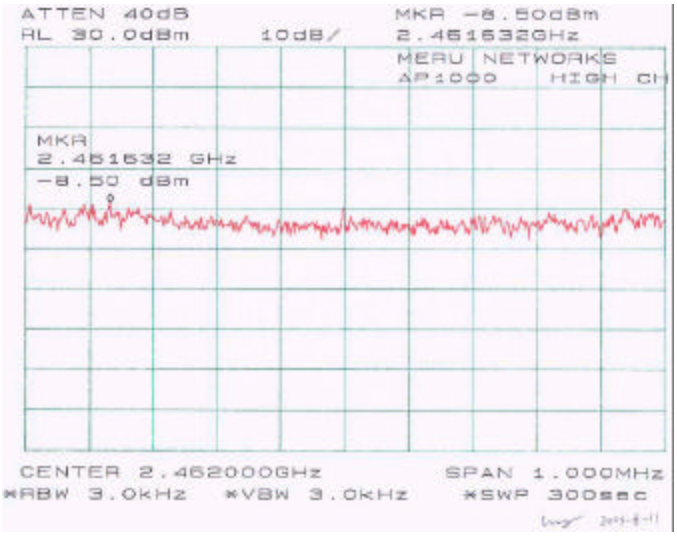
Frequency (MHz)	Peak Power Spectral Density (dBm)	Standard (dBm)	Result
2412	-8.33	≤ 8	Compliant
2437	-6.83	≤ 8	Compliant
2462	-8.50	≤ 8	Compliant

7.5 Plot of Peak Power Spectral Density

Please refer to following pages for plots of peak power spectral density.


ATTEN 40dB
RL 30.0dBm
10dB/
MKR -8.33dBm
2.411677GHz
MERU NETWORKS
AP1000 LOW CH
MKR
2.411677 GHz
-8.33 dBm
CENTER 2.412000GHz
SPAN 1.000MHz
*RBW 3.0kHz
*VBW 3.0kHz
*SWP 300sec


ATTEN 40dB
RL 30.0dBm
10dB/
MKR -6.83dBm
2.436630GHz
MERU NETWORKS
AP1000 MID CH
MKR
2.436630 GHz
-6.83 dBm
CENTER 2.437000GHz
SPAN 1.000MHz
*RBW 3.0kHz
*VBW 3.0kHz
*SWP 300sec


ATTEN 40dB
RL 30.0dBm
10dB/
MKR -8.50dBm
2.461632GHz
MERU NETWORKS
AP1000 HIGH CH
MKR
2.461632 GHz
-8.50 dBm
CENTER 2.462000GHz
SPAN 1.000MHz
*RBW 3.0kHz
*VBW 3.0kHz
*SWP 300sec

8 - 100 KHZ BANDWIDTH OF BAND EDGES

8.1 Standard Applicable

According to §15.247(c), in *any* 100 kHz bandwidth outside the frequency bands 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. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) see §15.205(c)).

8.2 Measurement Procedure

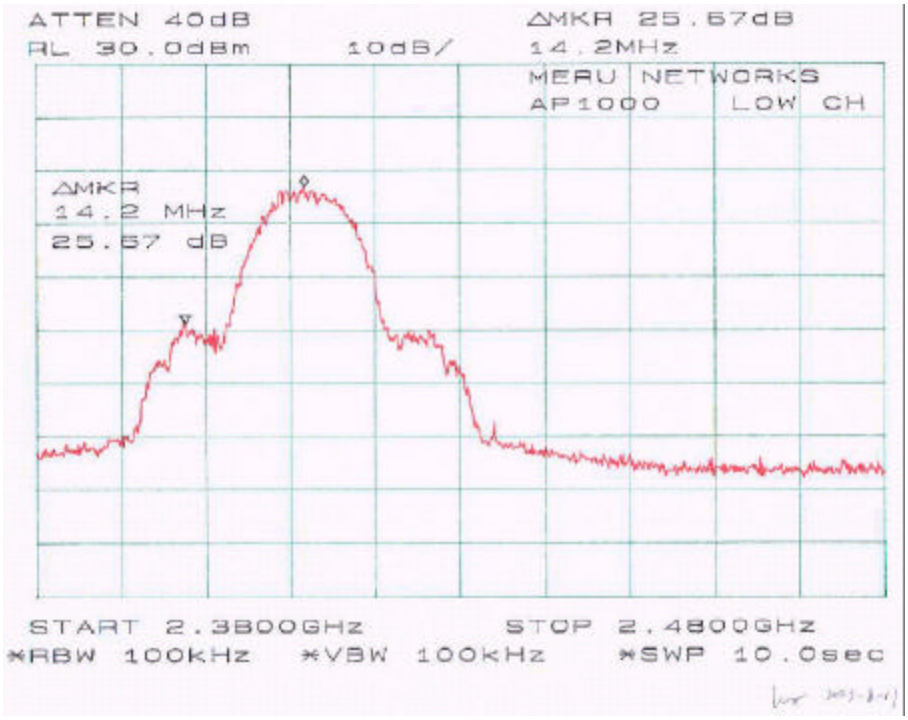
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

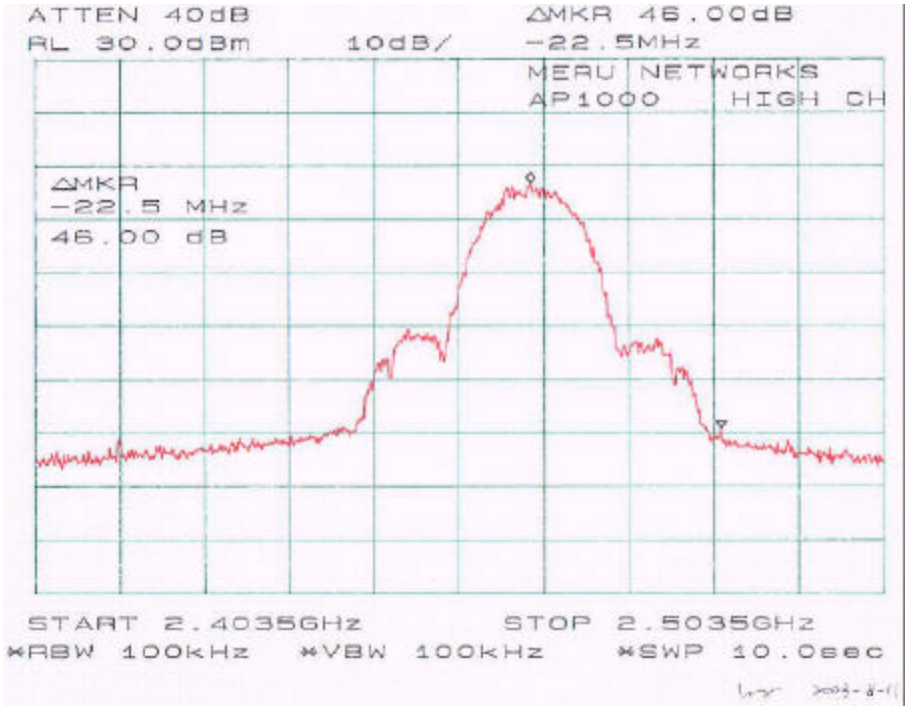
8.3 Test Equipment

Manufacturer	Model No.	Serial No.	Calibration Due Date
HP	8564E	Spectrum Analyzer	2003-12-06

8.4 Measure Results

Please refer to following pages for plots of band edge.


ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 25.67dB
14.2MHz
MERU NETWORKS
AP1000 LOW CH
ΔMKR
14.2 MHz
25.67 dB
START 2.3800GHz
STOP 2.4800GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec


ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 46.00dB
-22.5MHz
MERU NETWORKS
AP1000 HIGH CH
ΔMKR
-22.5 MHz
46.00 dB
START 2.4035GHz
STOP 2.5035GHz
*RBW 100kHz
*VBW 100kHz
*SWP 10.0sec

9 - ANTENNA REQUIREMENT

9.1 Standard Applicable

For intentional device, according to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to § 15.247 (1), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

9.2 Antenna Connected Construction

The maximum gain of antenna used for transmitting is 15 dBi for the outdoor antenna and 3dBi for the indoor antenna, and the antenna connector is designed with unique attachment. Please see the antenna spec. provided by the applicant for details.

10 - SPURIOUS RADIATED EMISSION

10.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at BACL is ±4.0 dB.

10.2 EUT Setup

The radiated emission tests were performed in the open area 3-meter test site, using the setup in accordance with the ANSI C63.4-1992. The specification used was the FCC 15 Subpart C limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

The host PC system was connected with 120Vac/60Hz power source.

10.3 Spectrum Analyzer Setup

According to FCC Rules, 47 CFR §15.33 (a) (1), the system was tested to 25GHz.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Range	***RBW***	***Video B/W***
Below 30MHz	10kHz	10kHz
30 – 1000MHz	100kHz	100kHz
Above 1000MHz	1MHz	1MHz

10.4 Test Procedure

For the radiated emissions test, the Host PC system power cord was connected to the AC floor outlet since the power supply used in the EUT did not provide an accessory power outlet.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dBµV of specification limits), and are distinguished with a "**Qp**" in the data table.

10.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBµV means the emission is 7dBµV below the maximum limit for Subpart C. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Subpart C Limit

10.6 Test Equipment

Manufacturer	Model No.	Serial No.	Calibration Due Date
HP	8564E	Spectrum Analyzer	2003-12-06

10.7 Summary of Test Results

According to the data in section 10.8, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.207 and 15.247, and had the worst margin of:

Original Antenna:

-6.7 dB at **2580.17 MHz** in the **Vertical** polarization, Low Channel

-9.4 dB at **2629.93 MHz** in the **Vertical** polarization, Middle Channel

-12.9 dB at **7386.00 MHz** in the **Horizontal** polarization, High Channel

-9.8 dB at **318.2 MHz** in the **Vertical** polarization, Unintentional Emission

MBF24008 Fiberclass Omni 8dBi Antenna:

-2.7 dB at **2580.17 MHz** in the **Vertical** polarization, Low Channel

-8.5 dB at **2629.93 MHz** in the **Vertical** polarization, Middle Channel

-9.6 dB at **2306.00 MHz** in the **Vertical** polarization, High Channel

-9.5 dB at **208.5 MHz** in the **Vertical** polarization, Unintentional Emission

MP24015PTNF Panel Antenna:

-3.5 dB at **2580.17 MHz** in the **Vertical** polarization, Low Channel

-3.4 dB at **2629.93 MHz** in the **Vertical** polarization, Middle Channel

-7.9 dB at **2306.00 MHz** in the **Vertical** polarization, High Channel

-7.8 dB at **208.60 MHz** in the **Vertical** polarization, Unintentional Emission

CAP22226 Antenna:

-5.5 dB at **2580.17 MHz** in the **Vertical** polarization, Low Channel

-10.2 dB at **2629.93 MHz** in the **Vertical** polarization, Middle Channel

-11.0 dB at **2483.50 MHz** in the **Vertical** polarization, High Channel

-8.6 dB at **208.60 MHz** in the **Vertical** polarization, Unintentional Emission

10.8.1 Final test data, 1 – 25 GHz, Original Antenna

Indicated			Table	Antenna		Correction Factor			Corrected Amplitude	FCC 15 Subpart C	
Frequency MHz	Ampl. dBµV/m	Comments	Angle Degree	Height Meter	Polar H/V	Antenna dBµV/m	Cable DB	Amp. DB	Corr. Ampl. dBµV/m	Limit dBµV/m	Margin dB
Low Channel											
2412.00	115.5	Fund/Peak	270	2.0	v	28.1	3.4	35.2	111.8		
2412.00	103.8	Fund/Peak	90	1.6	h	28.1	3.4	35.2	100.1		
2412.00	79.8	Fund/Ave	270	2.0	v	28.1	3.4	35.2	76.1		
2412.00	68.3	Fund/Ave	90	1.6	h	28.1	3.4	35.2	64.6		
2580.17	49.8	Ave	270	1.8	v	29.0	3.7	35.2	47.3	54	-6.7
2580.17	68.8	Peak	270	1.8	v	29.0	3.7	35.2	66.3	74	-7.7
2580.17	46.3	Ave	300	1.5	v	29.0	3.7	35.2	43.8	54	-10.2
7236.00	33.8	Ave	30	1.8	v	35.1	5.6	33.5	41.1	54	-12.9
7236.00	33.7	Ave	250	1.3	h	35.1	5.6	33.5	40.9	54	-13.1
2580.17	60.0	Peak	300	1.5	v	29.0	3.7	35.2	57.5	74	-16.5
4824.00	31.3	Ave	90	1.6	v	32.5	4.9	33.0	35.7	54	-18.3
4824.00	31.2	Ave	90	1.4	h	32.5	4.9	33.0	35.6	54	-18.4
7236.00	48.2	Peak	250	1.3	h	35.1	5.6	33.5	55.4	74	-18.6
7236.00	46.8	Peak	30	1.8	v	35.1	5.6	33.5	54.1	74	-19.9
4824.00	46.2	Peak	90	1.4	h	32.5	4.9	33.0	50.6	74	-23.4
4824.00	45.5	Peak	90	1.6	v	32.5	4.9	33.0	49.9	74	-24.1
Middle Channel											
2437.00	116.0	Fund/Peak	90	2.0	v	28.1	3.4	35.2	112.3		
2437.00	104.3	Fund/Peak	250	2.2	h	28.1	3.4	35.2	100.6		
2437.00	79.2	Fund/Ave	90	2.0	v	28.1	3.4	35.2	75.4		
2437.00	70.2	Fund/Ave	250	2.2	h	28.1	3.4	35.2	66.5		
2629.93	47.2	Ave	270	1.6	v	29.0	3.7	35.2	44.6	54	-9.4
2629.93	65.5	Peak	270	1.6	v	29.0	3.7	35.2	63.0	74	-11.0
7311.00	33.5	Ave	60	1.8	v	35.1	5.6	33.5	40.7	54	-13.3
7311.00	33.3	Ave	270	1.2	h	35.1	5.6	33.5	40.5	54	-13.5
2629.93	43.0	Ave	270	1.6	v	29.0	3.7	35.2	40.5	54	-13.5
4874.00	31.5	Ave	90	1.6	v	32.5	4.9	33.0	35.9	54	-18.1
4874.00	31.3	Ave	330	1.8	h	32.5	4.9	33.0	35.7	54	-18.3
7311.00	47.2	Peak	270	1.2	h	35.1	5.6	33.5	54.4	74	-19.6
2629.93	56.7	Peak	270	1.6	v	29.0	3.7	35.2	54.1	74	-19.9
7311.00	46.7	Peak	60	1.8	v	35.1	5.6	33.5	53.9	74	-20.1
4874.00	45.8	Peak	90	1.6	v	32.5	4.9	33.0	50.2	74	-23.8
4874.00	45.5	Peak	330	1.8	h	32.5	4.9	33.0	49.9	74	-24.1

High Channel											
2462.00	114.5	Fund/Peak	90	1.6	v	28.1	3.4	35.2	110.8		
2462.00	105.5	Fund/Peak	30	1.6	h	28.1	3.4	35.2	101.8		
2462.00	78.3	Fund/Ave	90	1.6	v	28.1	3.4	35.2	74.6		
2462.00	74.2	Fund/Ave	30	1.6	h	28.1	3.4	35.2	70.4		
7386.00	33.8	Ave	330	1.8	h	35.1	5.6	33.5	41.1	54	-12.9
7386.00	33.8	Ave	45	1.3	v	35.1	5.6	33.5	41.0	54	-13.0
2306.00	44.5	Ave	0	1.6	v	28.1	3.4	35.2	40.8	54	-13.3
2306.00	64.3	Peak	0	1.6	v	28.1	3.4	35.2	60.6	74	-13.4
2679.93	42.3	Ave	0	1.8	v	29.0	3.7	35.2	39.8	54	-14.2
4924.00	32.2	Ave	270	1.0	v	32.5	4.9	33.0	36.6	54	-17.4
4924.00	32.0	Ave	0	1.4	h	32.5	4.9	33.0	36.4	54	-17.6
2679.93	56.7	Peak	0	1.8	v	29.0	3.7	35.2	54.1	74	-19.9
7386.00	46.3	Peak	330	1.8	h	35.1	5.6	33.5	53.6	74	-20.4
7386.00	45.8	Peak	45	1.3	v	35.1	5.6	33.5	53.1	74	-20.9
4924.00	44.8	Peak	270	1.0	v	32.5	4.9	33.0	49.2	74	-24.8
4924.00	44.0	Peak	0	1.4	h	32.5	4.9	33.0	48.4	74	-25.6

Indicated			Table	Antenna		Correction Factor			FCC 15 Subpart B	
Frequency	Ampl.	Direction	Height	Polar	Antenna	Cable Loss	Amp.	Corr. Ampl.	Limit	Margin
MHz	dBµV/m	Degree	Meter	H/V	dBµV/m	dBµV/m	dB	dBµV/m	dBµV/m	dB
318.20	43.8	60	1.5	v	15.1	2.3	25.0	36.2	46	-9.8
498.10	39.2	0	1.3	v	18.7	3.1	25.0	36.0	46	-10.0
184.10	42.0	30	1.6	h	13.2	2.0	25.0	32.2	43.5	-11.3
208.33	45.2	180	1.8	v	11.5	2.2	25.0	33.9	46	-12.1
238.60	42.5	90	1.0	h	12.6	2.2	25.0	32.3	46	-13.7
114.00	38.4	0	1.4	h	11.3	1.5	25.0	26.3	43.5	-17.2

Note:

AVG = average
Fund = fundamental

10.8.2 Final test data, 1 – 25 GHz, MBF24008 Fiberclass Omni 8dBi Antenna

Indicated			Table	Antenna		Correction Factor			Corrected Amplitude	FCC 15 Subpart C	
Frequency MHz	Ampl. dBµV/m	Comments	Angle Degree	Height Meter	Polar H/V	Antenna dBµV/m	Cable DB	Amp. DB	Corr. Ampl. dBµV/m	Limit dBµV/m	Margin dB
Low Channel											
2412.00	122.8	Fund/Peak	90	1.4	v	28.1	3.4	35.2	119.1		
2412.00	107.2	Fund/Peak	270	1.0	h	28.1	3.4	35.2	103.4		
2412.00	88.7	Fund/Ave	90	1.4	v	28.1	3.4	35.2	84.9		
2412.00	80.7	Fund/Ave	270	1.0	h	28.1	3.4	35.2	76.9		
2580.17	73.8	Peak	270	1.8	v	29.0	3.7	35.2	71.3	74	-2.7
2400.00	57.7	Ave	270	1.0	h	28.1	3.4	35.2	54.0	56.9	-3.0
2580.17	52.2	Ave	270	1.8	v	29.0	3.7	35.2	49.6	54	-4.4
2400.00	63.8	Ave	90	1.4	v	28.1	3.4	35.2	60.1	64.9	-4.9
2390.00	72.5	Peak	90	1.4	v	28.1	3.4	35.2	68.8	74	-5.3
2400.00	81.2	Peak	270	1.0	h	28.1	3.4	35.2	77.5	83.4	-6.0
2400.00	94.3	Peak	90	1.4	v	28.1	3.4	35.2	90.6	99.1	-8.5
2580.17	47.5	Ave	100	1.5	v	29.0	3.7	35.2	45.0	54	-9.0
7236.00	34.8	Ave	120	1.2	h	35.1	5.6	33.5	42.1	54	-11.9
7236.00	34.7	Ave	30	1.8	v	35.1	5.6	33.5	41.9	54	-12.1
2390.00	44.8	Ave	90	1.4	v	28.1	3.4	35.2	41.1	54	-13.0
2580.17	61.0	Peak	100	1.5	v	29.0	3.7	35.2	58.5	74	-15.5
2390.00	60.3	Peak	270	1.0	h	28.1	3.4	35.2	56.6	74	-17.4
2390.00	40.2	Ave	270	1.0	h	28.1	3.4	35.2	36.4	54	-17.6
4824.00	31.8	Ave	0	1.2	v	32.5	4.9	33.0	36.2	54	-17.8
4824.00	31.7	Ave	60	1.4	h	32.5	4.9	33.0	36.1	54	-17.9
7236.00	45.5	Peak	30	1.8	v	35.1	5.6	33.5	52.7	74	-21.3
7236.00	45.3	Peak	120	1.2	h	35.1	5.6	33.5	52.5	74	-21.5
4824.00	44.5	Peak	0	1.2	v	32.5	4.9	33.0	48.9	74	-25.1
4824.00	43.5	Peak	60	1.4	h	32.5	4.9	33.0	47.9	74	-26.1

Middle Channel											
2437.00	119.3	Fund/Peak	270	1.4	v	28.1	3.4	35.2	115.6		
2437.00	107.3	Fund/Peak	270	1.2	h	28.1	3.4	35.2	103.6		
2437.00	86.0	Fund/Ave	270	1.4	v	28.1	3.4	35.2	82.3		
2437.00	80.2	Fund/Ave	270	1.2	h	28.1	3.4	35.2	76.4		
2629.93	48.0	Ave	270	1.6	v	29.0	3.7	35.2	45.5	54	-8.5
2629.93	66.2	Peak	270	1.6	v	29.0	3.7	35.2	63.6	74	-10.4
7311.00	34.6	Ave	0	1.6	v	35.1	5.6	33.5	41.8	54	-12.2
7311.00	34.5	Ave	150	1.2	h	35.1	5.6	33.5	41.7	54	-12.3
2629.93	40.7	Ave	180	1.3	v	29.0	3.7	35.2	38.1	54	-15.9
4874.00	31.7	Ave	90	1.5	v	32.5	4.9	33.0	36.1	54	-17.9
4874.00	31.5	Ave	60	1.4	h	32.5	4.9	33.0	35.9	54	-18.1
7311.00	46.0	Peak	0	1.6	v	35.1	5.6	33.5	53.2	74	-20.8
7311.00	45.2	Peak	150	1.2	h	35.1	5.6	33.5	52.4	74	-21.6
2629.93	54.2	Peak	180	1.3	v	29.0	3.7	35.2	51.6	74	-22.4
4874.00	44.2	Peak	90	1.5	v	32.5	4.9	33.0	48.6	74	-25.4
4874.00	43.8	Peak	60	1.4	h	32.5	4.9	33.0	48.2	74	-25.8
High Channel											
2462.00	118.3	Fund/Peak	90	1.5	v	28.1	3.4	35.2	114.6		
2462.00	103.7	Fund/Peak	90	1.2	h	28.1	3.4	35.2	99.9		
2462.00	86.8	Fund/Ave	90	1.5	v	28.1	3.4	35.2	83.1		
2462.00	74.7	Fund/Ave	90	1.2	h	28.1	3.4	35.2	70.9		
2306.00	68.2	Peak	270	1.0	v	28.1	3.4	35.2	64.4	74	-9.6
2306.00	45.8	Ave	270	1.0	v	28.1	3.4	35.2	42.1	54	-11.9
7386.00	34.5	Ave	90	1.6	v	35.1	5.6	33.5	41.7	54	-12.3
7386.00	34.5	Ave	250	1.2	h	35.1	5.6	33.5	41.7	54	-12.3
2483.50	64.8	Peak	0	1.6	v	28.1	3.4	35.2	61.1	74	-12.9
2679.93	42.7	Ave	270	1.5	v	29.0	3.7	35.2	40.1	54	-13.9
2483.50	40.2	Ave	0	1.6	v	28.1	3.4	35.2	36.5	54	-17.6
4924.00	31.5	Ave	45	1.5	v	32.5	4.9	33.0	35.9	54	-18.1
4924.00	31.3	Ave	270	1.4	h	32.5	4.9	33.0	35.7	54	-18.3
2679.93	57.8	Peak	270	1.5	v	29.0	3.7	35.2	55.3	74	-18.7
7386.00	45.8	Peak	90	1.6	v	35.1	5.6	33.5	53.0	74	-21.0
7386.00	45.0	Peak	250	1.2	h	35.1	5.6	33.5	52.2	74	-21.8
2483.50	33.5	Ave	0	1.5	h	28.1	3.4	35.2	29.8	54	-24.3
4924.00	44.0	Peak	45	1.5	v	32.5	4.9	33.0	48.4	74	-25.6
4924.00	43.5	Peak	270	1.4	h	32.5	4.9	33.0	47.9	74	-26.1
2483.50	49.7	Peak	0	1.5	h	28.1	3.4	35.2	45.9	74	-28.1

Indicated			Table	Antenna		Correction Factor			FCC 15 Subpart B	
Frequency	Ampl.	Direction	Height	Polar	Antenna	Cable Loss	Amp.	Corr. Ampl.	Limit	Margin
MHz	dBµV/m	Degree	Meter	H/V	dBµV/m	dBµV/m	dB	dBµV/m	dBµV/m	dB
208.50	47.8	30	2.0	v	11.5	2.2	25.0	36.5	46	-9.5
318.17	43.7	0	1.6	v	15.1	2.3	25.0	36.1	46	-9.9
238.50	46.1	270	1.0	h	12.6	2.2	25.0	35.9	46	-10.1
498.15	38.5	15	1.5	v	18.7	3.1	25.0	35.3	46	-10.7
184.00	42.2	60	1.5	h	13.2	2.0	25.0	32.3	43.5	-11.2
113.83	43.5	30	1.4	h	11.3	1.5	25.0	31.3	43.5	-12.2

Note:

AVG = average
Fund = fundamental

10.8.3 Final test data, 1 – 25 GHz, MP24015PTNF Panel Antenna

Indicated			Table	Antenna		Correction Factor			Corrected Amplitude	FCC 15 Subpart C	
Frequency MHz	Ampl. dBµV/m	Comments	Angle Degree	Height Meter	Polar H/V	Antenna dBµV/m	Cable DB	Amp. DB	Corr. Ampl. dBµV/m	Limit dBµV/m	Margin dB
Low Channel											
2412.00	120.3	Fund/Peak	0	1.4	v	28.1	3.4	35.2	116.6		
2412.00	103.3	Fund/Peak	0	1.6	h	28.1	3.4	35.2	99.6		
2412.00	86.7	Fund/Ave	0	1.4	v	28.1	3.4	35.2	82.9		
2412.00	78.2	Fund/Ave	0	1.6	h	28.1	3.4	35.2	74.4		
2580.17	73.0	Peak	0	1.4	v	29.0	3.7	35.2	70.5	74	-3.5
2580.17	52.3	Ave	0	1.4	v	29.0	3.7	35.2	49.8	54	-4.2
2390.00	73.0	Peak	0	1.4	v	28.1	3.4	35.2	69.3	74	-4.8
2400.00	52.3	Ave	0	1.4	h	28.1	3.4	35.2	48.6	54.4	-5.8
2400.00	60.4	Ave	0	1.4	v	28.1	3.4	35.2	56.6	62.9	-6.3
2400.00	76.7	Peak	0	1.4	h	28.1	3.4	35.2	72.9	79.6	-6.7
2580.17	48.7	Ave	0	1.6	h	29.0	3.7	35.2	46.1	54	-7.9
2400.00	91.2	Peak	0	1.4	v	28.1	3.4	35.2	87.4	96.6	-9.2
2390.00	46.8	Ave	0	1.4	v	28.1	3.4	35.2	43.1	54	-10.9
2580.17	64.5	Peak	0	1.6	h	29.0	3.7	35.2	62.0	74	-12.0
7236.00	34.7	Ave	0	1.2	h	35.1	5.6	33.5	41.9	54	-12.1
7236.00	34.5	Ave	0	1.5	v	35.1	5.6	33.5	41.7	54	-12.3
2390.00	65.0	Peak	0	1.5	h	28.1	3.4	35.2	61.3	74	-12.8
4824.00	31.5	Ave	0	1.2	v	32.5	4.9	33.0	35.9	54	-18.1
4824.00	31.5	Ave	0	1.2	h	32.5	4.9	33.0	35.9	54	-18.1
2390.00	39.3	Ave	0	1.5	h	28.1	3.4	35.2	35.6	54	-18.4
7236.00	45.7	Peak	0	1.5	v	35.1	5.6	33.5	52.9	74	-21.1
7236.00	45.5	Peak	0	1.2	h	35.1	5.6	33.5	52.7	74	-21.3
4824.00	43.8	Peak	0	1.2	v	32.5	4.9	33.0	48.2	74	-25.8
4824.00	43.3	Peak	0	1.2	h	32.5	4.9	33.0	47.7	74	-26.3

Middle Channel											
2437.00	122.2	Fund/Peak	0	1.0	v	28.1	3.4	35.2	118.4		
2437.00	105.8	Fund/Peak	0	1.2	h	28.1	3.4	35.2	102.1		
2437.00	87.3	Fund/Ave	0	1.0	v	28.1	3.4	35.2	83.6		
2437.00	80.5	Fund/Ave	0	1.2	h	28.1	3.4	35.2	76.8		
2629.93	73.2	Peak	0	1.6	v	29.0	3.7	35.2	70.6	74	-3.4
2629.93	51.7	Ave	0	1.6	v	29.0	3.7	35.2	49.1	54	-4.9
7311.00	34.7	Ave	0	1.3	v	35.1	5.6	33.5	41.9	54	-12.1
7311.00	34.5	Ave	0	1.2	h	35.1	5.6	33.5	41.7	54	-12.3
2629.93	39.3	Ave	0	1.3	v	29.0	3.7	35.2	36.8	54	-17.2
4874.00	31.7	Ave	0	1.2	v	32.5	4.9	33.0	36.1	54	-17.9
4874.00	31.4	Ave	0	1.4	h	32.5	4.9	33.0	35.8	54	-18.2
7311.00	46.2	Peak	0	1.3	v	35.1	5.6	33.5	53.4	74	-20.6
7311.00	45.8	Peak	0	1.2	h	35.1	5.6	33.5	53.0	74	-21.0
2629.93	51.7	Peak	0	1.3	v	29.0	3.7	35.2	49.1	74	-24.9
4874.00	44.0	Peak	0	1.2	v	32.5	4.9	33.0	48.4	74	-25.6
4874.00	43.2	Peak	0	1.4	h	32.5	4.9	33.0	47.6	74	-26.4
High Channel											
2462.00	119.5	Fund/Peak	0	1.6	v	28.1	3.4	35.2	115.8		
2462.00	104.7	Fund/Peak	0	1.5	h	28.1	3.4	35.2	100.9		
2462.00	86.2	Fund/Ave	0	1.6	v	28.1	3.4	35.2	82.4		
2462.00	74.5	Fund/Ave	0	1.5	h	28.1	3.4	35.2	70.8		
2306.00	69.8	Peak	0	1.0	v	28.1	3.4	35.2	66.1	74	-7.9
2306.00	47.0	Ave	0	1.0	v	28.1	3.4	35.2	43.3	54	-10.8
2483.50	66.9	Peak	0	1.4	v	28.1	3.4	35.2	63.1	74	-10.9
2679.93	44.8	Ave	0	1.3	v	29.0	3.7	35.2	42.3	54	-11.7
7386.00	34.6	Ave	0	1.5	v	35.1	5.6	33.5	41.8	54	-12.2
7386.00	34.5	Ave	0	1.4	h	35.1	5.6	33.5	41.7	54	-12.3
2483.50	42.9	Ave	0	1.4	v	28.1	3.4	35.2	39.1	54	-14.9
2679.93	61.3	Peak	0	1.3	v	29.0	3.7	35.2	58.8	74	-15.2
4924.00	31.5	Ave	0	1.6	v	32.5	4.9	33.0	35.9	54	-18.1
4924.00	31.4	Ave	0	1.4	h	32.5	4.9	33.0	35.8	54	-18.2
7386.00	46.0	Peak	0	1.5	v	35.1	5.6	33.5	53.2	74	-20.8
7386.00	45.5	Peak	0	1.4	h	35.1	5.6	33.5	52.7	74	-21.3
2483.50	36.5	Ave	0	1.5	h	28.1	3.4	35.2	32.8	54	-21.3
2483.50	56.3	Peak	0	1.5	h	28.1	3.4	35.2	52.6	74	-21.4
4924.00	43.8	Peak	0	1.6	v	32.5	4.9	33.0	48.2	74	-25.8
4924.00	43.7	Peak	0	1.4	h	32.5	4.9	33.0	48.1	74	-25.9

Indicated			Table	Antenna		Correction Factor			FCC 15 Subpart B	
Frequency	Ampl.	Direction	Height	Polar	Antenna	Cable Loss	Amp.	Corr. Ampl.	Limit	Margin
MHz	dBµV/m	Degree	Meter	H/V	dBµV/m	dBµV/m	dB	dBµV/m	dBµV/m	dB
208.60	49.5	0	1.8	v	11.5	2.2	25.0	38.2	46	-7.8
318.12	44.2	330	1.6	v	15.1	2.3	25.0	36.6	46	-9.4
498.00	39.8	30	1.4	v	18.7	3.1	25.0	36.6	46	-9.4
238.45	45.6	270	1.2	h	12.6	2.2	25.0	35.4	46	-10.6
183.50	41.7	60	1.6	h	13.2	2.0	25.0	31.8	43.5	-11.7
114.00	40.1	0	1.3	h	11.3	1.5	25.0	27.9	43.5	-15.6

Note:

AVG = average
Fund = fundamental

10.8.4 Final test data, 1 – 25 GHz, CAP22226 Antenna

Indicated			Table	Antenna		Correction Factor			Corrected Amplitude	FCC 15 Subpart C	
Frequency MHz	Ampl. dBµV/m	Comments	Angle Degree	Height Meter	Polar H/V	Antenna dBµV/m	Cable DB	Amp. DB	Corr. Ampl. dBµV/m	Limit dBµV/m	Margin dB
Low Channel											
2412.00	116.3	Fund/Peak	0	1.4	v	28.1	3.4	35.2	112.6		
2412.00	104.0	Fund/Peak	100	1.8	h	28.1	3.4	35.2	100.3		
2412.00	84.3	Fund/Ave	0	1.4	v	28.1	3.4	35.2	80.6		
2412.00	77.7	Fund/Ave	100	1.8	h	28.1	3.4	35.2	73.9		
2580.17	71.0	Peak	330	1.7	v	29.0	3.7	35.2	68.5	74	-5.5
2400.00	57.7	Ave	15	1.4	v	28.1	3.4	35.2	53.9	60.6	-6.7
2580.17	49.7	Ave	330	1.7	v	29.0	3.7	35.2	47.1	54	-6.9
2390.00	70.2	Peak	0	1.4	v	28.1	3.4	35.2	66.5	74	-7.6
2580.17	48.7	Ave	0	1.6	h	29.0	3.7	35.2	46.1	54	-7.9
2400.00	49.3	Ave	90	1.6	h	28.1	3.4	35.2	45.6	53.9	-8.3
2400.00	85.5	Peak	15	1.4	v	28.1	3.4	35.2	81.8	92.6	-10.8
2400.00	73.2	Peak	90	1.6	h	28.1	3.4	35.2	69.4	80.3	-10.8
7236.00	34.8	Ave	120	1.2	h	35.1	5.6	33.5	42.0	54	-12.0
2580.17	64.5	Peak	0	1.6	h	29.0	3.7	35.2	62.0	74	-12.0
7236.00	34.5	Ave	0	1.5	v	35.1	5.6	33.5	41.7	54	-12.3
2390.00	43.0	Ave	0	1.4	v	28.1	3.4	35.2	39.3	54	-14.8
2390.00	61.7	Peak	100	1.5	h	28.1	3.4	35.2	57.9	74	-16.1
4824.00	31.8	Ave	30	1.2	v	32.5	4.9	33.0	36.2	54	-17.8
4824.00	31.7	Ave	0	1.2	h	32.5	4.9	33.0	36.1	54	-17.9
2390.00	38.0	Ave	100	1.5	h	28.1	3.4	35.2	34.3	54	-19.8
7236.00	46.5	Peak	0	1.5	v	35.1	5.6	33.5	53.7	74	-20.3
7236.00	46.1	Peak	120	1.2	h	35.1	5.6	33.5	53.3	74	-20.7
4824.00	44.1	Peak	30	1.2	v	32.5	4.9	33.0	48.5	74	-25.5
4824.00	43.3	Peak	0	1.2	h	32.5	4.9	33.0	47.7	74	-26.3

Middle Channel											
2437.00	114.7	Fund/Peak	15	1.0	v	28.1	3.4	35.2	110.9		
2437.00	104.0	Fund/Peak	220	1.2	h	28.1	3.4	35.2	100.3		
2437.00	85.3	Fund/Ave	15	1.0	v	28.1	3.4	35.2	81.6		
2437.00	78.3	Fund/Ave	220	1.2	h	28.1	3.4	35.2	74.6		
2629.93	46.3	Ave	30	1.7	v	29.0	3.7	35.2	43.8	54	-10.2
7311.00	34.5	Ave	60	1.3	v	35.1	5.6	33.5	41.7	54	-12.3
7311.00	34.3	Ave	120	1.2	h	35.1	5.6	33.5	41.5	54	-12.5
2629.93	62.5	Peak	30	1.7	v	29.0	3.7	35.2	60.0	74	-14.0
2629.93	41.5	Ave	250	1.3	v	29.0	3.7	35.2	39.0	54	-15.0
4874.00	31.8	Ave	0	1.0	v	32.5	4.9	33.0	36.2	54	-17.8
4874.00	31.6	Ave	250	1.4	h	32.5	4.9	33.0	36.0	54	-18.0
7311.00	46.3	Peak	120	1.2	h	35.1	5.6	33.5	53.6	74	-20.4
7311.00	46.0	Peak	60	1.3	v	35.1	5.6	33.5	53.2	74	-20.8
2629.93	55.0	Peak	250	1.3	v	29.0	3.7	35.2	52.5	74	-21.5
4874.00	44.5	Peak	0	1.0	v	32.5	4.9	33.0	48.9	74	-25.1
4874.00	44.0	Peak	250	1.4	h	32.5	4.9	33.0	48.4	74	-25.6
High Channel											
2462.00	114.2	Fund/Peak	0	1.4	v	28.1	3.4	35.2	110.4		
2462.00	102.8	Fund/Peak	90	1.6	h	28.1	3.4	35.2	99.1		
2462.00	84.7	Fund/Ave	0	1.4	v	28.1	3.4	35.2	80.9		
2462.00	78.7	Fund/Ave	90	1.6	h	28.1	3.4	35.2	74.9		
2483.50	66.7	Peak	60	1.4	v	28.1	3.4	35.2	63.0	74	-11.0
7386.00	34.6	Ave	30	1.3	v	35.1	5.6	33.5	41.8	54	-12.2
7386.00	34.5	Ave	90	1.2	h	35.1	5.6	33.5	41.7	54	-12.3
2306.00	65.2	Peak	15	1.0	v	28.1	3.4	35.2	61.5	74	-12.5
2306.00	45.1	Ave	15	1.0	v	28.1	3.4	35.2	41.3	54	-12.7
2679.93	39.7	Ave	60	1.3	v	29.0	3.7	35.2	37.2	54	-16.8
4924.00	31.6	Ave	270	1.4	h	32.5	4.9	33.0	36.0	54	-18.0
4924.00	31.5	Ave	330	1.0	v	32.5	4.9	33.0	35.9	54	-18.1
2483.50	39.4	Ave	60	1.4	v	28.1	3.4	35.2	35.7	54	-18.4
2483.50	57.6	Peak	100	1.5	h	28.1	3.4	35.2	53.8	74	-20.2
7386.00	45.8	Peak	30	1.3	v	35.1	5.6	33.5	53.0	74	-21.0
7386.00	45.5	Peak	90	1.2	h	35.1	5.6	33.5	52.7	74	-21.3
2483.50	35.6	Ave	100	1.5	h	28.1	3.4	35.2	31.8	54	-22.2
2679.93	53.4	Peak	60	1.3	v	29.0	3.7	35.2	50.9	74	-23.1
4924.00	44.2	Peak	330	1.0	v	32.5	4.9	33.0	48.6	74	-25.4
4924.00	43.5	Peak	270	1.4	h	32.5	4.9	33.0	47.9	74	-26.1

Indicated			Table	Antenna		Correction Factor			FCC 15 Subpart B	
Frequency	Ampl.	Direction	Height	Polar	Antenna	Cable Loss	Amp.	Corr. Ampl.	Limit	Margin
MHz	dBµV/m	Degree	Meter	H/V	dBµV/m	dBµV/m	dB	dBµV/m	dBµV/m	dB
208.60	48.7	0	2.0	v	11.5	2.2	25.0	37.4	46	-8.6
498.07	40.5	0	1.5	v	18.7	3.1	25.0	37.3	46	-8.7
318.31	44.7	330	1.7	v	15.1	2.3	25.0	37.1	46	-8.9
183.90	42.1	30	1.5	h	13.2	2.0	25.0	32.3	43.5	-11.2
238.31	42.2	90	1.2	h	12.6	2.2	25.0	31.9	46	-14.1
114.09	38.3	30	1.5	h	11.3	1.5	25.0	26.1	43.5	-17.4

Note:

AVG = average
Fund = fundamental