



**FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT**

FOR

11Mbps Wireless PCI Network Card

MODEL NUMBER: SWL-2300P (PCI)

BRAND NAME: Samsung 11Mbps Wireless LAN PCI Card

FCC ID:E2XSWL-2300P

REPORT NUMBER: 03I1765-1

ISSUE DATE: January 27, 2003

Prepared for

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Prepared by

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1. TEST RESULT CERTIFICATION

COMPANY NAME: SAMSUNG ELECTROMECHANICS CO.
314, MAETAN-3DONG, PALDAL-GU
SUWON, KYUNGGI-DO, 442-743, KOREA

EUT DESCRIPTION: 11MBPS WIRELESS PCI NETWORK CARD

MODEL NAME: SWL-2300P (PCI)

DATE TESTED: JANUARY 13 – 21, 2003

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Approved & Released For CCS By:

Tested By:



MIKE HECKROTTE
CHIEF ENGINEER
COMPLIANCE CERTIFICATION SERVICES

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EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The SWL-2300P is a wireless LAN adapter card that provides wireless connection between computers, it is designed to operate with IEEE 802.11 standard and uses CSMA/CA (Collision Sense Multiple Access with Collision Avoidance) algorithm as the media access scheme, which makes high speed communication (with minimal collision probability) possible.

It is designed for the frequency band of (2.4 – 2.4835) GHz, it has either a patch antenna with 5.0 dBi gain or sleeve dipole antenna with 2.0 dBi gain, maximum conducted peak output power is 16.53 dBm and the maximum conducted average output power is 12.8 dBm.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, and 15.407.

4. FACILITIES AND ACCREDITATION

4.1. FACILITIES AND EQUIPMENT

The open area test sites and conducted measurement facilities used to collect the radiated data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

4.2. LABORATORY ACCREDITATIONS AND LISTINGS

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200065-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (reference no: 31040/SIT (1300B3) and 31040/SIT (1300F2)).

4.3. TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	NVLAP*	FCC Part 15, CISPR 22, AS/NZS 3548, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, CNS 13438	 200065-0
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 1300
Japan	VCCI	CISPR 22 Two OATS and one conducted Site	VCCI R-1014, R-619, C-640
Norway	NEMKO	EN50081-1, EN50081-2, EN50082-1, EN50082-2, IEC61000-6-1, IEC61000-6-2, EN50083-2, EN50091-2, EN50130-4, EN55011, EN55013, EN55014-1, EN55104, EN55015, EN61547, EN55022, EN55024, EN61000-3-2, EN61000-3-3, EN60945, EN61326-1	 ELA 117
Norway	NEMKO	EN60601-1-2 and IEC 60601-1-2, the Collateral Standards for Electro-Medical Products. MDD, 93/42/EEC, AIMD 90/385/EEC	 ELA-171
Taiwan	BSMI	CNS 13438	 SL2-IN-E-1012
Canada	Industry Canada	RSS210 Low Power Transmitter and Receiver	 IC2324 A,B,C, and F

* No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

5. CALIBRATION AND UNCERTAINTY

5.1. MEASURING INSTRUMENT CALIBRATION

The measurement instruments utilized to perform the tests documented in this report have been calibrated in accordance with the manufacturer's recommendations, and are traceable to national standards.

5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Radiated Emission	
30MHz – 200 MHz	+/- 3.3dB
200MHz – 1000MHz	+4.5/-2.9dB
1000MHz – 2000MHz	+4.6/-2.2dB
Power Line Conducted Emission	
150kHz – 30MHz	+/-2.9

Any results falling within the above values are deemed to be marginal.

5.3. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
SA Display Section 3	HP	85662A	2314A04793	4/15/03
SA RF Section, 1.5 GHz	HP	85680A	2314A02604	11/26/03
Preamplifier, 1300 MHz	HP	8447D	2944A06550	8/22/03
Antenna, Log Periodic 200 ~ 1000 MHz	EMCO	3146	9107-3163	3/29/03
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	1/31/03
Preamplifier, 1 ~ 26.5 GHz	HP	8449B	3008A00369	6/30/03
Antenna, Horn 18 ~ 26 GHz	ARA	MWH-1826/B	1049	11/7/03
Quasi-Peak Adaptor	HP	85650A	3145A01654	6/1/03
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	9/6/03
Line Filter	Lindgren	LMF-3489	497	NCR
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	837990	9/6/03
EMI Test Receiver	R & S	ESHS 20	827129/006	4/17/03
Biconical Antenna	Eaton	94455-1	1214	3/30/03
Microwave Amplifier	HP	11975A	2517A01067	10/14/05
Harmonic Mixer	HP	11970K	3003A03109	10/14/05
AC Power Source	ACS	AFC-10K-AFC-2	J1568	NCR

6. SETUP OF EQUIPMENT UNDER TEST

SETUP INFORMATION FOR TRANSMITTER TESTS

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Device Type	Manufacturer	Model	Serial Number	FCC ID
Desktop PC	HP	Vectra VL6	US81918970	DoC
Monitor	Dell	M780	5322DE20E049	DoC
PS/2 Mouse	HP	M-S34	LZA83553579	DZL211029
Keyboard	HP	SK-2502	HR805273662	GYUR41SK

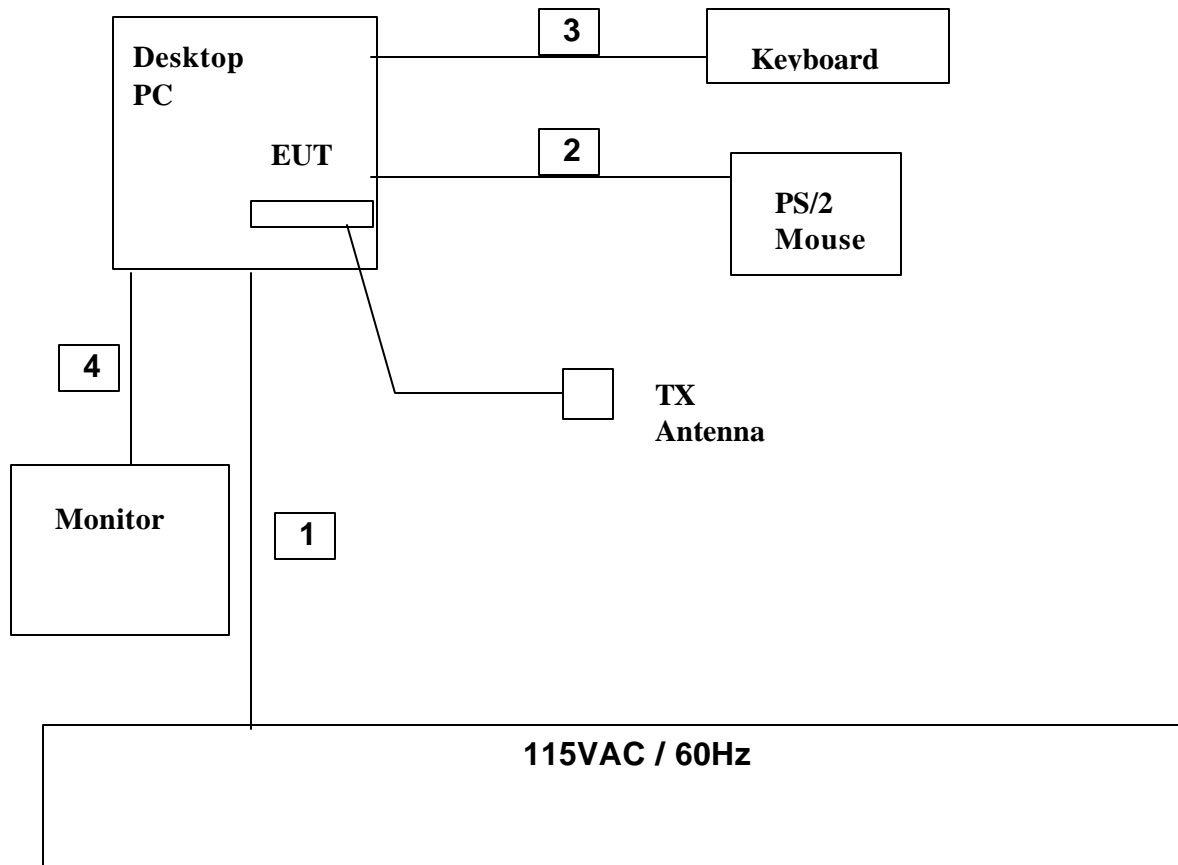
I/O CABLES

Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US115	Unshielded	2 m	N/A
2	Mouse	1	PS/2	Unshielded	2m	N/A
3	KB	1	PS/2	Unshielded	2m	N/A
4	VGA	1	DB15	Shielded	2m	N/A

TEST SETUP

The EUT is installed in the desktop computer.

SETUP DIAGRAM FOR TRANSMITTER TESTS



SETUP INFORMATION FOR DIGITAL DEVICE TESTS

SUPPORT EQUIPMENT

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
PS/2 MOUSE	HP	M-S34	LZA83553579	DZL211029
KEYBOARD	HP	SK-2502	HR805273662	GYUR41SK
MODEM	HAYES	4714US	A02247143261	DoC
PRINTER	JCM	GP965	20001149	DoC
MONITOR	DELL	M780	5322DE20E049	DoC
DESKTOP PC	HP	VECTRA VL6	US81918970	DoC

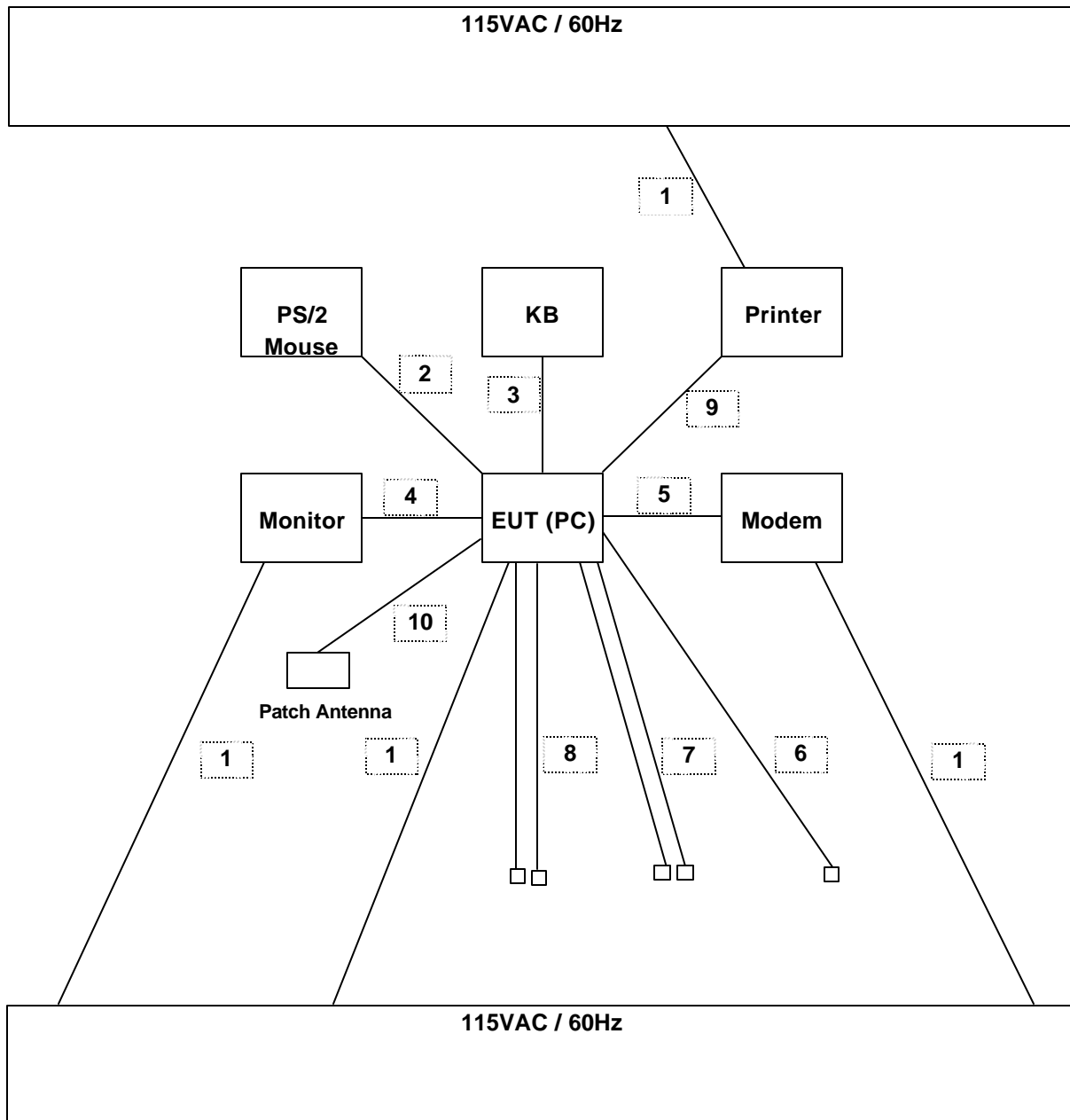
I/O CABLES

TEST I / O CABLES								
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark
1	AC	4	US 115V	Un-shielded	2m	No	No	PC Power cable bundled for only LC test
2	Mouse	1	PS/2	Un-shielded	2m	Yes	No	N/A
3	KB	1	PS/2	Shielded	2m	Yes	No	N/A
4	Video	1	DB15	Shielded	2m	Yes	Yes	One Torroid on Each End
5	Serial	1	DB9	Shielded	1m	Yes	No	N/A
6	Network	1	RJ45	Un-shielded	5m	No	No	N/A
7	Phone	2	RJ11	Un-shielded	1m	No	No	N/A
8	USB	2	USB	Un-shielded	1m	No	No	N/A
9	Parallel	1	DB25	Shielded	2m	Yes	Yes	N/A
10	RF	1	SMA	Shielded	1.5m	Yes	No	N/A

TEST SETUP

The EUT is installed in the desktop computer.

SETUP DIAGRAM FOR DIGITAL DEVICE TESTS



7. APPLICABLE RULES

§15.247 (a)- BANDWIDTH

(2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

§15.247 (b)- POWER OUTPUT

The maximum peak output power of the intentional radiator shall not exceed the following:

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 watt.

(4) Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§15.247 (b)- RADIO FREQUENCY EXPOSURE

(5) Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See §1.1307(b)(1) of this chapter.

§15.247 (c)- SPURIOUS EMISSIONS

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 §15.209(a) is not required. 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)).

§15.247 (d)- PEAK POWER SPECTRAL DENSITY

(d) For direct sequence 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.

(f) The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

§15.205- RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	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	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.207- CONDUCTED LIMITS

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

§15.209- RADIATED EMISSION LIMITS

(a) Except as provided elsewhere in this Subpart, 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)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

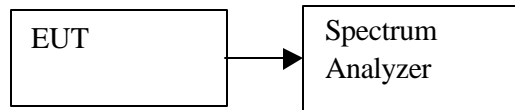
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this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

(b) In the emission table above, the tighter limit applies at the band edges.

8. TEST SETUP, PROCEDURE AND RESULT

8.1. 6 dB BANDWIDTH

TEST SETUP



TEST PROCEDURE

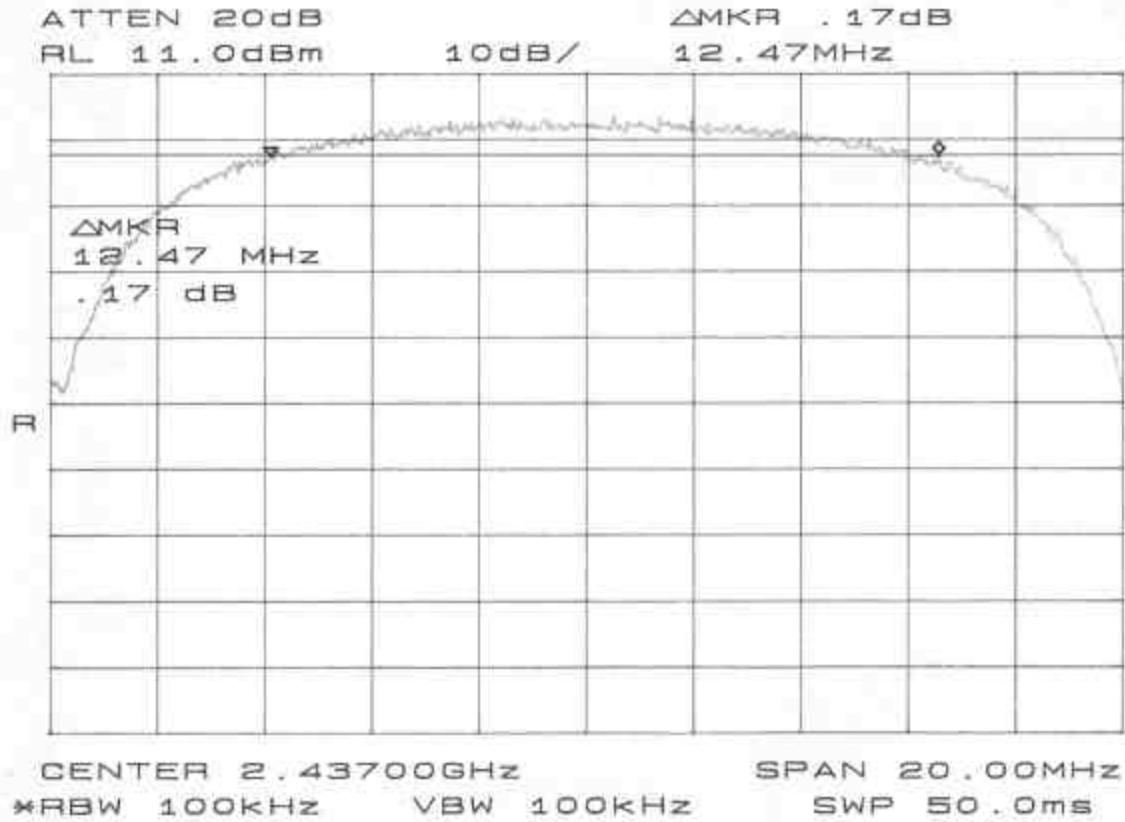
The transmitter output is connected to the spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is coupled.

RESULTS

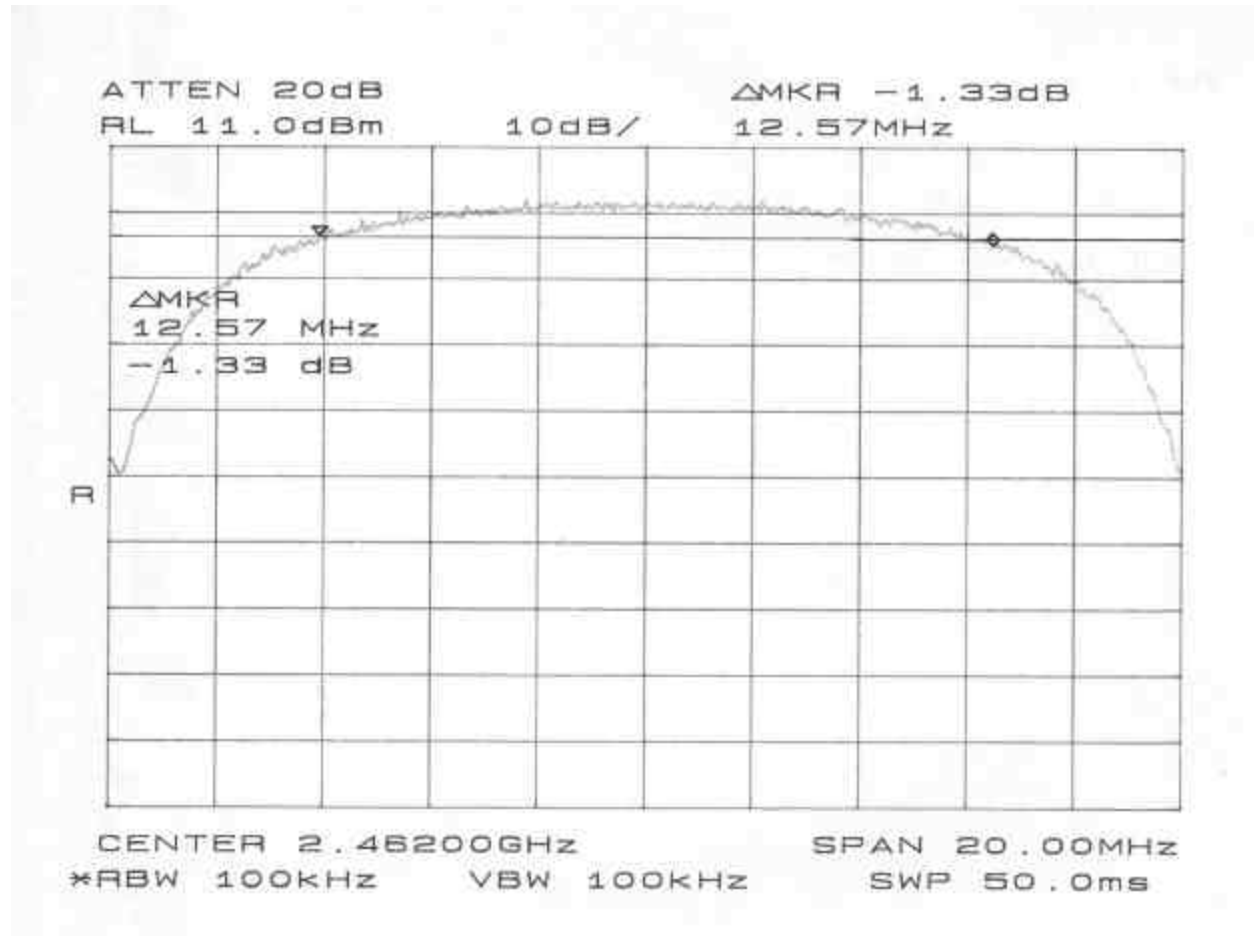
No non-compliance noted:

Channel	Frequency (MHz)	B (kHz)	Limit (kHz)	Margin (kHz)
Low	2412	12430	500	11930
Middle	2437	12470	500	11970
High	2462	12570	500	12070

6 dB BANDWIDTH, Mid Channel (2437 MHz)

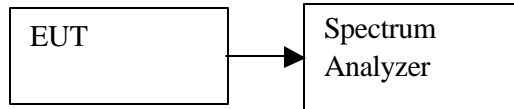


6 dB BANDWIDTH, High Channel (2462 MHz)



8.2. 26 dB EMISSION BANDWIDTH

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to approximately 1 % of the EBW, the VBW is set to 3 times RBW, and the sweep time is coupled.

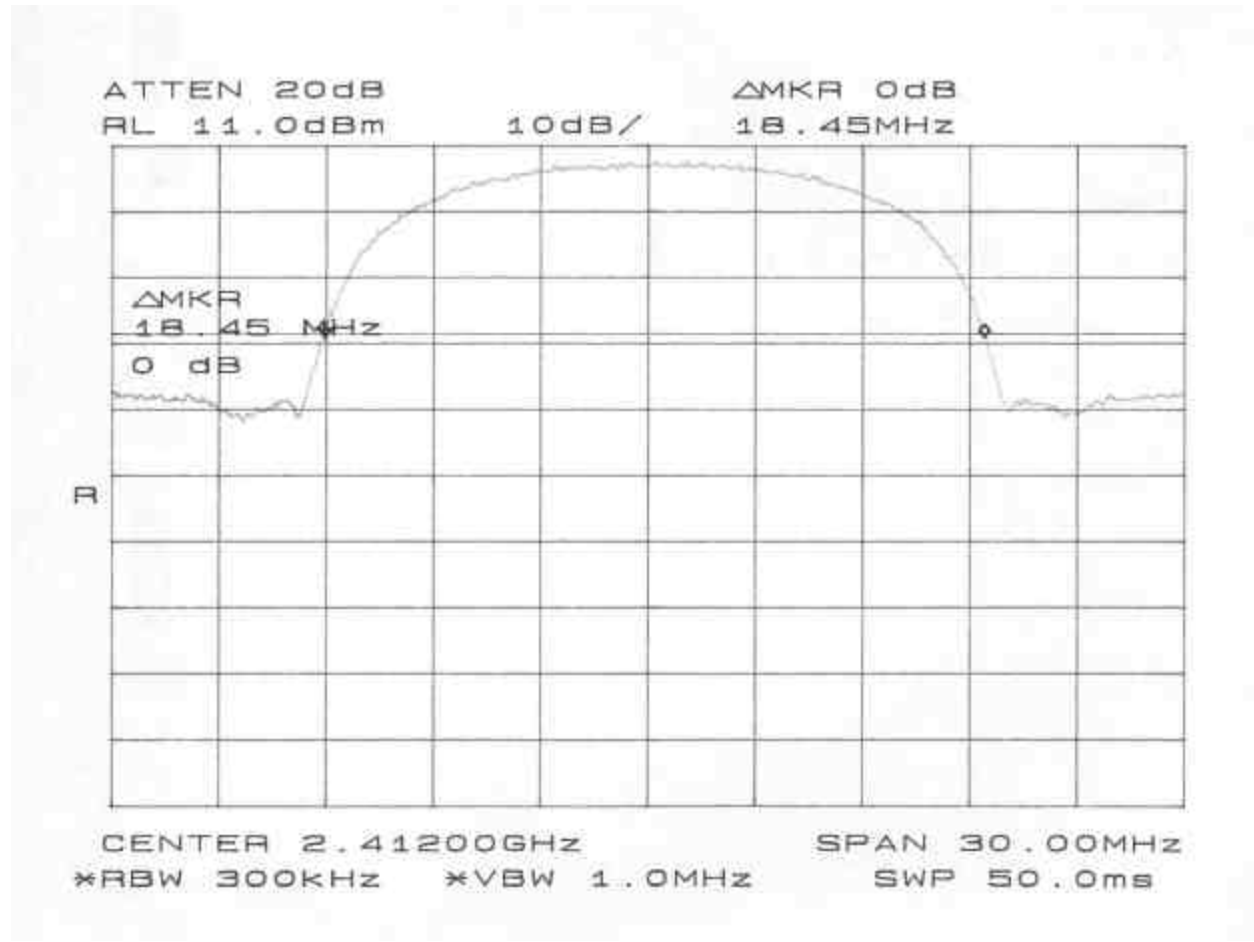
LIMIT

Reporting requirement only, used to determine the channel integration bandwidth for the peak power integration measurements.

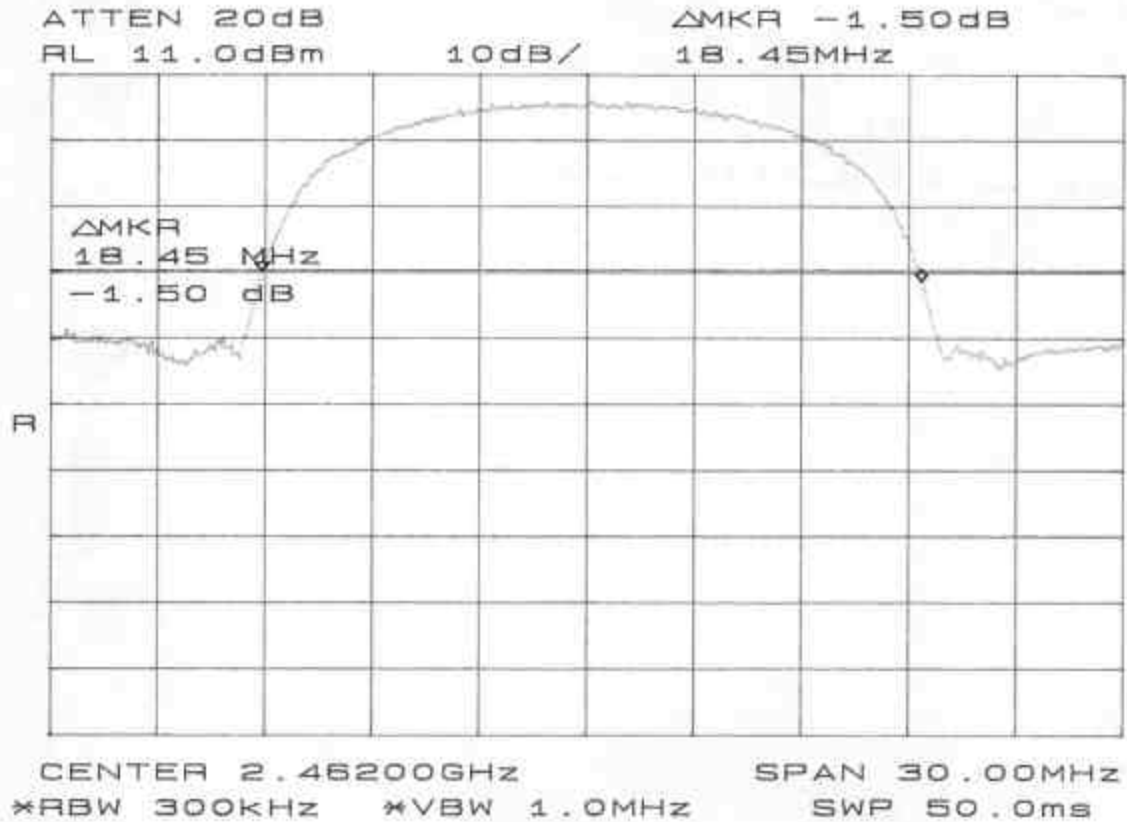
RESULTS

Channel	Frequency (MHz)	B (MHz)
Low	2412	18.45
Middle	2437	18.45
High	2462	18.45

26 dB BANDWIDTH, Low Channel (2412 MHz)

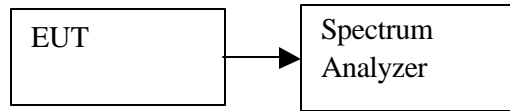


26 dB BANDWIDTH, High Channel (2412 MHz)



8.3. PEAK POWER

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to a Spectrum Analyzer, and the channel power was integrated over the 26dB Bandwidth.

LIMIT

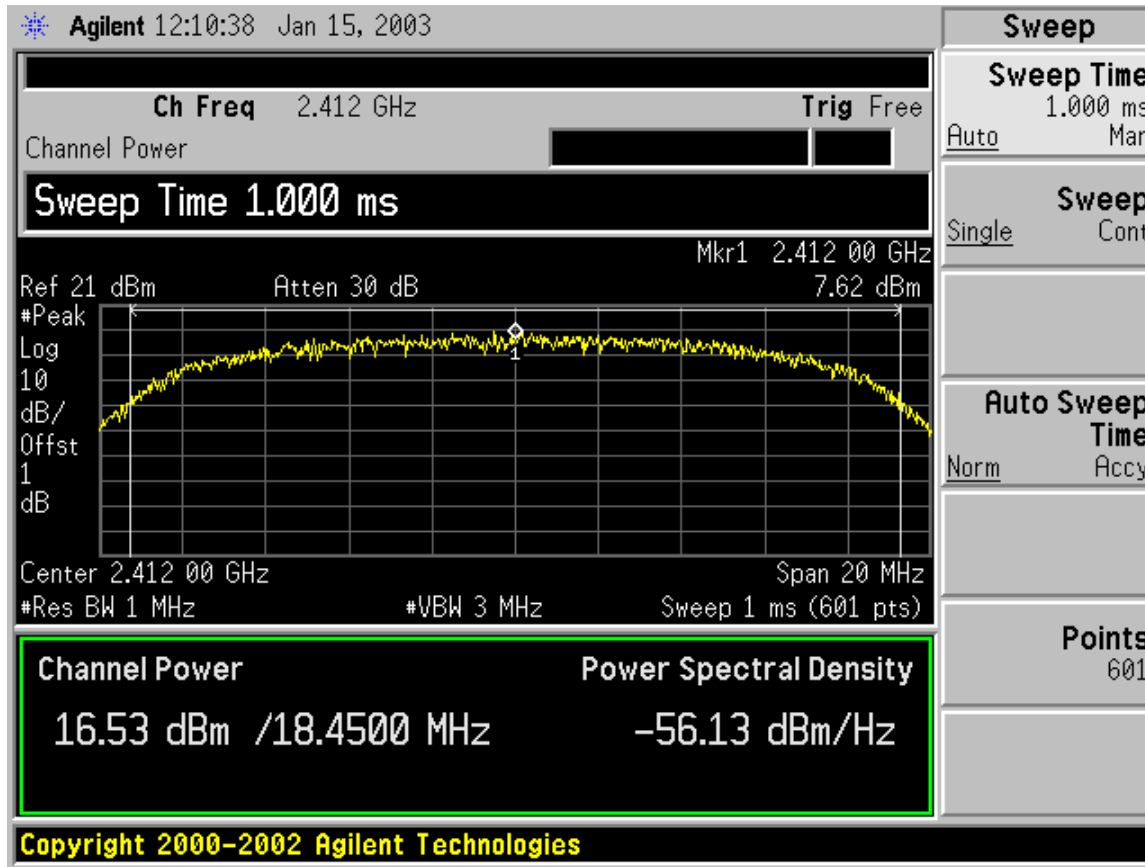
The maximum antenna gain is 5.0 dBi, therefore the limit is 30 dBm.

RESULTS

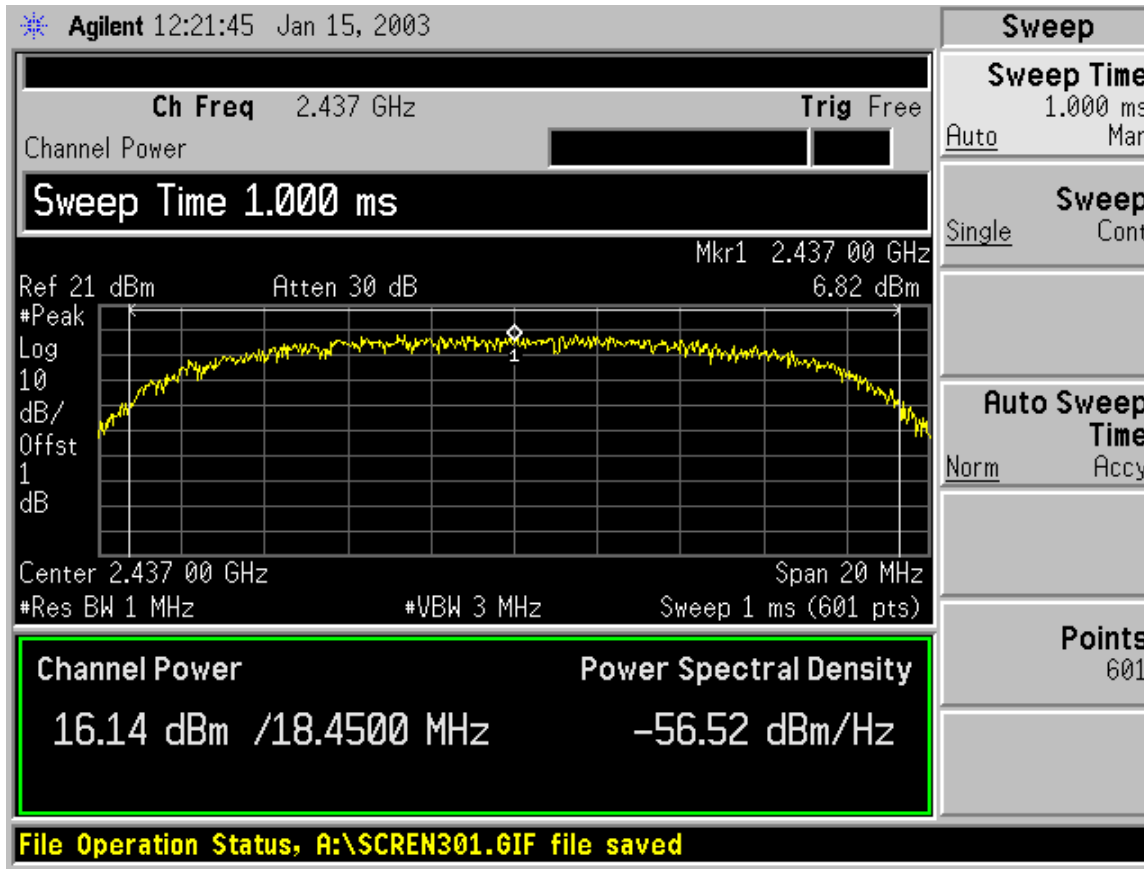
No non-compliance noted:

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	16.53	30	-13.47
Middle	2437	16.14	30	-13.86
High	2462	15.59	30	-14.41

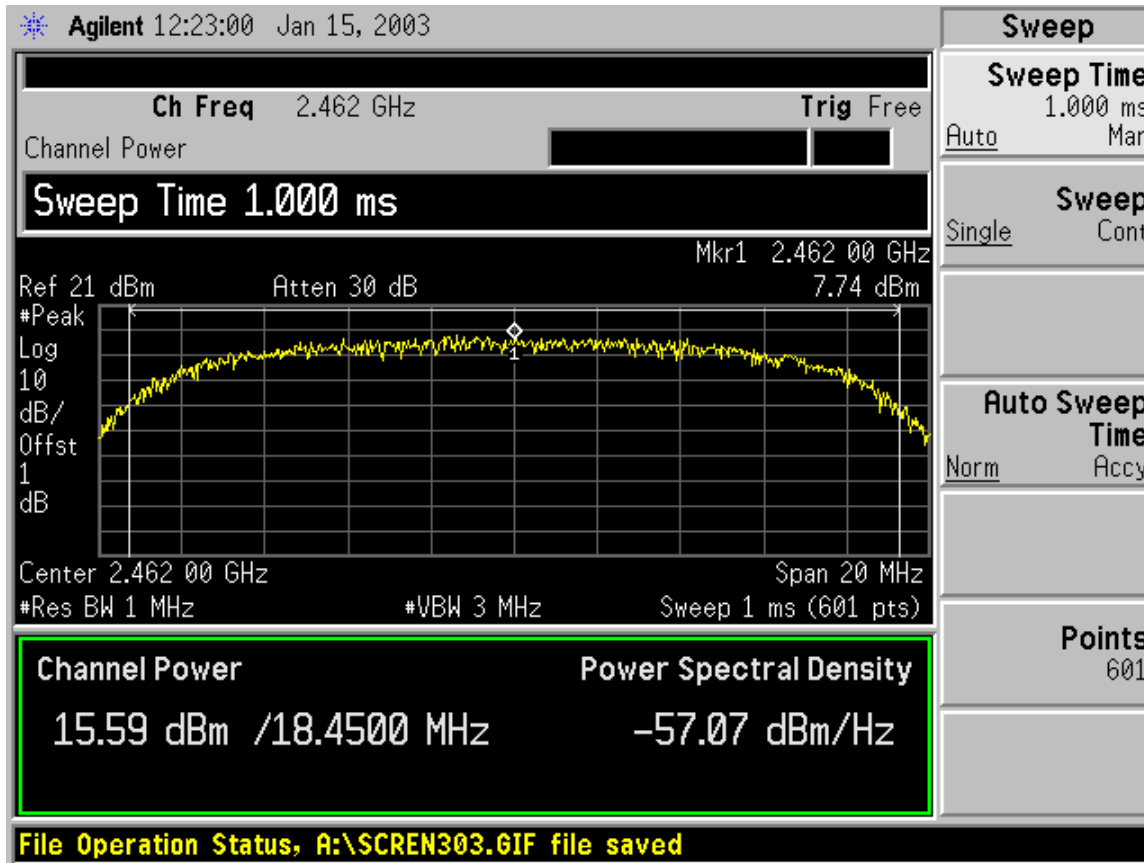
Peak Output Power, Low channel



Peak Output Power, Middle channel

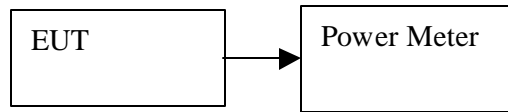


Peak Output Power, High channel



8.4. AVERAGE POWER

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to a Power Meter, and the Average Power was measured.

LIMIT

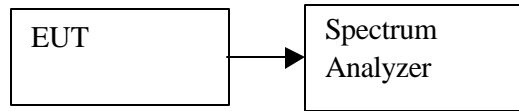
Reporting requirement only, used for reference.

RESULTS

Channel	Frequency (MHz)	Average Power (dBm)
Low	2412	12.80
Middle	2437	12.40
High	2462	11.90

8.5. PEAK POWER SPECTRAL DENSITY

TEST SETUP



TEST PROCEDURE

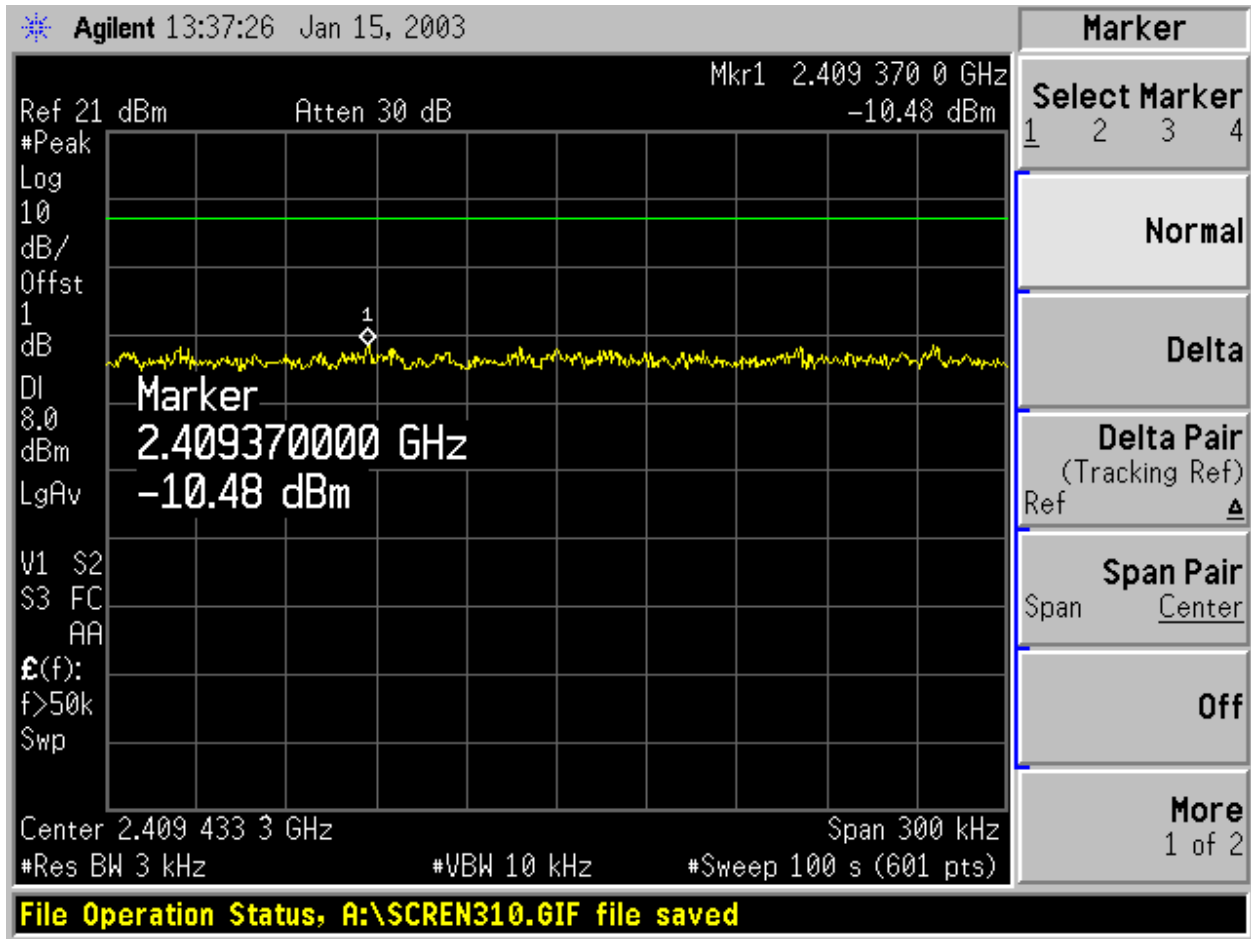
The transmitter output is connected to the spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW = 10KHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz band.

RESULTS

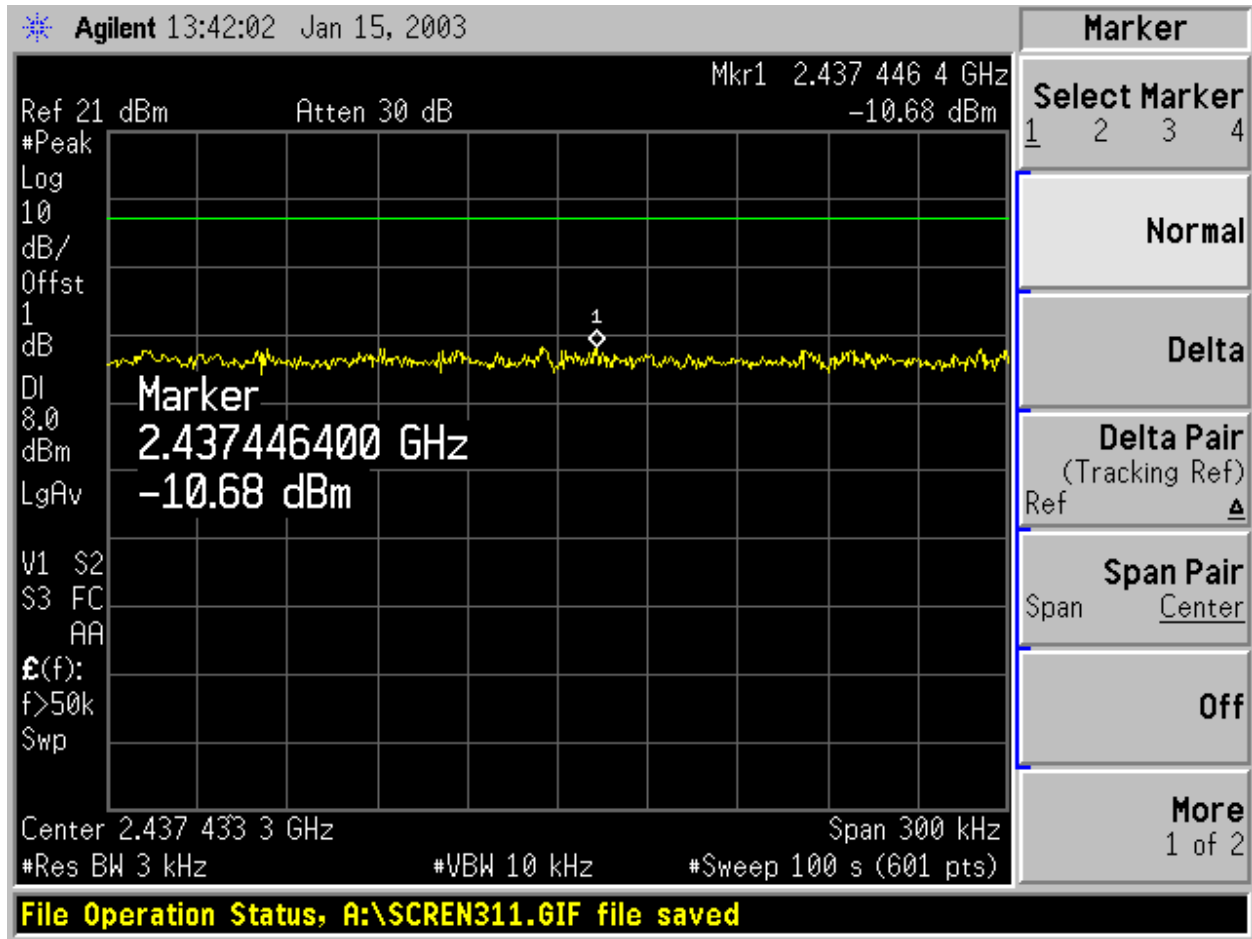
No non-compliance noted:

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.48	8	-18.48
Middle	2437	-10.68	8	-18.68
High	2462	-10.39	8	-18.39

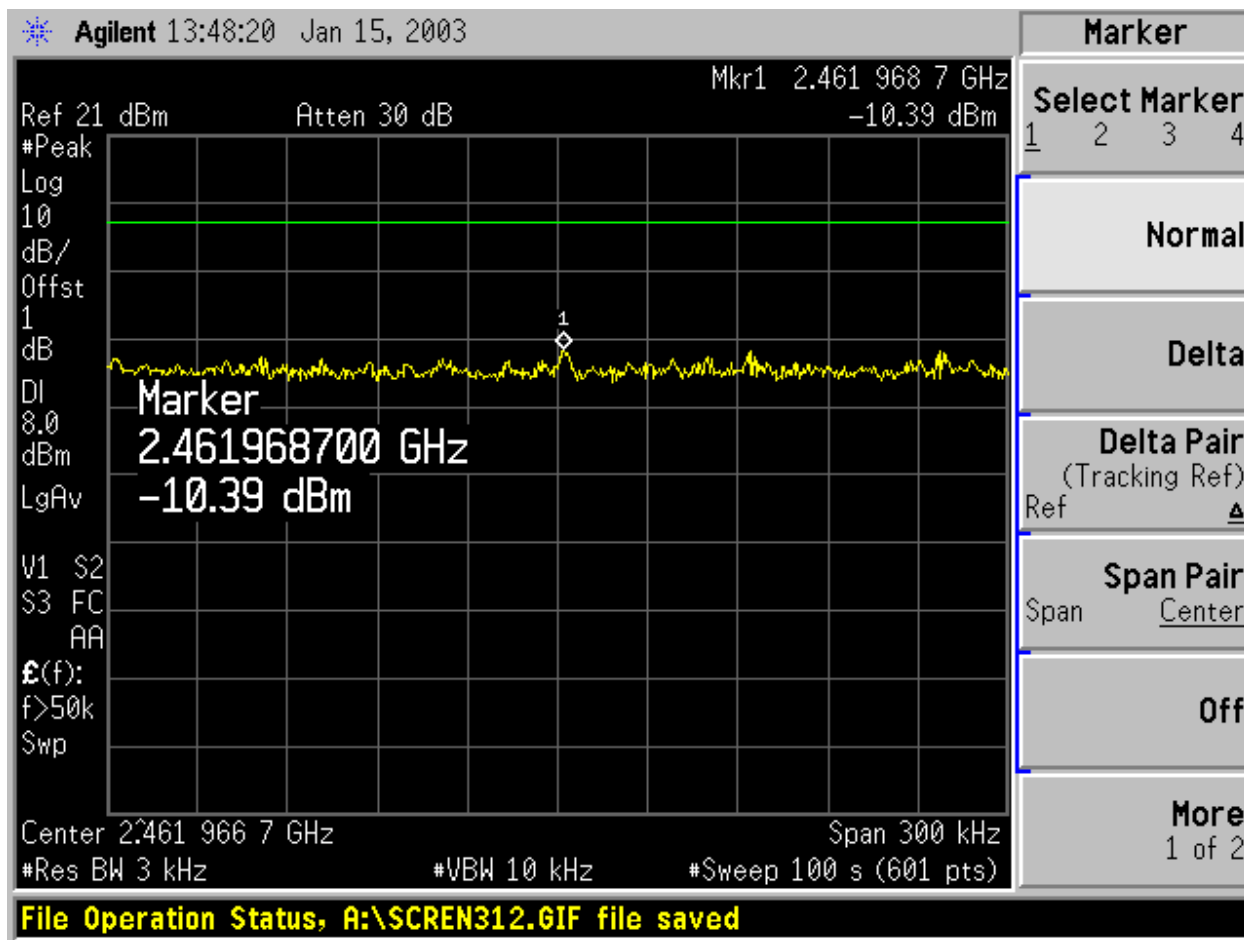
Peak Power Spectral Density, Low Channel:



Peak Power Spectral Density, Middle Channel:



Peak Power Spectral Density, High Channel:



8.6. MAXIMUM PERMISSIBLE EXPOSURE

CALCULATIONS

Given

$$E = \sqrt{(30 * P * G) / d}$$

and

$$S = E^2 / 3770$$

where

E = Field Strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = distance in meters

S = Power Density in milliwatts / square centimeter

Combining equations and rearranging the terms to express the distance as a function of the remaining variables yields:

$$d = \sqrt{((30 * P * G) / (3770 * S))}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = 100 * d \text{ (m)}$$

yields

$$d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$$

$$d = 0.282 * \sqrt{(P * G / S)}$$

where

d = distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power Density in mW / cm²

Substituting the logarithmic form of power and gain using:

$$P \text{ (mW)} = 10^{(P \text{ (dBm)} / 10)} \text{ and}$$

$$G \text{ (numeric)} = 10^{(G \text{ (dBi)} / 10)}$$

yields

$$d = 0.282 * 10^{((P + G) / 20) / \sqrt{S}} \quad \text{Equation (1)}$$

where

d = MPE safe distance in cm
P = Power in dBm
G = Antenna Gain in dBi
S = Power Density Limit in mW / cm²

RESULTS

No non-compliance noted:

MAXIMUM PERMISSIBLE EXPOSURE

EUT output power = 16.53 dBm
Antenna Gain = 5.0 dBi
S = 1.0 mW / cm² from 1.1310 Table 1

Substituting these parameters into Equation (1) above:

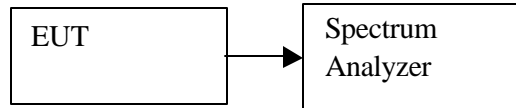
MPE Safe Distance = 03.36 cm

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

8.7. SPURIOUS EMISSIONS – CONDUCTED MEASUREMENTS

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

TEST SETUP



TEST PROCEDURE

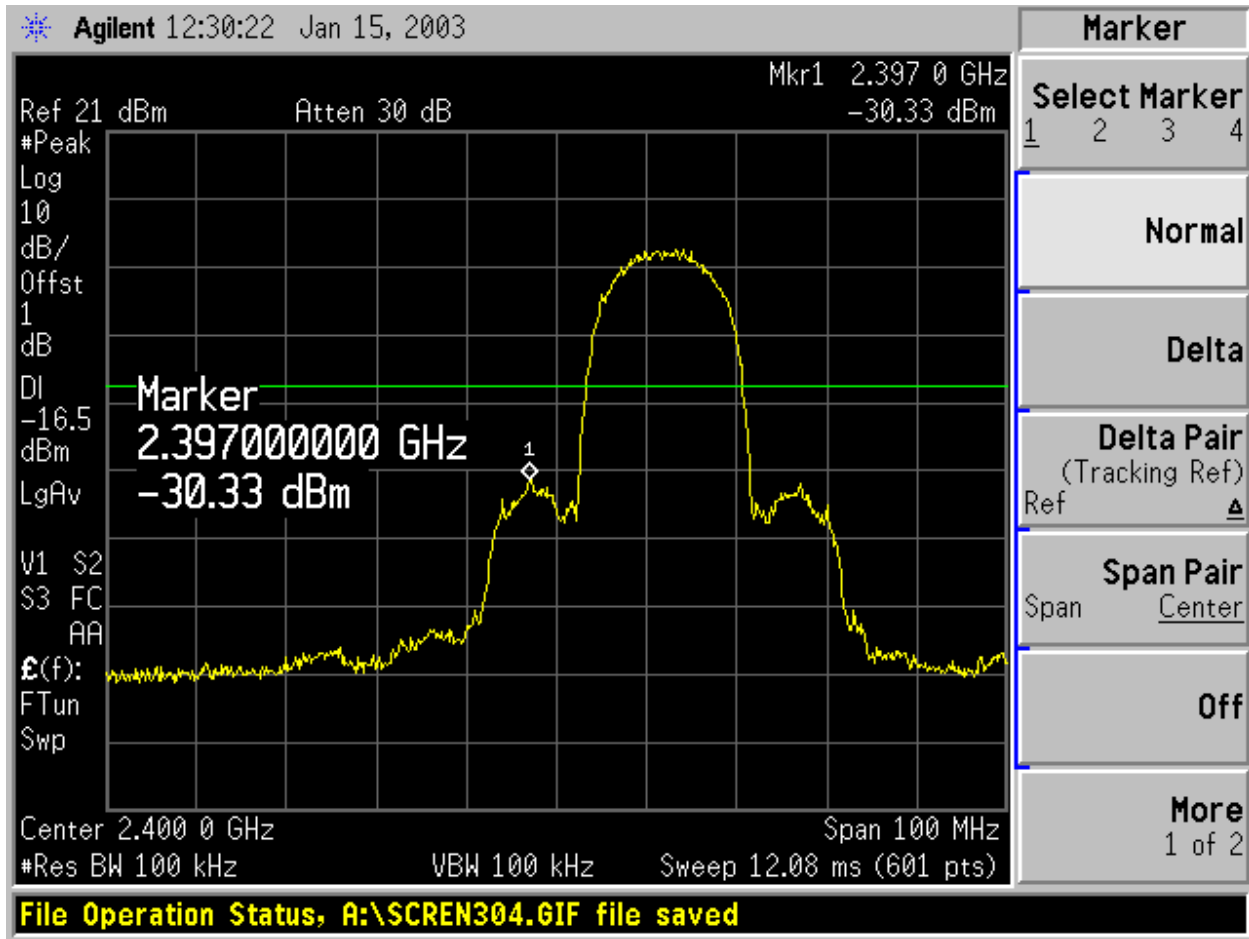
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

Measurements are made over the 30 MHz to 26.5 GHz range with the transmitter set to the lowest, middle, and highest channels within the 2.4 GHz band.

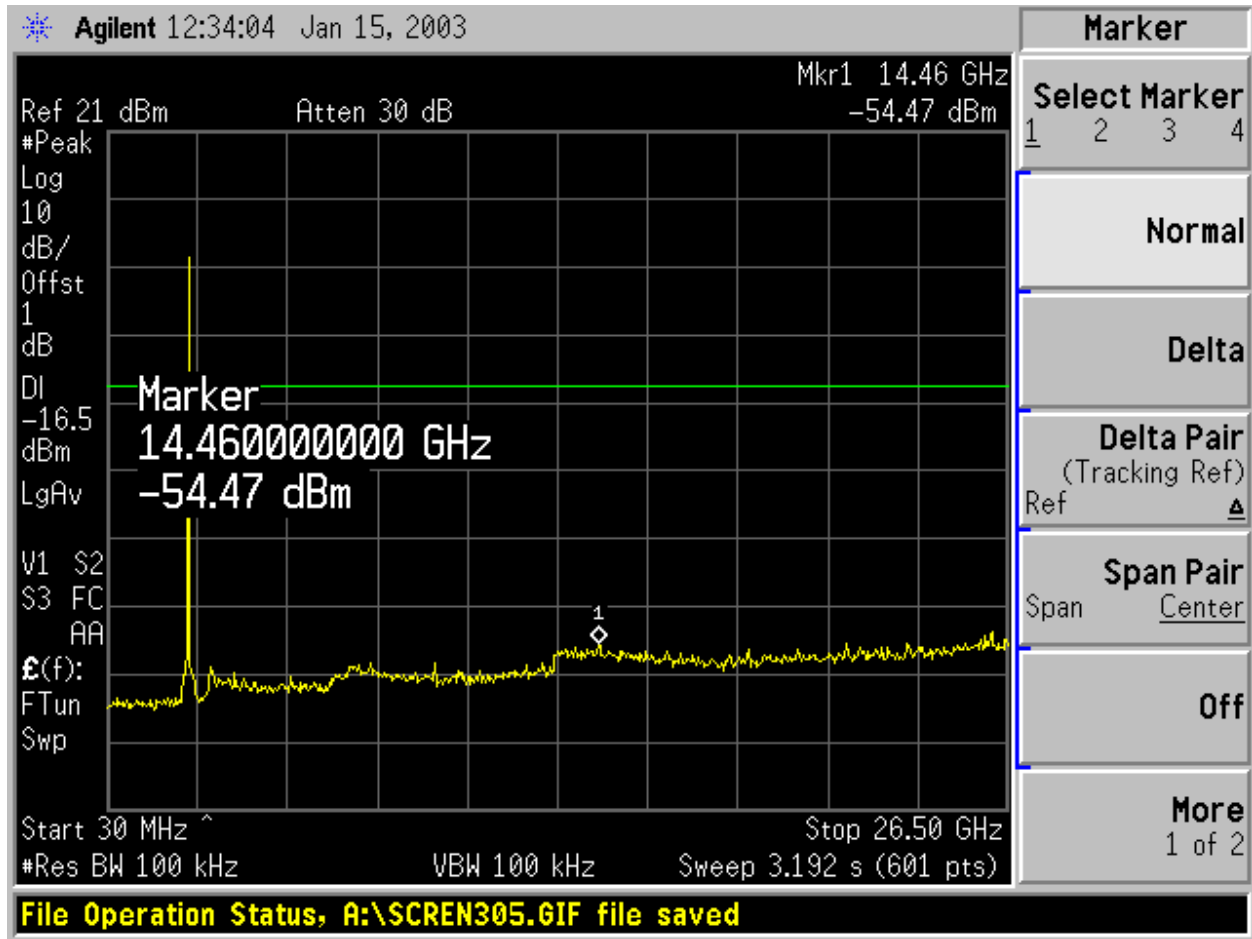
RESULTS

No non-compliance noted:

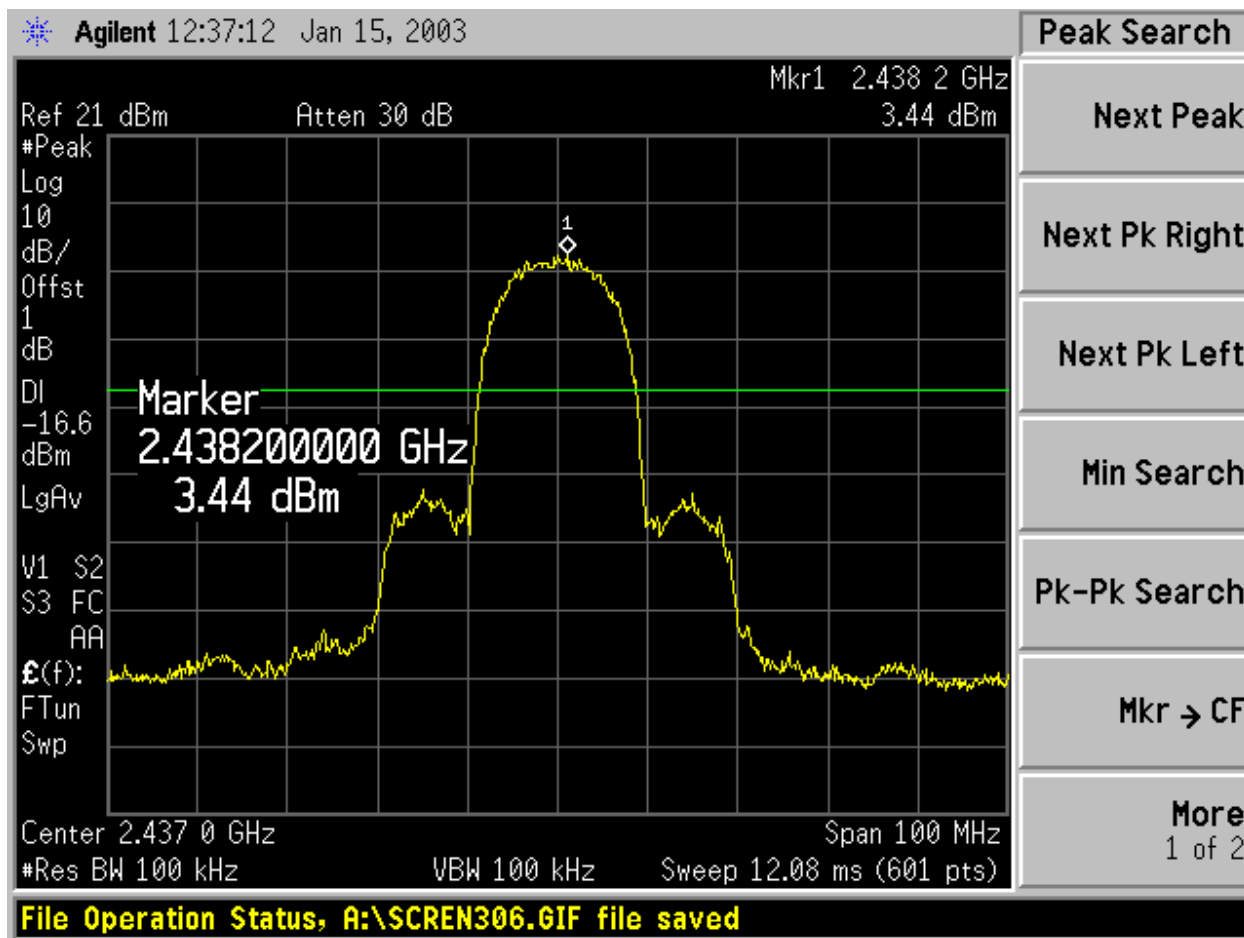
Band edge at 2.4GHz, Low Channel:



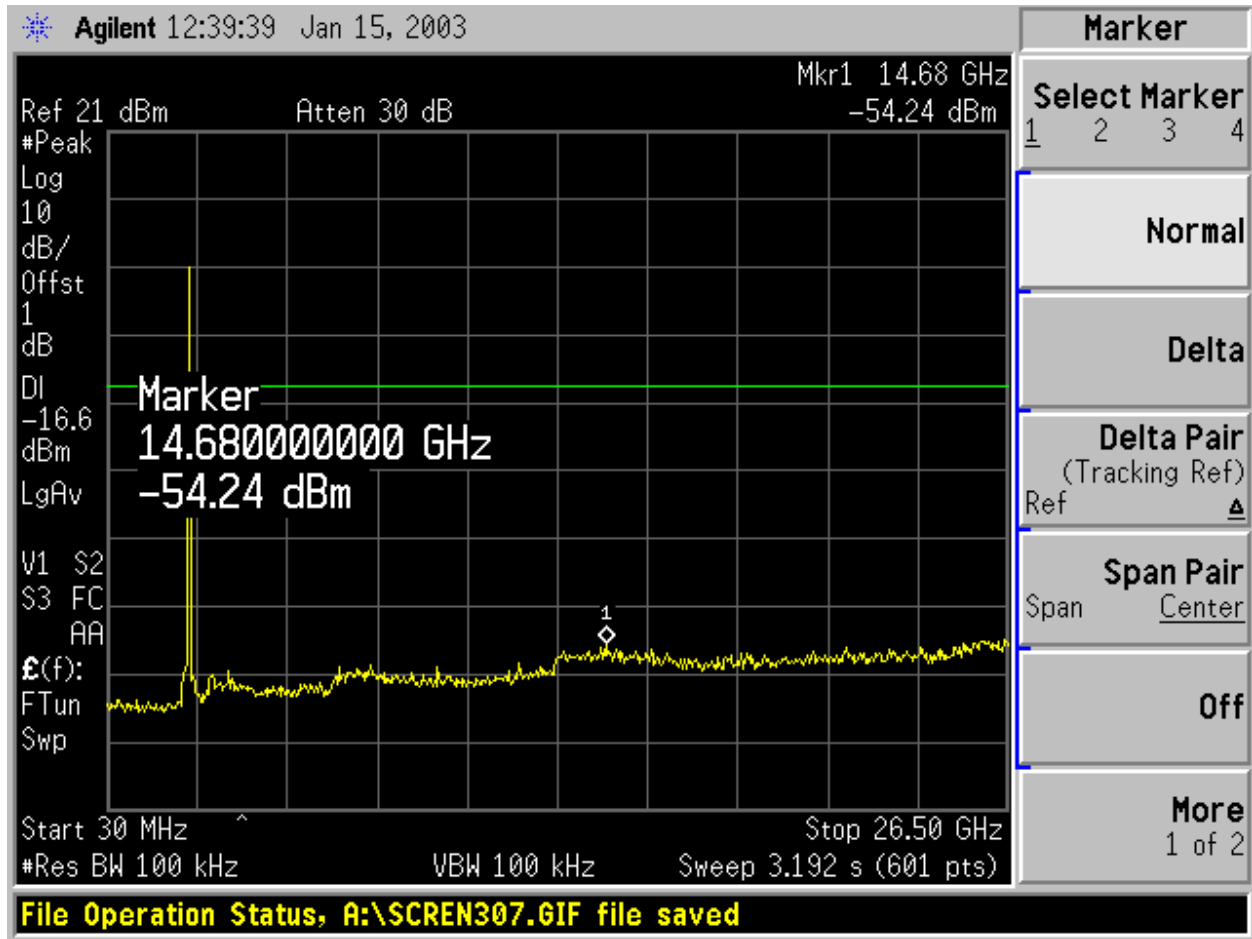
Conducted Spurious Emissions, Low Channel:



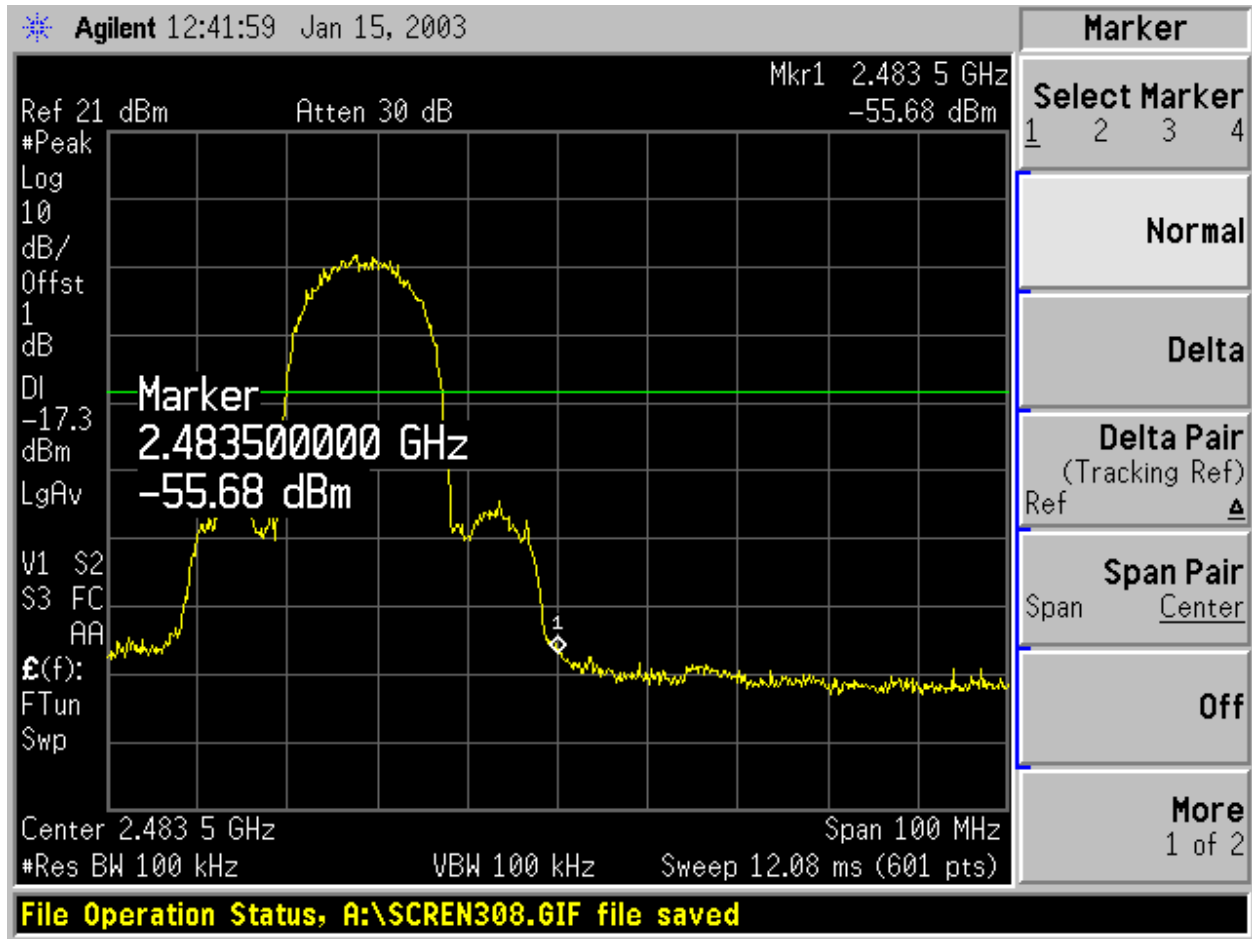
Conducted Spurious Emissions, Middle Channel:



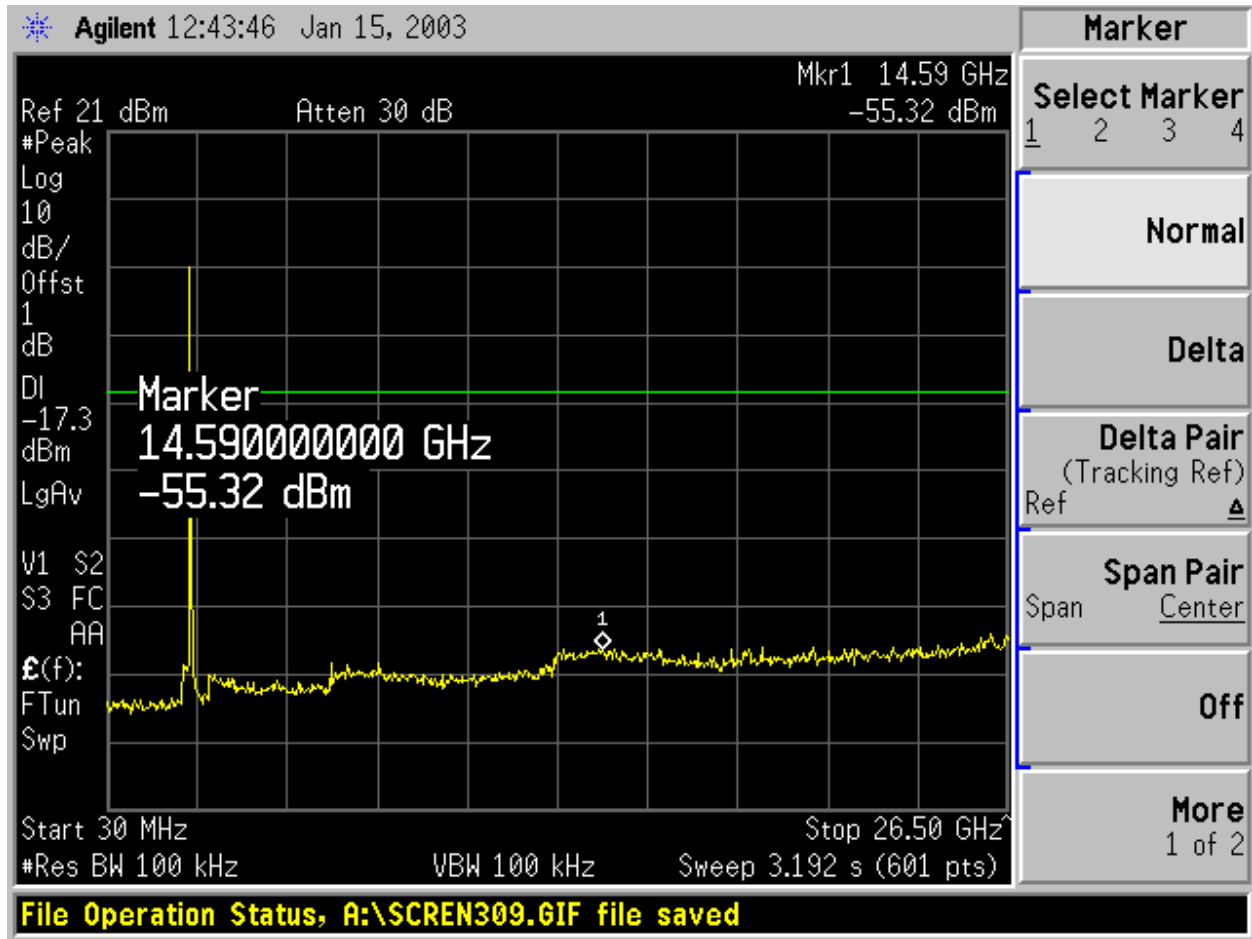
Conducted Spurious Emissions, Middle Channel:



Band edge at 2.4835GHz, High Channel:



Conducted Spurious Emissions, High Channel:



8.8. UNDESIRABLE EMISSIONS – RADIATED MEASUREMENTS

TEST SETUP

The EUT is placed on the wooden table. The antenna to EUT distance is 3 meters for frequencies below 1GHz and 1m for frequencies above 1GHz. The EUT is configured in accordance with ANSI C63.4/1992.

The EUT is set to transmit in a continuous mode.

TEST PROCEDURE

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz, the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26.5 GHz is investigated with the transmitter set to the lowest, middle, and highest channels within the 2.4 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The frequency span is set small enough to easily differentiate between broadcast stations, intermittent ambient signals and EUT emissions. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the suspected signal. Measurements were made with the antenna polarized in both the vertical and the horizontal positions.

TEST RESULTS

No non-compliance noted:

01/13/03 High Frequency Measurement
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Frank Ibrahim
 Project #: 03I1765-1
 Company: Smsung ElectroMechanics
 EUT Descrip.: 11 Mbps Wireless PCI Network Card
 EUT M/N: SWL-2300P
 Test Target: FCC 15.247
 Mode Oper: TX ON at CH1 (2412MHz), 11Mbps, Patch Antenna

Test Equipment:

Cable (feet)	EMCO Horn 1-18GHz	Pre-amplifier 1-26GHz	Spectrum Analyzer	
15	T73; S/N: 6717	HP 8449R	8566B Analyzer	T87 ARA 18-26GHz & Mixer > 26GHz

Peak Measurements: 1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements: 1 MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
4.824	3.3	40.3	30.2	33.8	5.7	-34.6	-9.5	1.0	36.7	26.6	74.0	54.0	-37.3	-27.4	V, Noise Floor
12.060	3.3	37.1	29.0	39.4	9.5	-33.4	-9.5	1.0	44.1	36.0	74.0	54.0	-29.9	-18.0	V, Noise Floor
14.472	3.3	39.0	29.2	41.7	10.8	-32.9	-9.5	1.0	50.0	40.2	74.0	54.0	-24.0	-13.8	V, Noise Floor
19.296	3.3	45.1	34.0	34.0	13.5	-32.6	-9.5	1.0	51.5	40.4	74.0	54.0	-22.5	-13.6	V, Noise Floor
4.824	3.3	40.3	30.2	33.8	5.7	-34.6	-9.5	1.0	36.7	26.6	74.0	54.0	-37.3	-27.4	H, Noise Floor
12.060	3.3	37.1	29.0	39.4	9.5	-33.4	-9.5	1.0	44.1	36.0	74.0	54.0	-29.9	-18.0	H, Noise Floor
14.472	3.3	39.0	29.2	41.7	10.8	-32.9	-9.5	1.0	50.0	40.2	74.0	54.0	-24.0	-13.8	H, Noise Floor
19.296	3.3	45.1	34.0	34.0	13.5	-32.6	-9.5	1.0	51.5	40.4	74.0	54.0	-22.5	-13.6	H, Noise Floor

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

Note: No spurious signals detected above noise floor level in the frequency range of (1-25) GHz

01/13/03 High Frequency Measurement
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Frank Ibrahim
 Project #: 03I1765-1
 Company: Smsung ElectroMechanics
 EUT Descrip.: 11 Mbps Wireless PCI Network Card
 EUT M/N: SWL-2300P
 Test Target: FCC 15.247
 Mode Oper: TX ON at CH6 (2437MHz), 11Mbps, Patch Antenna

Test Equipment:

Cable (feet)	EMCO Horn 1-18GHz	Pre-amplifier 1-26GHz	Spectrum Analyzer	
15	T73; S/N: 6717	HP 8449R	8566B Analyzer	T87 ARA 18-26GHz & Mixer > 26GHz

Peak Measurements: 1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements: 1 MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
4.874	3.3	40.3	30.2	33.9	5.8	-34.6	-9.5	1.0	36.9	26.8	74.0	54.0	-37.1	-27.2	V, Noise Floor
7.311	3.3	38.9	30.2	37.2	7.3	-34.6	-9.5	1.0	40.3	31.6	74.0	54.0	-33.7	-22.4	V, Noise Floor
12.185	3.3	37.1	29.0	39.3	9.5	-33.3	-9.5	1.0	44.1	36.0	74.0	54.0	-29.9	-18.0	V, Noise Floor
19.496	3.3	45.1	34.0	33.7	13.6	-32.7	-9.5	1.0	51.2	40.1	74.0	54.0	-22.8	-13.9	V, Noise Floor
4.874	3.3	40.3	30.2	33.9	5.8	-34.6	-9.5	1.0	36.9	26.8	74.0	54.0	-37.1	-27.2	H, Noise Floor
7.311	3.3	38.9	30.2	37.2	7.3	-34.6	-9.5	1.0	40.3	31.6	74.0	54.0	-33.7	-22.4	H, Noise Floor
12.185	3.3	37.1	29.0	39.3	9.5	-33.3	-9.5	1.0	44.1	36.0	74.0	54.0	-29.9	-18.0	H, Noise Floor
19.496	3.3	45.1	34.0	33.7	13.6	-32.7	-9.5	1.0	51.2	40.1	74.0	54.0	-22.8	-13.9	H, Noise Floor

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

Note: No spurious signals detected above noise floor level in the frequency range of (1-25) GHz

01/13/03 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Frank Ibrahim
Project #: 03I1765-1
Company: Smsung ElectroMechanics
EUT Descrip.: 11 Mbps Wireless PCI Network Card
EUT M/N: SWL-2300P
Test Target: FCC 15.247
Mode Oper: TX ON at C11 (2462MHz), 11Mbps, Patch Antenna

Test Equipment:

Cable (feet)	EMCO Horn 1-18GHz	Pre-amplifier 1-26GHz	Spectrum Analyzer	Horn > 18GHz
15	T73; S/N: 6717	HP 8449R	8566B Analyzer	T87 ARA 18-26GHz & Mixer > 26GHz

Peak Measurements:

1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements:

1 MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
4.924	3.3	40.3	30.2	34.1	5.8	-34.5	-9.5	1.0	37.2	27.1	74.0	54.0	-36.8	-26.9	V. Noise Floor
7.386	3.3	38.9	30.2	37.3	7.3	-34.6	-9.5	1.0	40.5	31.8	74.0	54.0	-33.5	-22.2	V. Noise Floor
12.310	3.3	37.1	29.0	39.2	9.6	-33.3	-9.5	1.0	44.1	36.0	74.0	54.0	-29.9	-18.0	V. Noise Floor
19.696	3.3	45.1	34.0	33.4	13.7	-32.8	-9.5	1.0	50.9	39.8	74.0	54.0	-23.1	-14.2	V. Noise Floor
22.158	3.3	45.0	33.3	35.3	15.0	-33.6	-9.5	1.0	53.2	41.5	74.0	54.0	-20.8	-12.5	V. Noise Floor
4.924	3.3	40.3	30.2	34.1	5.8	-34.5	-9.5	1.0	37.2	27.1	74.0	54.0	-36.8	-26.9	H. Noise Floor
7.386	3.3	38.9	30.2	37.3	7.3	-34.6	-9.5	1.0	40.5	31.8	74.0	54.0	-33.5	-22.2	H. Noise Floor
12.310	3.3	37.1	29.0	39.2	9.6	-33.3	-9.5	1.0	44.1	36.0	74.0	54.0	-29.9	-18.0	H. Noise Floor
19.696	3.3	45.1	34.0	33.4	13.7	-32.8	-9.5	1.0	50.9	39.8	74.0	54.0	-23.1	-14.2	H. Noise Floor
22.158	3.3	45.0	33.3	35.3	15.0	-33.6	-9.5	1.0	53.2	41.5	74.0	54.0	-20.8	-12.5	H. Noise Floor

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

Note: No spurious signals detected above noise floor level in the frequency range of (1-25) GHz

01/22/03 High Frequency Measurement
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Frank Ibrahim
 Project #: 03I1765-1
 Company: Smsung ElectroMechanics
 EUT Descrip.: 11 Mbps Wireless PCI Network Card
 EUT M/N: SWL-2300P
 Test Target: FCC 15.247
 Mode Oper: TX ON at CH1 (2412MHz), 11Mbps, Monopole Antenna

Test Equipment:

Cable (feet)	EMCO Horn 1-18GHz	Pre-amplifier 1-26GHz	Spectrum Analyzer	
15	T72; S/N: 6739	HP 8449R	8566B Analyzer	T87 ARA 18-26GHz & Mixer > 26GHz

Peak Measurements: 1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements: 1 MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
4.824	3.3	47.0	33.4	33.9	5.7	-34.6	-9.5	1.0	43.5	29.9	74.0	54.0	-30.5	-24.1	V
12.060	3.3	37.1	29.0	39.3	9.5	-33.4	-9.5	1.0	43.9	35.8	74.0	54.0	-30.1	-18.2	V, Noise Floor
14.472	3.3	39.0	29.2	41.3	10.8	-32.9	-9.5	1.0	49.7	39.9	74.0	54.0	-24.3	-14.1	V, Noise Floor
19.296	3.3	45.1	34.0	34.0	13.5	-32.6	-9.5	1.0	51.5	40.4	74.0	54.0	-22.5	-13.6	V, Noise Floor
4.824	3.3	48.3	43.5	33.9	5.7	-34.6	-9.5	1.0	44.8	40.0	74.0	54.0	-29.2	-14.0	H
12.060	3.3	37.1	29.0	39.3	9.5	-33.4	-9.5	1.0	43.9	35.8	74.0	54.0	-30.1	-18.2	H, Noise Floor
14.472	3.3	39.0	29.2	41.3	10.8	-32.9	-9.5	1.0	49.7	39.9	74.0	54.0	-24.3	-14.1	H, Noise Floor
19.296	3.3	45.1	34.0	34.0	13.5	-32.6	-9.5	1.0	51.5	40.4	74.0	54.0	-22.5	-13.6	H, Noise Floor

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

Note: No spurious signals detected above noise floor level in the frequency range of (1-25) GHz

01/13/03 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Frank Ibrahim
Project #: 03I1765-1
Company: Smsung ElectroMechanics
EUT Descr.: 11 Mbps Wireless PCI Network Card
EUT M/N: SWL-2300P
Test Target: FCC 15.247
Mode Oper: TX ON at CH6 (2437MHz), 11Mbps, Monopole Antenna

Test Equipment:

Cable (feet)	EMCO Horn 1-18GHz	Pre-amplifier 1-26GHz	Spectrum Analyzer	Horn > 18GHz
15	T72; S/N: 6739	HP 8449R	8566B Analyzer	T87 ARA 18-26GHz & Mixer > 26GHz

Peak Measurements:

1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements:

1 MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
4.874	3.3	44.0	31.3	34.0	5.8	-34.6	-9.5	1.0	40.7	28.0	74.0	54.0	-33.3	-26.0	V
7.311	3.3	38.9	30.2	37.1	7.3	-34.6	-9.5	1.0	40.3	31.6	74.0	54.0	-33.7	-22.4	V, Noise Floor
12.185	3.3	37.1	29.0	39.2	9.5	-33.3	-9.5	1.0	44.0	35.9	74.0	54.0	-30.0	-18.1	V, Noise Floor
19.496	3.3	45.1	34.0	33.7	13.6	-32.7	-9.5	1.0	51.2	40.1	74.0	54.0	-22.8	-13.9	V, Noise Floor
4.874	3.3	40.3	30.2	34.0	5.8	-34.6	-9.5	1.0	37.0	26.9	74.0	54.0	-37.0	-27.1	H, Noise Floor
7.311	3.3	38.9	30.2	37.1	7.3	-34.6	-9.5	1.0	40.3	31.6	74.0	54.0	-33.7	-22.4	H, Noise Floor
12.185	3.3	37.1	29.0	39.2	9.5	-33.3	-9.5	1.0	44.0	35.9	74.0	54.0	-30.0	-18.1	H, Noise Floor
19.496	3.3	45.1	34.0	33.7	13.6	-32.7	-9.5	1.0	51.2	40.1	74.0	54.0	-22.8	-13.9	H, Noise Floor

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

Note: No spurious signals detected above noise floor level in the frequency range of (1-25) GHz

01/13/03 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Frank Ibrahim
Project #: 03I1765-1
Company: Smsung ElectroMechanics
EUT Descr.: 11 Mbps Wireless PCI Network Card
EUT M/N: SWL-2300P
Test Target: FCC 15.247
Mode Oper: TX ON at C11 (2462MHz), 11Mbps, Monopole Antenna

Test Equipment:

Cable (feet)	EMCO Horn 1-18GHz	Pre-amplifier 1-26GHz	Spectrum Analyzer	Horn > 18GHz
15	T72; S/N: 6739	HP 8449R	8566B Analyzer	T87 ARA 18-26GHz & Mixer > 26GHz

Peak Measurements:

1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

Average Measurements:

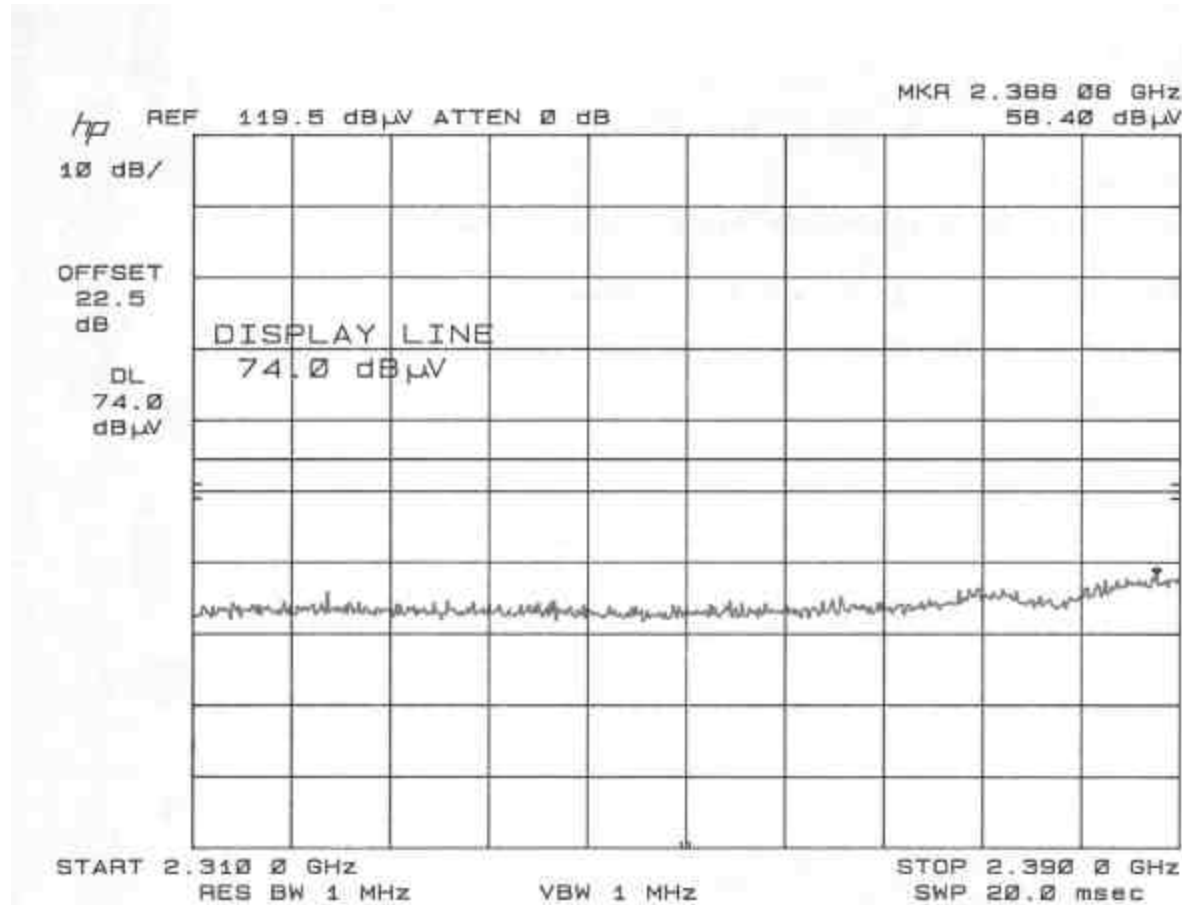
1 MHz Resolution Bandwidth
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
4.924	3.3	44.5	31.6	34.2	5.8	-34.5	-9.5	1.0	41.4	28.5	74.0	54.0	-32.6	-25.5	V
7.386	3.3	38.9	30.2	37.3	7.3	-34.6	-9.5	1.0	40.4	31.7	74.0	54.0	-33.6	-22.3	V, Noise Floor
12.310	3.3	37.1	29.0	39.2	9.6	-33.3	-9.5	1.0	44.1	36.0	74.0	54.0	-29.9	-18.0	V, Noise Floor
19.696	3.3	45.1	34.0	33.4	13.7	-32.8	-9.5	1.0	50.9	39.8	74.0	54.0	-23.1	-14.2	V, Noise Floor
4.924	3.3	43.9	31.3	34.2	5.8	-34.5	-9.5	1.0	40.8	28.2	74.0	54.0	-33.2	-25.8	H
7.386	3.3	38.9	30.2	37.3	7.3	-34.6	-9.5	1.0	40.4	31.7	74.0	54.0	-33.6	-22.3	H, Noise Floor
12.310	3.3	37.1	29.0	39.2	9.6	-33.3	-9.5	1.0	44.1	36.0	74.0	54.0	-29.9	-18.0	H, Noise Floor
19.696	3.3	45.1	34.0	33.4	13.7	-32.8	-9.5	1.0	50.9	39.8	74.0	54.0	-23.1	-14.2	H, Noise Floor

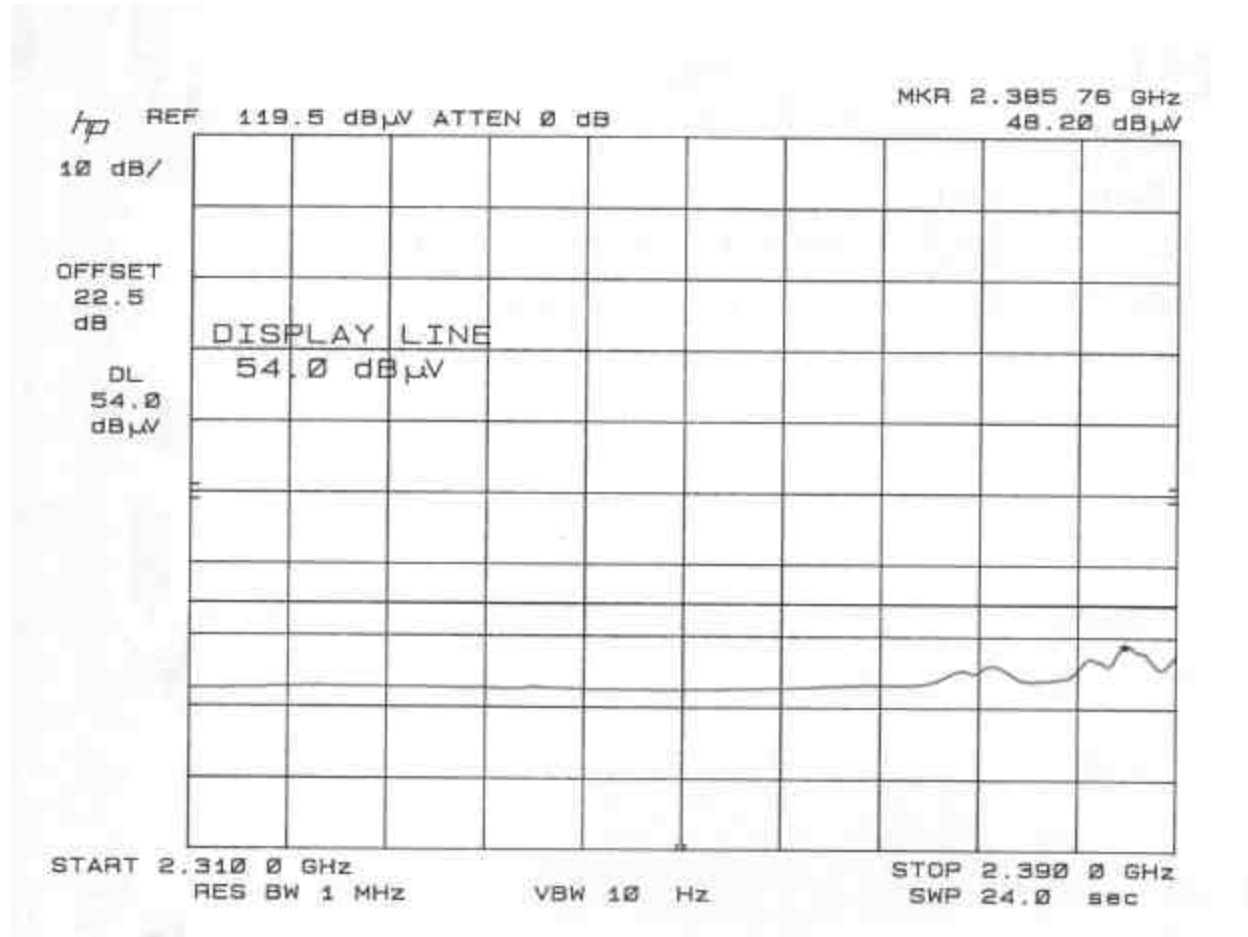
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

Note: No spurious signals detected above noise floor level in the frequency range of (1-25) GHz

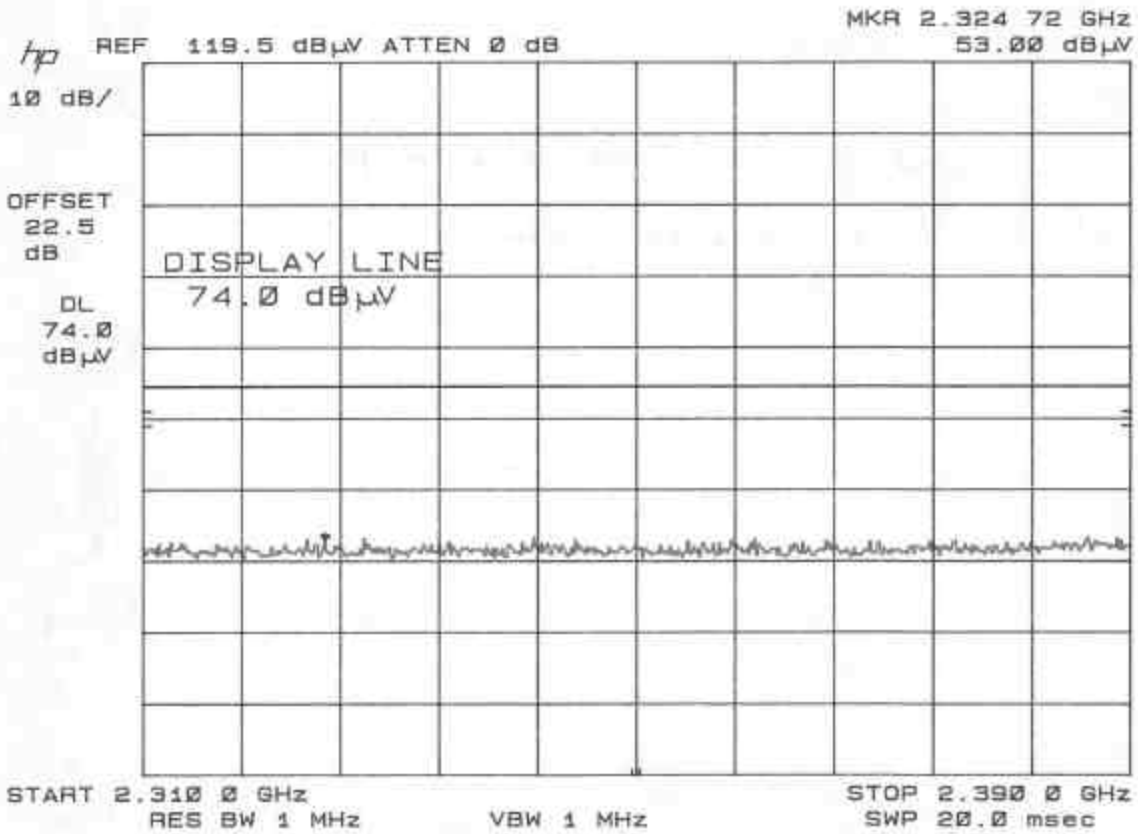
**Restricted Band (2310-2390)MHz, Vertical, Peak
CH1 (2412 MHz), 1Mbps, Patch Antenna**



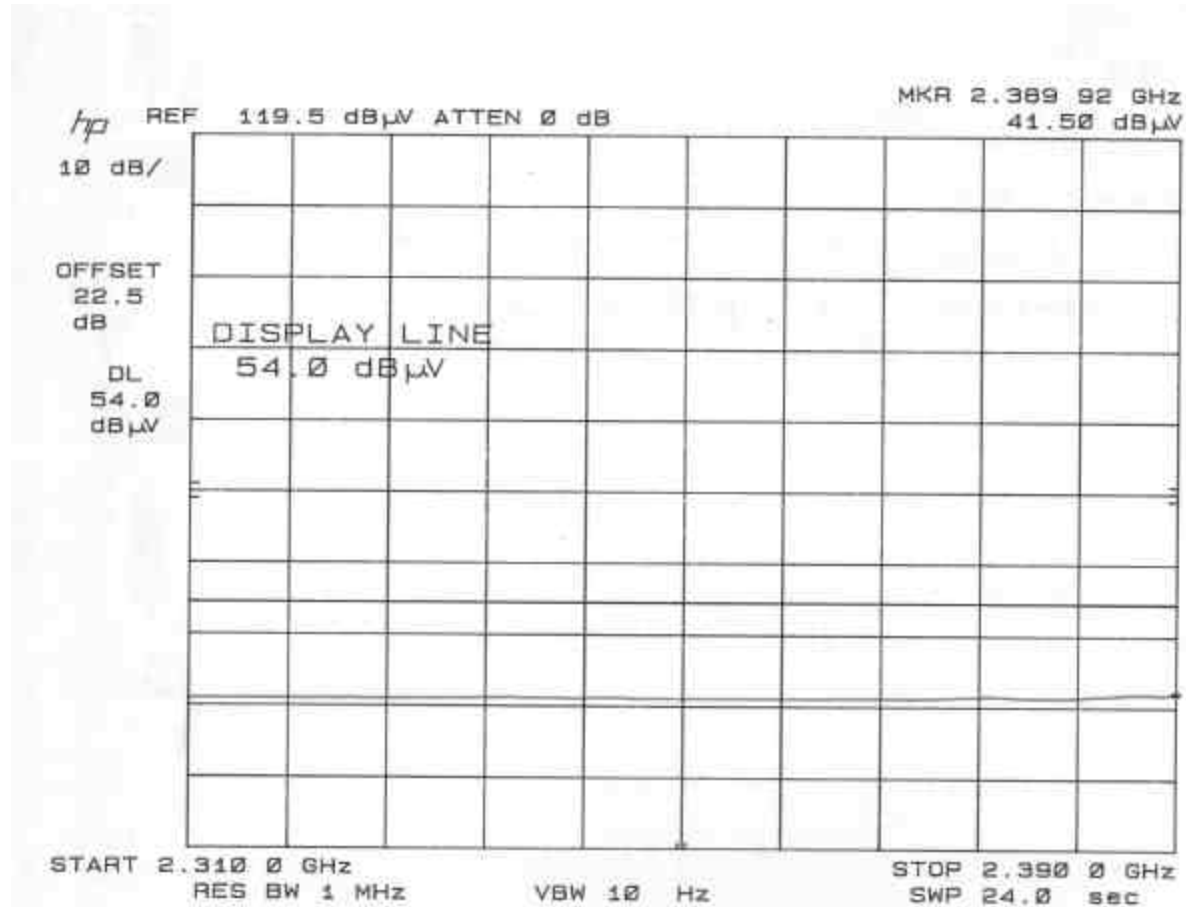
**Restricted Band (2310-2390)MHz, Vertical, Average
CH1 (2412 MHz), 1Mbps, Patch Antenna**



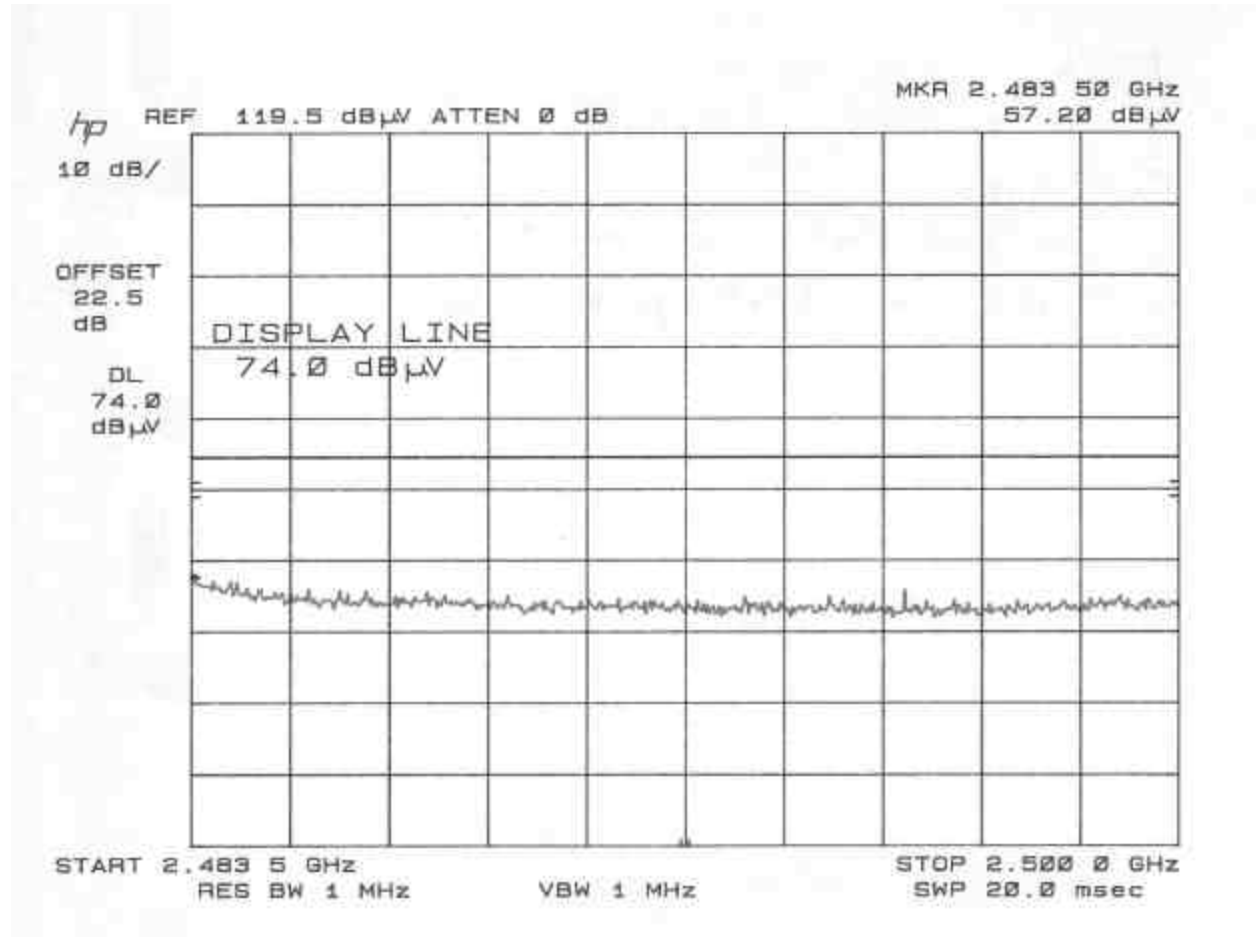
**Restricted Band (2310-2390)MHz, Horizontal, Peak
CH1 (2412 MHz), 1Mbps, Patch Antenna**



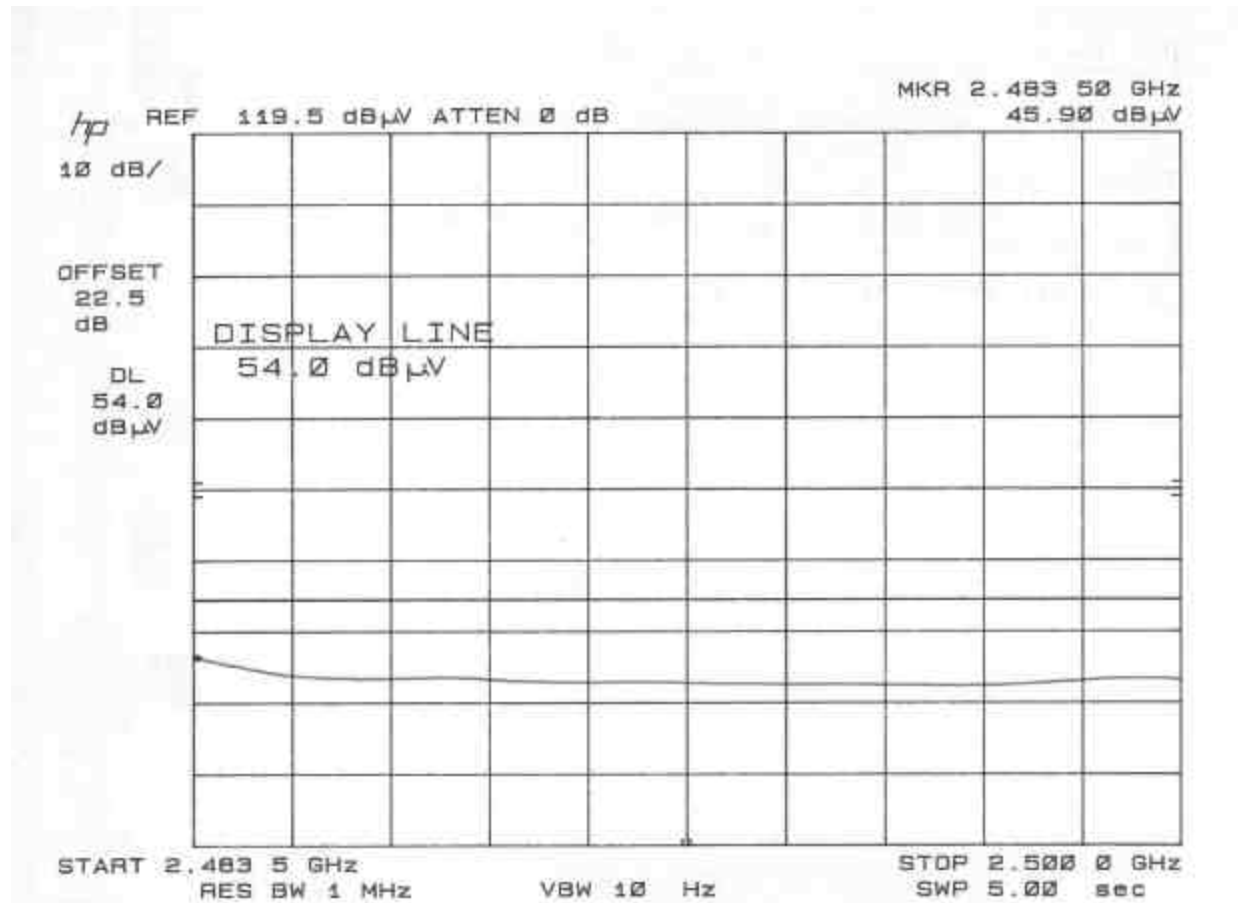
**Restricted Band (2310-2390)MHz, Horizontal, Average
CH1 (2412 MHz), 1Mbps, Patch Antenna**



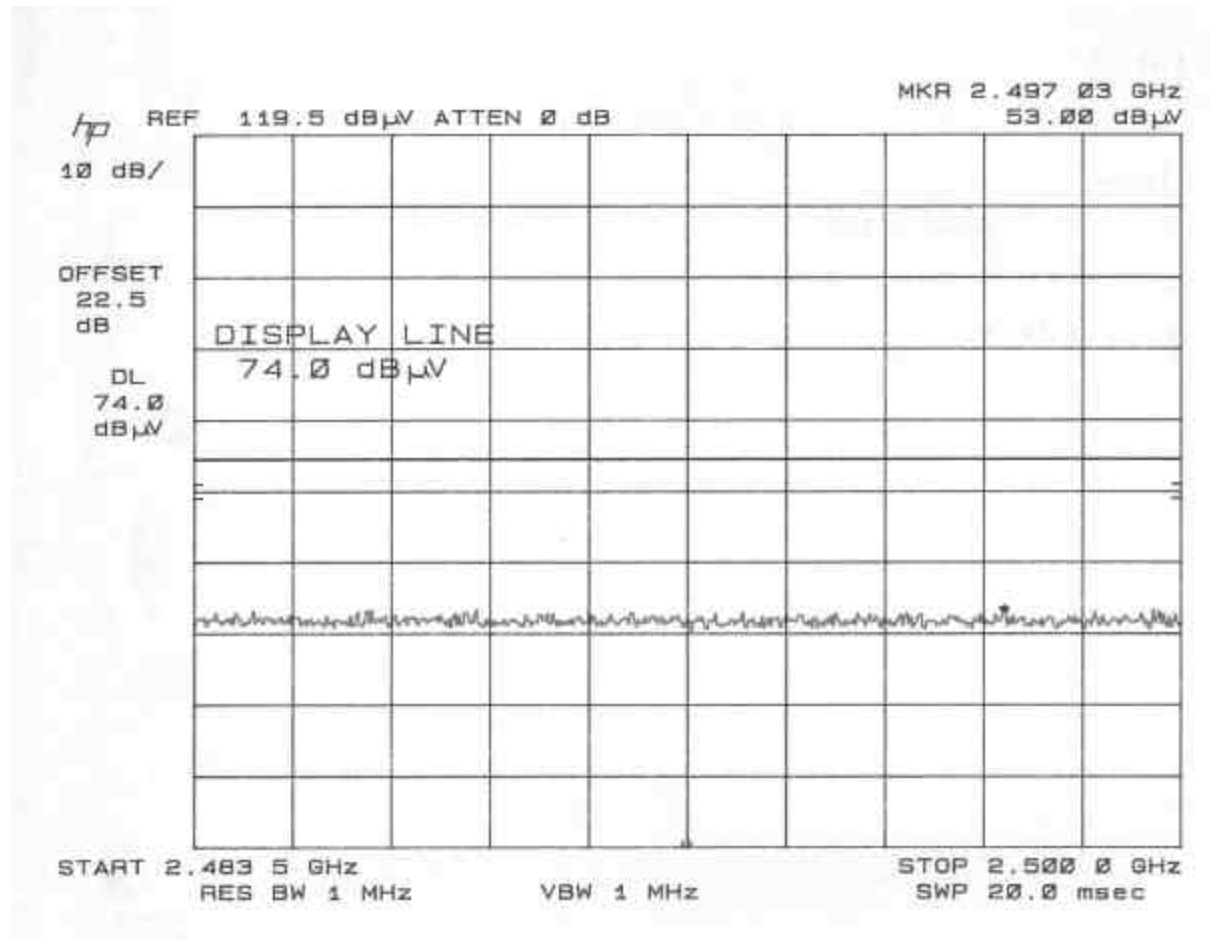
**Restricted Band (2483.5-2500)MHz, Vertical, Peak
CH11(2462 MHz), 1Mbps, Patch Antenna**



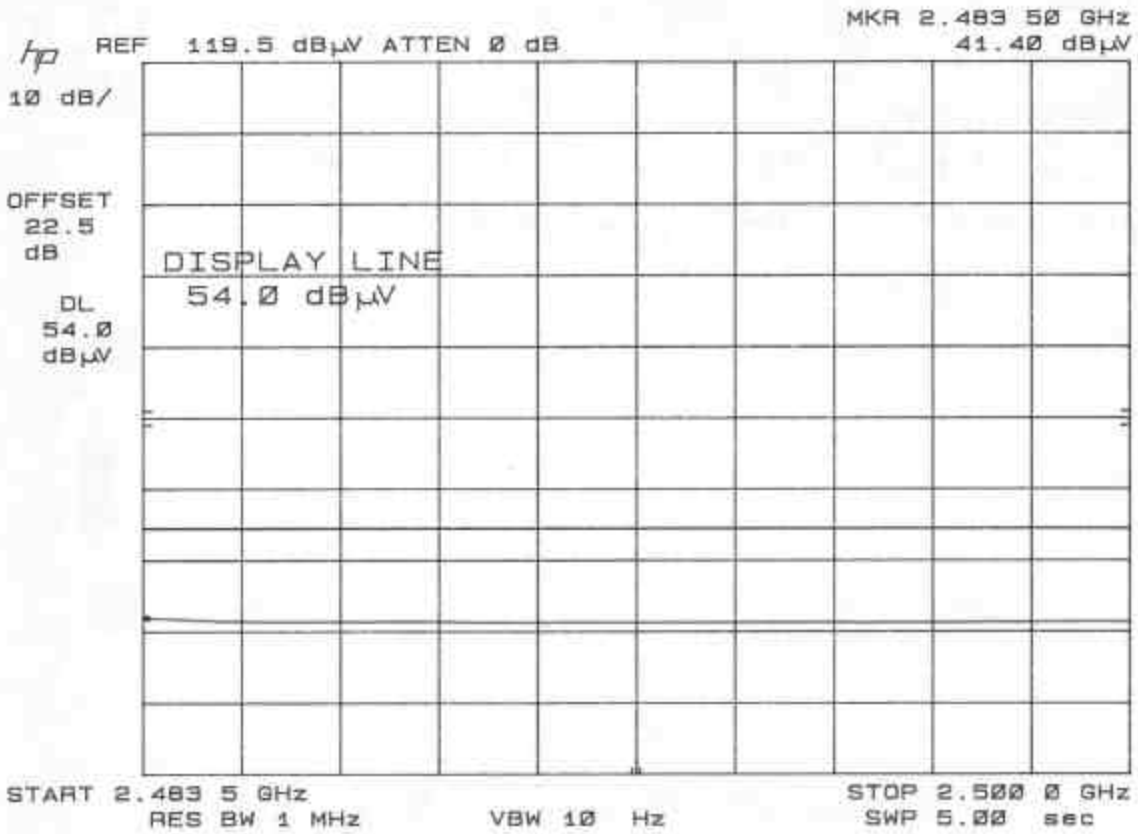
**Restricted Band (2483.5-2500)MHz, Vertical, Average
CH11 (2462 MHz), 1Mbps, Patch Antenna**



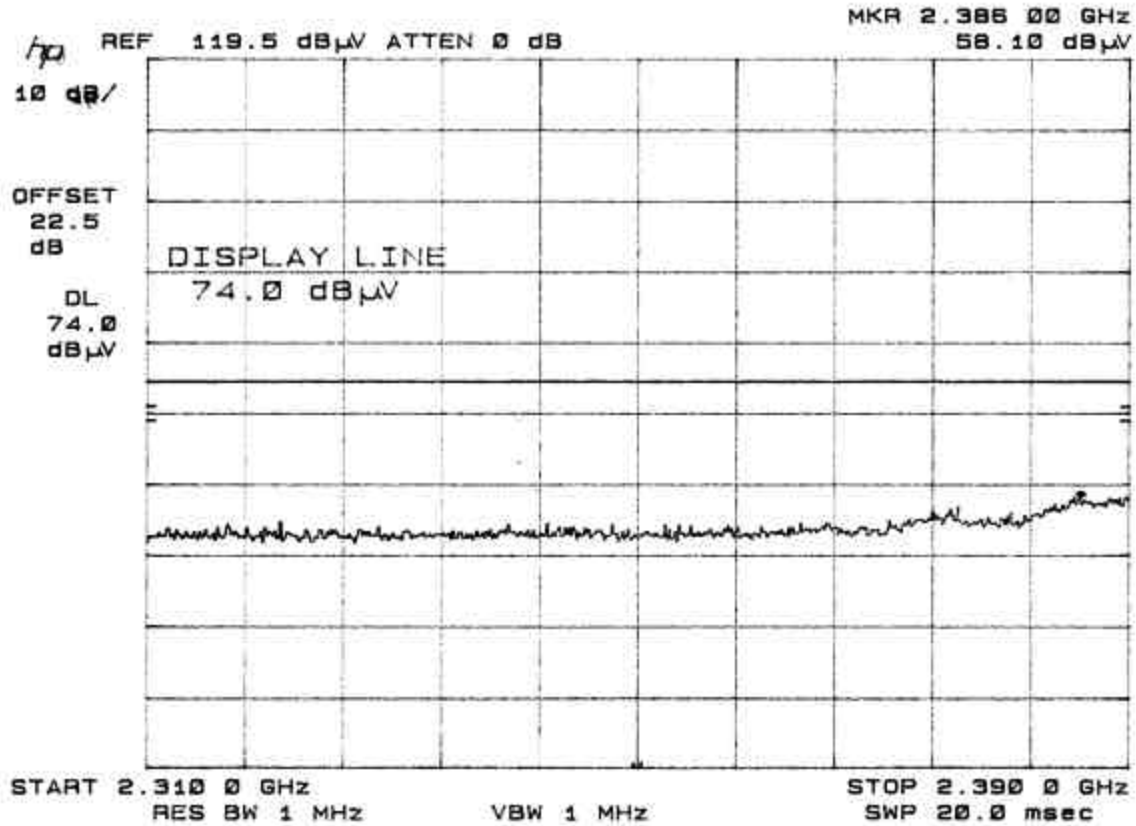
**Restricted Band (2483.5-2500)MHz, Horizontal, Peak
CH11 (2462 MHz), 1Mbps, Patch Antenna**



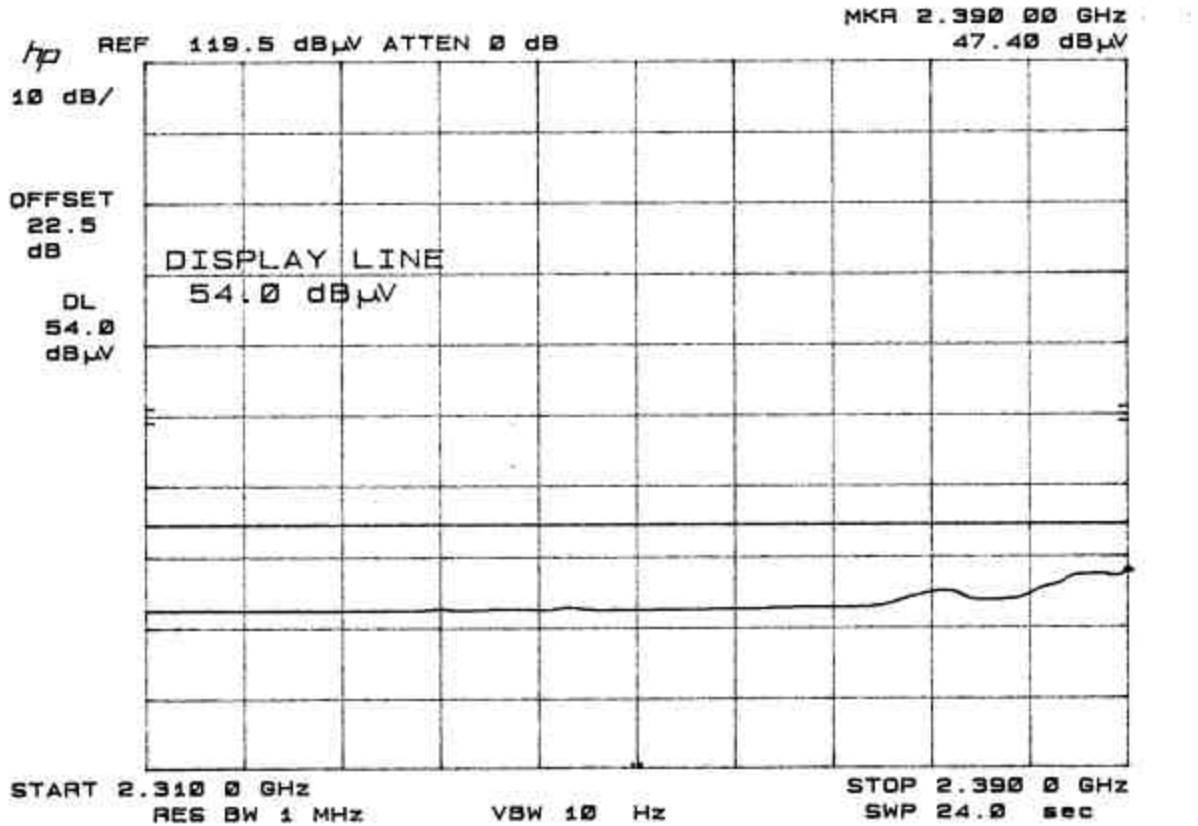
**Restricted Band (2483.5-2500)MHz, Horizontal, Average
CH11 (2462 MHz), 1Mbps, Patch Antenna**



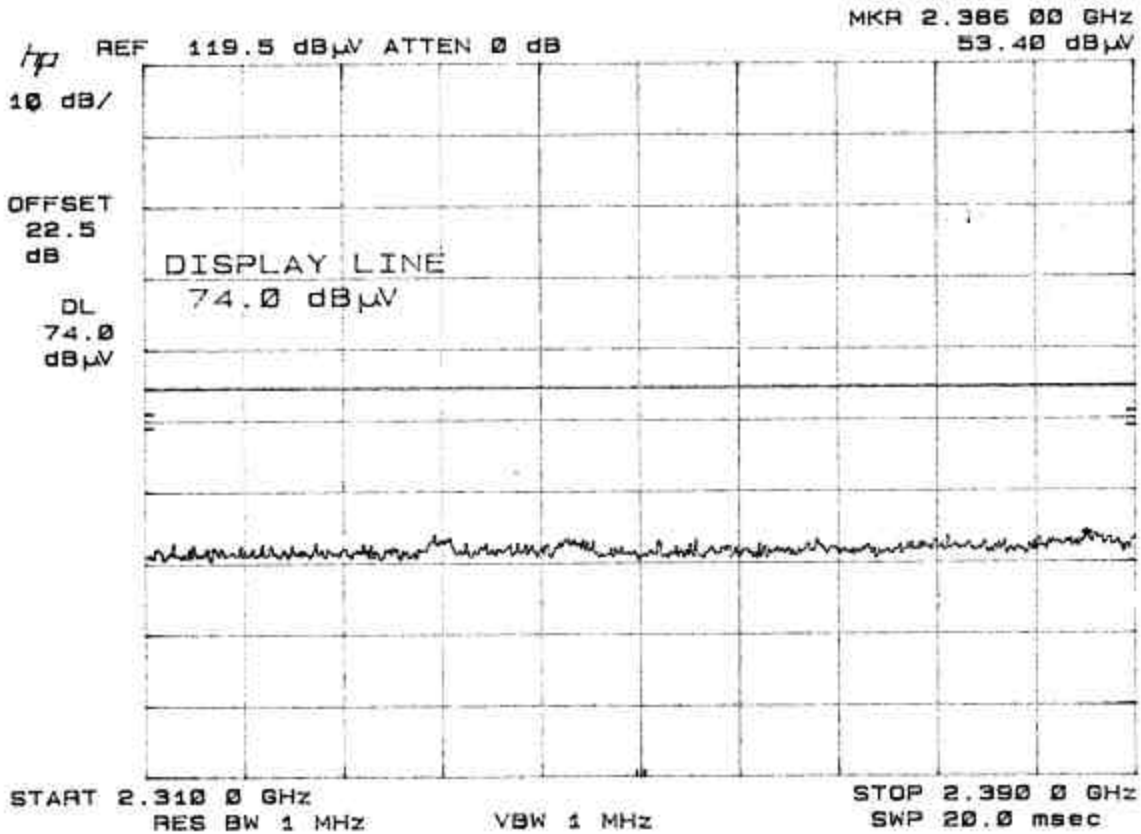
**Restricted Band (2310-2390)MHz, Vertical, Peak
CH1 (2412 MHz), 1Mbps, Sleeve dipole Antenna**



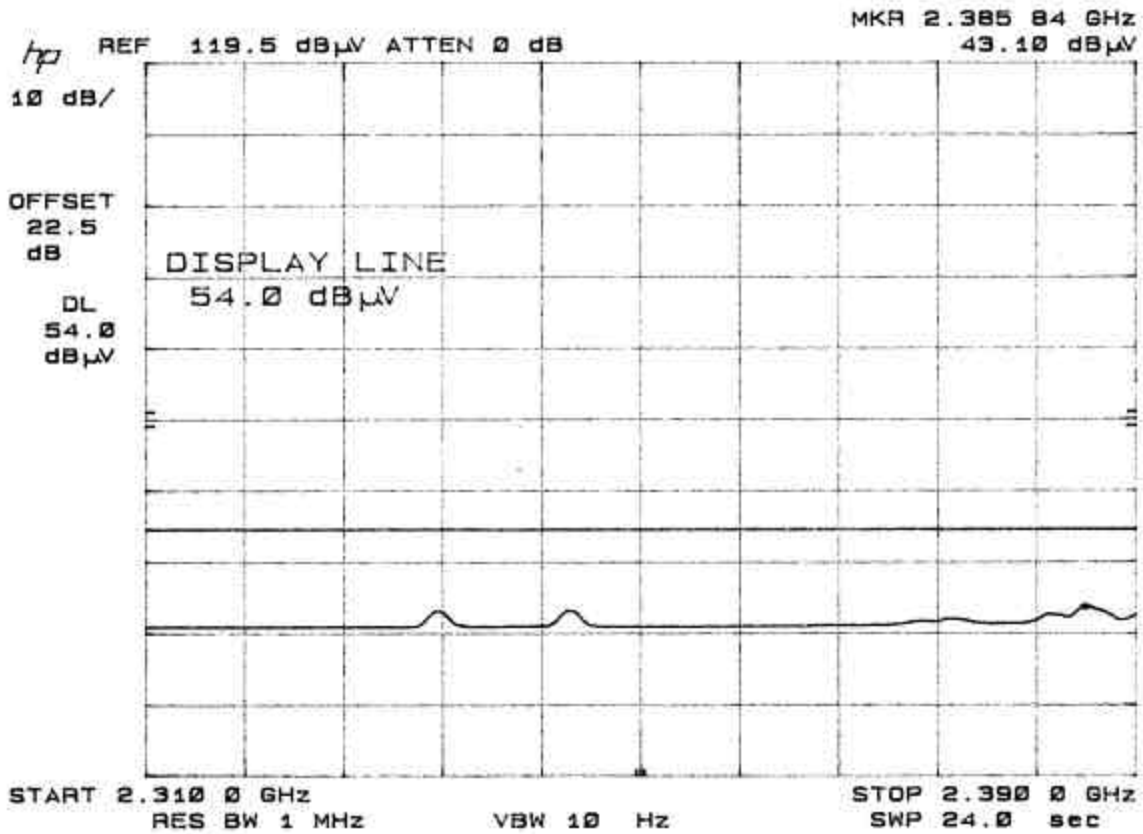
**Restricted Band (2310-2390)MHz, Vertical, Average
CH1 (2412 MHz), 1Mbps, Sleeve dipole Antenna**



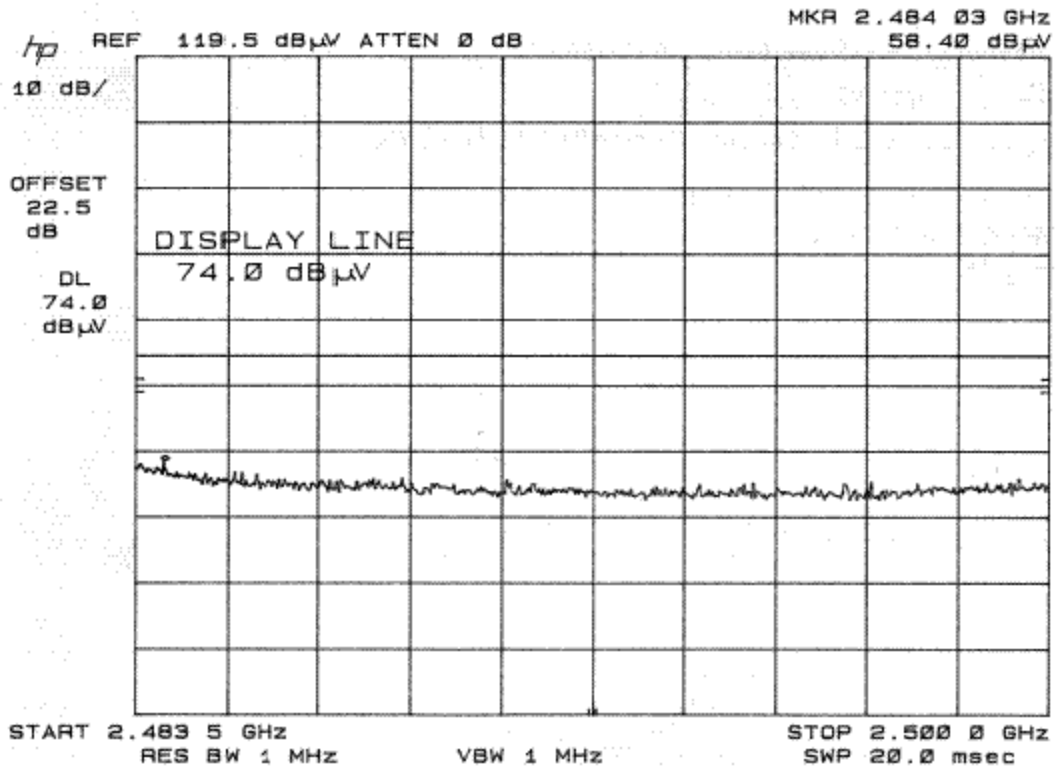
**Restricted Band (2310-2390)MHz, Horizontal, Peak
CH1 (2412 MHz), 1Mbps, Sleeve dipole Antenna**



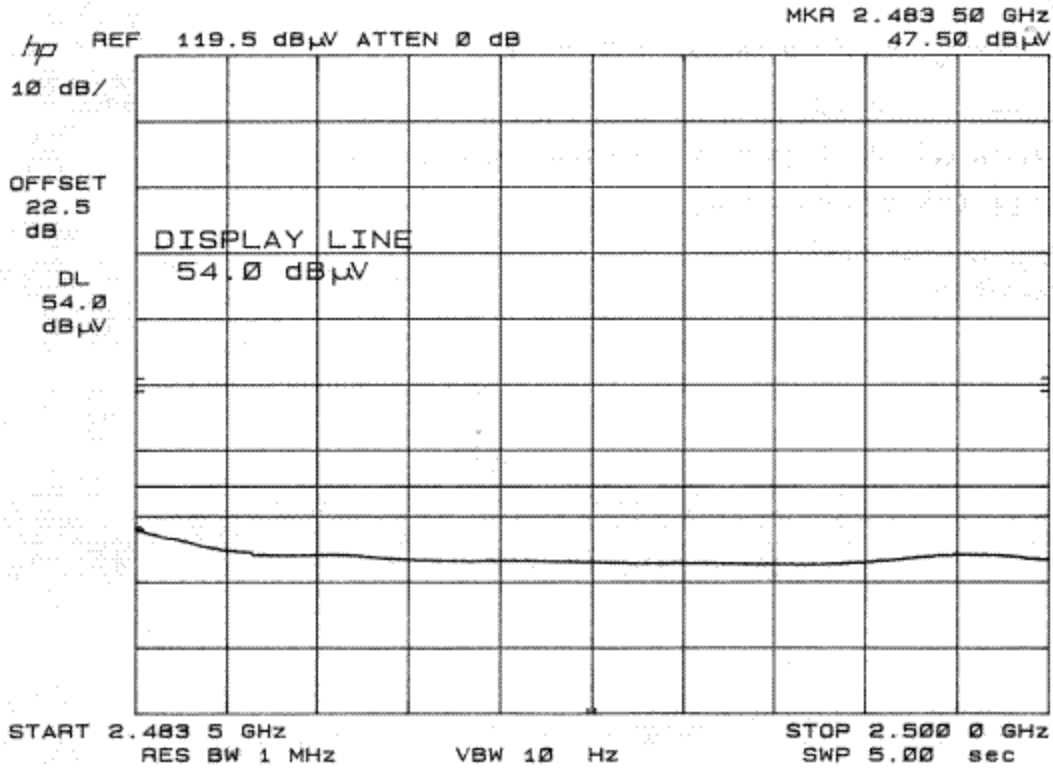
**Restricted Band (2310-2390)MHz, Horizontal, Average
CH1 (2412 MHz), 1Mbps, Sleeve dipole Antenna**



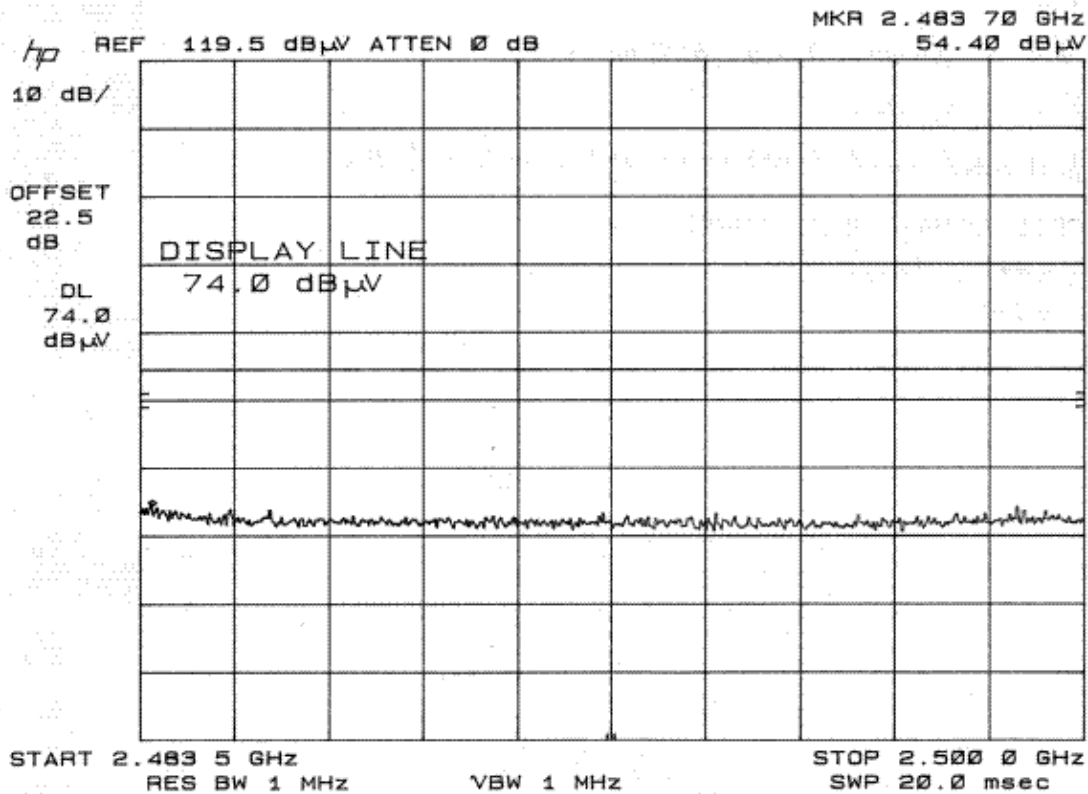
**Restricted Band (2483.5-2500)MHz, Vertical, Peak
CH11 (2462MHz), 1Mbps, Sleeve dipole Antenna**



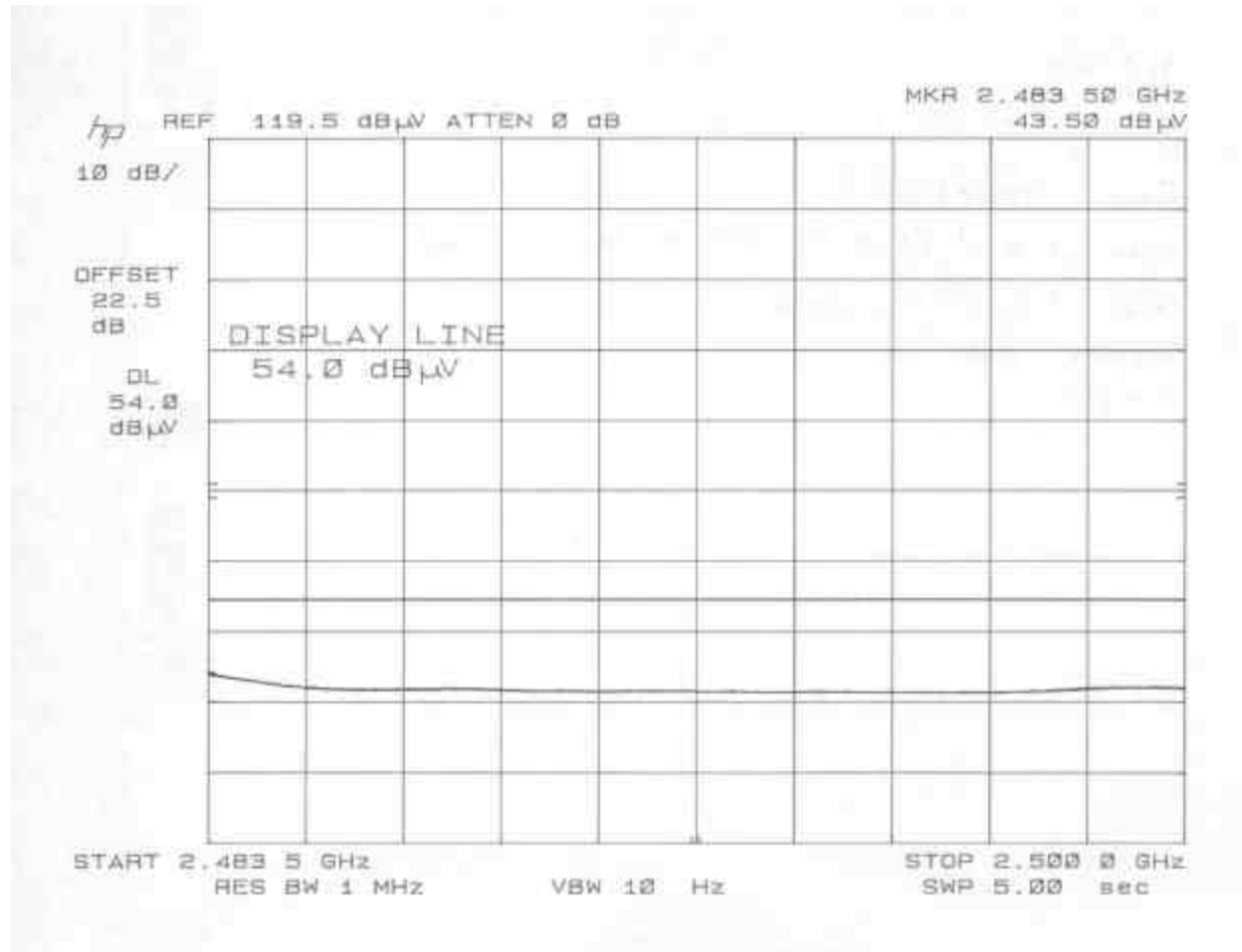
**Restricted Band (2483.5-2500)MHz, Vertical, Average
CH11 (2462 MHz), 1Mbps, Sleeve dipole Antenna**



**Restricted Band (2483.5-2500)MHz, Horizontal, Peak
CH11 (2462 MHz), 1Mbps, Sleeve dipole Antenna**



**Restricted Band (2483.5-2500)MHz, Horizontal, Average
CH11 (2462 MHz), 1Mbps, Sleeve dipole Antenna**





FCC, VCCI, CISPR, CE, AUSTEL, NZ
 UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
 PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #: 031765-1
Report #: 030114C01
Date & Time: 01/14/03 11:43 AM
Test Engr: Frank Ibrahim

Company: Samsung ElectroMechanics
EUT Description: 11 Mbps Wireless PCI Network Card, Model: SWL-2300P (PCI)
Test Configuration : EUT, PC, KB, PS/2 Mouse, Monitor, Printer, Modem
Type of Test: FCC 15.209
Mode of Operation: TX ON at mid channel 2437MHz, 11Mps, Patch Antenna

[<< Main Sheet](#)

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
816.00	44.60	21.42	5.39	27.42	44.00	46.00	-2.00	3mV	0.00	1.00	QP
667.00	45.30	20.59	4.83	27.88	42.84	46.00	-3.16	3mV	0.00	1.00	QP
638.00	44.60	19.82	4.71	27.84	41.29	46.00	-4.71	3mV	0.00	1.00	P
594.00	45.40	18.76	4.53	27.78	40.92	46.00	-5.08	3mV	0.00	1.00	P
267.00	51.00	12.98	2.81	26.42	40.38	46.00	-5.62	3mH	0.00	1.00	P
433.00	46.80	16.32	3.72	27.27	39.58	46.00	-6.42	3mV	0.00	1.00	P
6 Worst Data											



FCC, VCCI, CISPR, CE, AUSTEL, NZ
 UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
 PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #: 0311765-1
Report #: 030114C01
Date & Time: 01/14/03 11:43 AM
Test Engr: Frank Ibrahim

Company: Samsung ElectroMechanics
EUT Description: 11 Mbps Wireless PCI Network Card, Model: SWL-2300P (PCI)
Test Configuration: EUT, PC, KB, PS/2 Mouse, Monitor, Printer, Modem
Type of Test: FCC 15.209
Mode of Operation: TX ON at mid channel, 2437MHz, 11Mbps, Monopole Antenna

[<< Main Sheet](#)

Freq.	Reading	AF	Closs	Pre-amp	Level	Limit	Margin	Pol	Az	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC B	(dB)	(H/V)	(Deg)	(Meter)	(P/Q/A)
816.00	44.60	21.42	5.39	27.42	44.00	46.00	-2.00	3mV	0.00	1.00	QP
667.00	45.30	20.59	4.83	27.88	42.84	46.00	-3.16	3mV	0.00	1.00	QP
638.00	44.60	19.82	4.71	27.84	41.29	46.00	-4.71	3mV	0.00	1.00	P
594.00	45.40	18.76	4.53	27.78	40.92	46.00	-5.08	3mV	0.00	1.00	P
433.00	46.80	16.32	3.72	27.27	39.58	46.00	-6.42	3mV	0.00	1.00	P
333.00	46.90	14.93	3.18	26.63	38.38	46.00	-7.62	3mV	0.00	1.00	P
6 Worst Data											

8.9. POWERLINE CONDUCTED EMISSIONS

TEST SETUP

The EUT is placed on a wooden table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane on the floor.

The EUT is set to transmit in a continuous mode.

TEST PROCEDURE

The resolution bandwidth is set to 10 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq. (MHz)	Reading			Class (dB)	Limit QP	EN B AV	Margin		Remark L1 / L2
	PK (dBuV)	QP (dBuV)	AV (dBuV)				QP (dB)	AV (dB)	
0.17	43.26	40.25	--	0.00	65.43	55.43	-25.18	-15.18	L1
0.24	40.29	35.26	--	0.00	63.57	53.57	-28.31	-18.31	L1
22.06	41.14	29.20	--	0.00	60.00	50.00	-30.80	-20.80	L1
0.17	42.20	38.52	--	0.00	65.43	55.43	-26.91	-16.91	L2
0.24	38.20	33.32	--	0.00	63.51	53.51	-30.19	-20.19	L2
22.06	38.76	30.75	--	0.00	60.00	50.00	-29.25	-19.25	L2
6 Worst Data									

EUT with Patch Antenna

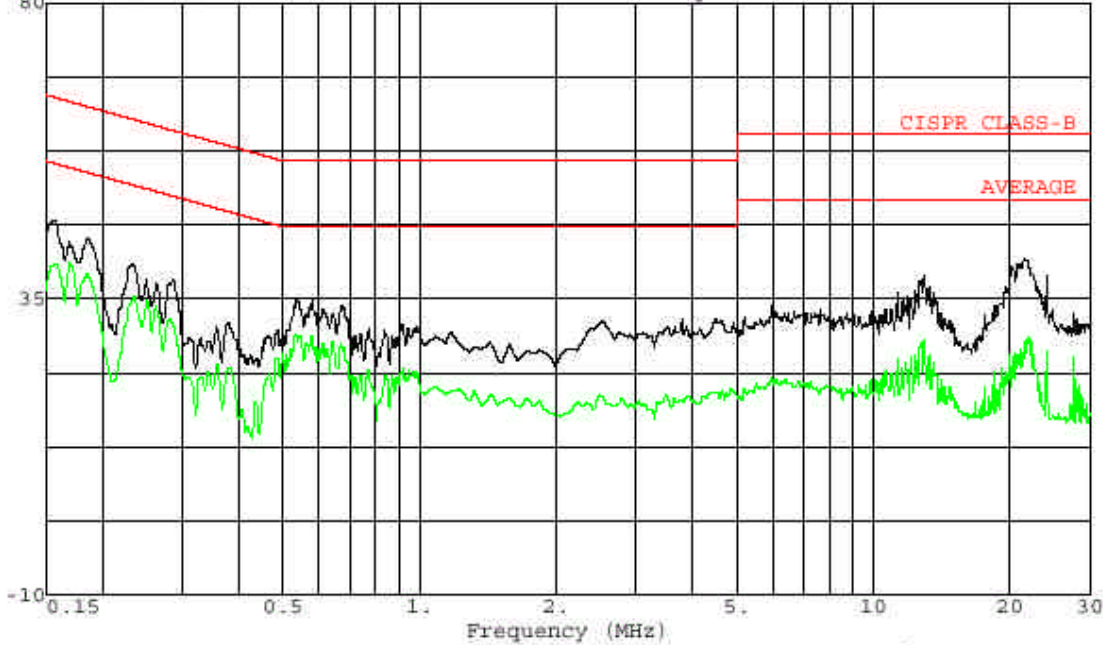
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq. (MHz)	Reading			Class (dB)	Limit QP	EN B AV	Margin		Remark L1 / L2
	PK (dBuV)	QP (dBuV)	AV (dBuV)				QP (dB)	AV (dB)	
0.16	47.22	--	--	0.00	65.86	55.86	-18.64	-8.64	L1
0.19	44.48	--	--	0.00	64.97	54.97	-20.49	-10.49	L1
13.41	45.22	--	--	0.00	60.00	50.00	-14.78	-4.78	L1
0.16	45.86	--	--	0.00	65.83	55.83	-19.97	-9.97	L2
0.18	42.50	--	--	0.00	65.03	55.03	-22.53	-12.53	L2
13.77	43.00	--	--	0.00	60.00	50.00	-17.00	-7.00	L2
6 Worst Data									

EUT with Sleeve dipole Antenna



561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 10 File#: LC115.EMI Date: 01-14-2003 Time: 15:23:35
Level (dBuV) Compliance Certification Service



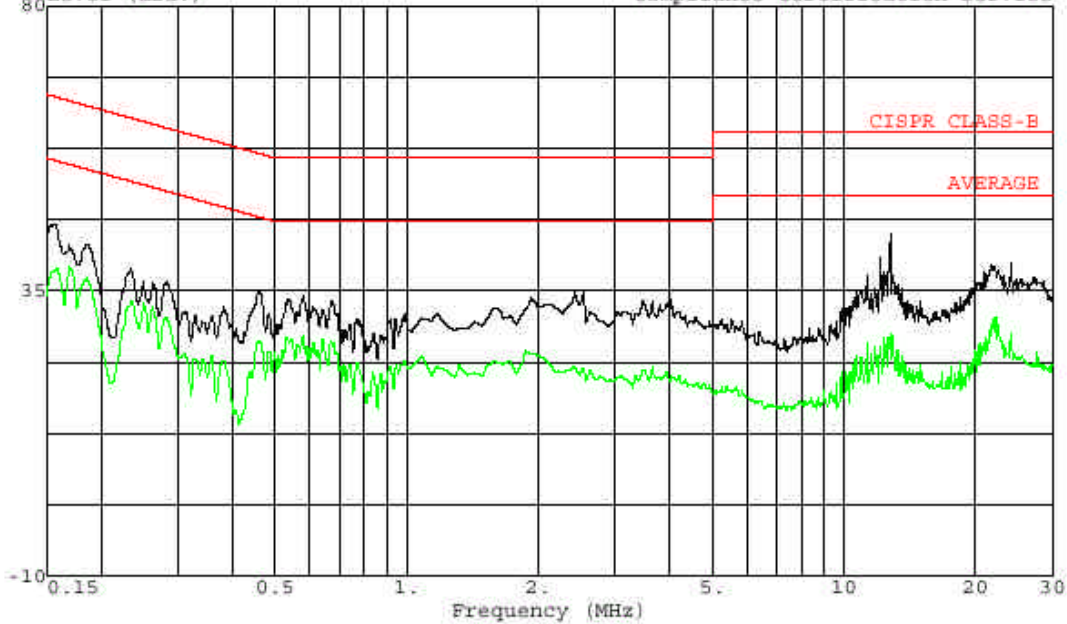
Trace: 8
Project # : 03I1765-1
Test Engineer : Frank Ibrahim
Company : Samsung ElectroMechanics
EUT : 11 Mbps Wireless PCI Network Card
Test Config. : EUT, PC, KB, PS/2 Mouse, Modem, Printer,
Monitor
Model Name : SWL-2300P
Test of Target: FCC 15.209
Mode of Op. : TX ON at mid channel (2437MHz)
: 115VAC/60Hz
: L1: PK(BLACK), AV(GREEN)

EUT with Patch Antenna



561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 17 File#: LC115.EMI Date: 01-14-2003 Time: 15:34:52
Level (dBuV) Compliance Certification Service



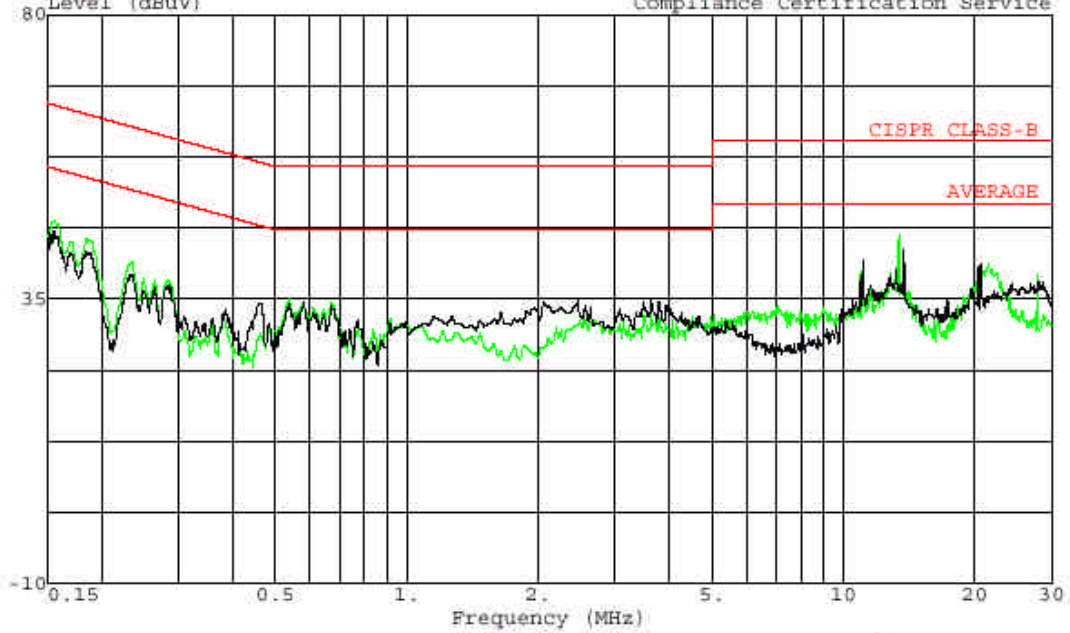
Trace: 15
Project # : 03I1765-1
Test Engineer : Frank Ibrahim
Company : Samsung ElectroMechanics
EUT : 11 Mbps Wireless PCI Network Card
Test Config. : EUT, PC, KB, PS/2 Mouse, Modem, Printer,
Monitor
Model Name : SWL-2300P
Test of Target: FCC 15.209
Mode of Op. : TX ON at mid channel (2437MHz)
: 115VAC/60Hz
: L2: PK(BLACK), AV(GREEN)

EUT with Patch Antenna



561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 7 File#: LC115.EMI Date: 01-23-2003 Time: 09:38:44
Level (dBuV) Compliance Certification Service

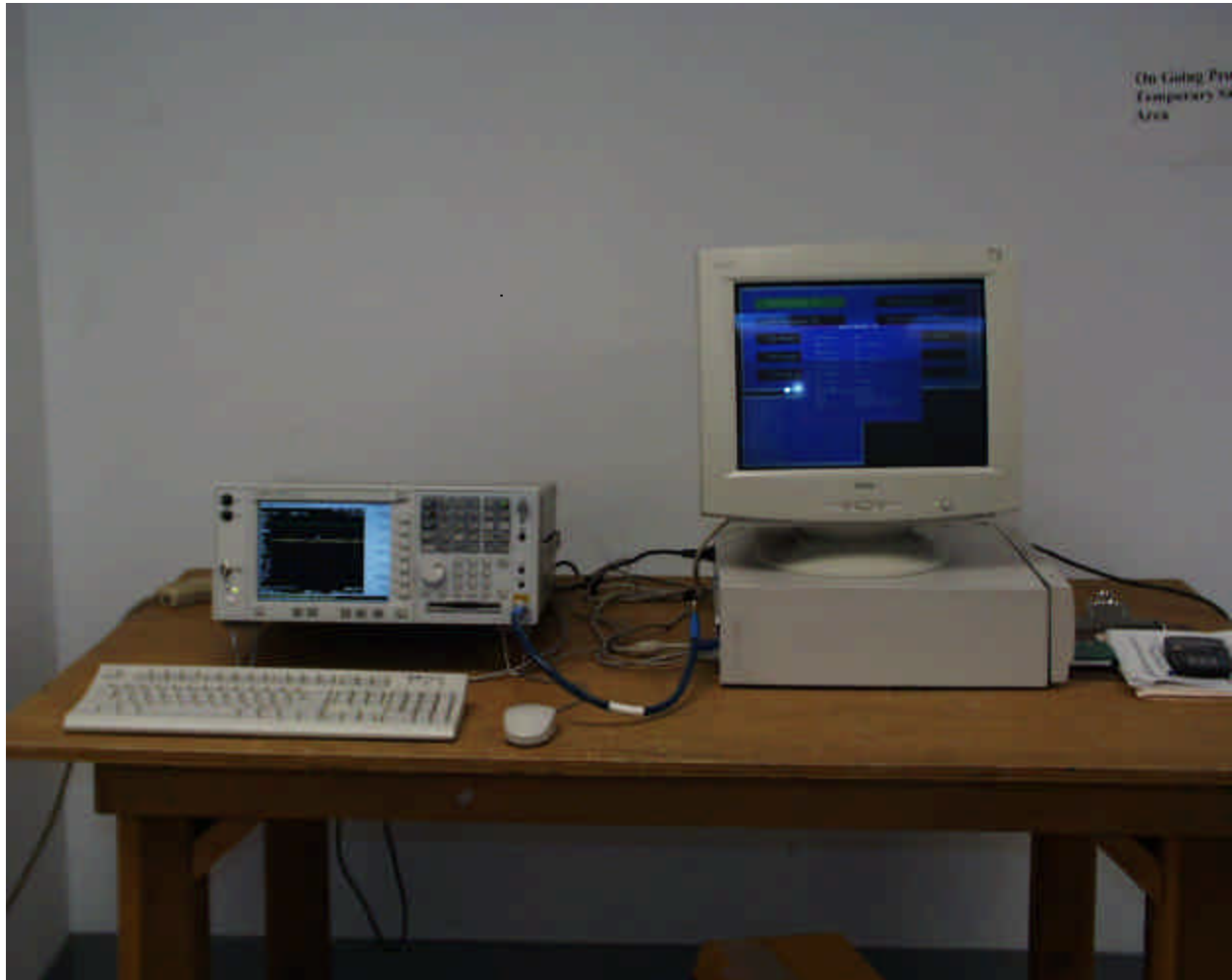


Trace: 3
Project # : 03I1765-1
Test Engineer : Frank Ibrahim
Company : Samsung ElectroMechanics
EUT : 11Mbps Wireless PCI Network Card
Test Config. : EUT, PC, KB, PS/2 Mouse, Modem, Printer,
: Monitor
Model Name : SWL-2300P
Test of Target: FCC 15.209
Mode of Op. : 115VAC, 60Hz
: PK: L1 (Black), L2 (Green)

EUT with Sleeve dipole Antenna

9. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP



RADIATED RF MEASUREMENT SETUP, HIGH FREQUENCY, PATCH ANTENNA



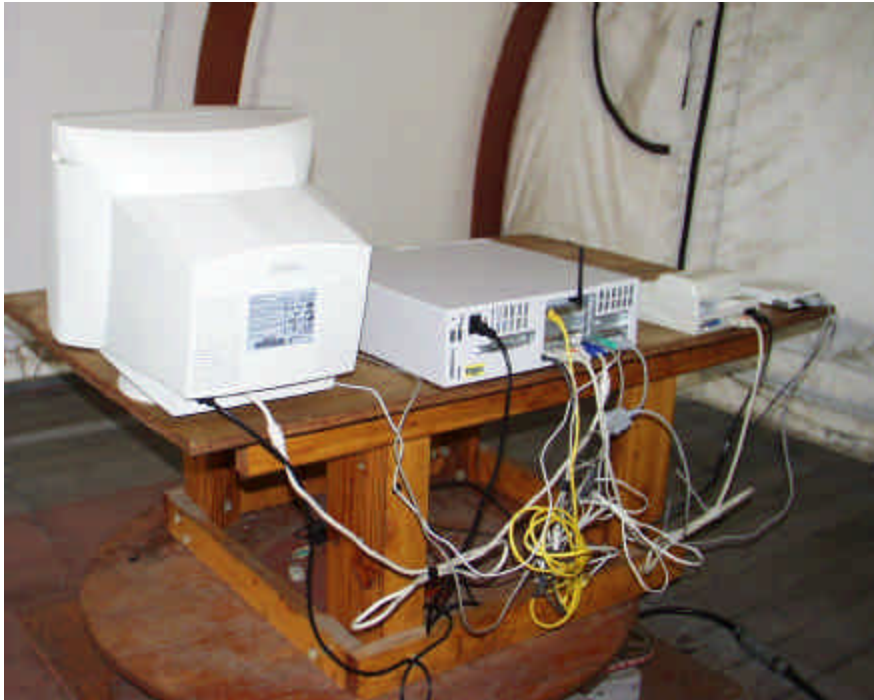
RADIATED RF MEASUREMENT SETUP, HIGH FREQUENCY, SLEEVE DIPOLE ANTENNA



DIGITAL DEVICE RADIATED EMISSIONS MEASUREMENT SETUP, PATCH ANTENNA



DIGITAL DEVICE RADIATED EMISSIONS MEASUREMENT SETUP, SLEEVE DIPOLE ANTENNA



POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP, PATCH ANTENNA



POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP, SLEEVE DIPOLE ANTENNA



END OF REPORT