FCC Part 15
EMI TEST REPORT

of

E.U.T. : IEEE 802.11g WLAN Mini-PCI card

MODEL : WLG200-3A

FCC ID. : Q72WLG

for

APPLICANT : Chung Nam Electronics Co., Ltd.

ADDRESS : 12/F, Chung Nam Building, No. 1 Lockhart Road, Hong Kong

Test Performed by

ELECTRONICS TESTING CENTER, TAIWAN
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Report Number: ET93S-02-132

TEST REPORT CERTIFICATION

Applicant : Chung Nam Electronics Co., Ltd.
12/F, Chung Nam Building, No. 1 Lockhart Road, Hong Kong

Manufacturer : Chung Nam Electronics Co., Ltd.
12/F, Chung Nam Building, No. 1 Lockhart Road, Hong Kong

Description of EUT :

a) Type of EUT : IEEE 802.11g WLAN Mini-PCI card

b) Trade Name : CNE

c) Model No. : WLG200-3A

d) Power Supply : Mini-PCI card: 3.3V DC via Notebook
Notebook Power Adapter:Input 120Vac , 50/60Hz ; Output DC 12Vdc , 800mA

Regulation Applied : FCC Rules and Regulations Part 15 Subpart B & C (2003)

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.4, and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Note: 1. The result of the testing report relate only to the item tested.
2. The testing report shall not be reproduced expect in full, without the written approval of ETC.

Issued Date : Feb. 16, 2004

Test Engineer : Lee-Ying Hsu

Approve & Authorized Signer : Win-Po Tsai

Signature
Win-Po Tsai
Manager of EMC Testing Department I
Electronics Testing Center, Taiwan

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1 GENERAL INFORMATION

1.1 Product Description

a) Type of EUT : IEEE 802.11g WLAN Mini-PCI card
b) Trade Name : CNE
c) Model No. : WLG200-3A
d) Power Supply : Mini-PCI card: 3.3V DC via Notebook
Notebook Power Adapter:Input 120Vac ,50/60Hz ;Output DC 12Vdc, 800mA

1.2 Characteristics of Device

The 802.11g WLAN Mini-PCI card is a complete wireless high speed Network Interface Card (NIC). It conforms to the IEEE 802.11g protocol and operates in the 2.45GHz ISM frequency bands.

It provides a complete reference design evaluation platform of hardware and software to system providers or integrators requiring wireless data communications capability and is ideal for intergration into computer platforms.

. Fully compliant with the IEEE 802.11g WLAN standards.

.FCC Certified Under Part 15 (pending) to Operate in the 2.45GHz Bands.

.Support for 54,48,36,24,18,12,9 and 6 Mbps OFDM, 11 and 5.5 Mbps CCK and legacy 2 and 1 Mbps data rates.

.Driver Supports Microsoft Windows ® 98/SE, ME, XP and 2000 (SR1).

1.3 Test Methodology

All testing were performed according to the procedures in ANSI C63.4 and FCC CFR 47 Part 2 and Part 15.

1.4 Test Facility

The semi-anechoic chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wen-ming Road, Lo-shan Tsun, Kweishan Hsiang, Taoyuan, Taiwan, R.O.C.
This site has been accreditation as a FCC filing site.

2 PROVISIONS APPLICABLE

2.1 Definition

Unintentional radiator:
A device that intentionally generates and radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:
A digital device which is marketed for use in commercial or business environment; exclusive of a device which is market for use by the general public, or which is intended to be used in the home.

Class B Digital Device :
A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business of industrial environment. Example of such devices that are marketed for the general public.

Note : A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

Intentional radiator:
A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Requirement for Compliance

(1) Conducted Emission Requirement

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following:

Frequency MHz	Quasi Peak dBμV	Average dBμV
0.15 - 0.5	66-56*	56-46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

*Decreases with the logarithm of the frequency.

For intentional device, according to § 15.207(a) Line Conducted Emission Limits is same as above table.

(2) Radiated Emission Requirement

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency MHz	Distance Meters	Radiated dBμV/m	Radiated μV/m
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

(3) Antenna Requirement

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.

(4) Bandwidth Requirement

According to 12.247 (a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

(5) Output Power Requirement

For systems using digital modulation , according to 15.247(b), the maximum peak output power of the intentional radiator shall not exceed 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(6) Spurious Emissions Measurement

According to 12.247 (c) , in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

(7) Power Density Requirement

According to 12.247 (d) , for 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..

2.3 Restricted Bands of Operation

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	4.5-5.25
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	Above 38.6
13.36-13.41			

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

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio / TV technician for help.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

For both radiated and conducted emissions below 1 GHz, EUT was configured for testing and embeded in a Notebook PC as a customer would normally use it. Measurement was performed under the condition that a computer program, cTxRx 2.1.0.0, was exercised to simulate data communication of EUT, and the transmission rate can be set by this program.

3.2 Devices for Tested System

Device	Manufacture	Model No.	Cable Description
IEEE 802.11g WLAN Mini-PCI card*	Chung Nam Electronics Co., Ltd.	WLG200-3A	N/A
Notebook PC	Emachines	MS310	2.0m, Unshielded Power Cord

Remark "*" means equipment under test.

4 CONDUCTED EMISSION MEASUREMENT

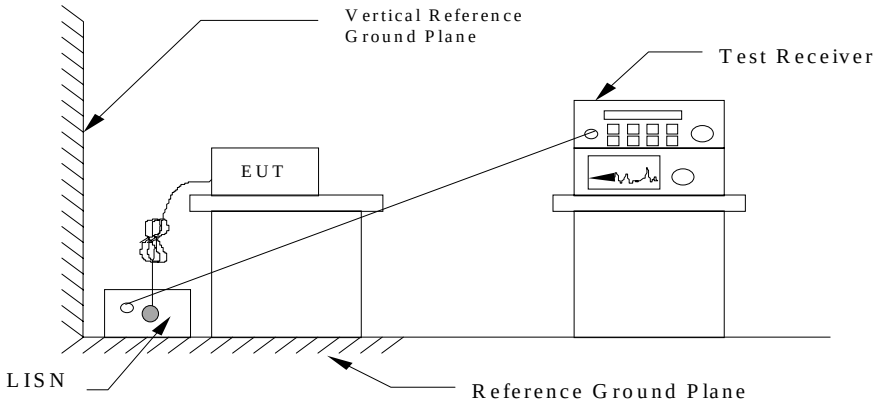
4.1 Standard Applicable

For unintentional and intentional device, Line Conducted Emission Limits are in accordance to § 15.107(a) and § 15.207(a) respectively. Both Limits are identical specification.

4.2 Measurement Procedure

1. Setup the configuration per figure 3.
2. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.
3. Record the 6 highest emissions relative to the limit.
4. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then record the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.
5. Confirm the highest three emissions with variation of the EUT cable configuration and record the final data.
6. Repeat all above procedures on measuring each operation mode of EUT.

Figure 3 : Conducted emissions measurement configuration



4.3 Conducted Emission Data

Operation Mode: Transmitting / Receiving

Test Date: Jan. 31, 2004 Temperature: 17°C Humidity: 65 %

Freq. (MHz)	**Meter Reading** (dBuV)				**Factor** (dB)	**Result** (dBuV)				**Limit** (dBuV)		**Margins** (dB)
	Q.P Value		AVG. Value			Q.P Value		AVG. Value		Q.P Value	AVG. Value	Q.P. or AVG.
	L1	L2	L1	L2		L1	L2	L1	L2			
0.185	40.4	41.4	----	----	0.1	40.5	41.5	----	----	64.3	54.3	-22.8
0.162	39.3	***	----	----	0.1	39.4	***	----	----	65.4	55.4	-26.0
0.166	***	44.8	----	----	0.1	***	44.9	----	----	65.2	55.2	-20.3
0.189	41.3	51.1	----	----	0.1	41.4	51.2	----	----	64.1	54.1	-12.9
1.986	***	37.1	----	----	0.1	***	37.2	----	----	56.0	46.0	-18.8
4.384	***	35.7	----	----	0.1	***	35.8	----	----	56.0	46.0	-20.2
4.493	37.2	***	----	----	0.1	37.3	***	----	----	56.0	46.0	-18.7
4.498	36.9	***	----	----	0.1	37.0	***	----	----	56.0	46.0	-19.0
4.615	34.6	***	----	----	0.1	34.7	***	----	----	56.0	46.0	-21.3
12.806	36.0	***	----	----	0.2	36.2	***	----	----	60.0	50.0	-23.8
13.013	***	35.4	----	----	0.2	***	35.6	----	----	60.0	50.0	-24.4

Note:

1. “***” means the value was too low to be measured.
2. If the data table appeared symbol of "----" means the Q.P. value is under the limit for AVG. so, the AVG. value doesn't need to be measured.
3. The estimated measurement uncertainty of the result measurement is ± 2.5dB.

Note : Please see appendix 1 for Ploted Datas

4.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + LISN FACTOR (Included Cable Loss)

Assume a receiver reading of 22.5 dB μ V is obtained, and LISN Factor is 0.1 dB, then the total of disturbance voltage is 22.6 dB μ V.

RESULT = 22.5 + 0.1 = 22.6 dB μ V

Level in μ V = Common Antilogarithm[(22.6 dB μ V)/20]

= 13.48 μ V

4.5 Conducted Measurement Equipment

The following test equipment are used during the conducted test.

Equipment	Manufacturer	Model No.	Next Cal. Due
RF Test Receiver	Rohde and Schwarz	ESCS30	09/18/2004
Line Impedance Stabilization network	EMCO	3825	11/01/2004

4.6 Photos of Conduction Measuring Setup

5 ANTENNA REQUIREMENT

5.1 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 (b), 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.

5.2 Antenna Construction and Directional Gain

Antenna type: Inverted F Type Antenna.
Antenna gain: 0.369 dBi.

6 EMISSION BANDWIDTH MEASUREMENT

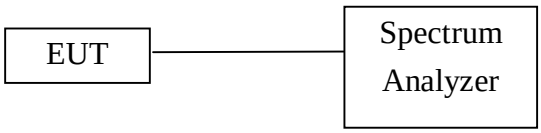
6.1 Standard Applicable

According to 15.247(a)(2), system using digital modulation techniques, the minimum 6dB bandwidth shall be at least 500 kHz.

6.2 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 as shown in figure 4. 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.

Figure 4: Emission bandwidth measurement configuration.



6.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Plotter	Hewlett-Packard	7440A	N/A
Spectrum Analyzer	Hewlett-Packard	8564EC	09/16/2005

6.4 Measurement Data

Test Date: Feb. 03, 2004 Temperature: 14℃ Humidity: 75 %

Channel	Frequency (MHz)	Data Transfer Rate (Mbps)	6dB Bandwidth (MHz)	FCC Limit (kHz)	Chart
1	2412	1	12.13	500	-
		2	12.47	500	-
		5.5	12.33	500	-
		11	11.15	500	Page 46
		6	16.13	500	-
		9	15.87	500	-
		12	15.87	500	-
		18	16.13	500	-
		24	15.73	500	-
		36	16.33	500	-
		48	16.00	500	-
		54	16.47	500	-
6	2437	1	12.63	500	-
		2	12.47	500	-
		5.5	12.87	500	-
		11	11.60	500	Page 47
		6	16.33	500	-
		9	16.13	500	-
		12	16.43	500	-
		18	16.23	500	-
		24	16.57	500	-
		36	16.37	500	-
		48	16.20	500	-
		54	16.40	500	-
11	2462	1	12.57	500	-
		2	12.20	500	-
		5.5	12.03	500	-
		11	11.20	500	Page 48
		6	16.10	500	-
		9	16.50	500	-
		12	16.03	500	-
		18	16.30	500	-
		24	16.27	500	-
		36	16.43	500	-
		48	16.53	500	-
		54	16.47	500	-

Note: Please see Appendix 2 for ploted datas

7 OUTPUT POWER MEASUREMENT

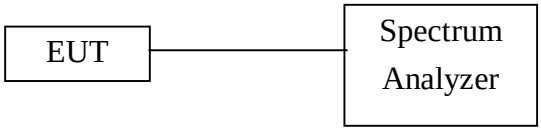
7.1 Standard Applicable

For direct sequence system, according to 15.247(b), the maximum peak output power of the transmitter shall not exceed 1 Watt. 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.

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 as shown in figure 5. 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 RBW of spectrum analyzer to 2 MHz and VBW to 3 MHz.
4. Measure the highest amplitude appearing on spectral display and record the level to calculate result data.
5. Repeat above procedures until all frequencies measured were complete.

Figure 5: Output power and measurement configuration.



7.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Plotter	Hewlett-Packard	7440A	N/A
Spectrum Analyzer	Hewlett-Packard	8564EC	09/16/2005

7.4 Measurement Data

Test Date: Feb. 03, 2004 Temperature: 14 ℃ Humidity: 75 %

Channel	Frequency (MHz)	Data Transfer Rate (Mbps)	Reading (dBm)	Cable Loss (dB)	Maximum Peak Output Power (dBm)	Maximum Peak Output Power (mW)	FCC Limit (mW)	Chart
1	2412	1	17.4	3	20.4	109.6	1000	-
		2	17.6	3	20.6	114.8	1000	-
		5.5	17.7	3	20.7	117.5	1000	-
		11	19.4	3	22.4	173.8	1000	-
		6	20.6	3	23.6	229.1	1000	-
		9	20.8	3	23.8	239.9	1000	Page 50
		12	19.7	3	22.7	186.2	1000	-
		18	20.0	3	23.0	199.5	1000	-
		24	19.5	3	22.5	177.8	1000	-
		36	19.0	3	22.0	158.5	1000	-
		48	16.8	3	19.8	95.5	1000	-
		54	17.2	3	20.2	104.7	1000	-
6	2437	1	17.0	3.16	20.16	104.7	1000	-
		2	17.1	3.16	20.26	107.2	1000	-
		5.5	17.7	3.16	20.86	123.0	1000	-
		11	19.9	3.16	23.06	204.2	1000	-
		6	20.6	3.16	23.76	239.9	1000	-
		9	20.8	3.16	23.96	251.2	1000	Page 51
		12	19.7	3.16	22.86	195.0	1000	-
		18	19.5	3.16	22.66	186.2	1000	-
		24	19.4	3.16	22.56	182.0	1000	-
		36	19.0	3.16	22.16	166.0	1000	-
		48	16.8	3.16	19.96	100.0	1000	-
		54	16.9	3.16	20.06	102.3	1000	-
11	2462	1	16.5	3	19.5	89.1	1000	-
		2	16.6	3	19.6	91.2	1000	-
		5.5	17.2	3	20.2	104.7	1000	-
		11	18.3	3	21.3	134.9	1000	-
		6	20.3	3	23.3	213.8	1000	-
		9	20.5	3	23.5	223.9	1000	Page 52
		12	19.3	3	22.3	169.8	1000	-
		18	19.0	3	22.0	158.5	1000	-
		24	19.0	3	22.0	158.5	1000	-
		36	18.5	3	21.5	141.3	1000	-
		48	16.2	3	19.2	83.2	1000	-
		54	16.5	3	19.5	89.1	1000	-

Note: 1. Please see Appendix 3 for ploted datas

8 POWER DENSITY MEASUREMENT

8.1 Standard Applicable

According to 15.247(d), for direct sequence systems, the transmitted power density averaged over any 1 second interval shall not be greater than 8 dBm in any 3 kHz bandwidth within these bands.

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 as shown in figure 5. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set EUT 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 spectrum analyzer on highest level appearing on spectral display within a 300 kHz frequency span.
4. Set the spectrum analyzer on a 3 kHz resolution bandwidth and 10 kHz video bandwidth as well as max. hold function, then record the measurement result.
5. Repeat above procedures until all measured frequencies were complete.

8.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Plotter	Hewlett-Packard	7440A	N/A
Spectrum Analyzer	Hewlett-Packard	8564EC	09/16/2005

8.4 Measurement Data

Test Date: Feb. 03, 2004 Temperature: 14 ℃ Humidity: 75 %

Channel	Frequency (MHz)	Data Transfer Rate (Mbps)	Reading (dBm)	Cable Loss (dB)	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
1	2412	1	-20.50	3	-17.50	8	-
		2	-19.00	3	-16.00	8	-
		5.5	-11.00	3	-8.00	8	-
		11	-9.67	3	-6.67	8	Page 54
		6	-23.50	3	-20.50	8	-
		9	-22.83	3	-19.83	8	-
		12	-24.67	3	-21.67	8	-
		18	-23.50	3	-20.50	8	-
		24	-21.17	3	-18.17	8	-
		36	-23.33	3	-20.33	8	-
		48	-25.67	3	-22.67	8	-
		54	-25.50	3	-22.50	8	-
6	2437	1	-20.70	3.16	-17.54	8	-
		2	-19.33	3.16	-16.17	8	-
		5.5	-11.00	3.16	-7.84	8	-
		11	-10.00	3.16	-6.84	8	Page 55
		6	-23.33	3.16	-20.17	8	-
		9	-22.83	3.16	-19.67	8	-
		12	-24.83	3.16	-21.67	8	-
		18	-23.83	3.16	-20.67	8	-
		24	-21.50	3.16	-18.34	8	-
		36	-23.67	3.16	-20.51	8	-
		48	-26.33	3.16	-23.17	8	-
		54	-25.83	3.16	-22.67	8	-
11	2462	1	-20.83	3	-17.83	8	-
		2	-20.33	3	-17.33	8	-
		5.5	-12.00	3	-9.00	8	-
		11	-10.67	3	-7.67	8	Page 56
		6	-23.33	3	-20.33	8	-
		9	-22.83	3	-19.83	8	-
		12	-24.83	3	-21.83	8	-
		18	-23.86	3	-20.83	8	-
		24	-21.50	3	-18.50	8	-
		36	-23.67	3	-20.67	8	-
		48	-26.33	3	-23.33	8	-
		54	-25.83	3	-22.83	8	-

Note: Please see Appendix 4 for ploted datas

9 SPURIOUS EMISSION - RF CONDUCTED MEASUREMENT

9.1 Standard Applicable

According to 12.247 (c) , in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

9.2 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 as shown in figure 5. 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.

9.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Plotter	Hewlett-Packard	7440A	N/A
Spectrum Analyzer	Hewlett-Packard	8564EC	09/16/2005

9.4 Measurement Data

Test Date: Feb. 03, 2004 Temperature: 14 ℃ Humidity: 75 %

Channel	Frequency(MHz)	Chart
1	2412	Page 58-59
6	2437	Page 60
11	2462	Page 61-62

All out-of –band conducted emissions were more than 20dB below a carrier.

Note: Please see Appendix 5 for ploted datas

10 RADIATED EMISSION MEASUREMENT

10.1 Standard Applicable

For unintentional radiator, the radiated emission shall comply with § 15.109(a).

For intentional radiators, according to § 15.247 (a), operation under this provision is limited to frequency hopping and direct sequence spread spectrum, and the out band emission shall be comply with § 15.247 (c)

10.2 Measurement Procedure

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively.
2. For emission frequencies measured below 1 GHz, it is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions. For emission frequencies measured above 1 GHz, a pre-scan be performed with a 1 meter measuring distance before final test.
3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0° to 360° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

   Note : A band pass filter was used to avoid pre-amplifier saturated when measure TX operation mode in frequency band above 1 GHz.
5. Repeat step 4 until all frequencies need to be measured were complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.
7. Check the three frequencies of highest emission with varying the datarate, placement of ANT. cables associated with EUT to obtain the worse case and record the result.

Figure 1 : Frequencies measured below 1 GHz configuration

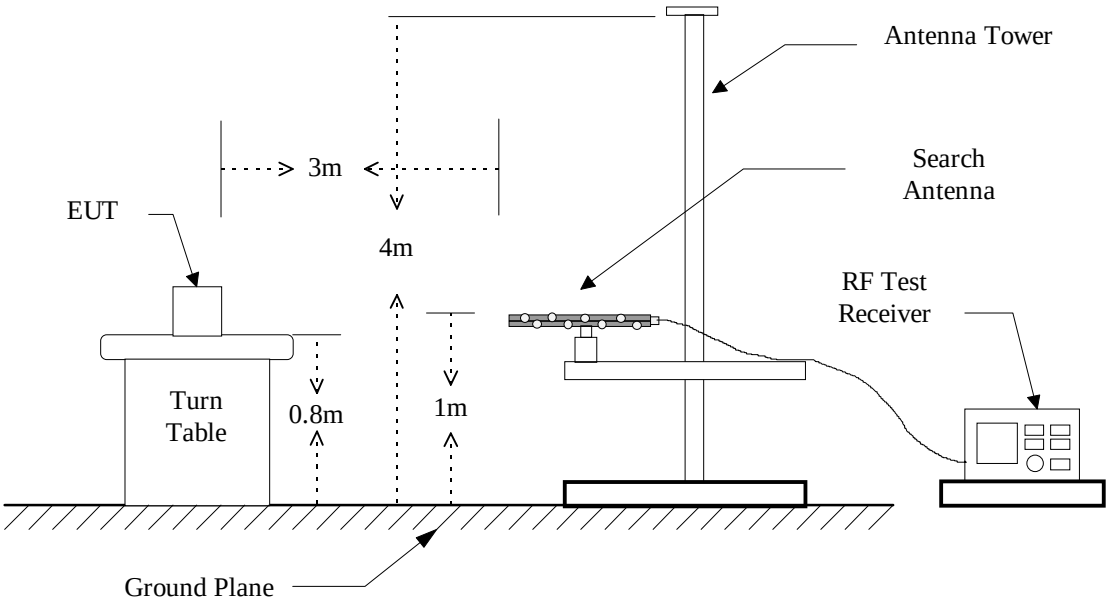
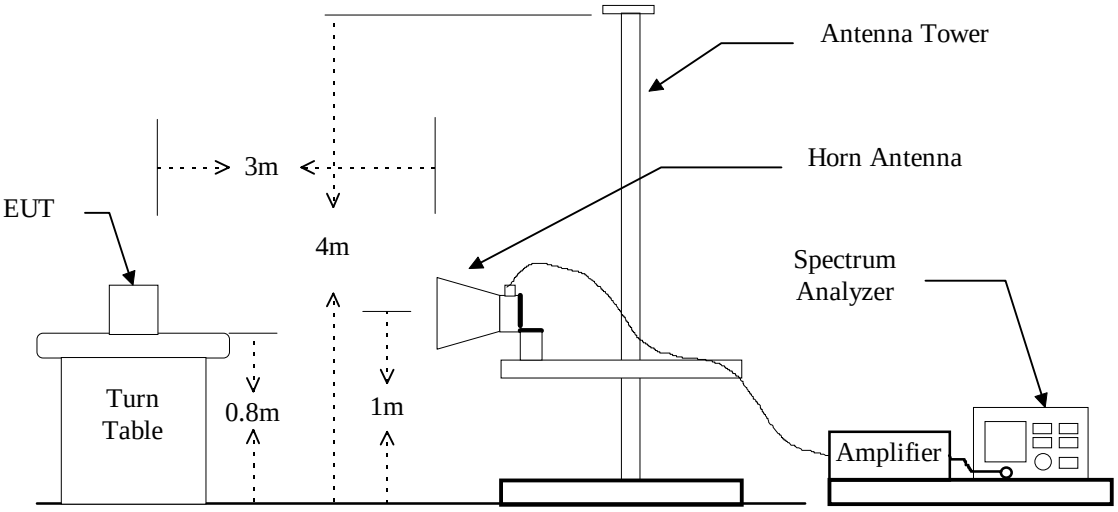


Figure 2 : Frequencies measured above 1 GHz configuration



10.3 Measuring Instrument

The following instrument are used for radiated emissions measurement :

Equipment	Manufacturer	Model No.	Next Cal. Due
EMI Test Receiver	Hewlett-Packard	8546A	01/31/2005
Horn Antenna	EMCO	3115	05/09/2004
BiconiLog Antenna	Schwarzbeck	9160	10/18/2004
Horn Antenna	EMCO	3116	06/28/2004
Preamplifier	Hewlett-Packard	8449B	09/17/2005
Spectrum Analyzer	Hewlett-Packard	8564EC	09/16/2005

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	300 kHz
	Spectrum Analyzer	Peak	120 kHz	300 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10 Hz

10.4 Radiated Emission Data

10.4.1 RF Portion

(1) Modulation Method: BPSK(1M,2M bps) and CCK(5.5M,11M bps)
Operation Mode: Receiving /Transmitting
Test Date: Feb. 03, 2004 Temperature: 14 ℃ Humidity: 75 %

a) Channel 1
Fundamental Frequency: 2412 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m		Margin	Table	Ant.
	H		V		(dB)	(dBuV/m)		(dBuV/m)		(dB)	Deg.	High
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.		(Deg.)	(m)
4824.000	46.3	34.9	46.1	34.7	-4.6	41.7	30.3	74.0	54.0	-12.3	200	1.0
7236.000	50.2	38.4	49.4	38.1	-1.0	49.2	37.4	74.0	54.0	-4.8	200	1.0
12060.000	48.1	35.9	48.1	35.7	2.9	51.0	38.8	74.0	54.0	-3.0	200	1.0
14472.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
19296.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

b) Channel 6
Fundamental Frequency: 2437 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m		Margin	Table	Ant.
	H		V		(dB)	(dBuV/m)		(dBuV/m)		(dB)	Deg.	High
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.		(Deg.)	(m)
4874.000	47.2	34.9	46.7	34.7	-4.6	42.6	30.3	74.0	54.0	-11.4	200	1.0
7311.000	49.7	37.1	49.6	37.1	-1.0	48.7	36.1	74.0	54.0	-5.3	200	1.0
12185.000	48.7	36.5	49.1	36.6	2.9	52.0	39.5	74.0	54.0	-2.0	200	1.0
19496.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

c) Channel 11
Fundamental Frequency: 2462 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m		Margin	Table	Ant.
	H		V		(dB)	(dBuV/m)		(dBuV/m)		(dB)	Deg.	High
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.		(Deg.)	(m)
4924.000	48.1	35.1	47.1	35.0	-4.6	43.5	30.5	74.0	54.0	-10.5	200	1.0
7386.000	50.6	36.6	49.7	36.3	-1.0	49.1	35.6	74.0	54.0	-4.4	200	1.0
19696.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
22158.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Note :
1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.
3. Item "Margin" referred to Average limit while there is only peak result.

(2) Modulation Method:OFDM(6M,9M,12M,24M,36M,48M and 54M bps)
Operation Mode: Receiving /Transmitting
Test Date: Feb. 03, 2004 Temperature: 14 ℃ Humidity: 75 %

a) Channel 1
Fundamental Frequency: 2412 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m		Margin	Table	Ant.
	H		V		(dB)	(dBuV/m)		(dBuV/m)		(dB)	Deg.	High
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.		(Deg.)	(m)
4824.000	47.0	34.6	46.8	34.7	-4.6	42.4	30.1	74.0	54.0	-11.6	200	1.0
7236.000	49.2	37.0	49.2	37.0	-1.0	48.2	36.0	74.0	54.0	-5.8	200	1.0
12060.000	49.3	36.6	48.5	36.7	2.9	52.2	39.6	74.0	54.0	-1.8	200	1.0
14472.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
19296.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

b) Channel 6
Fundamental Frequency: 2437 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m		Margin	Table	Ant.
	H		V		(dB)	(dBuV/m)		(dBuV/m)		(dB)	Deg.	High
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.		(Deg.)	(m)
4874.000	47.7	36.2	47.0	35.7	-4.6	43.1	31.6	74.0	54.0	-10.9	200	1.0
7311.000	49.7	37.2	49.3	37.0	-1.0	48.7	36.2	74.0	54.0	-5.3	200	1.0
12185.000	49.8	36.8	49.3	36.5	2.9	52.7	39.7	74.0	54.0	-1.3	200	1.0
19496.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

c) Channel 11
Fundamental Frequency: 2462 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m		Margin	Table	Ant.
	H		V		(dB)	(dBuV/m)		(dBuV/m)		(dB)	Deg.	High
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.		(Deg.)	(m)
4924.000	47.7	35.4	47.0	35.0	-4.6	43.1	30.8	74.0	54.0	-10.9	200	1.0
7386.000	49.2	36.6	49.5	37.0	-1.0	48.5	36.0	74.0	54.0	-5.5	200	1.0
19696.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---
22158.000	---	---	---	---	---	---	---	74.0	54.0	---	---	---

Note :
1. Item of margin shown in above table refer to average limit.
2. Remark “---” means that the emissions level is too low to be measured.
3. Item “Margin” referred to Average limit while there is only peak result.

10.4.2 Other Emission

(1) Modulation Methodd: BPSK(1M,2M bps) and CCK(5.5M,11M bps)

a) Emission frequencies below 1 GHz

Test Date: Jan. 31, 2004 Temperature: 17 ℃ Humidity: 65 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
269.590	H	22.6	15.7	38.3	46.0	-7.7	200	1.5
271.530	H	23.8	15.7	39.5	46.0	-6.5	200	1.5
290.930	V	24.7	16.8	41.5	46.0	-4.5	250	1.5
407.330	H	20.9	19.4	40.3	46.0	-5.7	25	1.0
431.580	V	19.6	20.1	39.7	46.0	-6.3	25	1.0
434.490	H	19.5	20.1	39.6	46.0	-6.4	25	1.0
504.330	V	14.0	21.5	35.5	46.0	-10.5	100	1.0
790.480	V	14.3	27.6	41.9	46.0	-4.1	20	1.0
793.390	H	12.5	27.6	40.1	46.0	-5.9	20	1.5
931.130	H	9.7	29.4	39.1	46.0	-6.9	100	1.5
935.980	V	11.3	29.4	40.7	46.0	-5.3	100	1.5

b) Emission frequencies above 1 GHz

Radiated emission frequencies above 1 GHz to 25 GHz were too low to be measured.

Channel	Frequency(MHz)	Chart
1	2412	Page 64-68
6	2437	Page 69-73
11	2462	Page 74-78

Note : Please see appendix 6 for Ploted Datas

(2) Modulation Method: OFDM(6M,9M,12M,24M,36M,48M and 54M bps)

a) Emission frequencies below 1 GHz

Test Date: Jan. 31, 2004 Temperature: 17 ℃ Humidity: 65 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
271.530	V	21.6	15.7	37.3	46.0	-8.7	200	1.5
274.440	H	23.7	15.7	39.4	46.0	-6.6	200	1.5
290.930	H	21.7	16.8	38.5	46.0	-7.5	200	1.5
290.930	V	19.6	16.8	36.4	46.0	-9.6	200	1.5
407.330	H	20.0	19.4	39.4	46.0	-6.6	25	1.0
407.330	V	21.6	19.4	41.0	46.0	-5.0	25	1.0
431.580	H	19.7	20.1	39.8	46.0	-6.2	25	1.0
431.580	V	20.5	20.1	40.6	46.0	-5.4	25	1.0
793.390	H	13.3	27.6	40.9	46.0	-5.1	20	1.5
793.390	V	16.2	27.6	43.8	46.0	-2.2	20	1.5
934.040	H	11.7	29.4	41.1	46.0	-4.9	100	1.5

b) Emission frequencies above 1 GHz

Radiated emission frequencies above 1 GHz to 25 GHz were too low to be measured.

Channel	Frequency(MHz)	79-83
1	2412	Page 58-59
6	2437	Page 84-88
11	2462	Page 89-93

Note : Please see appendix 6 for Ploted Datas

10.5 Field Strength Calculation

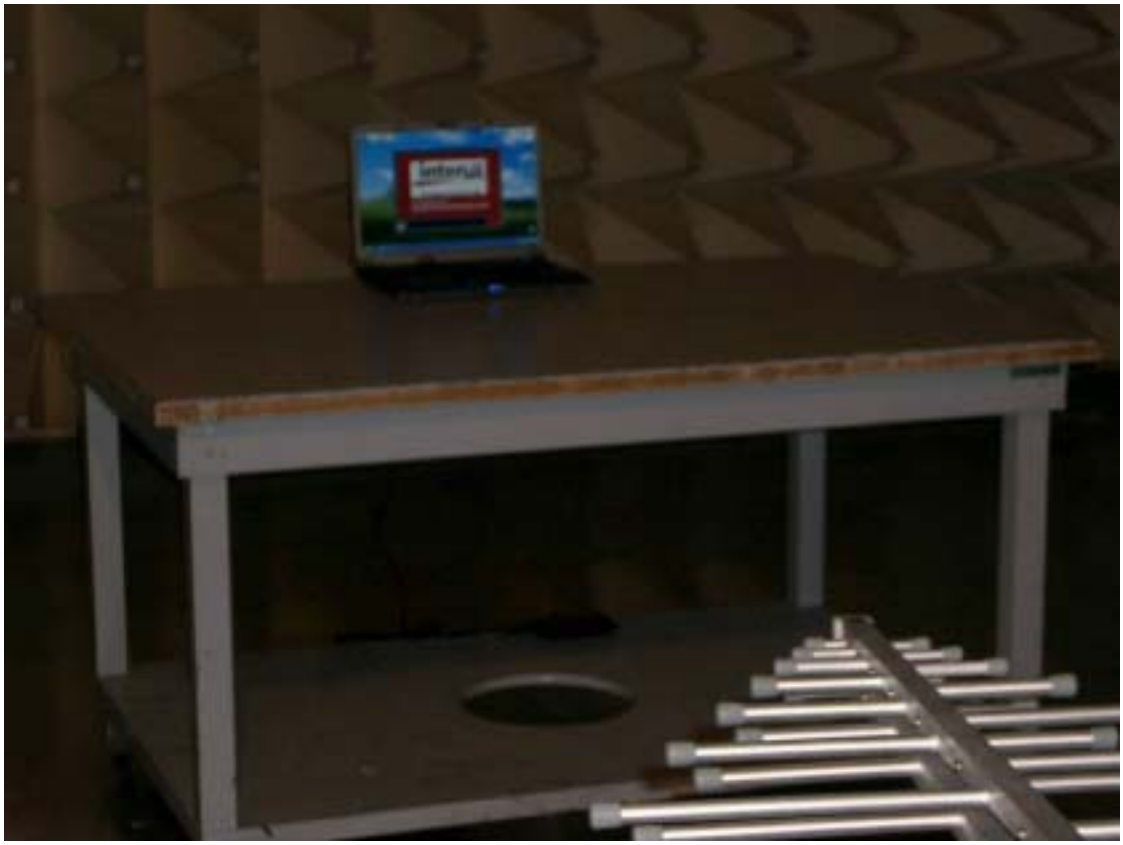
The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss(if used) and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

where

Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

10.6 Photos of Radiation Measuring Setup



11 RADIATED MEASUREMENT AT BANDEDGE WITH FUNDAMENTAL FREQUENCIES

11.1 Standard Applicable

According to 15.247(c), 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).

11.2 Measurement Procedure

1. Setup the configuration per figure 2 for 2.39GHz and 2.4835GHz measured.
2. Set the spectrum analyzer on 1MHz resolution bandwidth for each frequency measured.
3. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position th highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0º to 360º with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.
4. Repeat step 3 until all frequencies need to be measured were complete.
5. Repeat step 4 with search antenna in vertical polarized orientations.
6. Measurement applied to channel 1、6、11, recorded the result.

11.3 Measuring Instrument

The following instrument are used for radiated emissions measurement:

Equipment	Manufacturer	Model No.	Next Cal. Due
EMI Test Receiver	Hewlett-Packard	8546A	01/31/2005
Horn Antenna	EMCO	3115	05/09/2004
BiconiLog Antenna	Schwarzbeck	9160	10/18/2004
Horn Antenna	EMCO	3116	06/28/2004
Preamplifier	Hewlett-Packard	8449B	09/17/2005
Spectrum Analyzer	Hewlett-Packard	8564EC	09/16/2005

Measuring instrument setup in measured frequency band when specified detector function is used:

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
2390 & 2483.5	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10 Hz

11.4 Radiated Emission Data

(1) Antenna I, Modulation Method: BPSK(1M,2M bps) and CCK(5.5M,11M bps)

Test Date: Jan. 31, 2004 Temperature: 17 ℃ Humidity: 65 %

a) Channel 1

Operation Mode: Receiving /Transmitting

Fundamental Frequency: 2412 MHz

Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin	Table Deg.	Ant. High
	H		V		(dB)	Peak	Ave	Peak	Ave.	(dB)	(Deg.)	
(MHz)	Peak	Ave	Peak	Ave	Corr.							(m)
2390.000	37.8	22.2	40.2	22.8	28.3	68.5	51.1	74.0	54.0	-2.9	70	1.0
2483.500	31.7	20.7	26.5	21.0	28.3	60.0	49.3	74.0	54.0	-4.7	70	1.0

b) Channel 6

Operation Mode: Receiving / Transmitting

Fundamental Frequency: 2437 MHz

Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin	Table Deg.	Ant. High
	H		V		(dB)	Peak	Ave	Peak	Ave.	(dB)	(Deg.)	
(MHz)	Peak	Ave	Peak	Ave	Corr.							(m)
2390.000	32.7	20.7	34.3	20.7	28.3	62.6	49.0	74.0	54.0	-5.0	70	1.0
2483.500	34.0	20.7	38.0	21.0	28.3	65.3	49.3	74.0	54.0	-4.7	70	1.0

c) Channel 11

Operation Mode: Receiving / Transmitting

Fundamental Frequency: 2462 MHz

Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin	Table Deg.	Ant. High
	H		V		(dB)	Peak	Ave	Peak	Ave.	(dB)	(Deg.)	
(MHz)	Peak	Ave	Peak	Ave	Corr.							(m)
2390.000	31.8	20.5	31.5	20.7	28.3	60.1	49.0	74.0	54.0	-5.0	70	1.0
2483.500	35.2	20.5	41.5	21.7	28.3	69.8	50.0	74.0	54.0	-4.0	70	1.0

(2) Antenna I, Modulation Method: OFDM(6M,9M,12M,24M,36M,48M and 54M bps)

Test Date: Jan. 31, 2004 Temperature: 17 ℃ Humidity: 65 %

a) Channel 1

Operation Mode: Receiving /Transmitting

Fundamental Frequency: 2412 MHz

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
2375.730	32.7	21.3	34.7	21.8	28.3	63.0	50.1	74.0	54.0	-3.9	180	1.0
2485.950	32.0	20.7	32.3	21.2	28.3	60.6	49.5	74.0	54.0	-4.5	180	1.0

b) Channel 6

Operation Mode: Receiving / Transmitting

Fundamental Frequency: 2437 MHz

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
2389.300	32.8	20.5	31.8	20.7	28.3	61.1	49.0	74.0	54.0	-5.0	180	1.0
2489.140	32.2	20.8	33.0	21.0	28.3	61.3	49.3	74.0	54.0	-4.7	180	1.0

c) Channel 11

Operation Mode: Receiving / Transmitting

Fundamental Frequency: 2462 MHz

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Deg. (Deg.)	Ant. High (m)
2389.500	31.8	20.5	32.0	20.7	28.3	60.3	49.0	74.0	54.0	-5.0	180	1.0
2488.200	32.7	20.8	35.5	21.3	28.3	63.8	49.6	74.0	54.0	-4.4	180	1.0

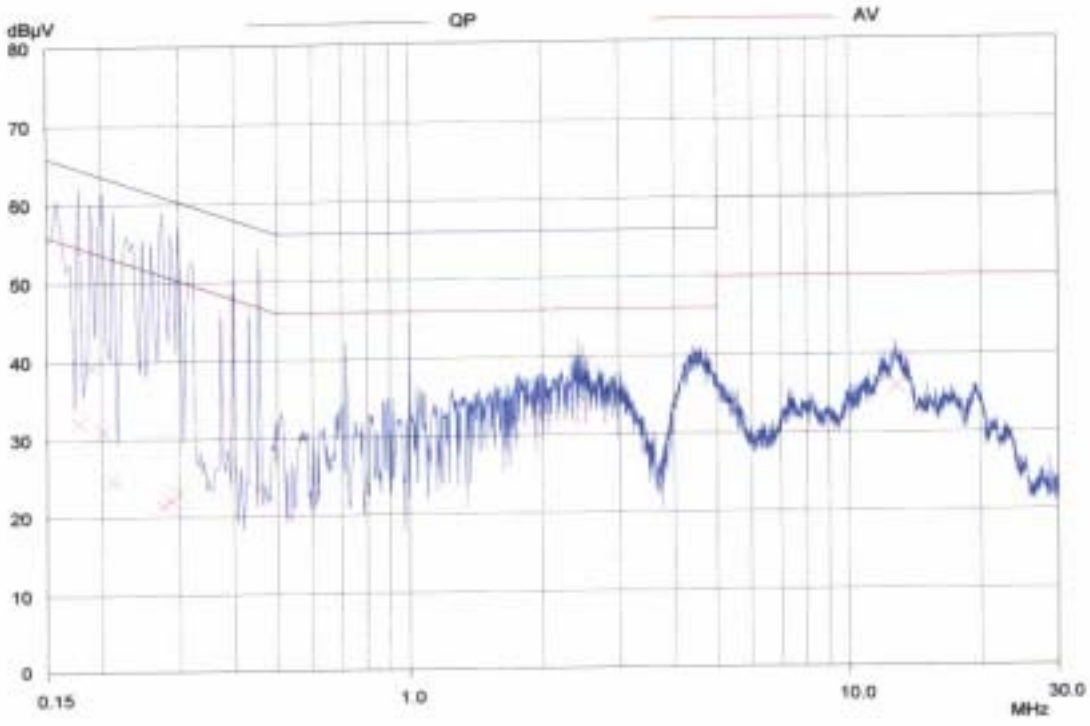
Appendix 1: Ploted Datas of Power Line Conducted Emissions

Conducted Emission Test

Peak value

EUT:	802.11 WLAN Card (WLG200-3A)
Manuf:	
Op Cond:	
Operator:	Lee-Ying
Test Spec:	FCC Part 15
Comment:	L1

Final Measurement:	Detector:	X QP
	Meas Time:	1sec
	Peaks:	8
	Acc Margin:	25 dB

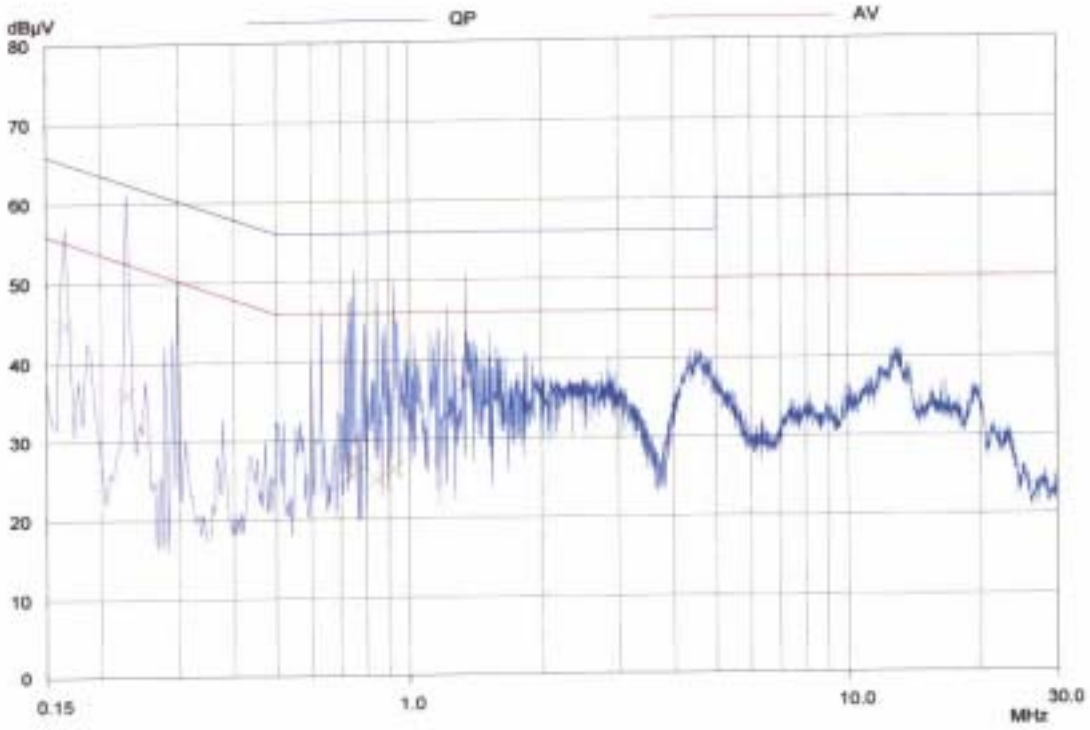


Conducted Emission Test

Peak value

EUT:	802.11 WLAN Card (WLG200-3A)
Manuf:	
Op Cond:	
Operator:	Lee-Ying
Test Spec:	FCC Part 15
Comment:	L2

Final Measurement:	Detector:	X QP
	Meas Time:	1sec
	Peaks:	8
	Acc Margin:	25 dB

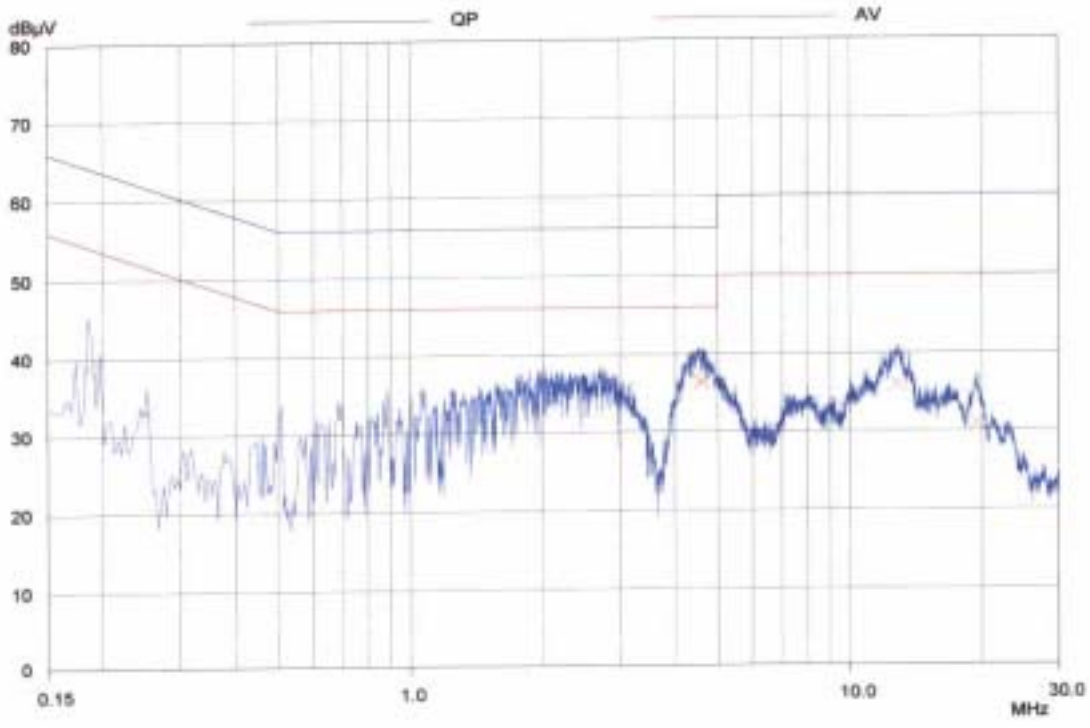


Conducted Emission Test

Peak value

EUT:	802.11 WLAN Card (WLG200-3A)
Manuf:	
Op Cond:	
Operator:	Lee-Ying
Test Spec:	FCC Part 15
Comment:	L1

Final Measurement:	Detector:	X QP
	Meas Time:	1sec
	Peaks:	8
	Acc Margin:	25 dB

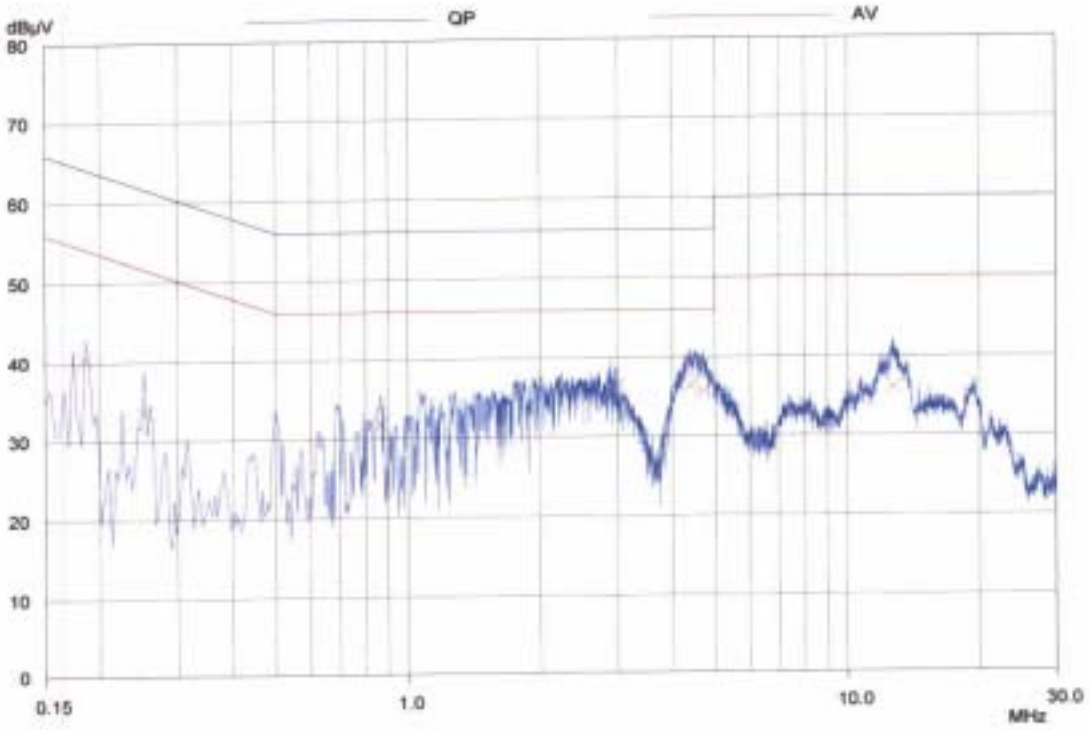


Conducted Emission Test

Peak value

EUT:	802.11 WLAN Card (WLG200-3A)
Manuf:	
Op Cond:	
Operator:	Lee-Ying
Test Spec:	FCC Part 15
Comment:	L2

Final Measurement:	Detector:	X QP
	Meas Time:	1sec
	Peaks:	8
	Acc Margin:	25 dB

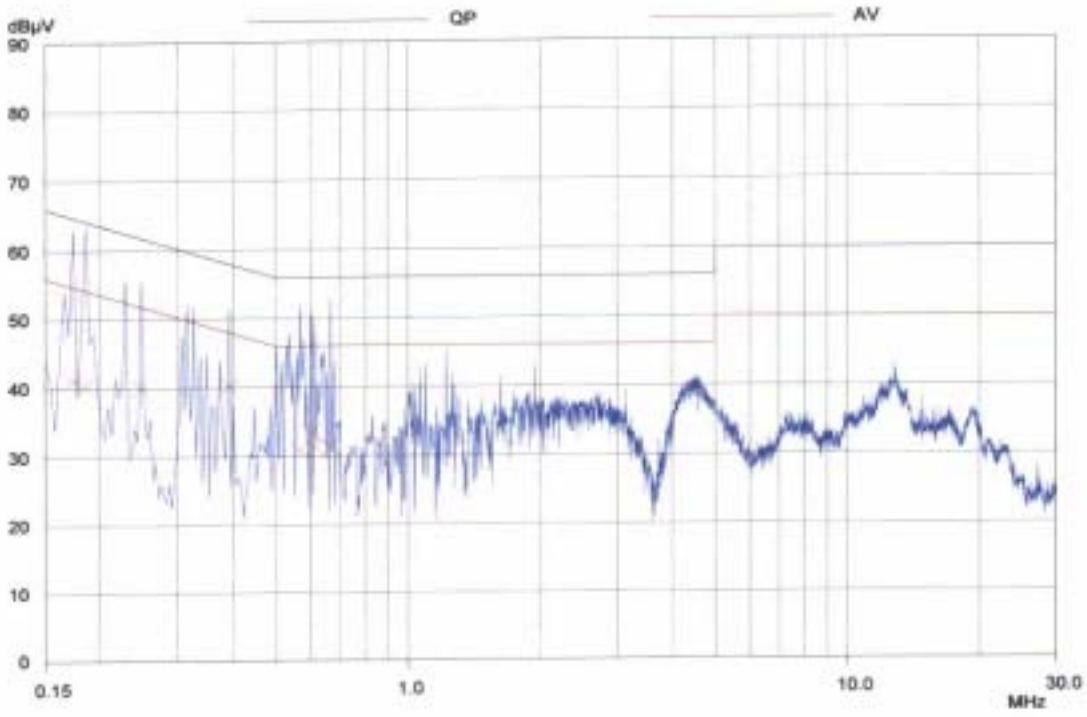


Conducted Emission Test

Peak value

EUT:	802.11 WLAN Card (WLG200-3A)
Manuf:	
Op Cond:	
Operator:	Lee-Ying
Test Spec:	FCC Part 15
Comment:	L1

Final Measurement:	Detector:	X QP
	Meas Time:	1sec
	Peaks:	8
	Acc Margin:	25 dB

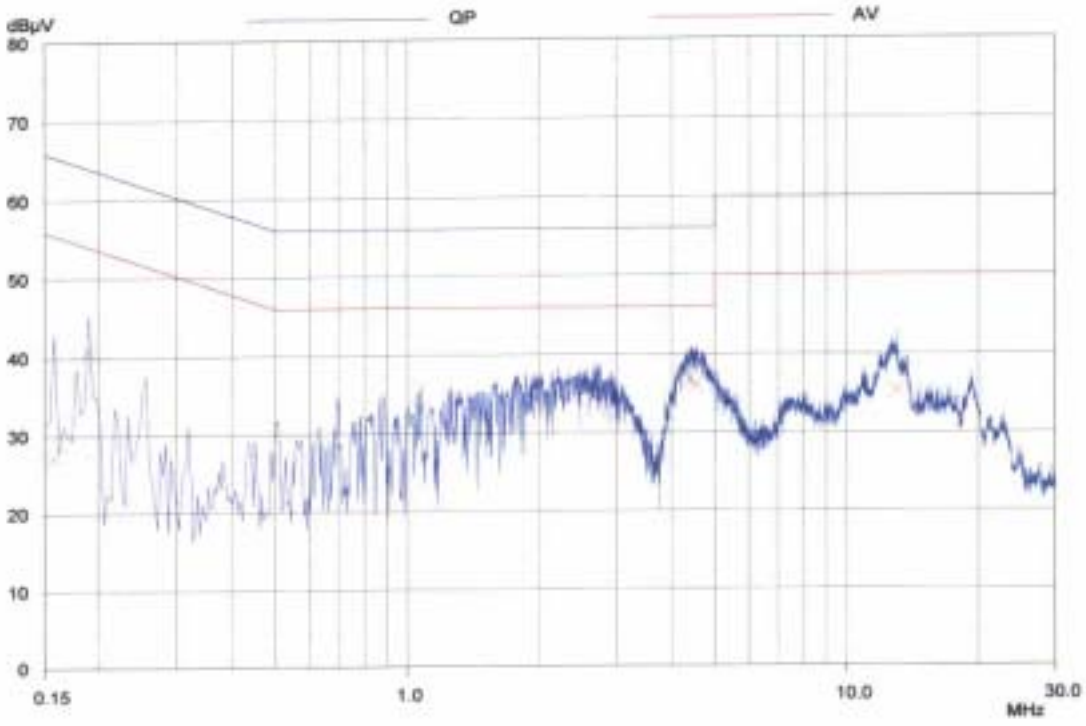


Conducted Emission Test

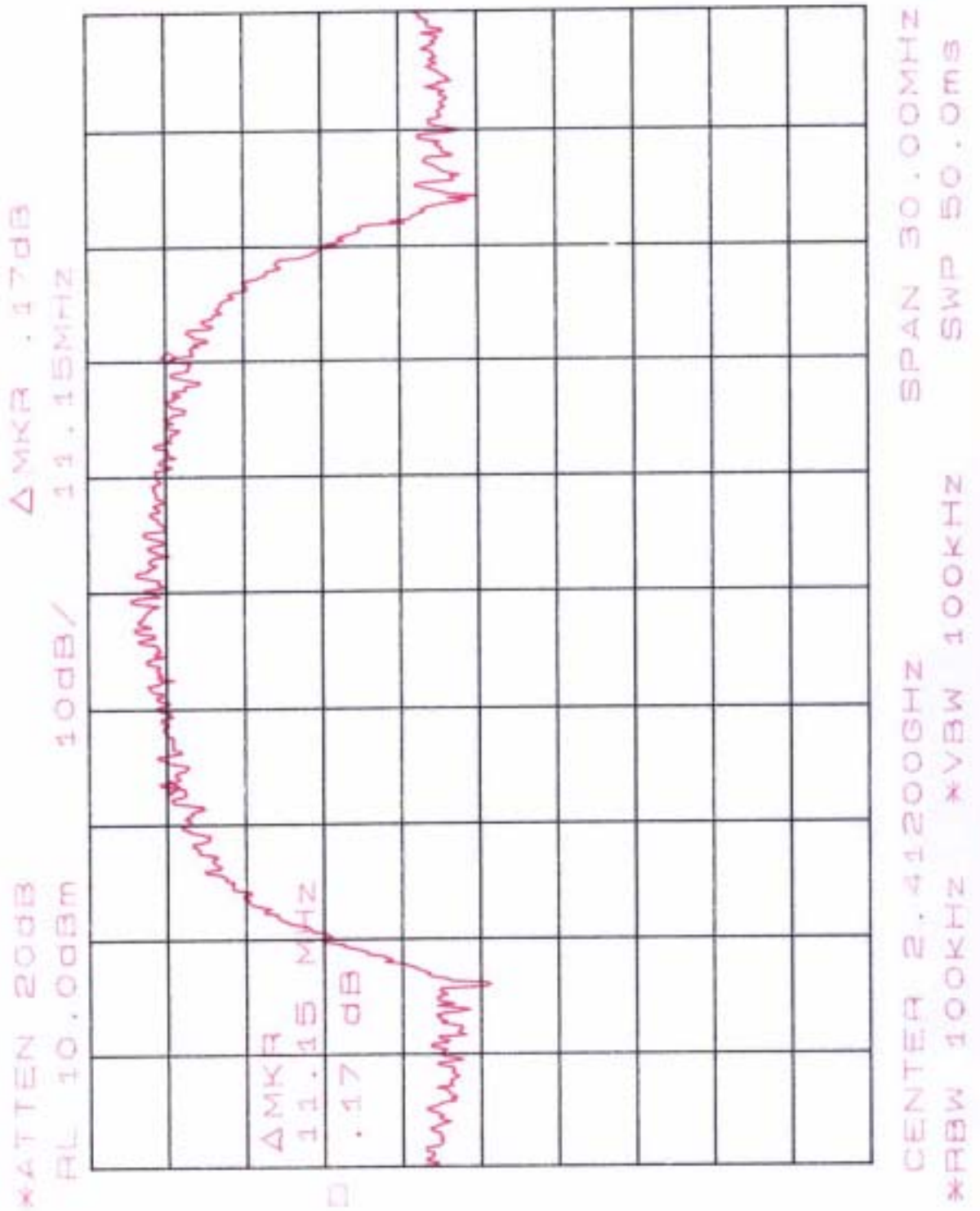
Peak value

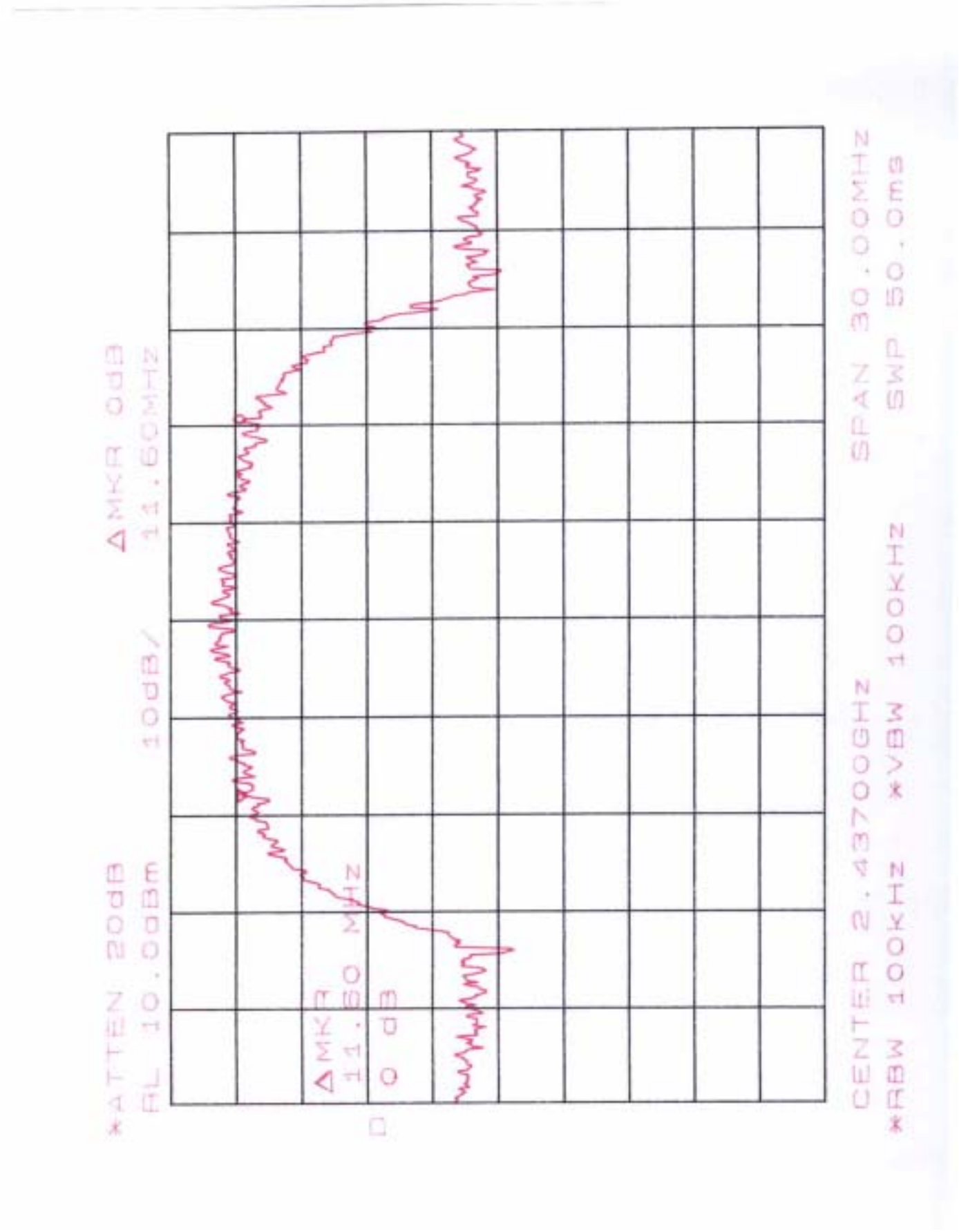
EUT:	802.11 WLAN Card (WLG200-3A)
Manuf:	
Op Cond:	
Operator:	Lee-Ying
Test Spec:	FCC Part 15
Comment:	L2

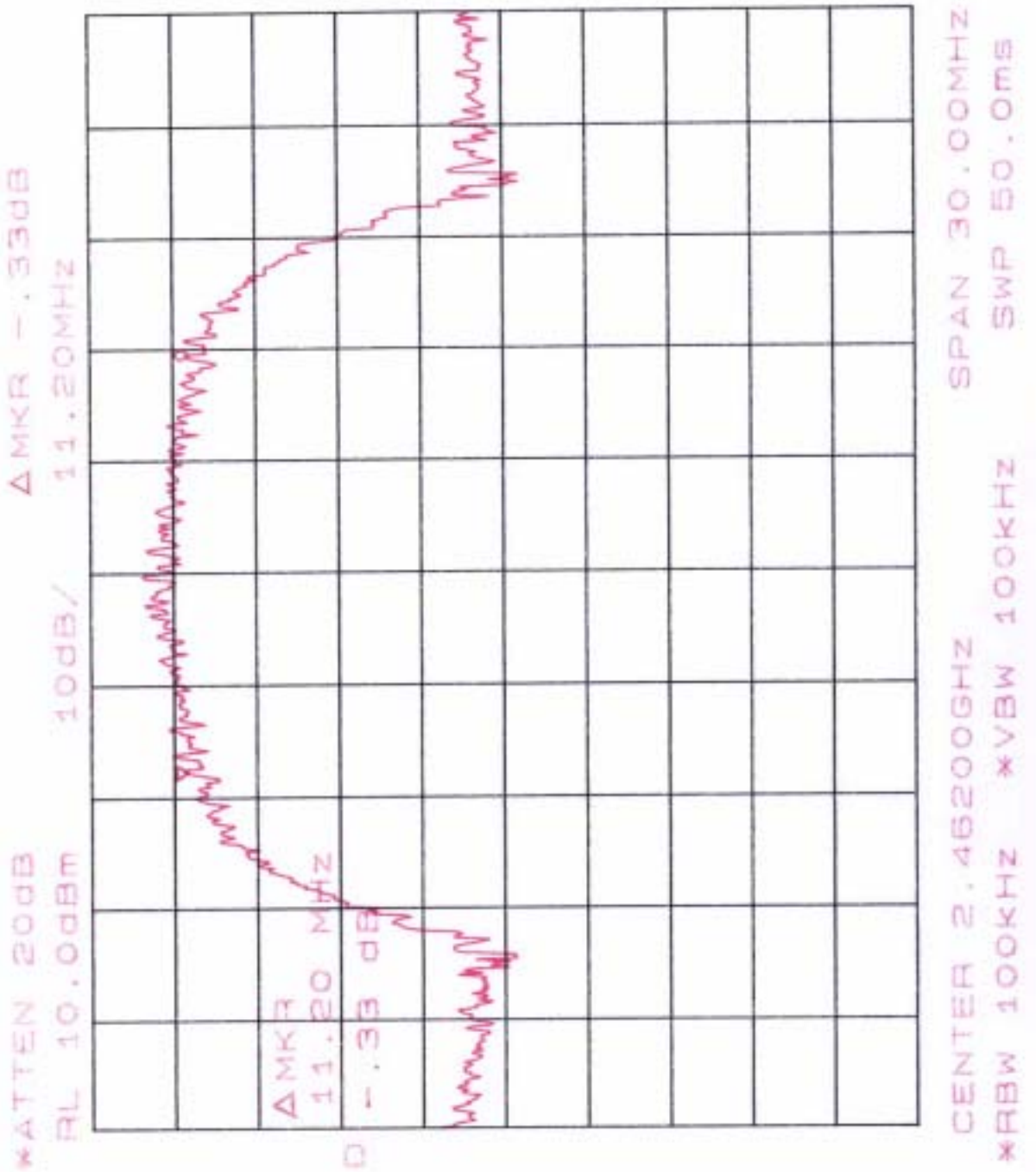
Final Measurement:	Detector:	X QP
	Meas Time:	1sec
	Peaks:	8
	Acc Margin:	25 dB



Appendix 2: Ploted Datas of Emissions Bandwidth


*ATTEN 20dB
RL 10.00dBm
10dB/
ΔMKR .17dB
11.15MHz
ΔMKR
11.15 MHz
.17 dB
CENTER 2.412000GHz
*RBW 100KHz
*VBW 100KHz
SPAN 30.00MHz
SWP 50.0ms

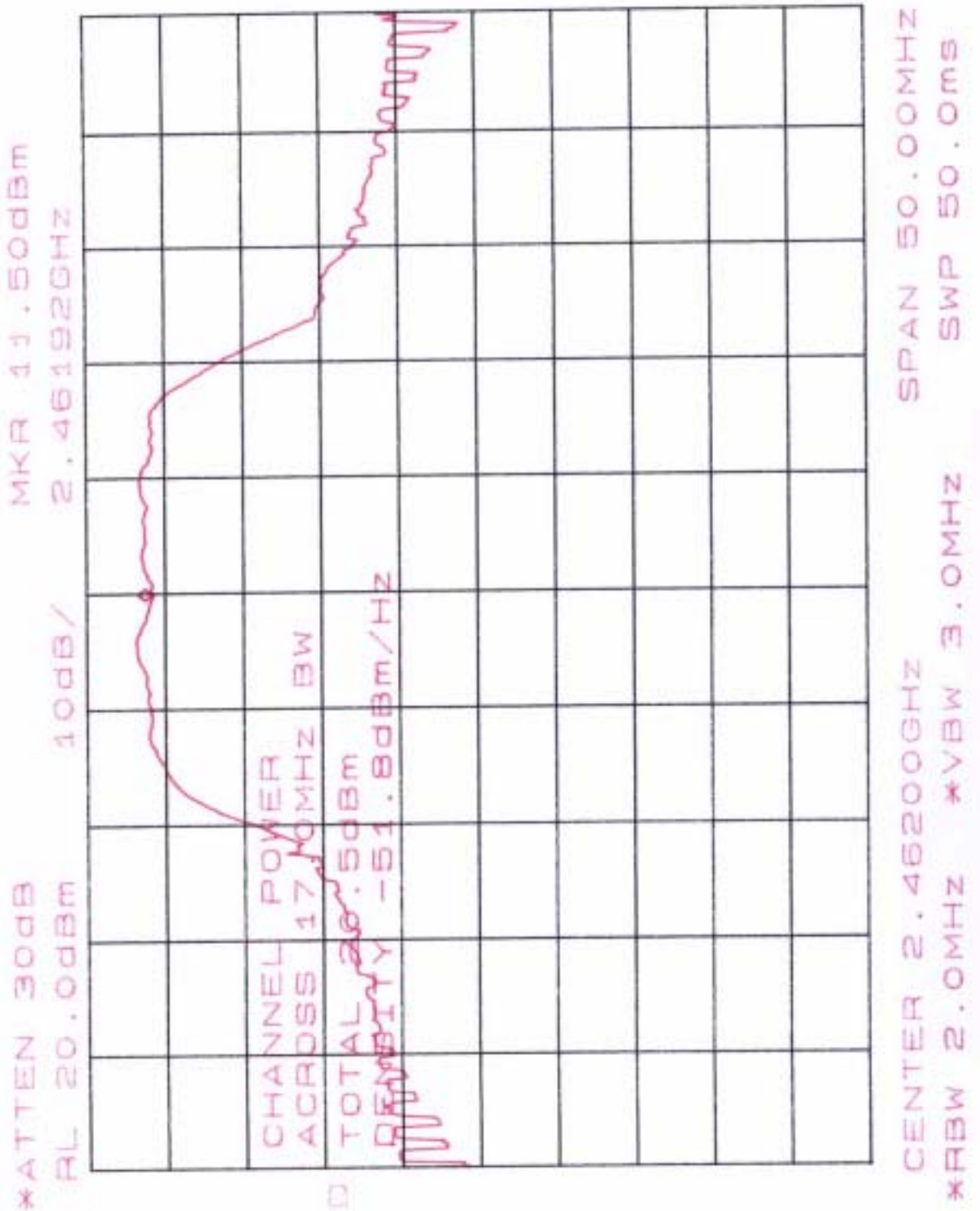

*ATTEN 20dB
RL 10.00dBm
10dB/
ΔMKR 0dB
11.60MHz
ΔMKR
11.60 MHz
0 dB
CENTER 2.43700GHz
*VBW 100KHz
*RBW 100KHz
SPAN 30.00MHz
SWP 50.0ms


*ATTEN 20dB
RL 10.0dBm
10dB/
ΔMKR -.33dB
11.20MHz
ΔMKR
11.20 MHz
-.33 dB
CENTER 2.462000GHz
*RBW 100kHz
*VBW 100kHz
SPAN 30.00MHz
SWP 50.0ms

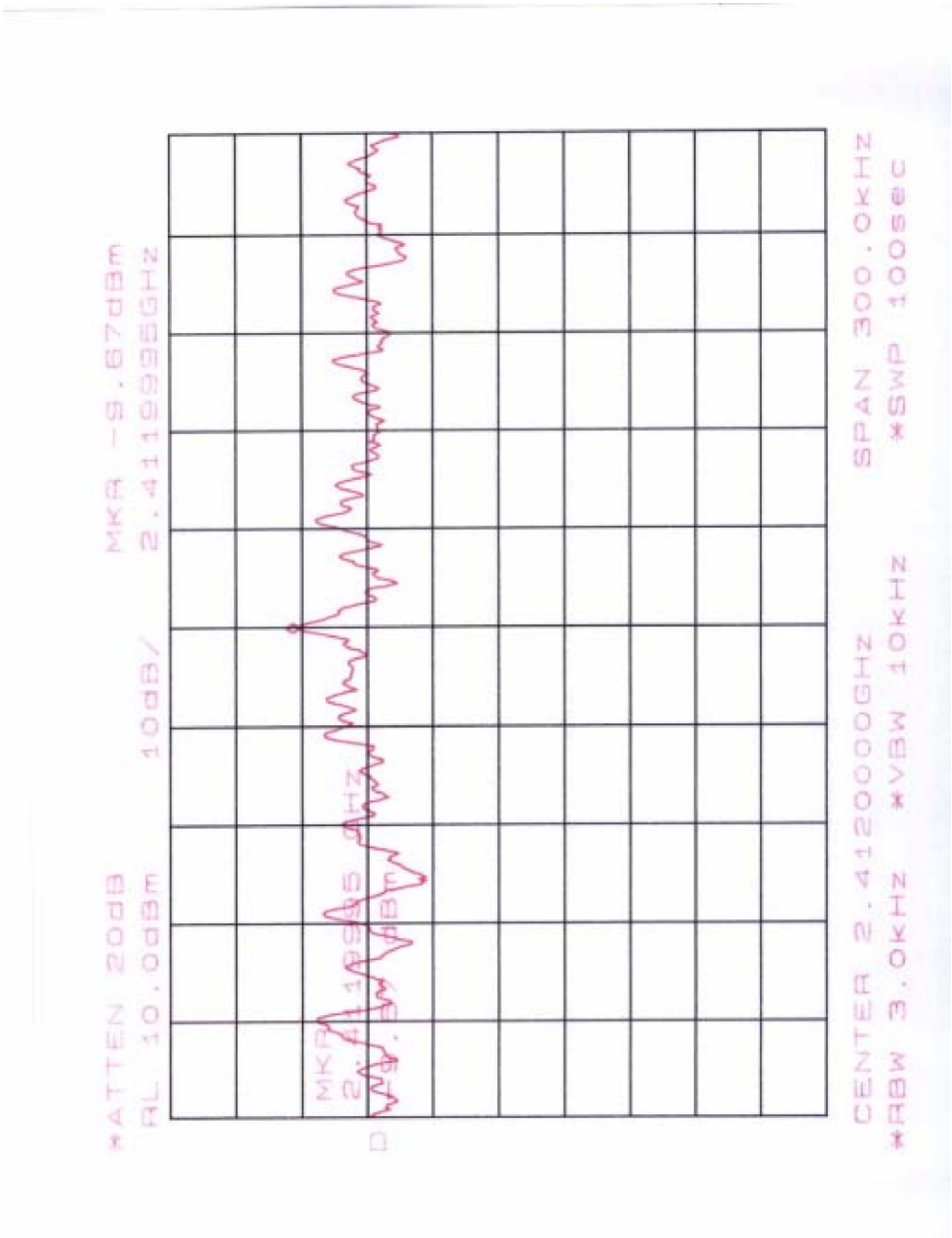
Appendix 3: Ploted Datas of Output Peak Power

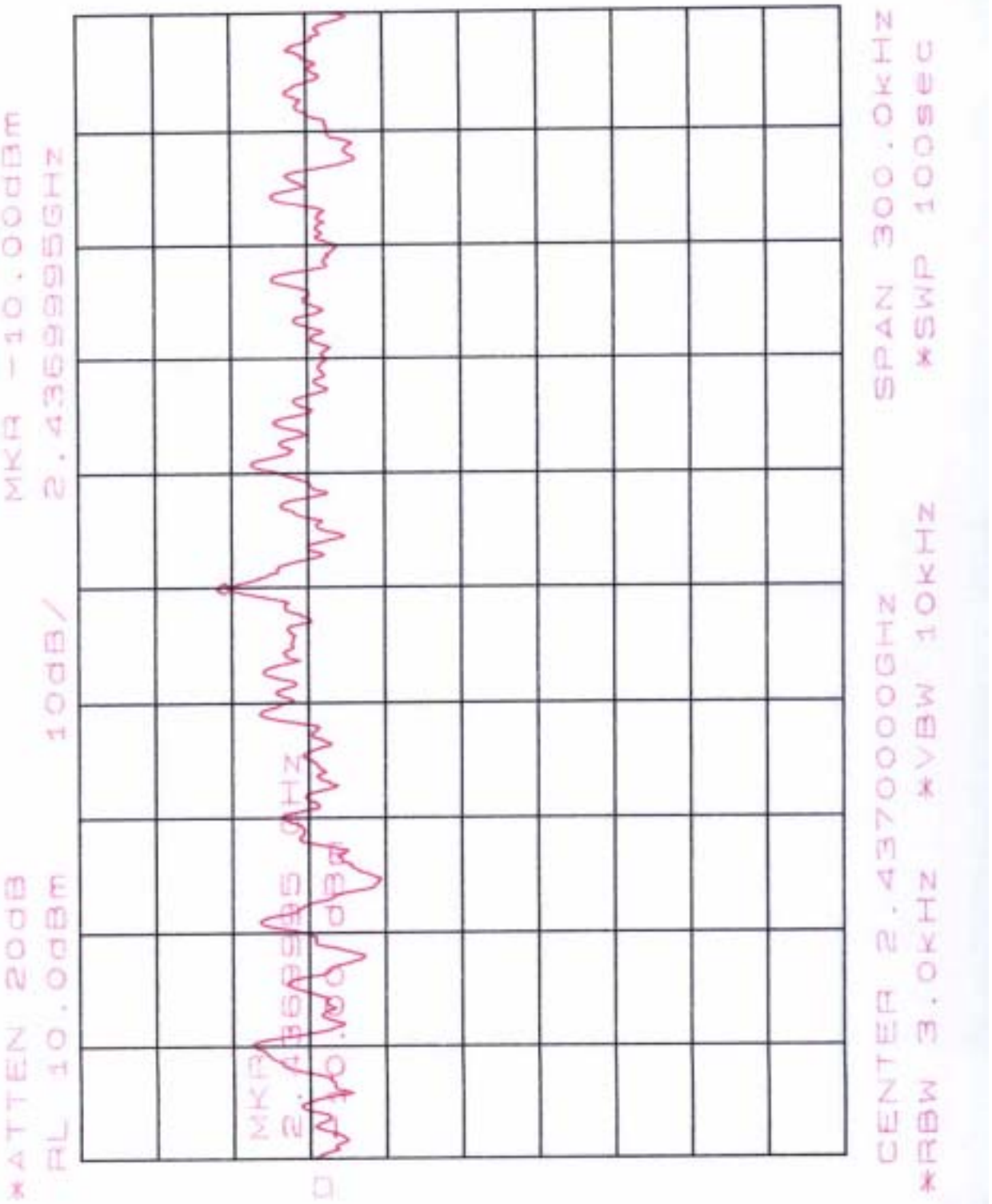

*ATTEN 30dB
RL 20.0dBm
10dB/
MKR 12.00dBm
2.411826GHz
CHANNEL POWER BW
ACROSS 16.0MHz
TOTAL 20.8dBm
DENSITY -151.3dBm/Hz
CENTER 2.412000GHz
*RBW 2.0MHz
*VBW 3.0MHz
SPAN 50.00MHz
SWP 50.0ms

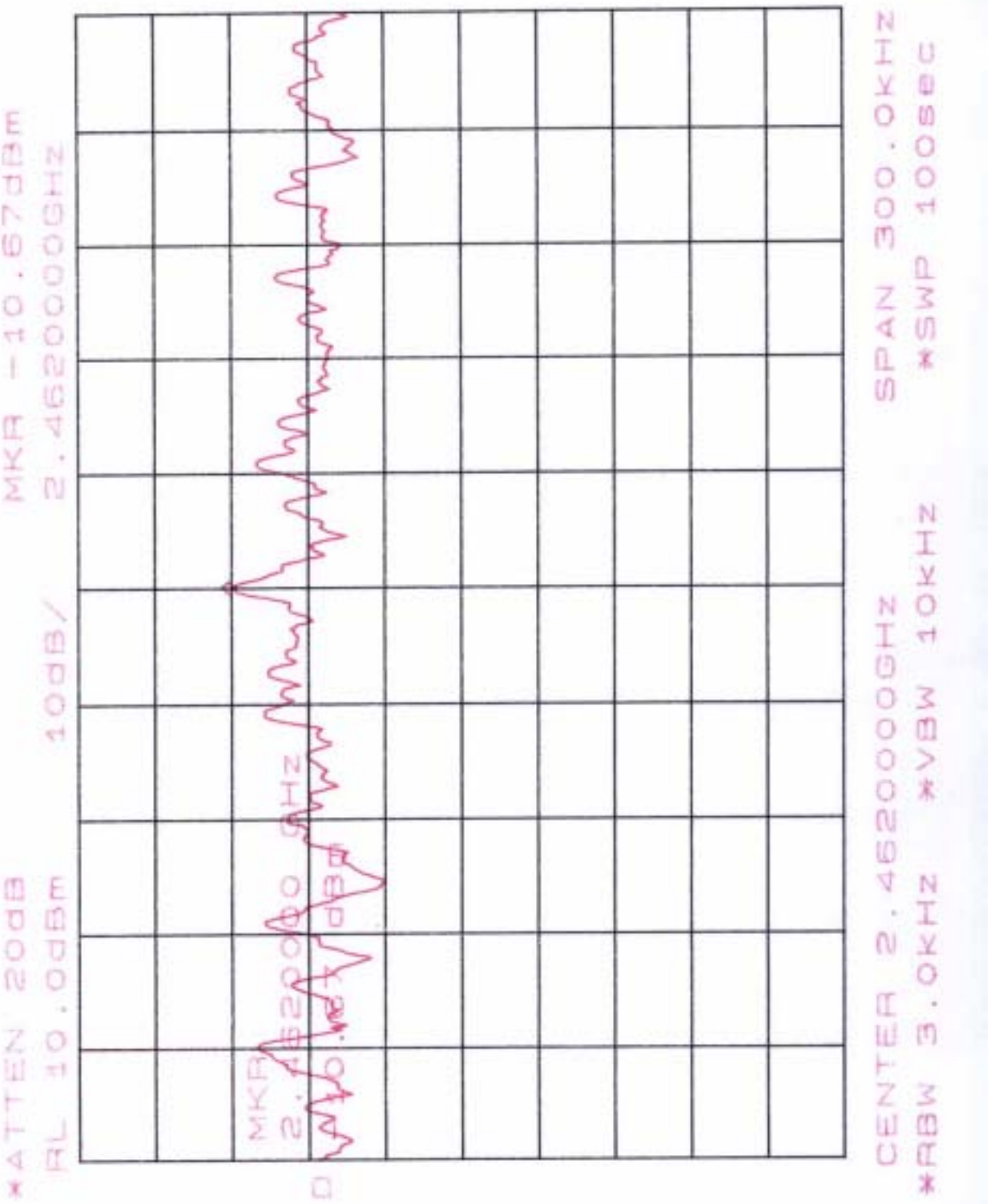

*ATTEN 30dB
RL 20.0dBm
10dB/
MKR 12.00dBm
2.436892GHz
CHANNEL POWER
ACROSS 17.0MHz BW
TOTAL
-51.85dBm/Hz
SPAN 50.00MHz
SWP 50.0ms
CENTER 2.437GHz
*VBW 3.0MHz
*RBW 2.0MHz


*ATTEN 30dB
RL 20.0dBm
10dB/
MKR 11.50dBm
2.461920GHz
CHANNEL POWER
ACROSS 17.40MHz BW
TOTAL 20.50dBm
DENSITY -51.8dBm/Hz
CENTER 2.462000GHz
*RBW 2.0MHz
*VBW 3.0MHz
SPAN 50.00MHz
SWP 50.0ms

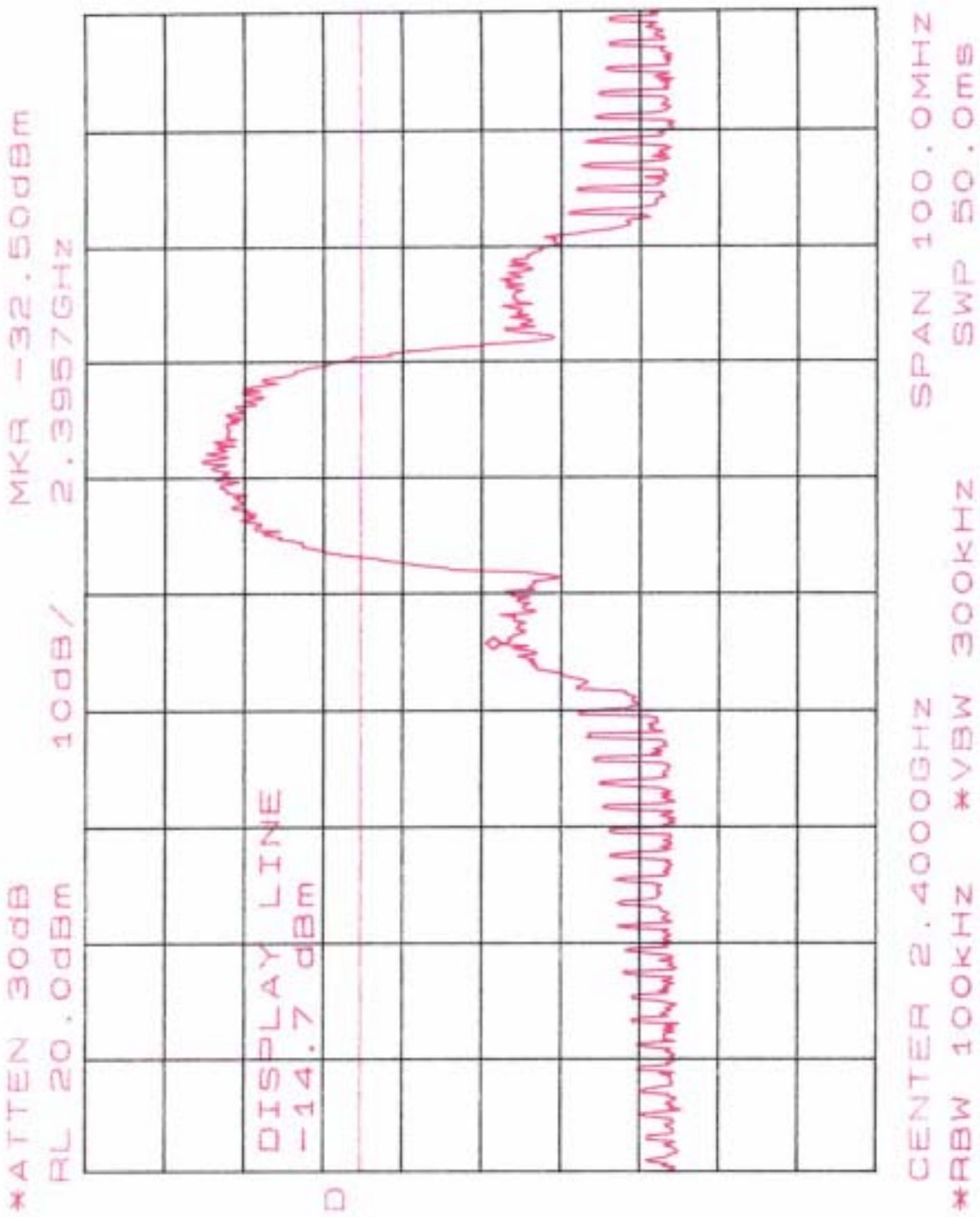
Appendix 4: Ploted Datas of Power Density

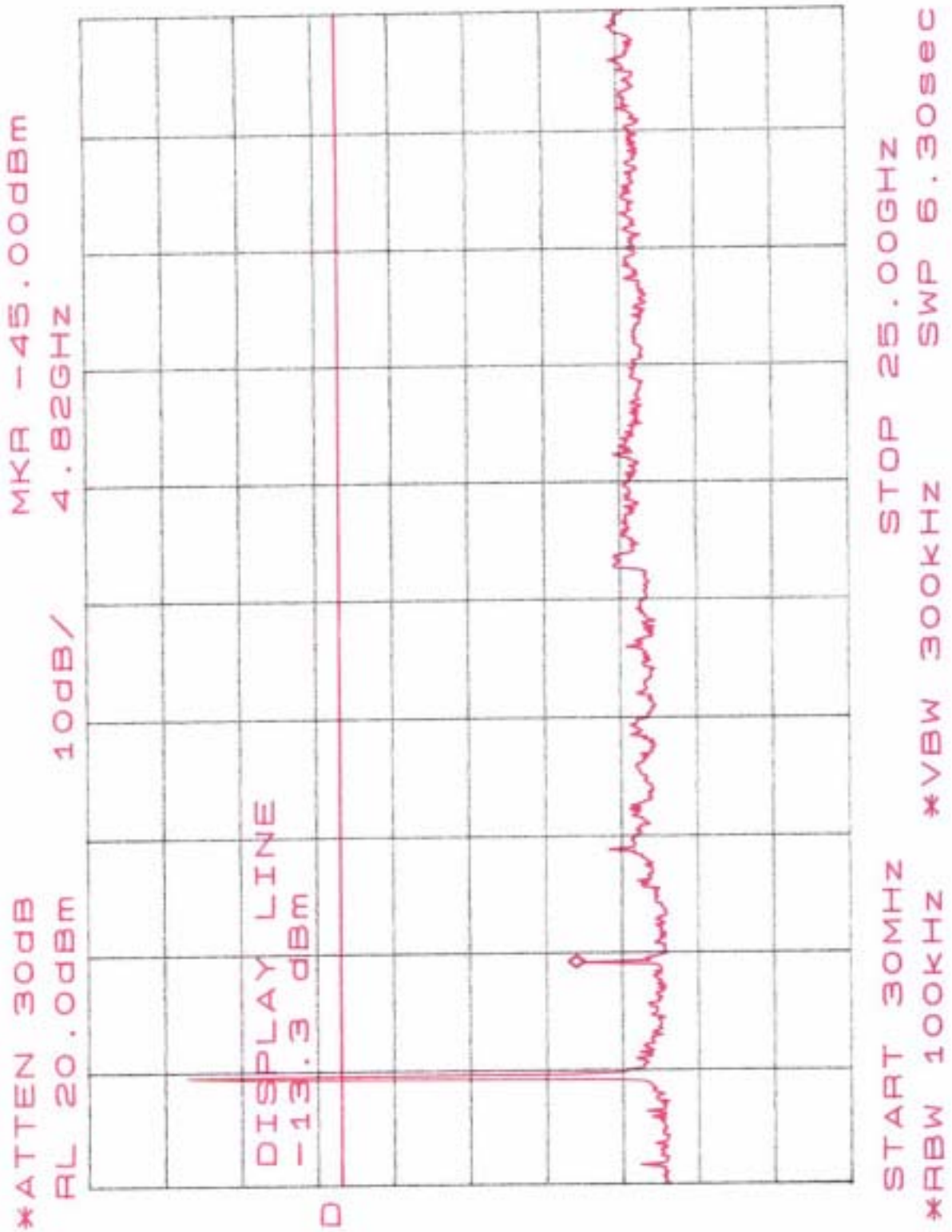

*ATTEN 20dB
RL 10.00dBm
10dB/
MKR -9.67dBm
2.411995GHz
SPAN 300.0KHz
*SWP 100sec
CENTER 2.412000GHz
*RBW 3.0KHz
*VBW 10KHz

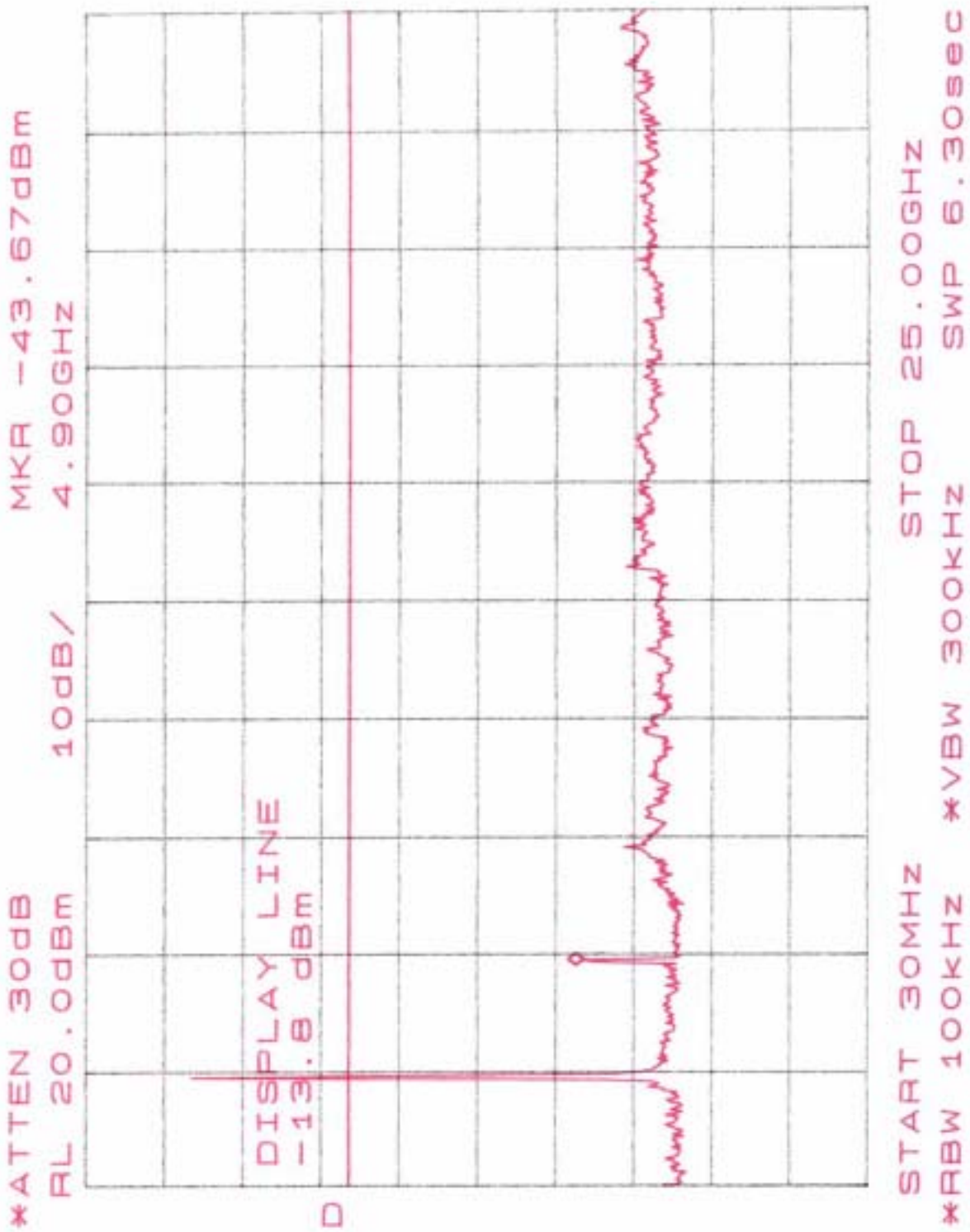

*ATTEN 20dB
RL 10.00dBm
10dB/
MKR -10.00dBm
2.436999955GHz
MKR 2.436999955GHz
0.00dB
CENTER 2.437000GHz
*RBW 3.0KHz
*VBW 10KHz
SPAN 300.0KHz
*SWP 100sec

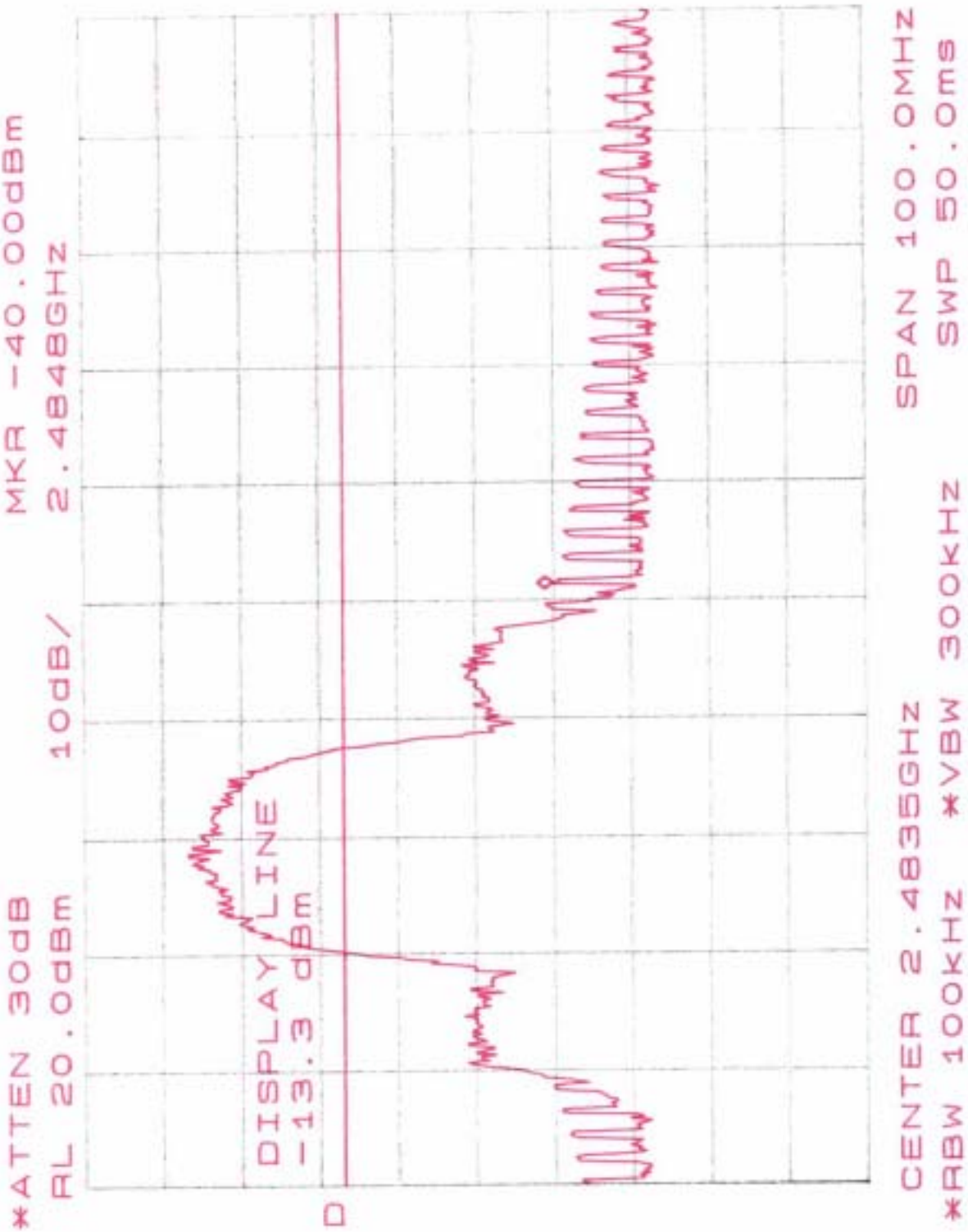

*ATTEN 20dB
RL 10.00dBm
10dB/
MKR -10.67dBm
2.462000GHz
MKR
2.462000 GHz
0.00 dBm
CENTER 2.462000GHz
*RBW 3.0KHz
*VBW 10KHz
SPAN 300.0KHz
*SWP 100sec

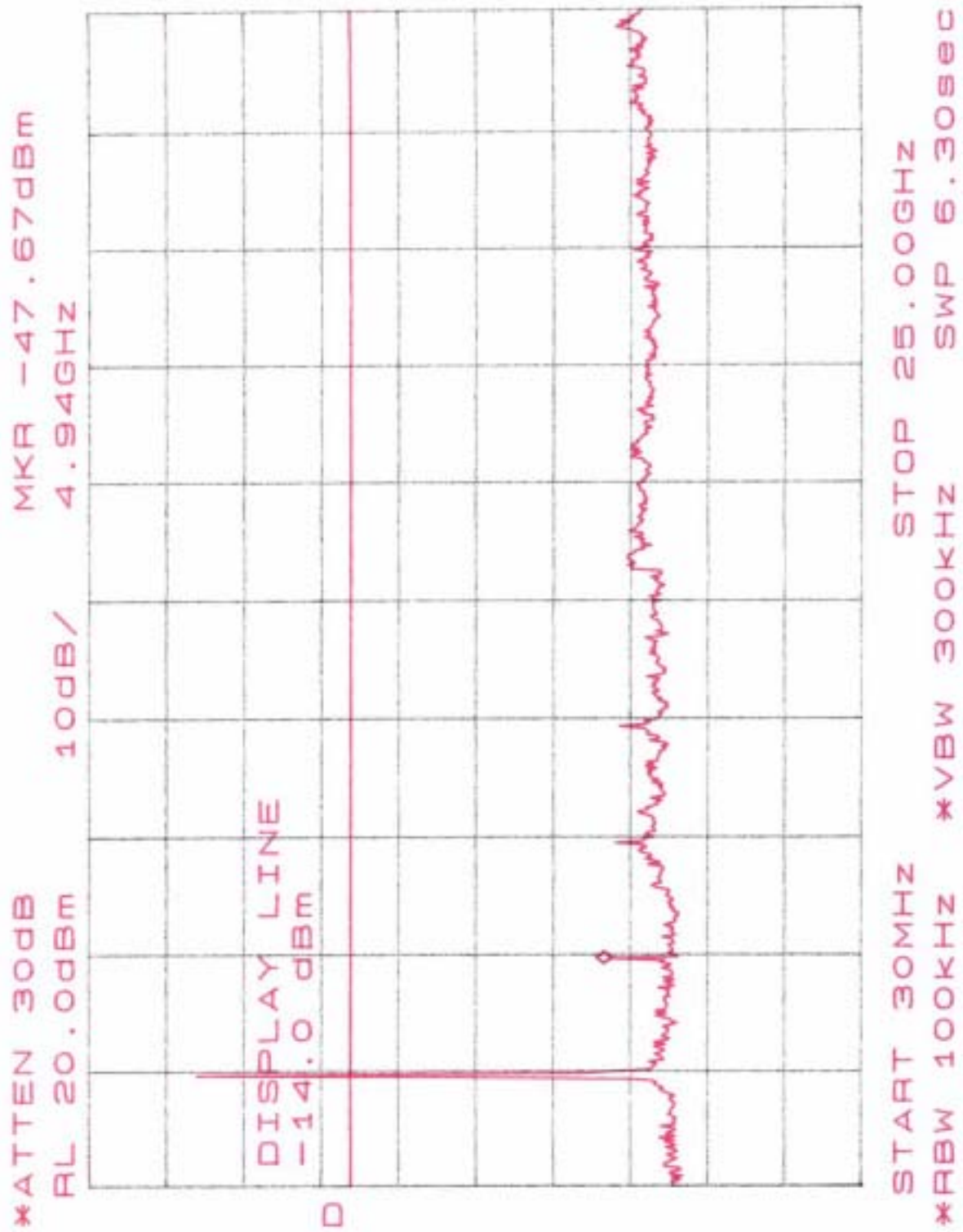
Appendix 5: Ploted Datas of Spurious Emission – RF Conducted Measurement


*ATTEN 30dB
RL 20.0dBm
10dB/
MKR -32.50dBm
2.3957GHz
DISPLAY LINE
-14.7 dBm
D
SPAN 100.0MHz
SWP 50.0ms
CENTER 2.4000GHz
*VBW 300KHz
*RBW 100KHz


*ATTEN 30dB
RL 20.0dBm
10dB/
MKR -45.00dBm
4.82GHz
DISPLAY LINE
-13.3 dBm
D
START 30MHz
*RBW 100KHz
*VBW 300KHz
STOP 25.00GHz
SWP 6.30sec


*ATTEN 30dB
RL 20.0dBm
10dB/
MKR -43.67dBm
4.90GHz
DISPLAY LINE
-13.8 dBm
D
START 30MHz
*RBW 100KHz
STOP 25.00GHz
*VBW 300KHz
SWP 6.30sec

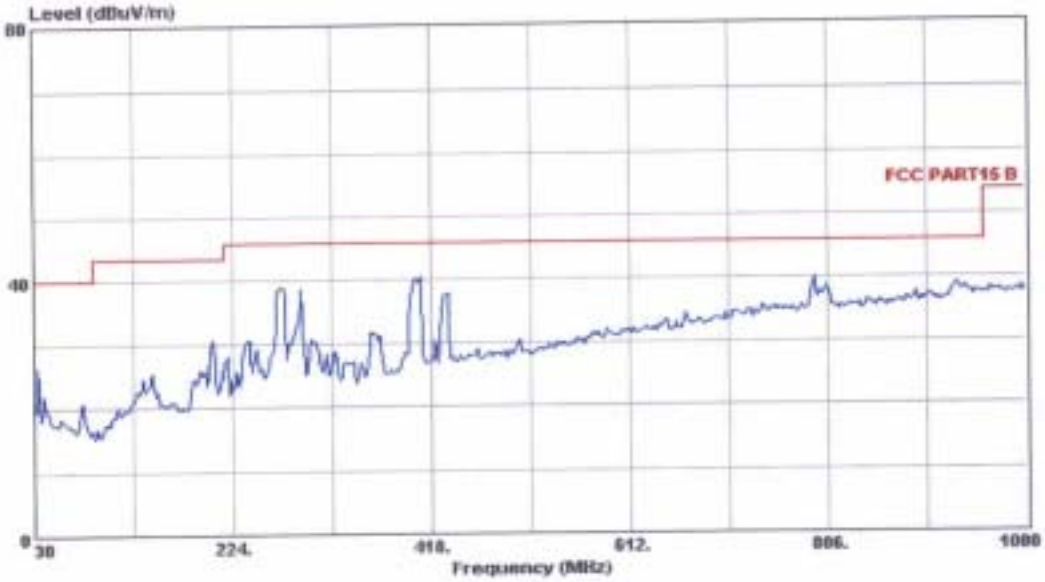

*ATTEN 30dB
RL 20.0dBm
10dB/
MKR -40.00dBm
2.4848GHz
DISPLAY LINE
-13.3 dBm
D
SPAN 100.0MHz
SWP 50.0ms
CENTER 2.4835GHz
*VBW 300KHz
*RBW 100KHz


*ATTEN 30dB
RL 20.0dBm
10dB/
MKR -47.67dBm
4.94GHz
DISPLAY LINE
-14.0 dBm
D
START 30MHz
*RBW 100KHz
STOP 25.00GHz
*VBW 300KHz
SWP 6.30sec

Appendix 6: Ploted Datas of Spurious Emissions - Radiated Emissions Measurement

ETC TEST LABORTARY

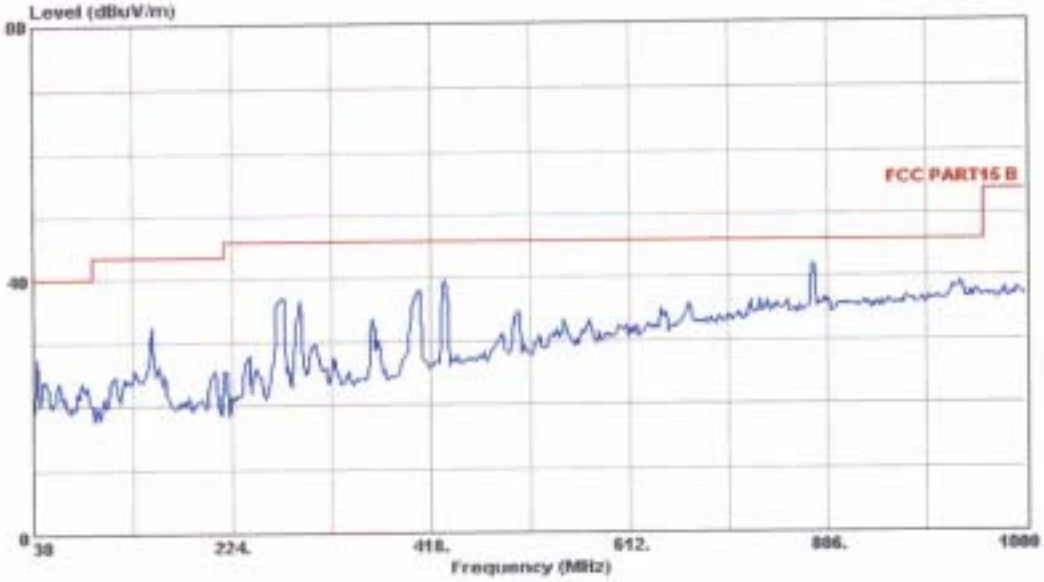
Data#: 33 File#: C:\Program Files\e3\Testaaa.emi



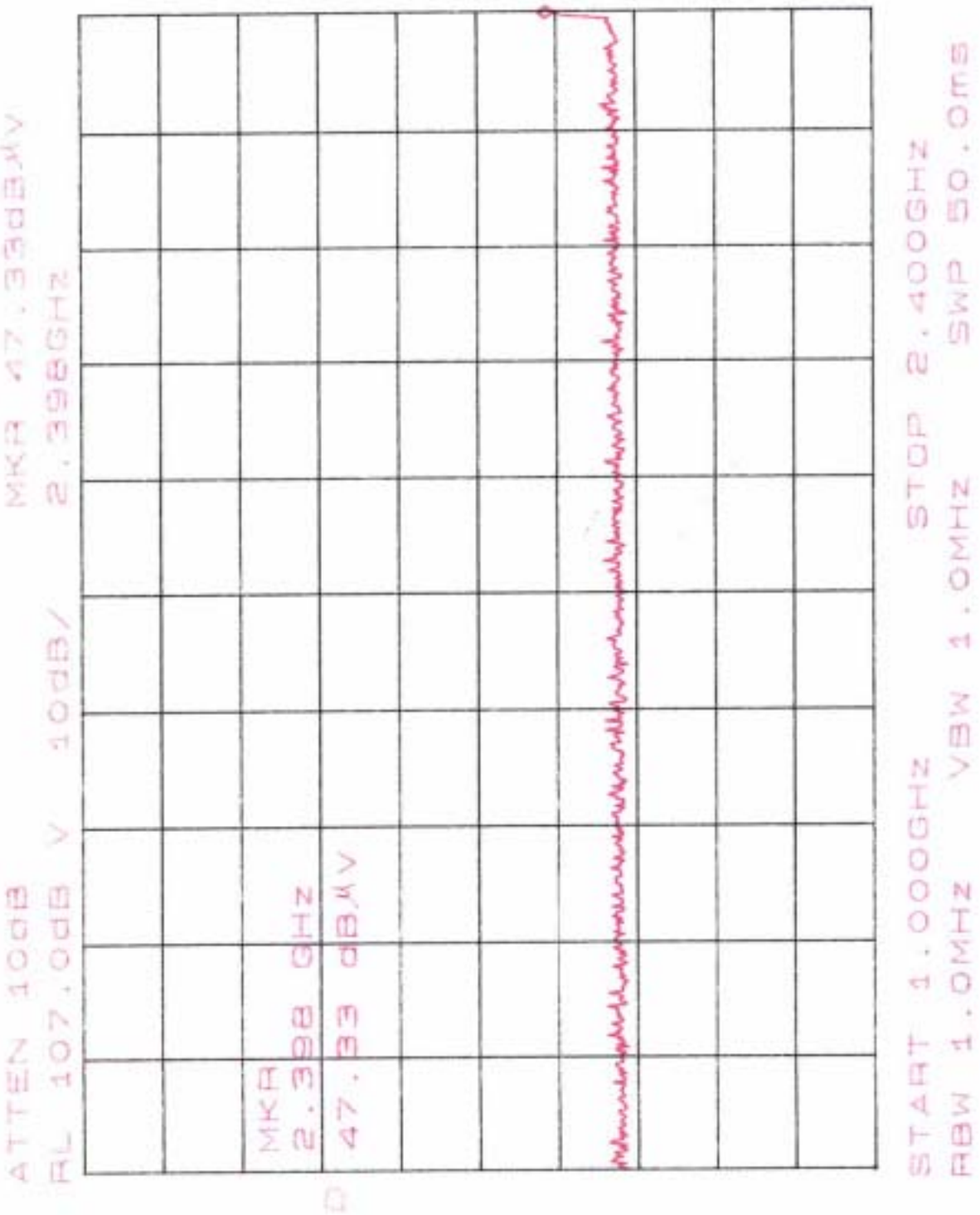
Site : MOO SITE
Condition : FCC PART15 B 3m HORIZONTAL
EUT : WLAN Card
Model : emachines M5310
Memo : RBW 120kHz , VBW 300kHz

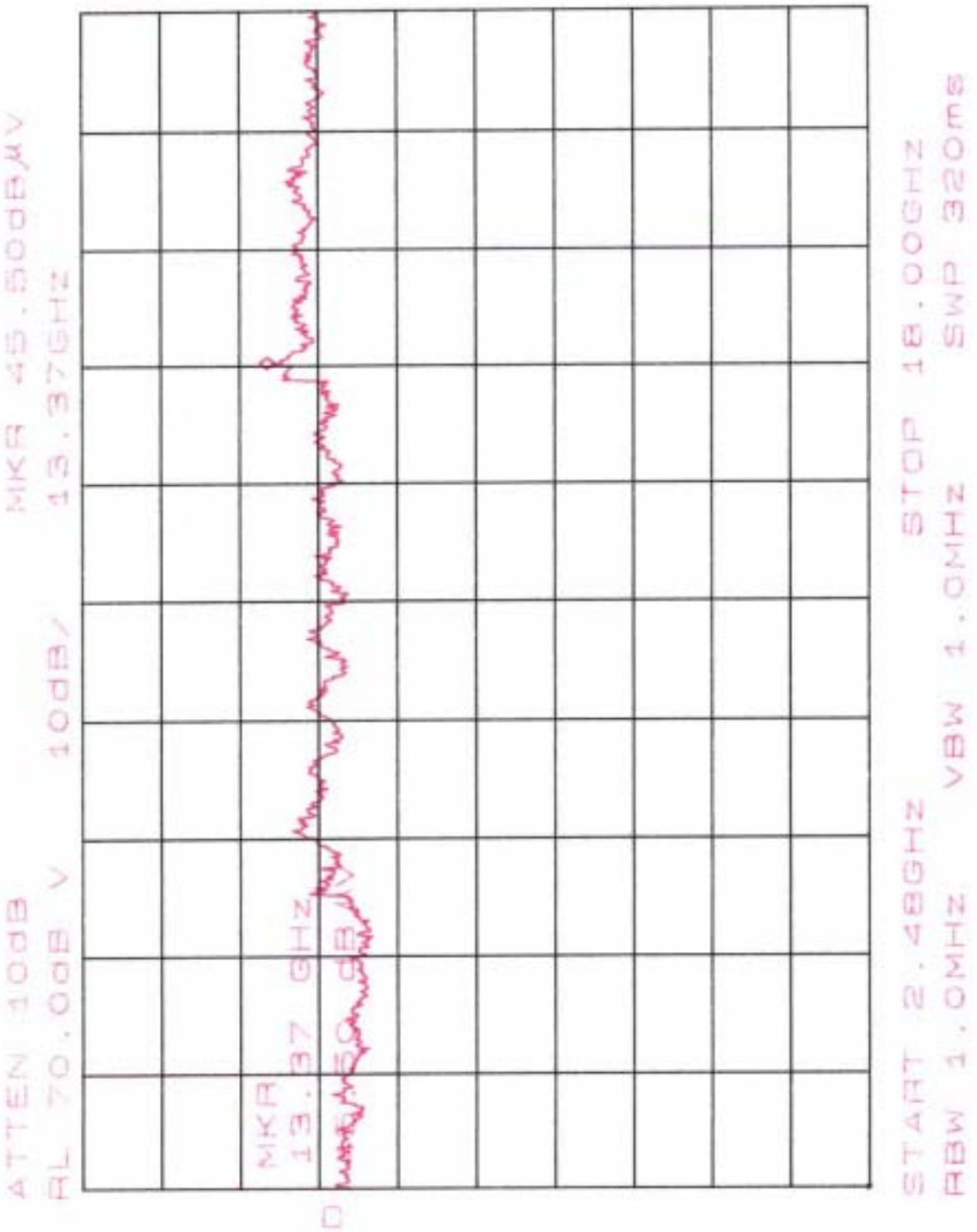
ETC TEST LABORTARY

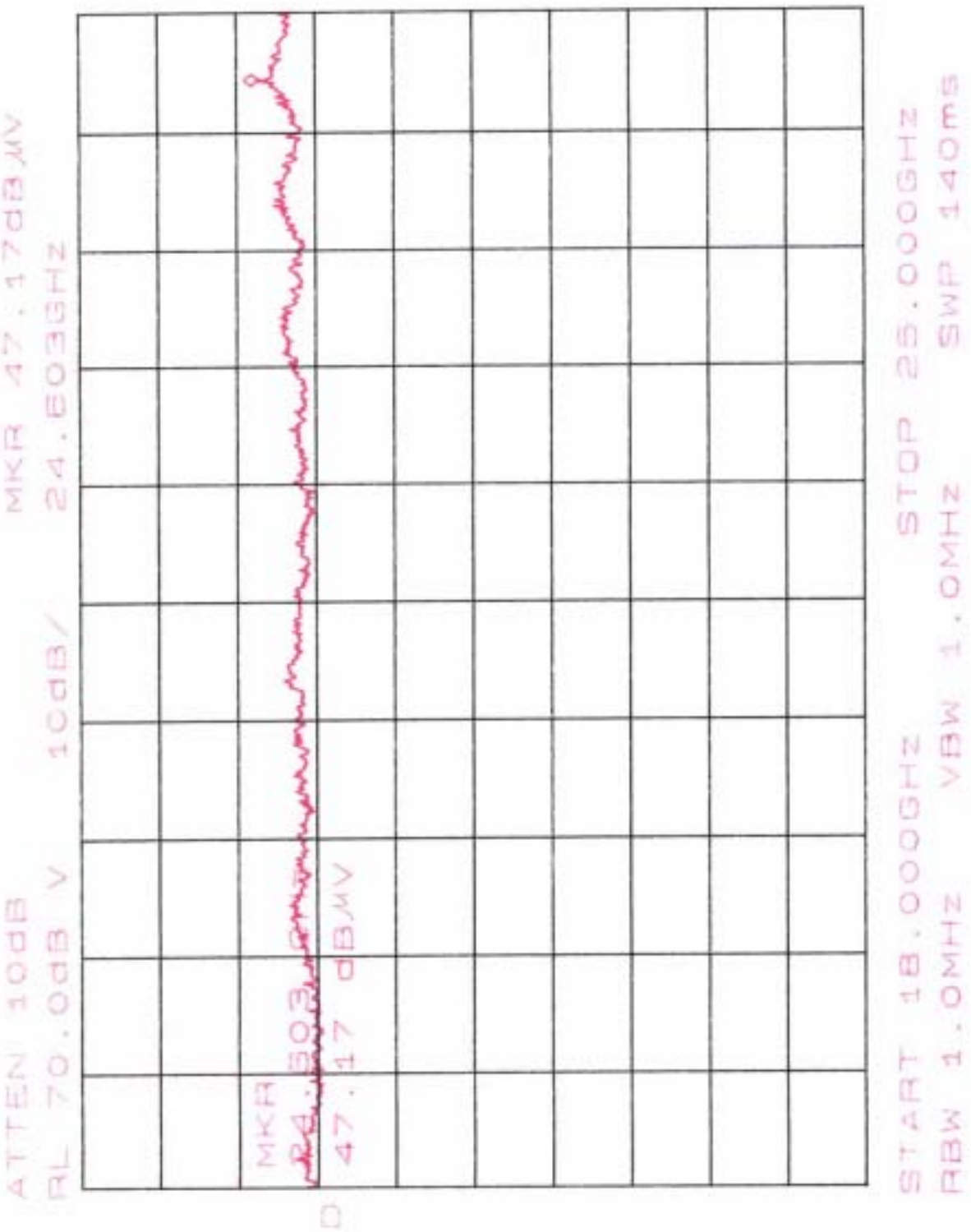
Data#: 51 File#: C:\Program Files\e3\TestHsu.emi



Site : HOO SITE
Condition : FCC PART15 B 3m VERTICAL
EUT : WLAN Card
Model : emachines M5310
Memo : RBW 120kHz , VBW 300kHz

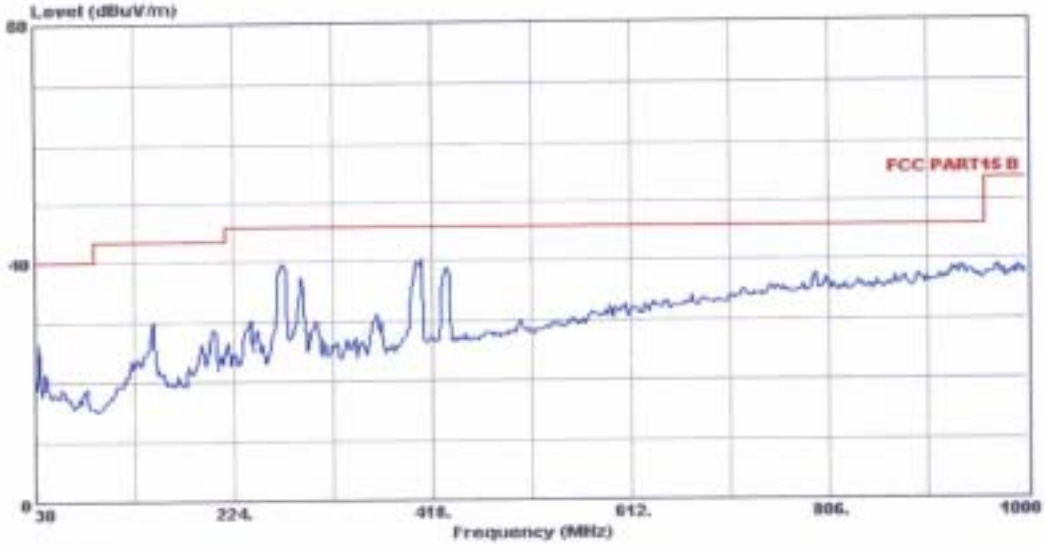

ATTEN 10dB
RL 107.0dBµV 10dB/
MKR 2.388 GHz
47.33 dBµV
MKR 17.33dBµV
2.398GHz
START 1.000GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 2.400GHz
SWP 50.0ms


ATTEN 10dB
RL 70.0dBµV
10dB/
MKR 45.50dBµV
13.37GHz
MKR
13.37 GHz
START 2.48GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 18.00GHz
SWP 320ms


ATTEN 10dB
RL 70.0dB V
10dB/
MKR 47.17dBµV
24.603GHz
MKR
24.603GHz
47.17 dBµV
START 18.000GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 25.000GHz
SWP 140ms

ETC TEST LABORTARY

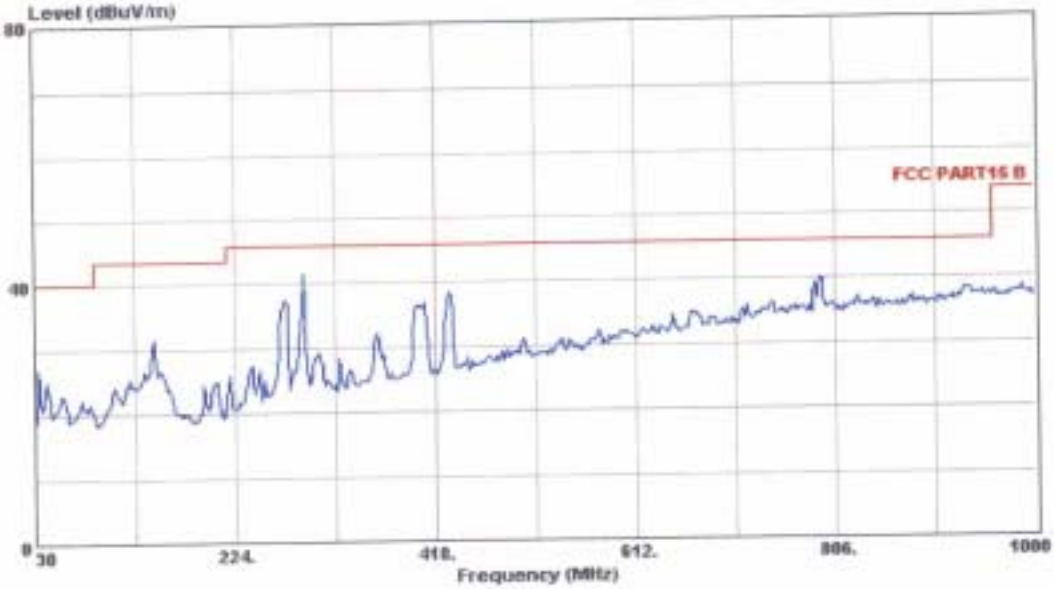
Data#: 35 File#: C:\Program Files\e3\Testaaa.emi



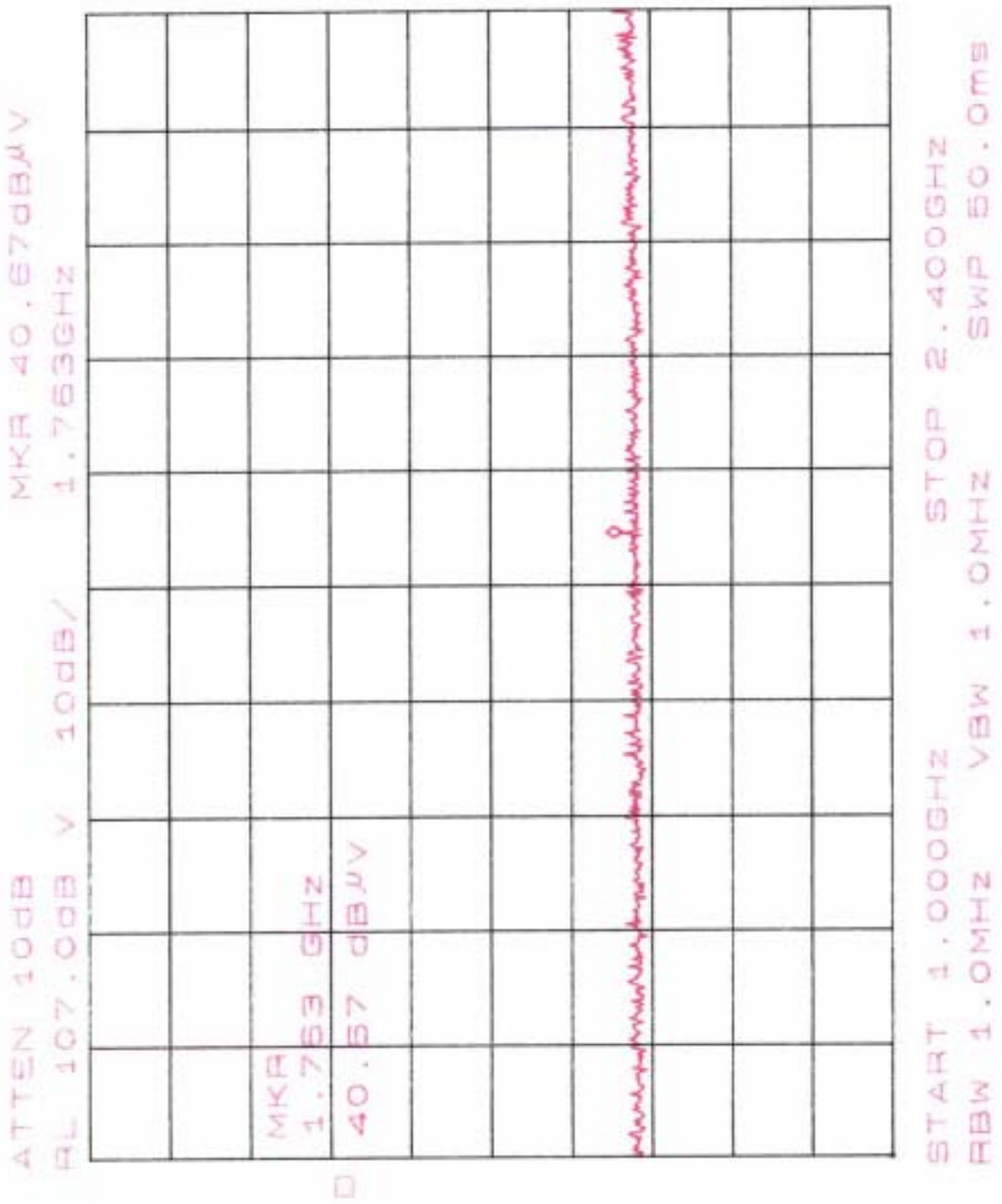
Site : HOO SITE
Condition : FCC PART15 B 3m HORIZONTAL
EUT : WLAN Card
Model : emachines M5310
Memo : RBW 120kHz , VBW 300kHz

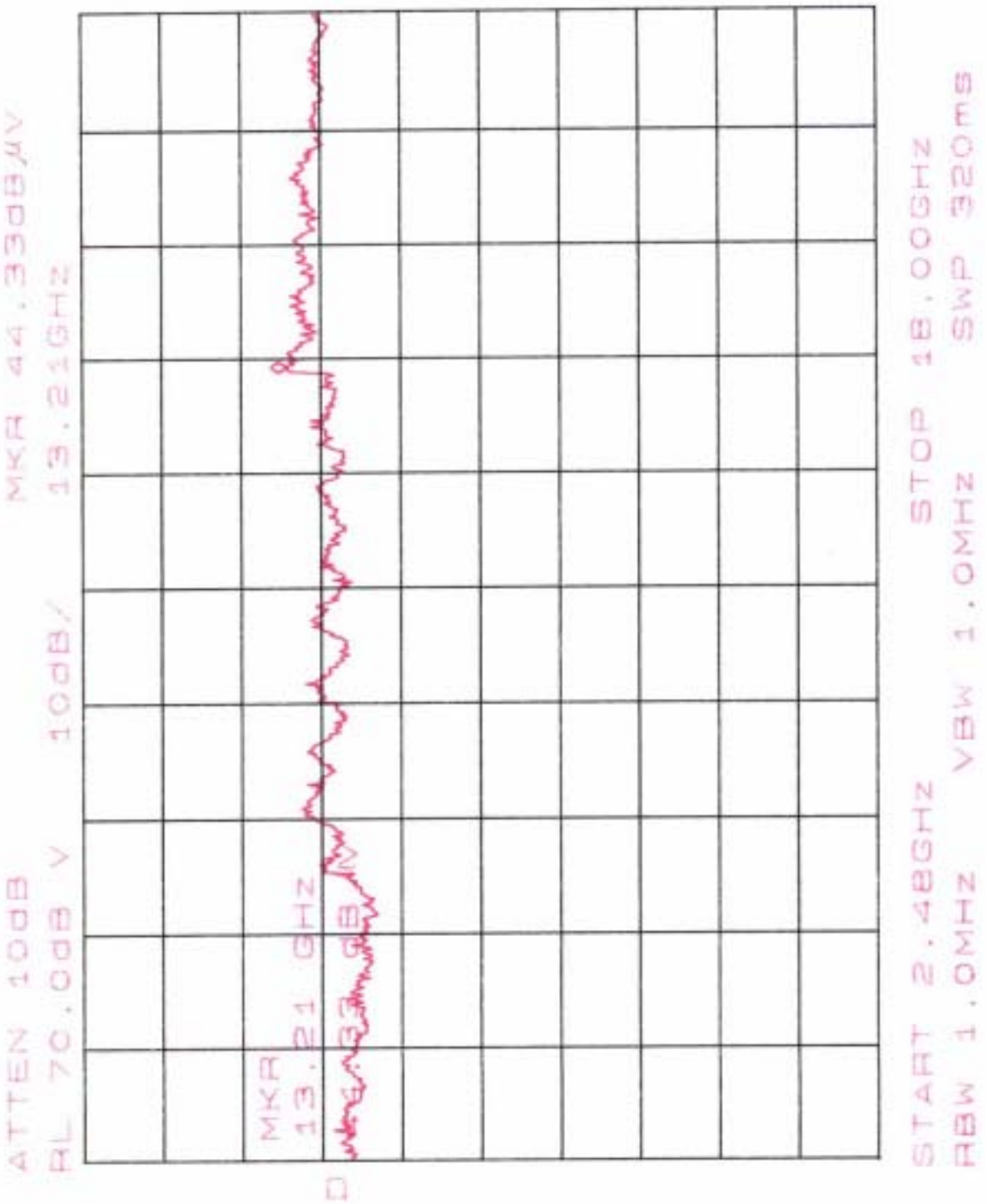
ETC TEST LABORTARY

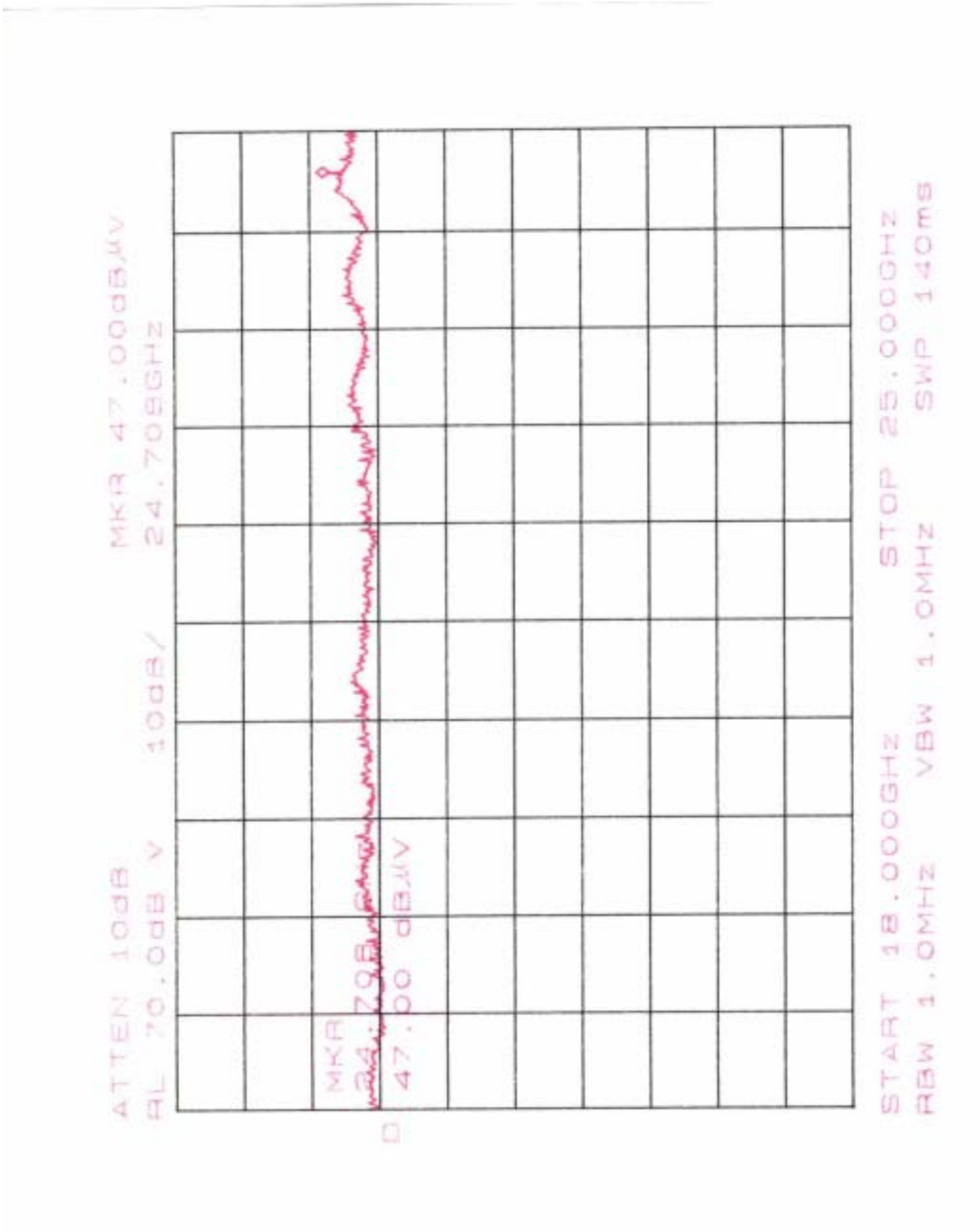
Data#: 53 File#: C:\Program Files\e3\TestHsu.emi



Site : HOO SITE
Condition : FCC PART15 B 3m VERTICAL
EUT : WLAN Card
Model : emachines M5310
Memo : RBW 120kHz , VBW 300kHz

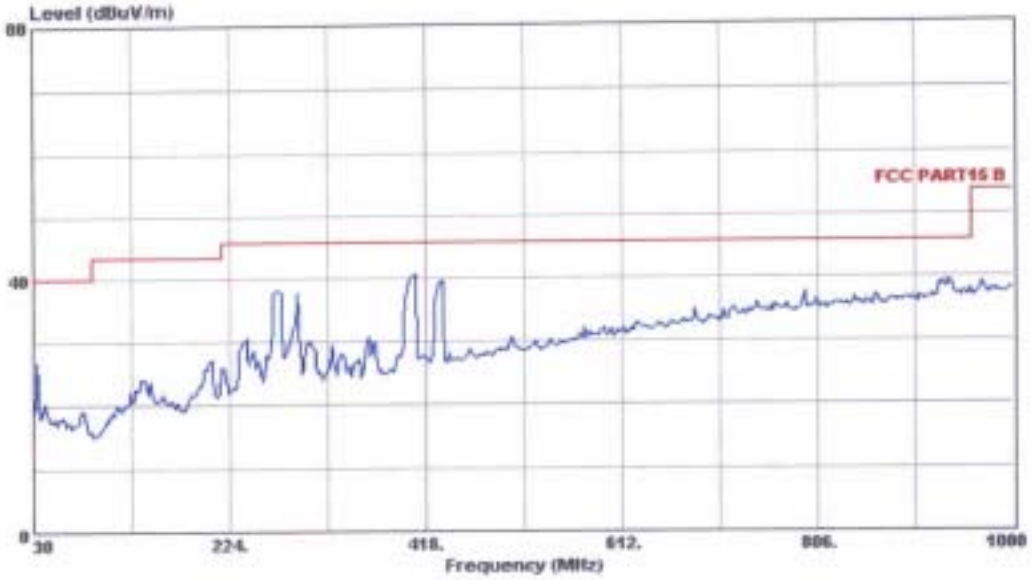

ATTEN 10dB
RL 107.0dBµV
10dB/
MKR 40.67dBµV
1.763GHz
MKR
1.763 GHz
40.67 dBµV
START 1.000GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 2.400GHz
SWP 50.0ms


ATTEN 10dB
RL 70.0dB V
100B/
MKR 44.33dBµV
13.21GHz
MKR
13.21 GHz
START 2.4GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 18.00GHz
SWP 320ms


ATTEN 10dB
RL 70.00dB V
10dB/
MKR 47.000dBµV
24.708GHz
MKR
24.798GHz
47.00 dBµV
START 18.000GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 25.000GHz
SWP 140ms

ETC TEST LABORTARY

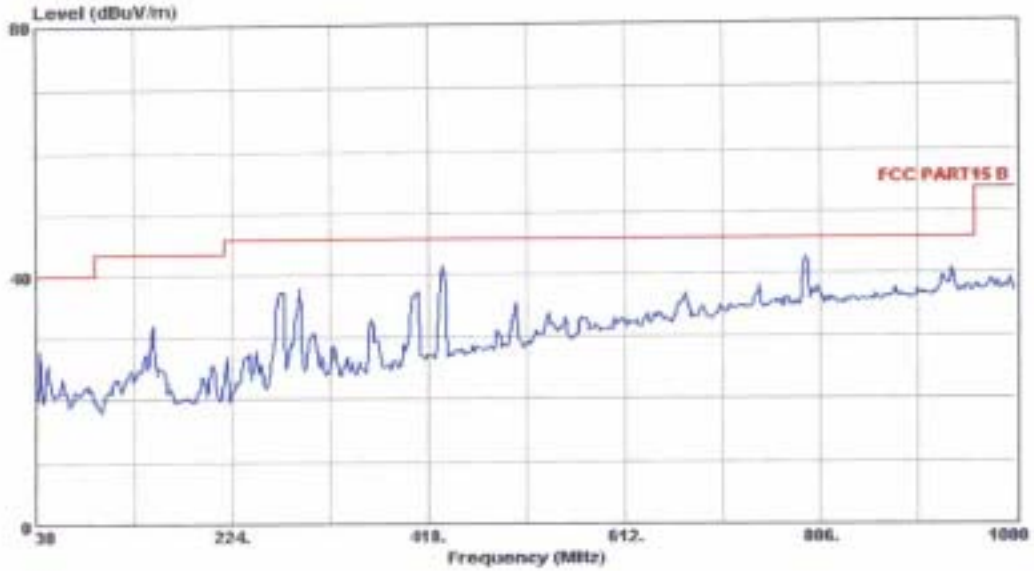
Data#: 37 File#: C:\Program Files\e3\Testaaa.emi



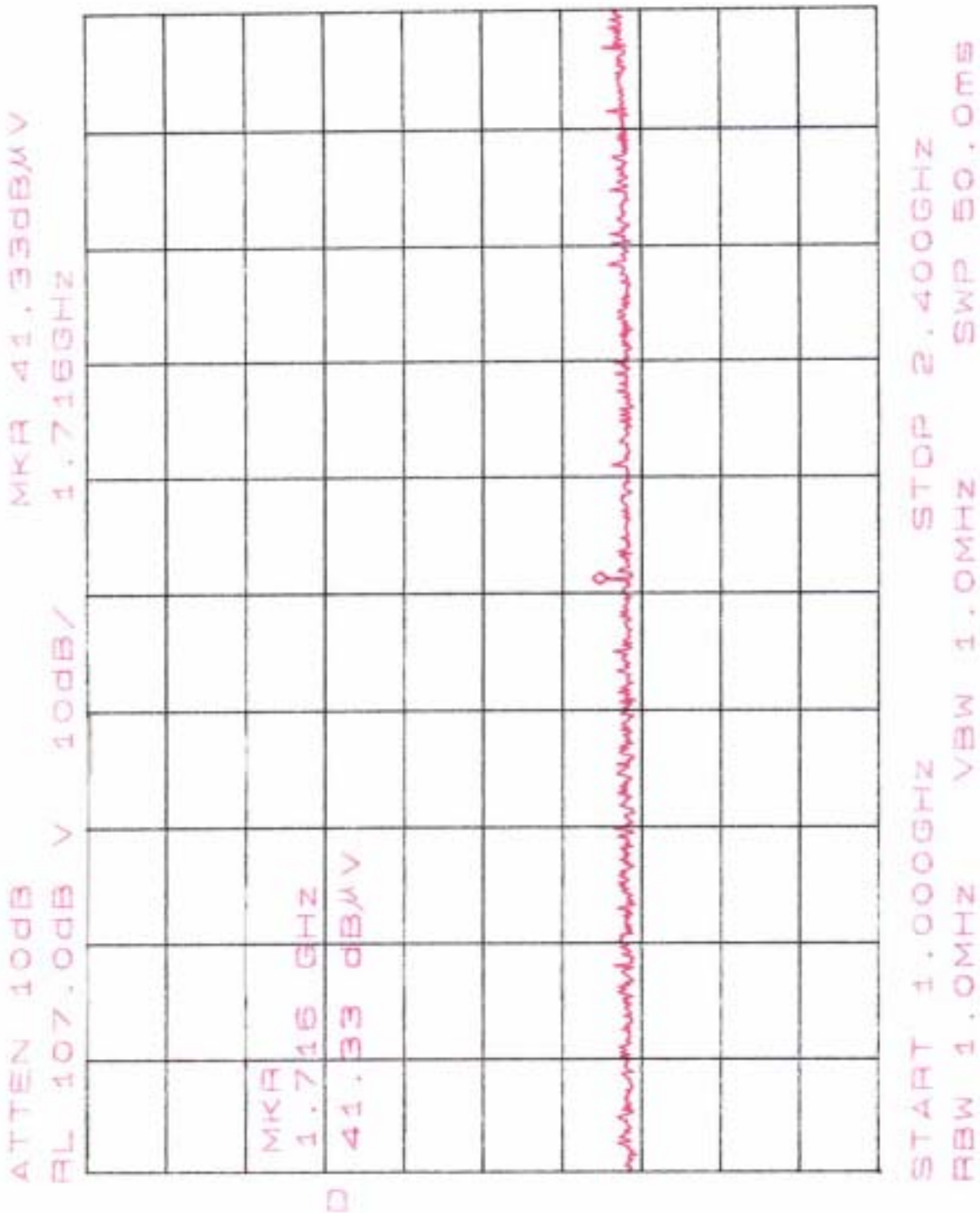
Site : MOO SITE
Condition : FCC PART15 B 3m HORIZONTAL
EUT : WLAN Card
Model : emachines M5310
Memo : RBW 120kHz , VBW 300kHz

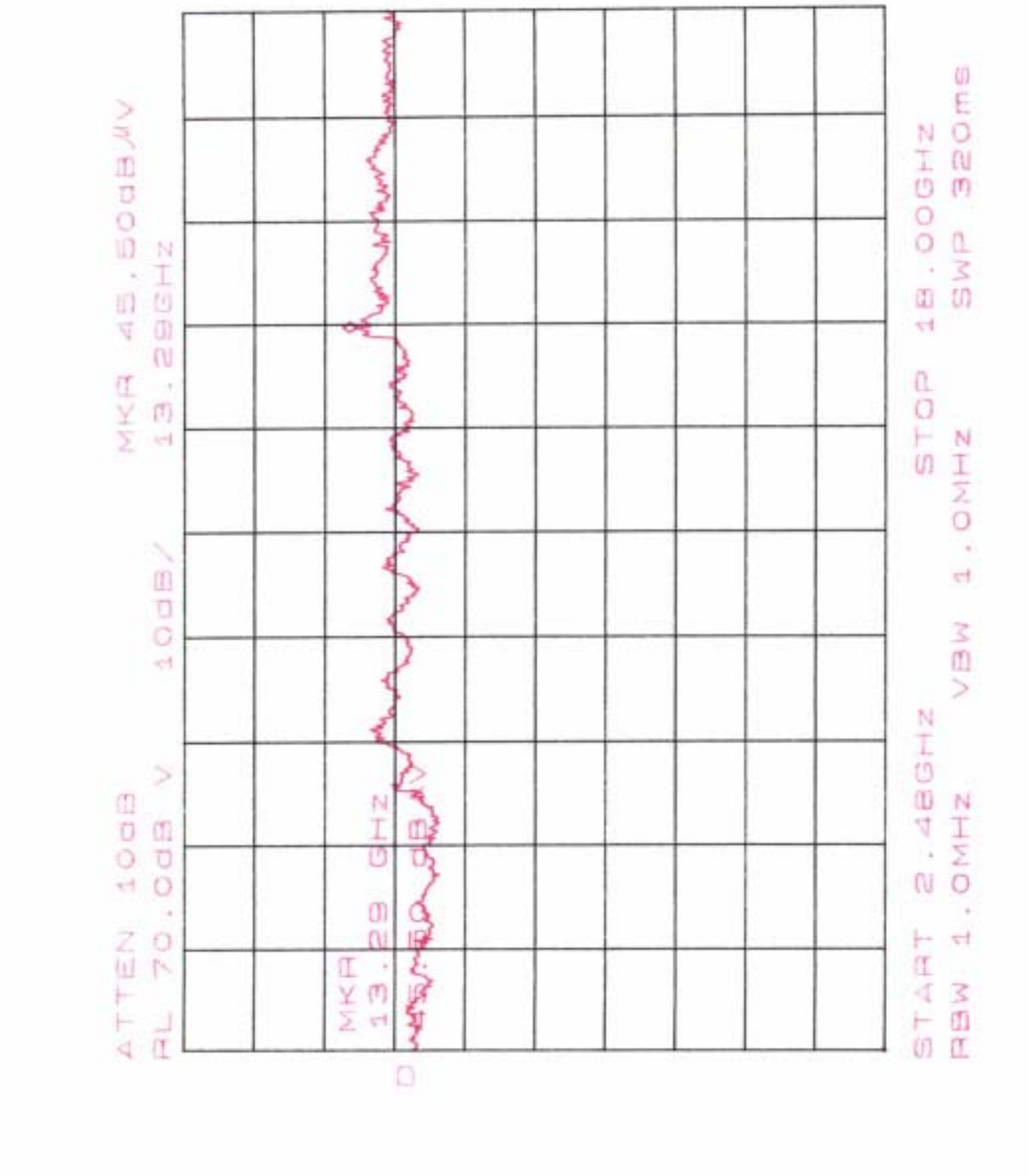
ETC TEST LABORTARY

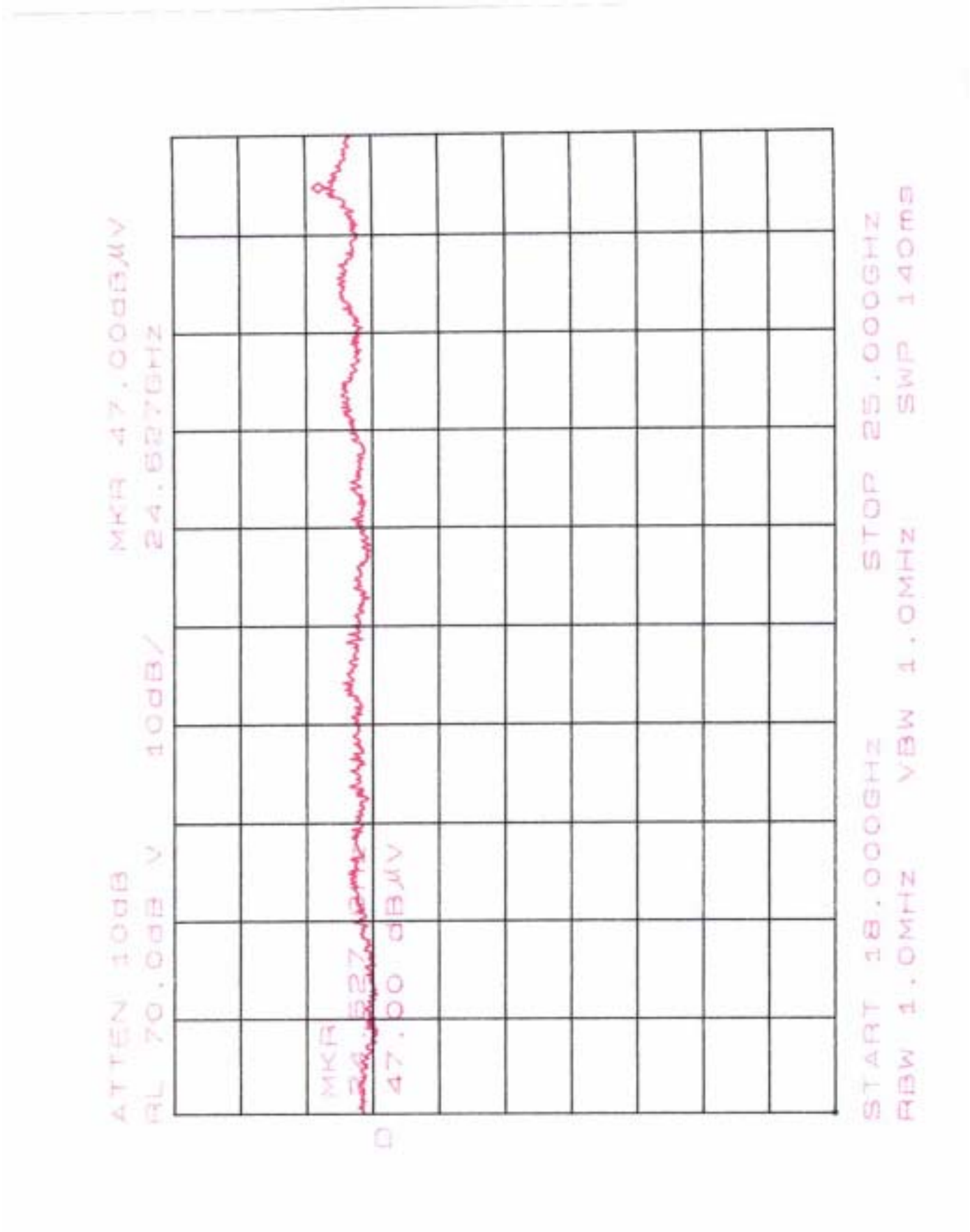
Data#: 55 File#: C:\Program Files\e3\TestHsu.emi



Site : HOO SITE
Condition : FCC PART15 B 3m VERTICAL
EUT : WLAN Card
Model : emachines M5310
Memo : RBW 120kHz , VBW 300kHz

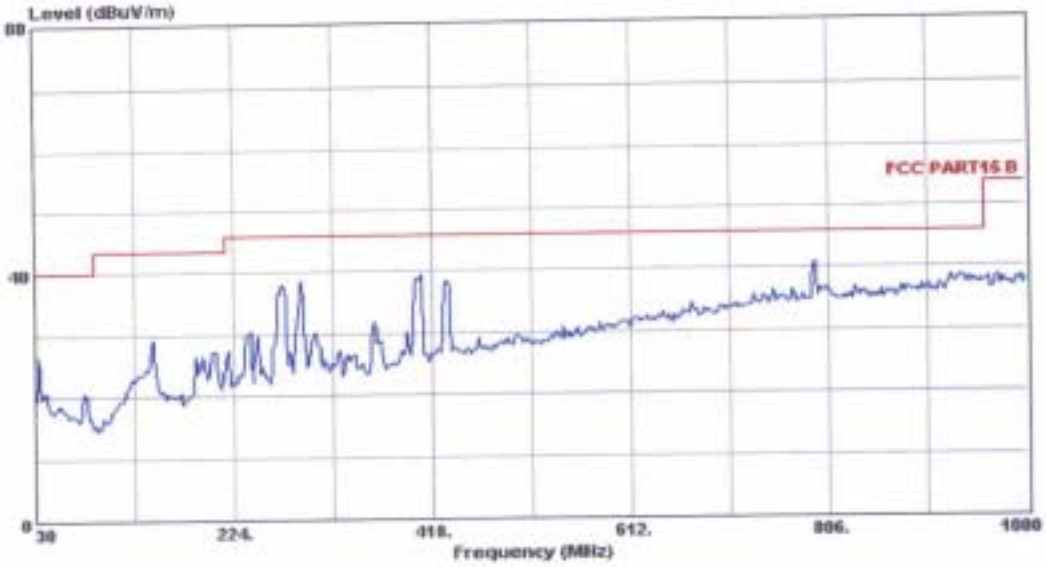

MKR 41.33dBµV
1.716GHz
ATTEN 10dB
RL 107.0dB V 10dB/
MKR
1.716 GHz
41.33 dBµV
START 1.000GHz
RBW 1.0MHz
STOP 2.400GHz
VBW 1.0MHz
SWP 80.0ms


MKR 45.60dBµV
13.29GHz
ATTEN 10dB
RL 70.00dBµV
10dB/
MKR
13.29 GHz
STOP 18.00GHz
SWP 320ms
VBW 1.0MHz
START 2.48GHz
RBW 1.0MHz


ATTEN 10dB
RL 70.00dBµV
10dB/
MKR 24.627GHz
47.63dBµV
MKR
47.00 dBµV
START 18.000GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 25.000GHz
SWP 140ms

ETC TEST LABORTARY

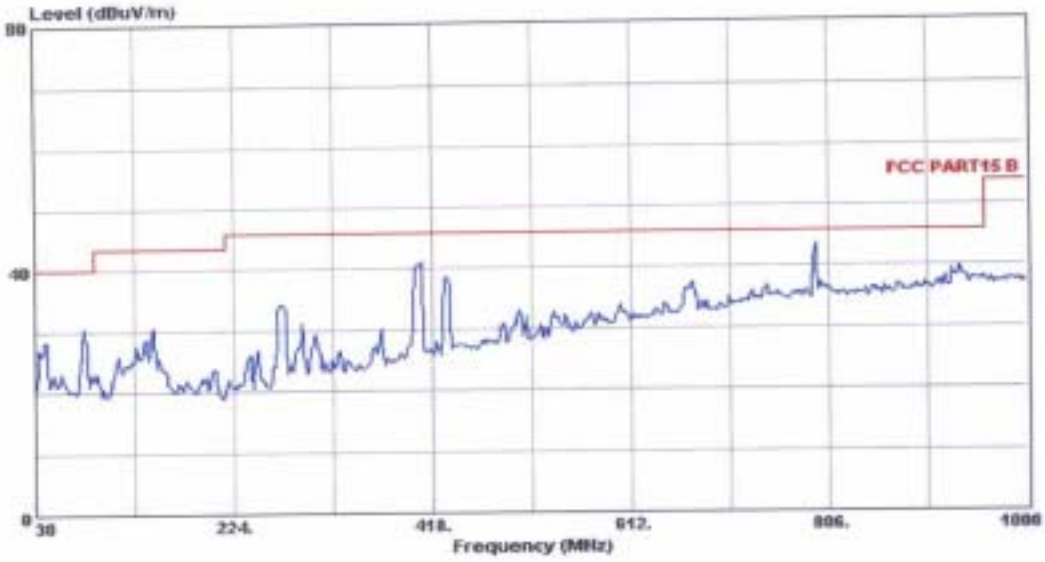
Data#: 39 File#: C:\Program Files\e3\Testaaa.emi



Site : MOD SITE
Condition : FCC PART15 B 3m HORIZONTAL
EUT : WLAN Card
Model : emachines M5310
Remo : RBW 120kHz , VBW 300kHz

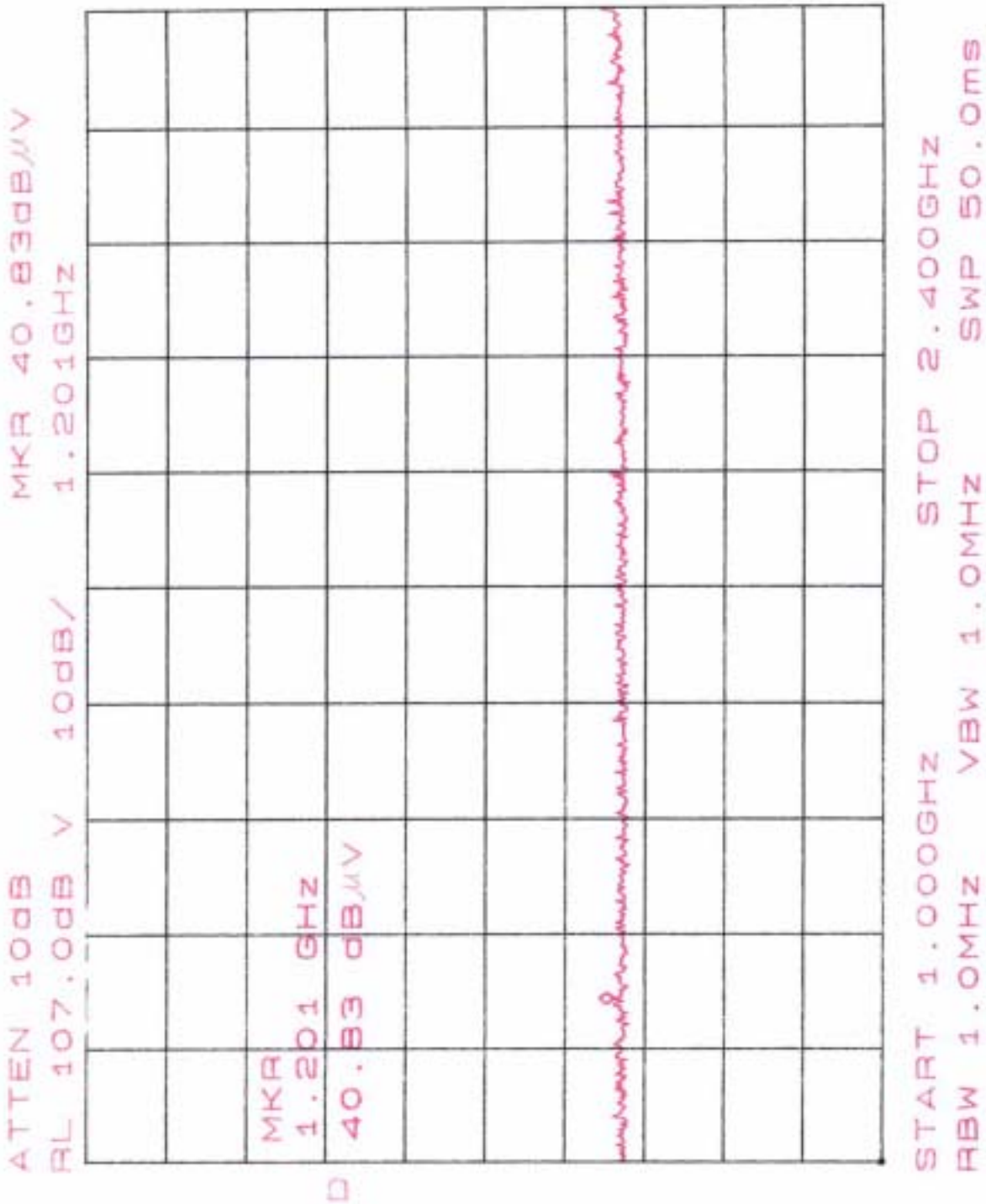
ETC TEST LABORTARY

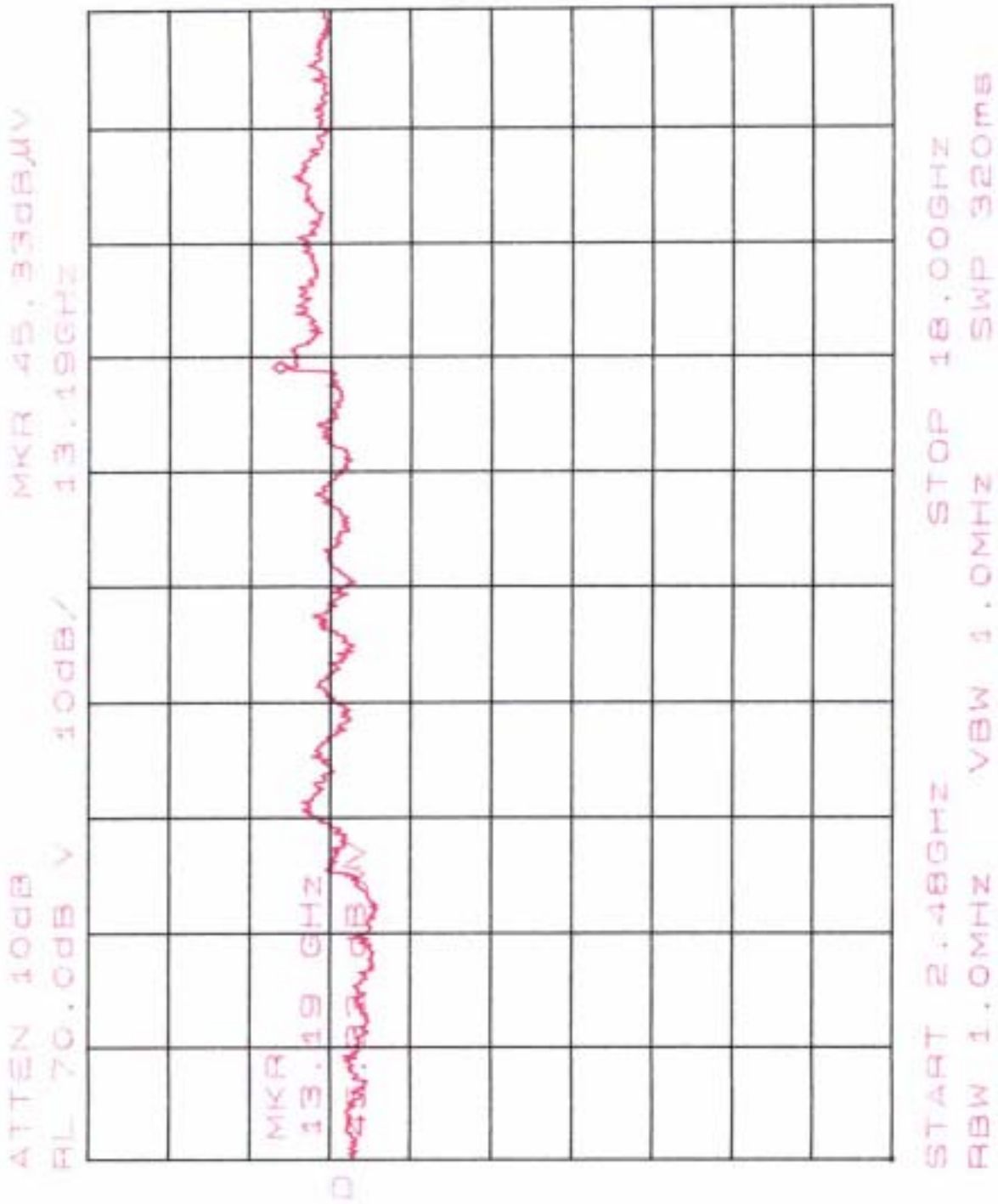
Data#: 41 File#: C:\Program Files\e3\Testaaa.emi

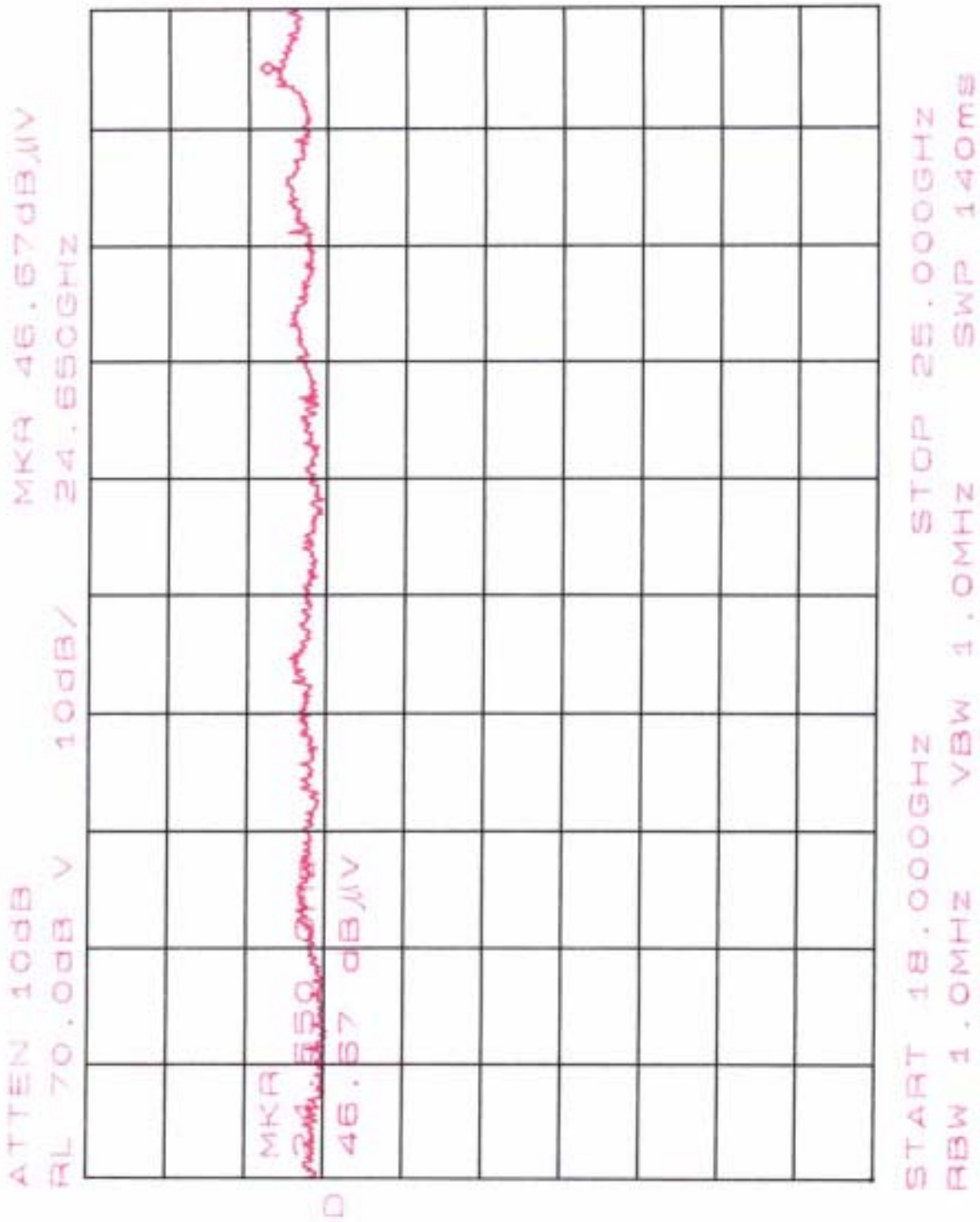


Site : HOO SITE
Condition : FCC PART15 B 3m VERTICAL
EUT : WLAN Card
Model : emachines M5310
Memo : RBW 120kHz , VBW 300kHz

- 1 -

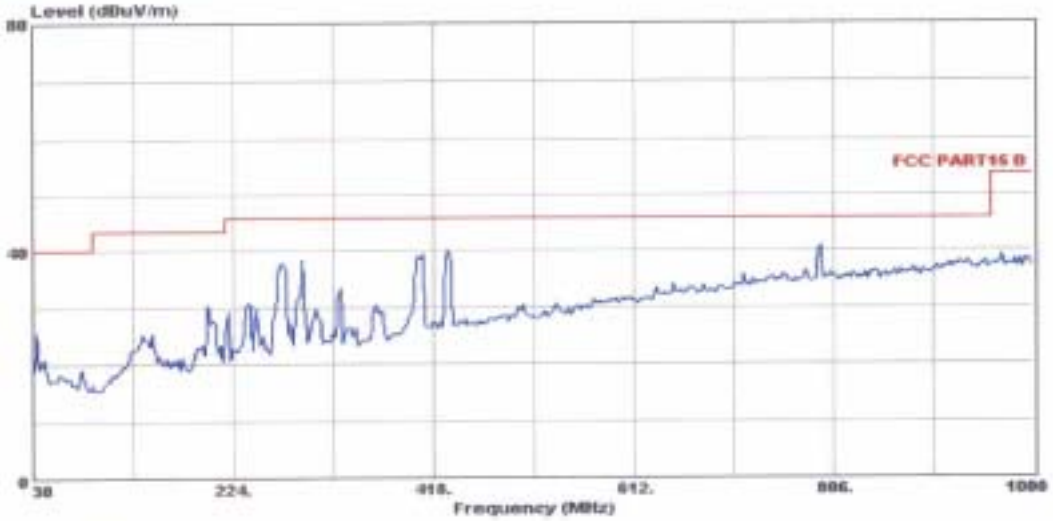

ATTEN 10dB
RL 107.0dBµV 10dB/
MKR 40.83dBµV
1.2016GHz
MKR
1.201 GHz
40.83 dBµV
START 1.000GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 2.400GHz
SWP 50.0ms


ATTEN 10dB
RL 70.0dB V
10dB/
MKR 45.338dBµV
13.19GHz
MKR
13.19 GHz
START 2.48GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 18.00GHz
SWP 320ms


ATTEN 10dB
RL 70.0dB V
10dB/
MKR 46.67dBµV
24.650GHz
MKR
24.650GHz
46.67 dBµV
D
START 18.000GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 25.000GHz
SWP 140ms

ETC TEST LABORTARY

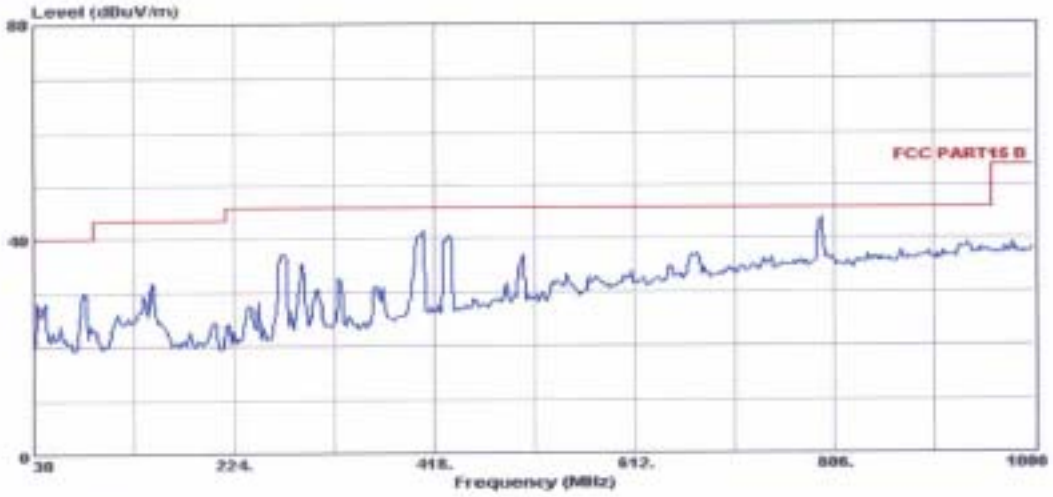
Data#: 45 File#: C:\Program Files\e3\Testaaa.emi



Site : 800 SITE
Condition : FCC PART15 B 3m HORIZONTAL
EUT : WLAN Card
Model : emachines M5310
Memo : RBW 120kHz , VBW 300kHz

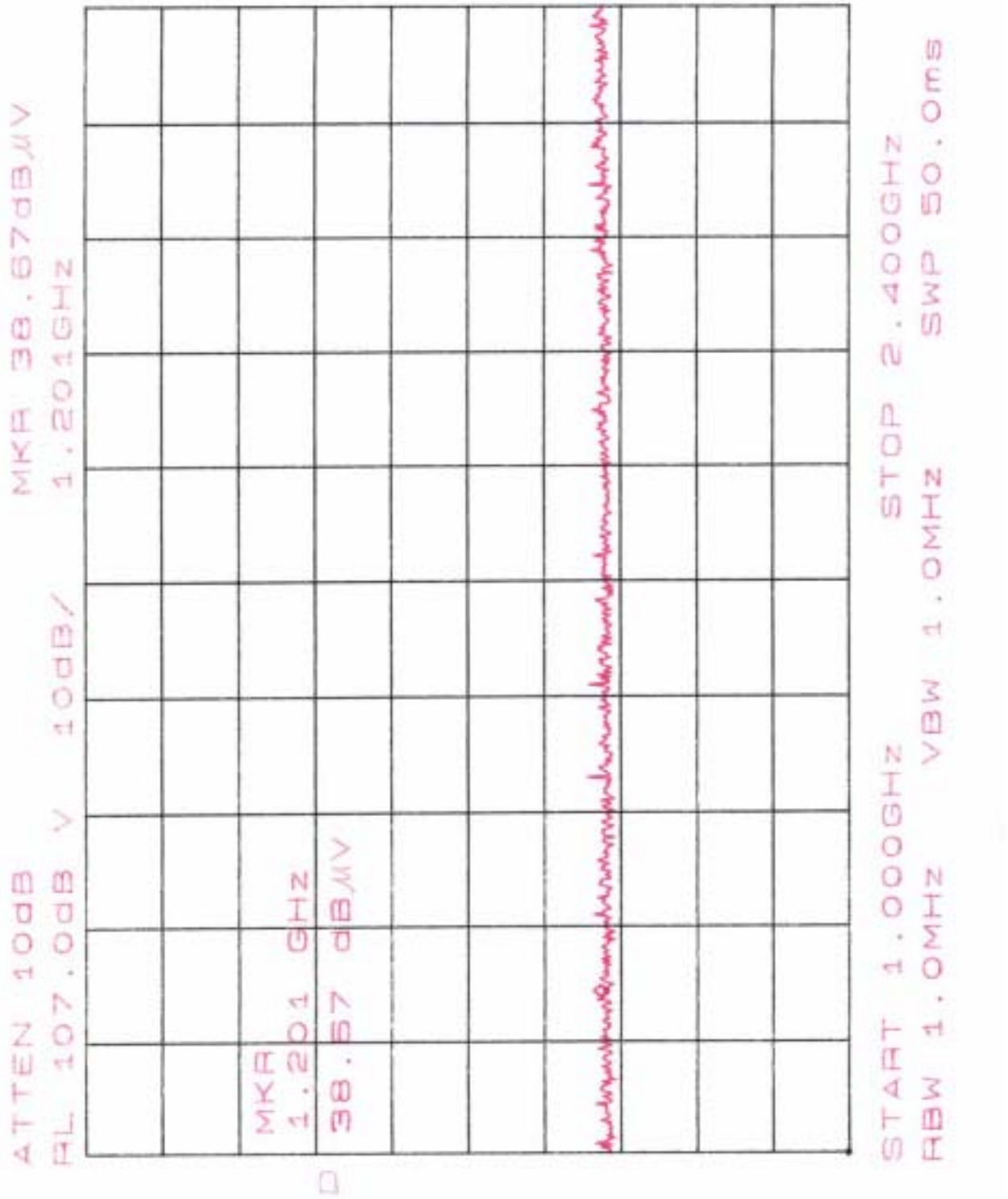
ETC TEST LABORTARY

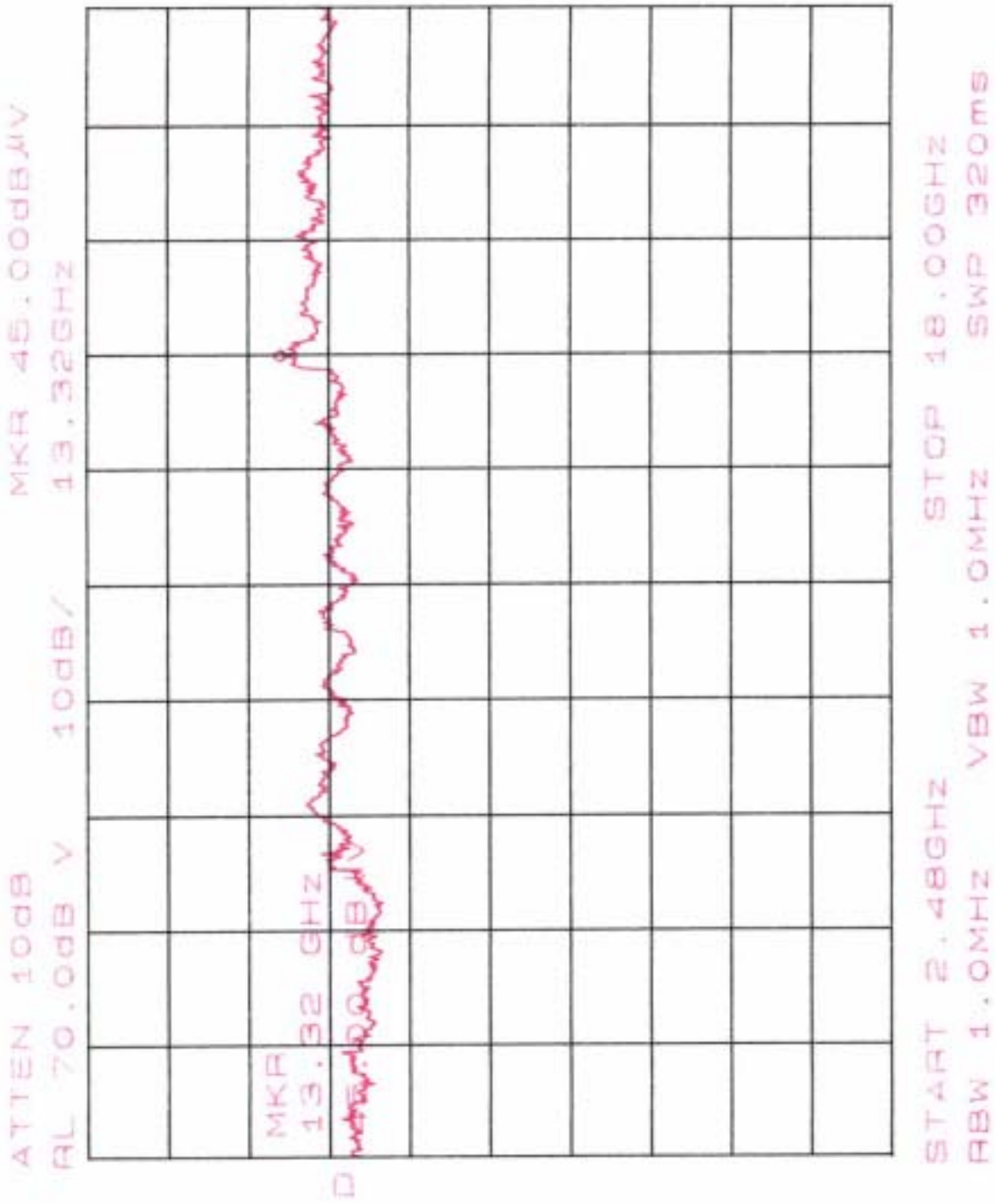
Data#: 43 File#: C:\Program Files\e3\Testaaa.emi

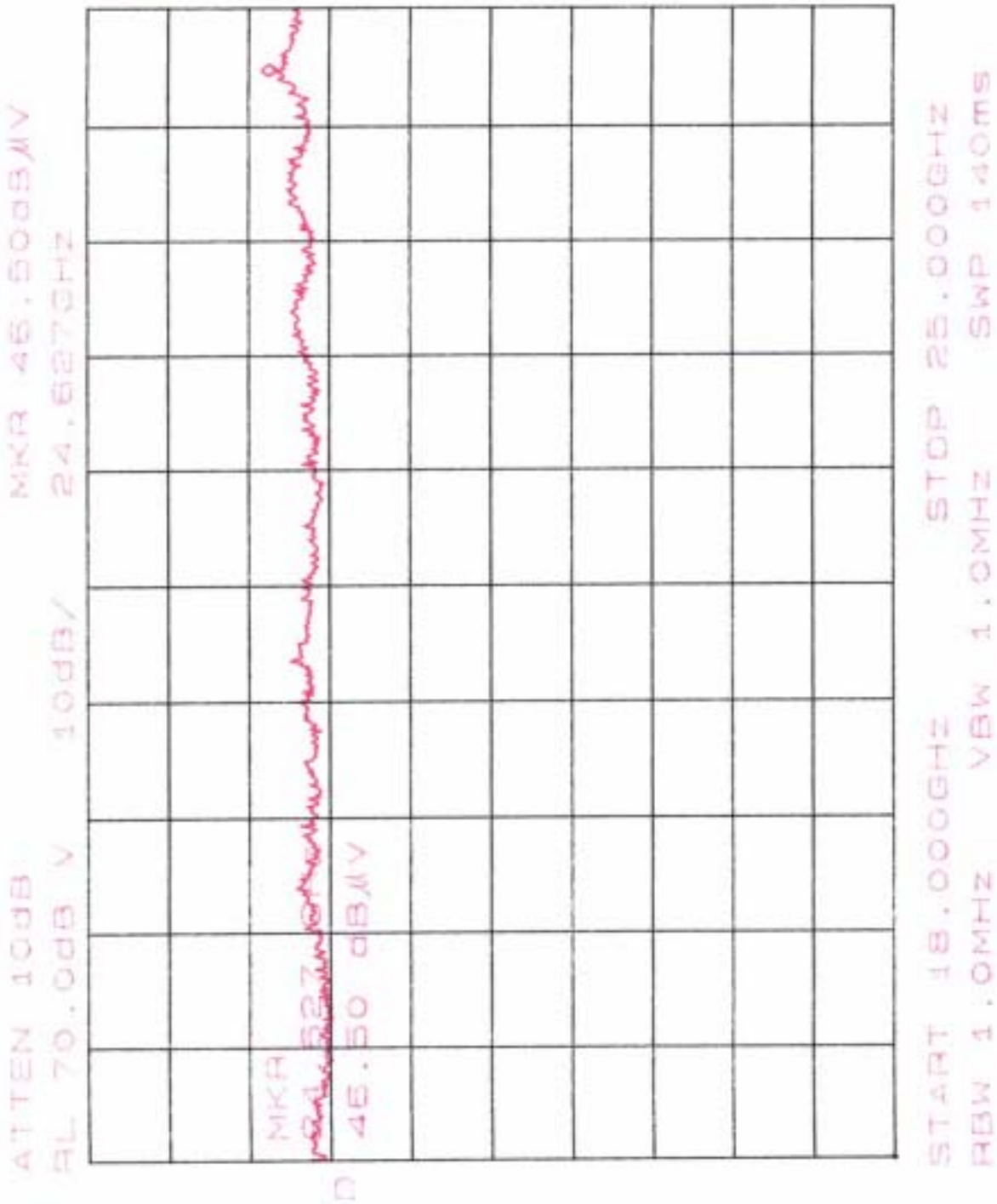


Site : MOD SITE
Condition : FCC PART15 B 3m VERTICAL
EUT : WLAN Card
Model : emachines M5310
Memo : RBW 120kHz , VBW 300kHz

- 1 -

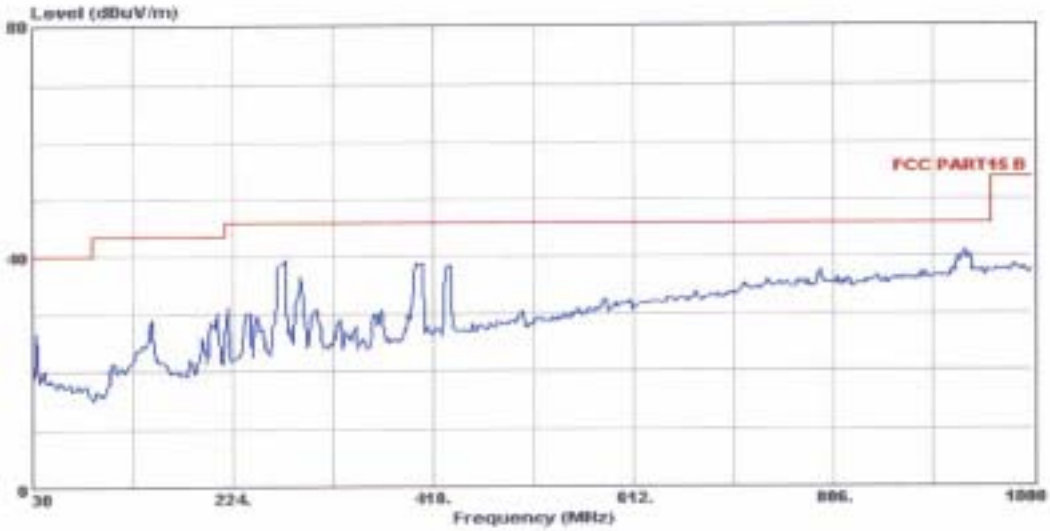

ATTEN 10dB
RL 107.0dB V 10dB/
MKR 38.67dBµV
1.201GHz
MKR
1.201 GHz
38.67 dBµV
START 1.000GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 2.400GHz
SWP 50.0ms


ATTEN 10dB
RL 70.0dB V 10dB/
MKR 45.00dBµV
13.325HZ
MKR
13.32 GHz
START 2.480GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 18.00GHz
SWP 320ms


ATTEN 10dB
RL 70.0dB V
10dB/
MKR 46.50dBµV
24.627GHz
MKR
1 24.627 GHz
46.50 dBµV
START 18.000GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 25.000GHz
SWP 140ms

ETC TEST LABORTARY

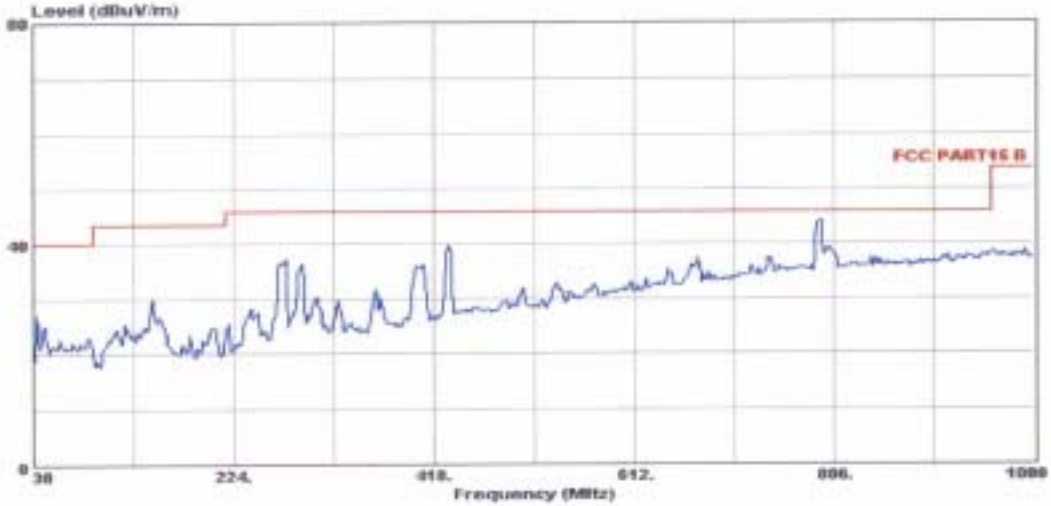
Data#: 47 File#: C:\Program Files\e3\TestHsu.emi



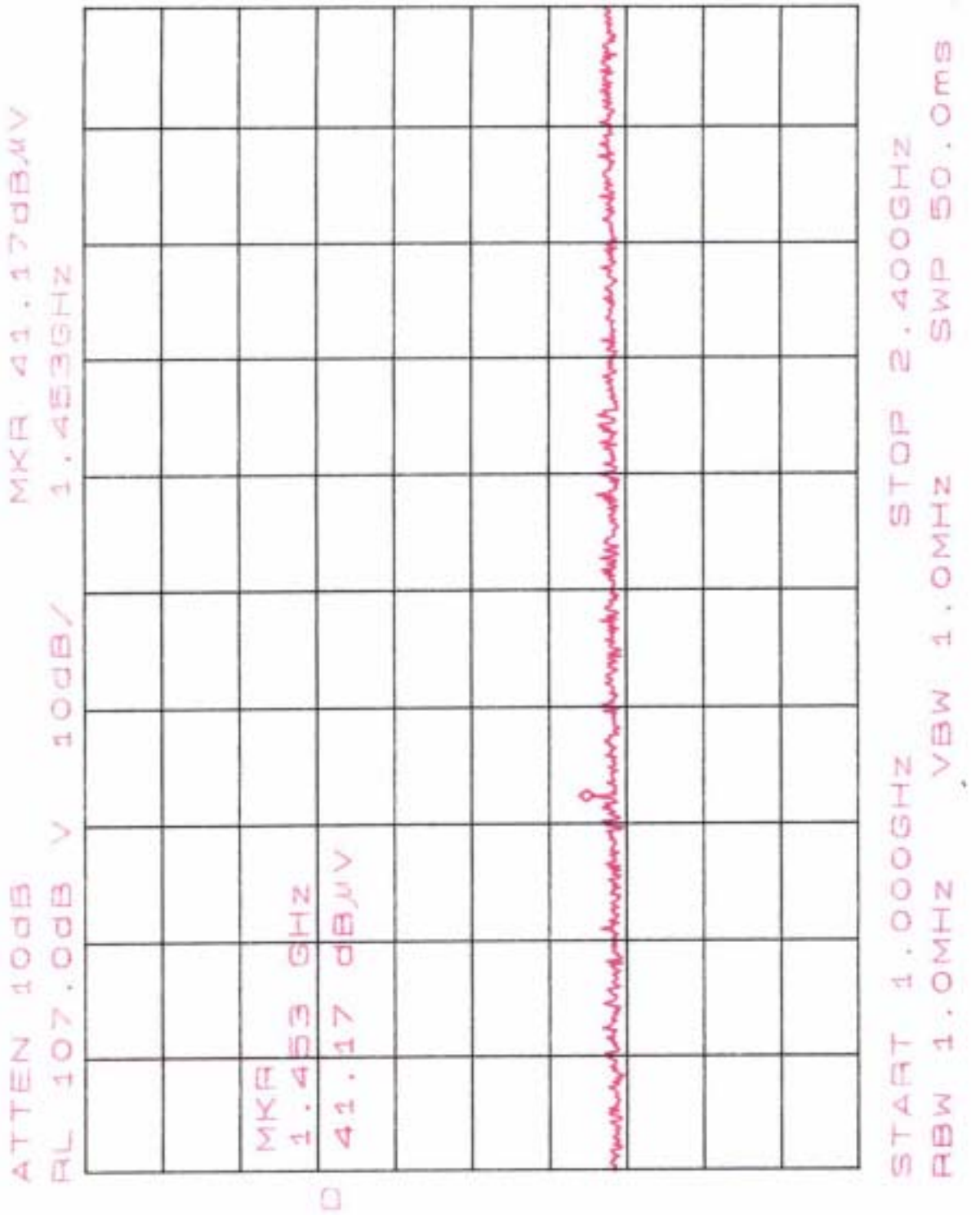
Site : 800 SITE
Condition : FCC PART15 B 3m HORIZONTAL
EUT : WLAN Card
Model : eMachines M5310
Memo : RBW 120kHz , VBW 300kHz

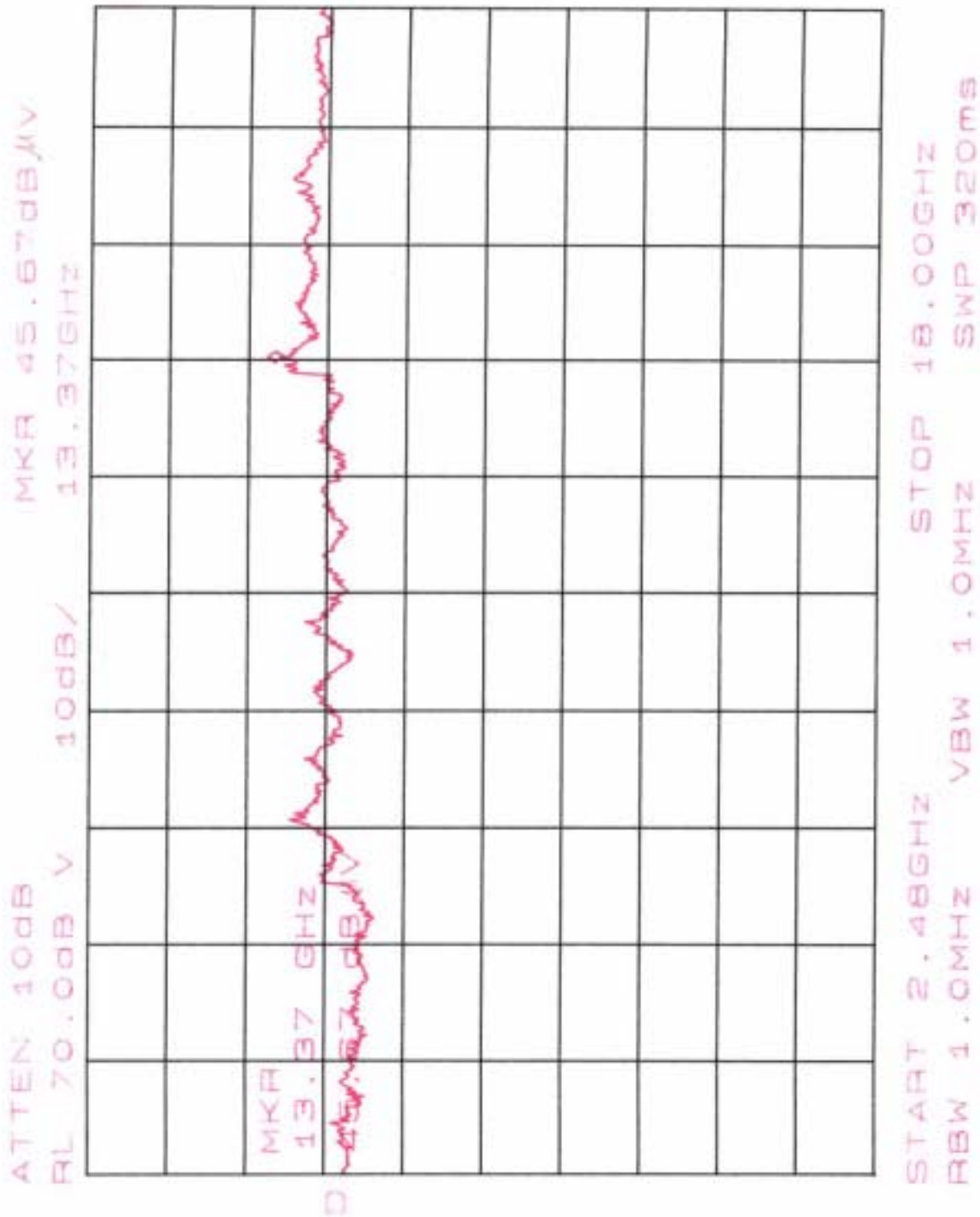
ETC TEST LABORTARY

Data#: 49 File#: C:\Program Files\e3\TestHsu.exi

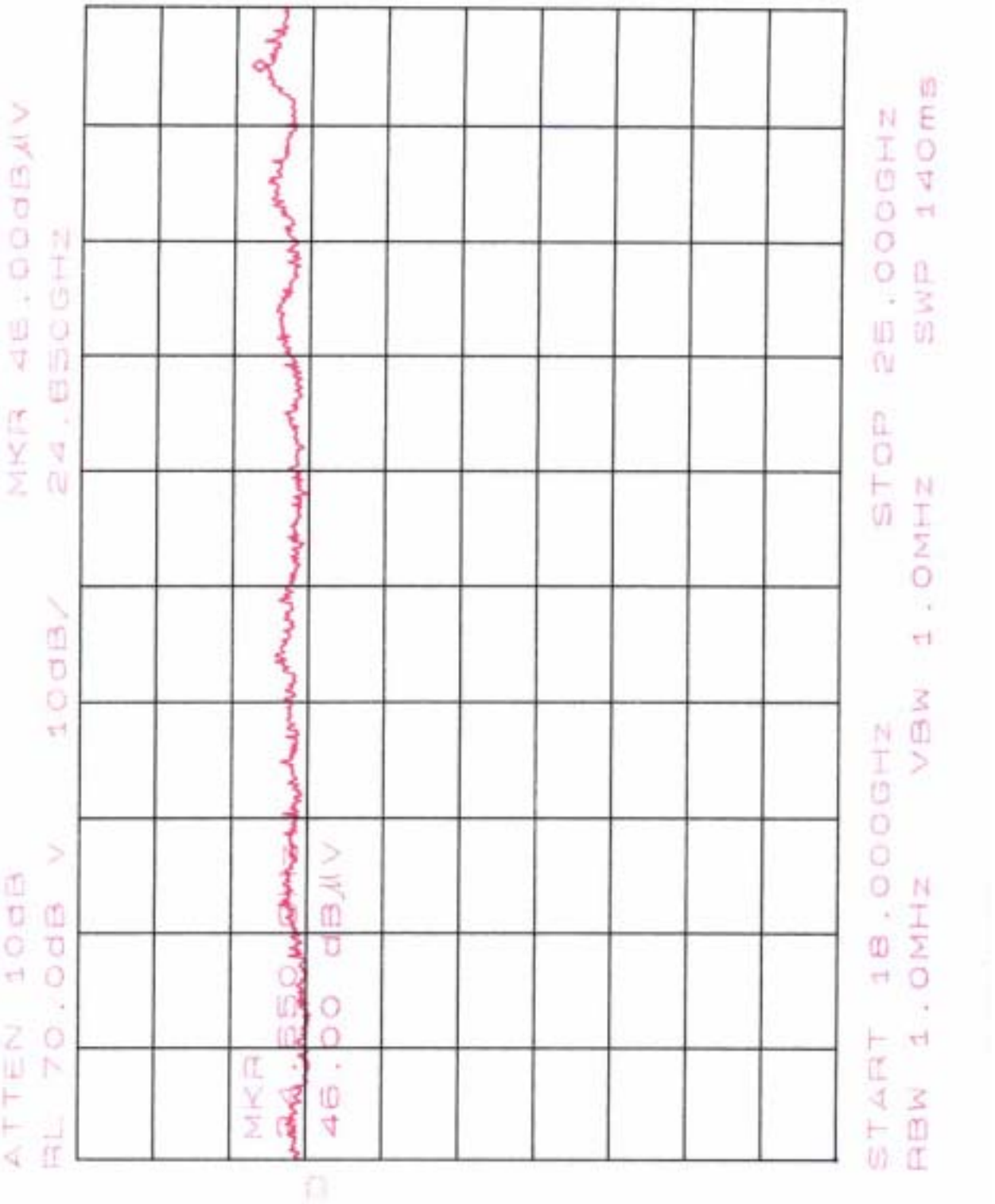


Site : HDO SITE
Condition : FCC PART15 B 3m VERTICAL
EUT : WLAN Card
Model : emachines M5310
Memo : RBW 120kHz , VBW 300kHz


ATTEN 10dB
RL 107.0dBµV 10dB/
MKR 41.17dBµV
1.453GHz
MKR 1.453 GHz
41.17 dBµV
START 1.000GHz
RBW 1.0MHz
STOP 2.400GHz
VBW 1.0MHz
SWP 50.0ms


ATTEN 10dB
RL 70.00dB V 10dB/
MKR 13.37 GHz
MKR 45.67dBµV 13.37GHz
START 2.48GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 18.00GHz
SWP 320ms

+


ATTEN 10dB
RL 70.0dB V
10dB/
MKR 24.850GHz
46.00 dBµV
MKR 46.000dBµV
START 18.000GHz
RBW 1.0MHz
VBW 1.0MHz
STOP 25.000GHz
SWP 140ms