

# EMI TEST REPORT

**Test Report No. : 22DE0015-YW-1**

**Applicant:** Sony Corporation

**Type of Equipment:** Notebook Computer (Wireless LAN built in PC)

**Model No.:** PCG-441L

**FCC ID:** AK8PCG441L

**Test standard:** FCC Part15 Subpart C, Section 15.247

**Test Result:** Complied

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The results in this report apply only to the sample tested.

**Date of test:** November 19-22, 2001

**Issued date:** December 3, 2001

**Tested by:**



Naoki Sakamoto

Group Leader of EMC section

**Approved by:**



Kazutoyo Nakanishi

Site Operation Manager of EMC section

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**A-pex International Co., Ltd.**

**YOKOWA LAB.**

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## 1 GENERAL INFORMATION

APPLICANT : Sony Corporation

ADDRESS : 6-7-35 Kitashinagawa, Shinagawa-ku, Tokyo  
141-0001 Japan  
TEL : 81-3-5795-8716  
FAX : 81-3-5795-8981

REGULATION(S) : FCC Part15 Subpart C, Section 15.247

MODEL NUMBER : PCG-441L

SERIAL NUMBER : 013 (Radiated and AC Main Conducted Emissions tests)  
001 (Antenna connector Conducted tests)

KIND OF EQUIPMENT : Notebook Computer (Wireless LAN built in PC)

TESTED DATE : November 19-22, 2001

RECEIPT DATE OF SAMPLE : November 19, 2001

REPORT FILE NUMBER : 22DE0015-YW-1

TEST SITE : A-PEX Yokowa No.3 Open Test Sites

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Test report  
FCC ID : AK8PCG441L  
Our reference : 22DE0015-YW-1  
Page : 4 of 15  
Issued date : December 3, 2001

## 1.1 Tested Methodology

The measurement was performed according to the procedures in ANSI C63.4(1992).

## 1.2 Test Facility

The open area site measurement facilities used to collect the radiated data are located at 108, Yokowa-cho, Ise-shi, Mie-ken, 516-1106 Japan.

These sites have been fully described in reports submitted to the FCC office.

No.1 and No.3 test site has filed to the FCC on September 12, 2000 as number: 90412 and is accepted by Industry Canada on May 01, 2001 as number IC2973-3.

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## 2 PRODUCT DESCRIPTION

Sony Corporation, Model PCG-441L (referred to as the EUT in this report) is a Notebook Computer.  
The specification is as following :

### LAN Module

Frequency characteristics : 2412MHz through 2462MHz  
No. of channels / channel spacing : 11 channels / 5MHz channel spacing  
Modulation : DSSS:Direct sequence spread spectrum.(IEEE 802.11b)  
Antenna type : /4 monopole antenna (Integral)  
Antenna Gain : 2.14dBi (Peak)  
I/F : PCMCIA-bus

#### \*FccPart15.31(e)

The host device PCG-441L provide the LAN Module with stable power supply(DC:3.3V), and the LAN Module complies power supply regulation.

#### \*FccPart15.203 Antenna requirement

Wireless LAN Module and its antenna comply with this requirement since they are built in host device PCG-441L when they are put up for sale and they are used with a particular antenna connector.

## 2.1 Test System Details

Model	FCC ID	Description
(1)Sony Corporation M/N: PCG-441L S/N: 013 (Radiated and AC Main Conducted Emissions tests) 001 (Antenna connector Conducted tests)	AK8PCG441L	Notebook Computer (Wireless LAN built in PC)
*FccPart15 Subpart B Class B Digital Device	DOC	
(2) Sony Corporation M/N: PCGA-AC16V3 S/N: 0110 A 0000069P (Radiated and AC Main Conducted Emissions tests) 0110 A 0000048P (Antenna connector Conducted tests)	DOC	AC Adapter

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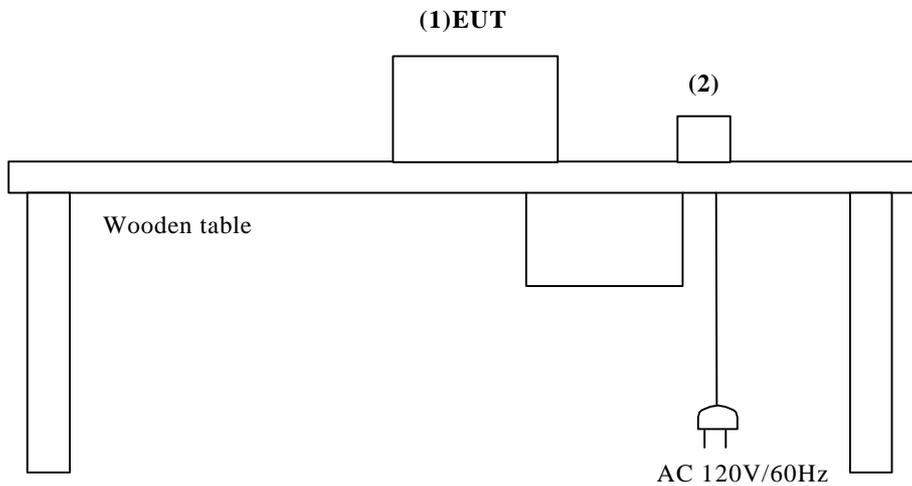
### 3 SYSTEM TEST CONFIGURATION

#### 3.1 Justification

The system was configured in typical fashion (as a customer would normally use it) for testing.

Test mode :           Transmitting mode  
                   Performed the test about channels 1(low), 6(mid) and 11(high) among 11 channels of all  
                   Carrier frequencies.  
                   Receiving mode

#### 3.2 Configuration of Tested System



\* Cabling was taken into consideration and test data was taken under worst case conditions.

#### List of cables used

No.	Name	Length (m)	Shield	Remark
	AC Power Cable	0.75	N	Polyvinyl chloride
	DC Power Cable	2.0	N	Polyvinyl chloride

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## 4 Measurement Uncertainty

### Conducted Emission Test

The measurement uncertainty (with a 95% confidence level) for this test was  $\pm 2.0$ dB.

The data listed in this test report may exceed the test limit because it does not have enough margin (more than 2.0dB).

The data listed in this test report has enough margin, more than 2.0dB.

### Radiated Emission Test

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is  $\pm 4.4$ dB.

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is  $\pm 4.8$ dB.

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is  $\pm 5.8$ dB.

The data listed in this test report may exceed the test limit because it does not have enough margin.

The data listed in this test report has enough margin, more than site margin.

**Test report****FCC ID** : AK8PCG441L**Our reference** : 22DE0015-YW-1**Page** : 8 of 15**Issued date** : December 3, 2001**5 TEST EQUIPMENT USED**

<u>Name</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Control No.</u>	<u>Calibrated Until</u>
Pre Amplifier	Hewlett Packard	8447D	AF-01	March 30, 2002
Pre Amplifier	Hewlett Packard	8449B	AF-04	November 3, 2002
Biconical Antenna	Schwarzbeck	BBA9106	BA-03	April 30, 2002
Logperiodic Antenna	Schwarzbeck	UKLP9140-A	LA-06	April 30, 2002
LISN	Schwarzbeck	NSLK8126	LS-04	November 5, 2002
Horn Antenna	AH System, Inc	SAS-200/571	HA-01	May 19, 2002
Horn Antenna	Schwarzbeck	BBHA9170	HA-03	November 22, 2001
Spectrum Analyzer	Hewlett packard	8567A	SA-04	March 30, 2002
Spectrum Analyzer	Advantest	R3271	SA-05	January 31, 2002
Test Receiver	Rohde & Schwarz	ESVS30	TR-02	April 11, 2002
Test Receiver	Rohde & Schwarz	ESHS10	TR-05	August 23, 2002
Power Sensor	Hewlett packard	ECP-E18A	PS-01	May 28, 2002
Power Metor	Hewlett packard	EPM-442A	PM-01	May 28, 2002

All measurement equipment is traceable to national standards.

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## 6 SUMMARY OF TESTS

### 6.1 §15.207 Conducted Emissions

#### Test Procedure

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flush with rear of tabletop. All other surfaces of tabletop was at least 80cm from any other grounded conducting surface. I/O cables and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Each EUT current-carrying power lead, except the ground (safety) lead, were individually connected through a LISN to the input power source. All unused 50 connectors of the LISN were resistively terminated in 50 when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT on a shielded room.

The EUT was connected to a Line Impedance Stabilization Network (LISN).

An overview sweep with peak detection has been performed.

The measurements have been performed with a CISPR quasi-peak detector (IF BW 10kHz) .

(Measurement range : 450kHz to 30MHz)

Test data : APPENDIX A1 to A5  
Photographs of test setup : Page 14(1)  
Test result : Pass  
Test instruments : LS-04, SA-04, TR-05

### 6.2 § 15.247(a)(2) 6dB Bandwidth

#### Test Procedure

The minimum 6dB bandwidth was measured with a spectrum analyzer connected to the antenna port.

2412MHz(Low) : 9.4571MHz > 500kHz

2437MHz(Mid) : 5.8286MHz > 500kHz

2462MHz(High) : 7.5429MHz > 500kHz

Test data : APPENDIX A6 to A8  
Test result : Pass  
Test instruments : SA-05

Test report  
FCC ID : AK8PCG441L  
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Issued date : December 3, 2001

### **6.3 § 15.247(b) Maximum Peak Out Put Power**

#### **Radiated : Test Procedure**

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged 40cm height to the ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

The Radiated Electric Field Strength intensity has been measured on an open test site with a ground plane and at a distance of 3m.

The measuring antenna height was varied between 1 to 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

**Test data** : APPENDIX A9 to A15  
**Photographs of test setup** : Page15(2)  
**Test result** : Pass  
**Test instruments** : SA-05, HA-01, AF-04

#### **Conducted :Test Procedure**

The Maximum Peak Output power was measured with a power meter connected to the antenna port.

\* Antenna Gain dose not exceed 6dBi.

**Test data** : APPENDIX A16  
**Test result** : Pass  
**Test instruments** : PS-01, PM-01, SA-05

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#### **6.4 § 15.247(c) Out of Band Emissions(Radiated)**

##### **Test Procedure**

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged 40cm height to the ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

The Radiated Electric Field Strength intensity has been measured on an open test site with a ground plane and at a distance of 3m.

The measuring antenna height was varied between 1 to 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

##### **Radiated Spurious emissions**

In any 100kHz 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 confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement. The result was also satisfied the general limits specified in Sec.15.209(a).

Measurement range : 30MHz to 1000MHz CISPR QP Detector, IF BW 120kHz  
: 1GHz to 26GHz PK and AV Detector

**Test data** : APPENDIX A17 to A20(30 –1000MHz)  
: APPENDIX A21 to A24(1 – 26GHz)  
**Photographs of test setup** : Page14(2)  
**Test result** : Pass  
**Test instruments** : AF-01, AF-04, BA-03, LA-06, HA-01, HA-03, SA-04, SA-05, TR-06

#### **6.5 § 15.247(c) Out of Band Emissions(Conducted)**

##### **Test Procedure**

The Out of Band Emissions(Conducted) was measured with a spectrum analyzer connected to the antenna port.

**Test data** : APPENDIX A25 to A36  
**Test result** : Pass  
**Test instruments** : SA-05

Test report  
FCC ID : AK8PCG441L  
Our reference : 22DE0015-YW-1  
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Issued date : December 3, 2001

#### **6.6 § 15.247(d) Power Density(Conducted)**

##### **Test Procedure**

The Power Density was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX A37 to A40  
Test result : Pass  
Test instruments : SA-05

#### **6.7 §15.247(e) Processing Gain Requirement**

Test data : See attached test report No.  
LucFCC ProcGain AddInformation 30May01.doc  
015127a\_Spr\_gainHighSpeed\_HS\_.doc  
Spr\_gainFCC\_HSI3E(012527a) Number2.xls  
Test result : Pass

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Test report  
FCC ID : AK8PCG441L  
Our reference : 22DE0015-YW-1  
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**Photographs of test setup(1)**



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**Photographs of test setup(2)**



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## APPENDIX

### Test Data

Conducted Emission (6.1)	<u>A1 to A5</u>
6dB Bandwidth (6.2)	<u>A6 to A8</u>
Maximum peak output power (6.3)	<u>A9 to A16</u>
Out of band emissions(Radiated) (6.4)	<u>A17 to A24</u>
Out of band emissions(Conducted) (6.5)	<u>A25 to A36</u>
Power density (6.6)	<u>A37 to A40</u>

# DATA OF CONDUCTION TEST

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA No.3 OPEN TEST SITE  
Report No. : 22DE0015-YW-1

Applicant : Sony Corporation  
Kind of Equipment : Notebook Computer  
Model No. : PCG-441L  
Serial No. :  
Power : AC120V/60Hz  
Mode : Transmitting (Ch1)  
Remarks : FCC ID: AK8PCG441L  
Date : 11/20/2001  
Phase : Single Phase  
Temperature : 28 °C  
Humidity : 28 %  
Regulation : FCC Part15.207

  
Engineer : Naoki Sakamoto

No.	FREQ. [MHz]	READING (N)		READING (L1)		LISN FACTOR [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
		QP [dBuV]	AV	QP [dBuV]	AV				QP [dBuV]	AV	QP [dBuV]	AV	QP [dB]	AV
1.	0.5819	27.3	-	26.3	-	0.1	0.1	0.0	27.5	-	48.0	0.0	20.5	-
2.	0.6660	32.4	-	32.2	-	0.1	0.1	0.0	32.6	-	48.0	0.0	15.4	-
3.	0.9167	26.0	-	26.1	-	0.1	0.1	0.0	26.3	-	48.0	0.0	21.7	-
4.	1.3355	24.7	-	26.5	-	0.1	0.1	0.0	26.7	-	48.0	0.0	21.3	-
5.	4.8535	21.5	-	22.6	-	0.2	0.2	0.0	23.0	-	48.0	0.0	25.0	-
6.	7.7406	20.1	-	21.5	-	0.4	0.3	0.0	22.2	-	48.0	0.0	25.8	-
7.	20.8642	13.4	-	14.1	-	0.9	0.4	0.0	15.4	-	48.0	0.0	32.6	-

CALCULATION: READING + LISN FACTOR + CABLE LOSS + ATTEN.

All other spurious emissions are more than 20dB below the limits.

# DATA OF CONDUCTION TEST CHART

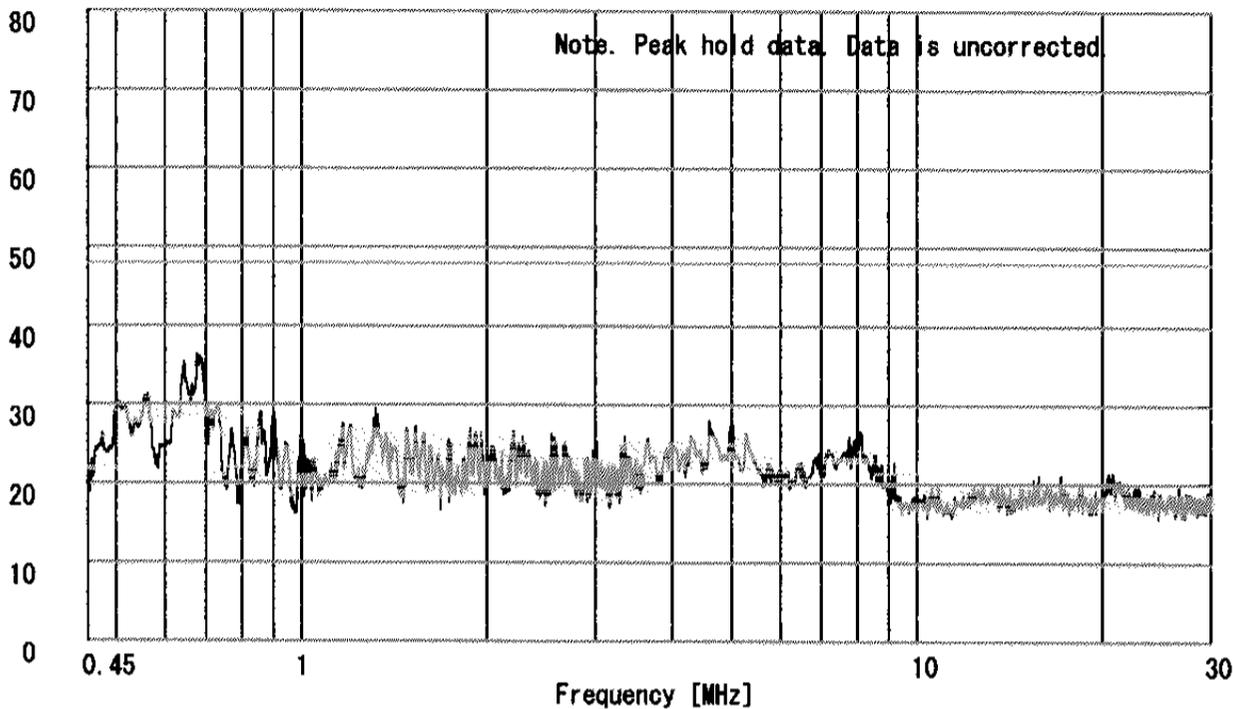
A-PEX INTERNATIONAL CO., LTD.  
YOKOWA No.3 OPEN TEST SITE  
Report No. : 22DE0015-YW-1

Applicant : Sony Corporation  
Kind of Equipment : Notebook Computer  
Model No. : PCG-441L  
Serial No. :  
Power : AC120V/60Hz  
Mode : Transmitting(Ch1)  
Remarks : FCC ID: AK8PCG441L  
Date : 11/20/2001  
Phase : Single Phase  
Temperature : 28 °C  
Humidity : 28 %  
Regulation 1 : FCC Part15. 207  
Regulation 2 : None

  
Engineer : Naoki Sakamoto

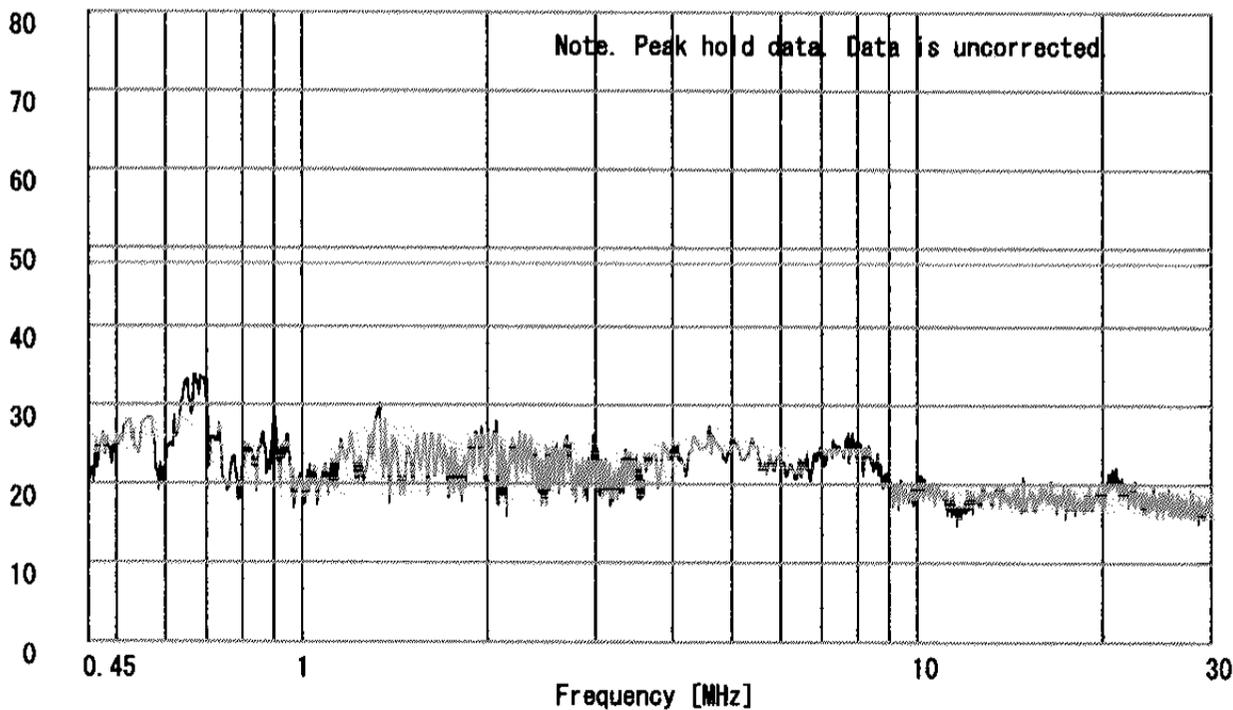
Emission Level [dB $\mu$ V]

PHASE:N



Emission Level [dB $\mu$ V]

PHASE:L1



# DATA OF CONDUCTION TEST CHART

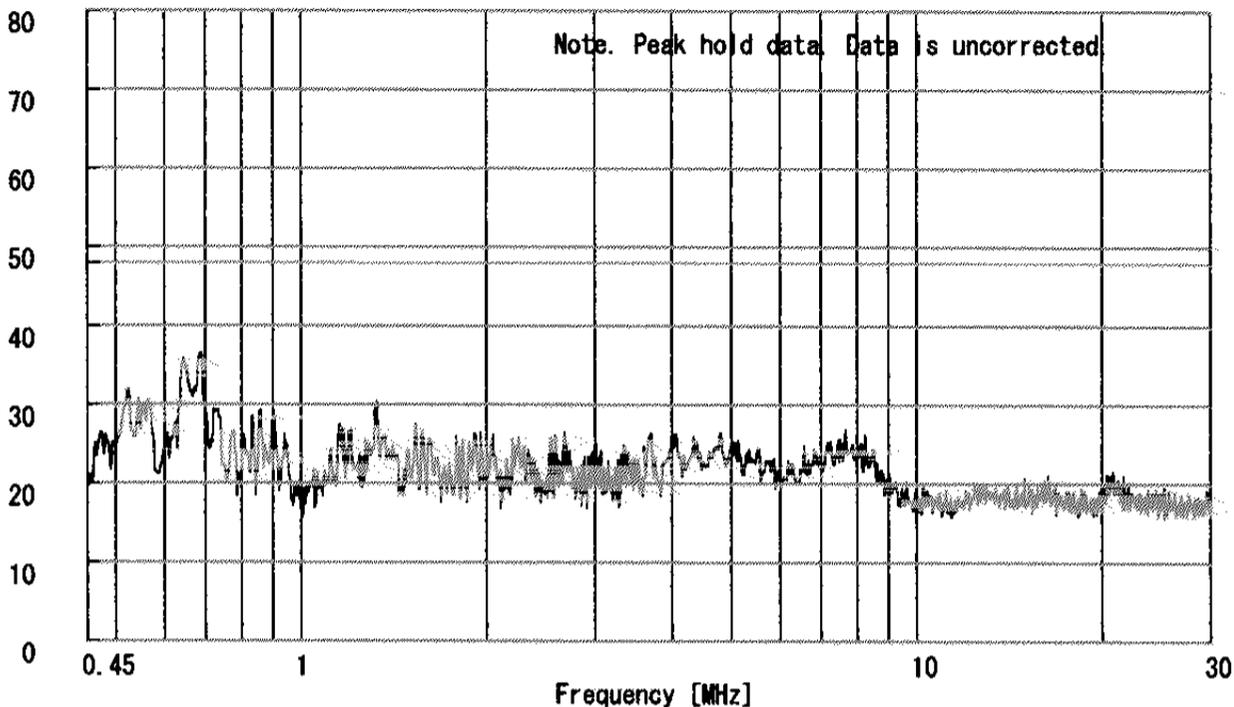
A-PEX INTERNATIONAL CO., LTD.  
YOKOWA No.3 OPEN TEST SITE  
Report No. : 22DE0015-YW-1

Applicant : Sony Corporation  
Kind of Equipment : Notebook Computer  
Model No. : PCG-441L  
Serial No. :  
Power : AC120V/60Hz  
Mode : Transmitting (Ch6)  
Remarks : FCC ID: AK8PCG441L  
Date : 11/20/2001  
Phase : Single Phase  
Temperature : 28 °C  
Humidity : 28 %  
Regulation 1 : FCC Part15.207  
Regulation 2 : None

Engineer : Naoki Sakamoto

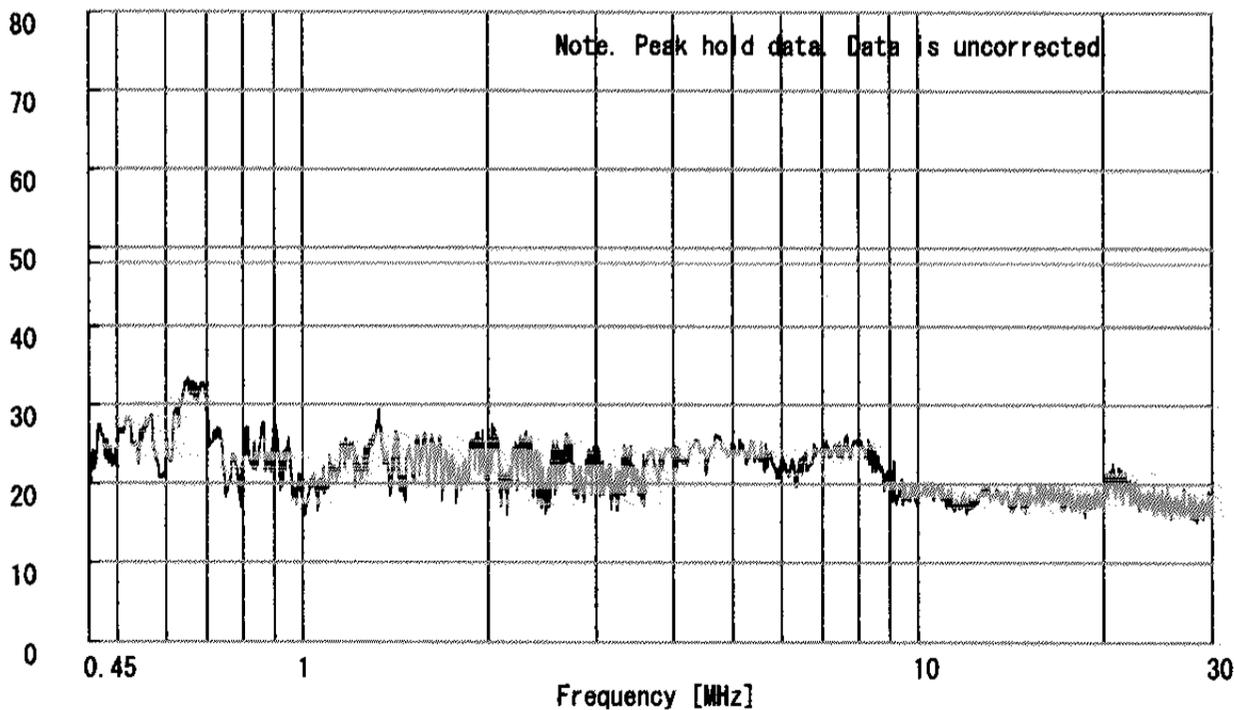
Emission Level [dB $\mu$ V]

PHASE:N



Emission Level [dB $\mu$ V]

PHASE:L1



# DATA OF CONDUCTION TEST CHART

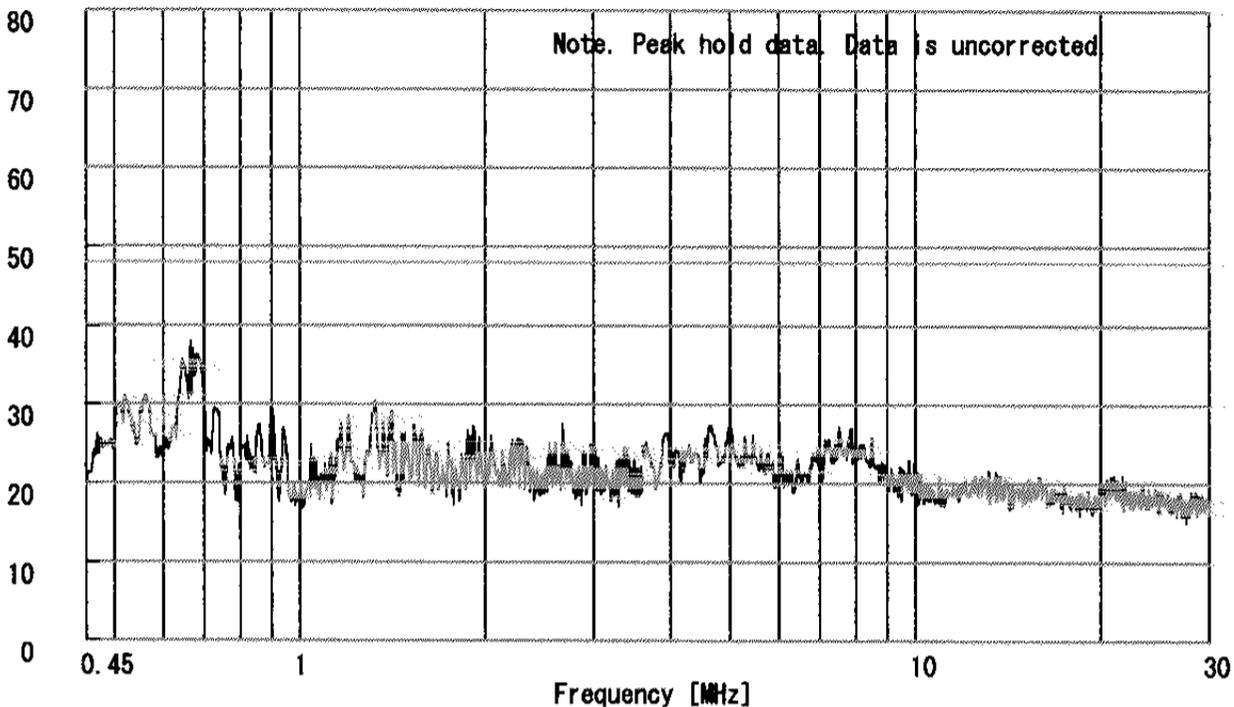
A-PEX INTERNATIONAL CO., LTD.  
YOKOWA No.3 OPEN TEST SITE  
Report No. : 22DE0015-YW-1

Applicant : Sony Corporation  
Kind of Equipment : Notebook Computer  
Model No. : PCG-441L  
Serial No. :  
Power : AC120V/60Hz  
Mode : Transmitting (Ch11)  
Remarks : FCC ID: AK8PCG441L  
Date : 11/20/2001  
Phase : Single Phase  
Temperature : 28 °C  
Humidity : 28 %  
Regulation 1 : FCC Part15. 207  
Regulation 2 : None

  
Engineer : Naoki Sakamoto

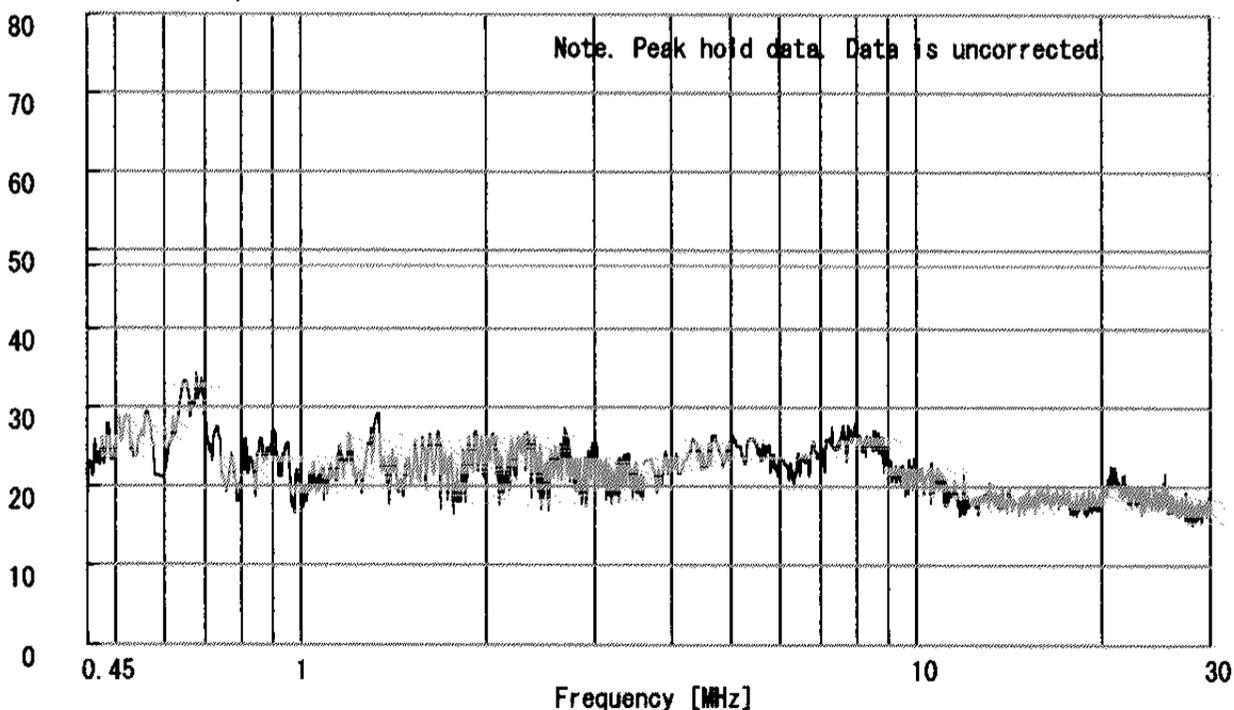
Emission Level [dB $\mu$ V]

PHASE:N



Emission Level [dB $\mu$ V]

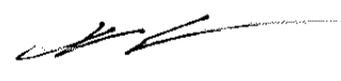
PHASE:L1



# DATA OF CONDUCTION TEST CHART

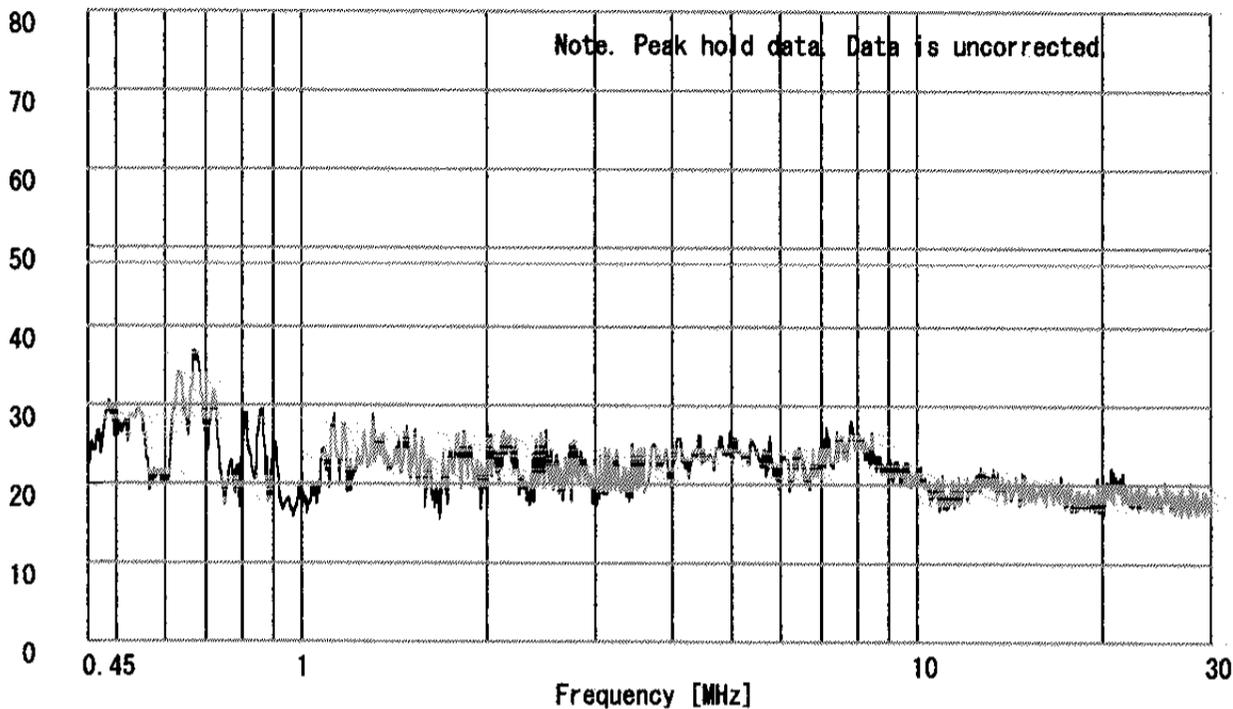
A-PEX INTERNATIONAL CO., LTD.  
YOKOWA No.3 OPEN TEST SITE  
Report No. : 22DE0015-YW-1

Applicant : Sony Corporation  
Kind of Equipment : Notebook Computer  
Model No. : PCG-441L  
Serial No. :  
Power : AC120V/60Hz  
Mode : Receiving  
Remarks : FCC ID: AK8PCG441L  
Date : 11/20/2001  
Phase : Single Phase  
Temperature : 28 °C  
Humidity : 28 %  
Regulation 1 : FCC Part15.207  
Regulation 2 : None

  
Engineer : Naoki Sakamoto

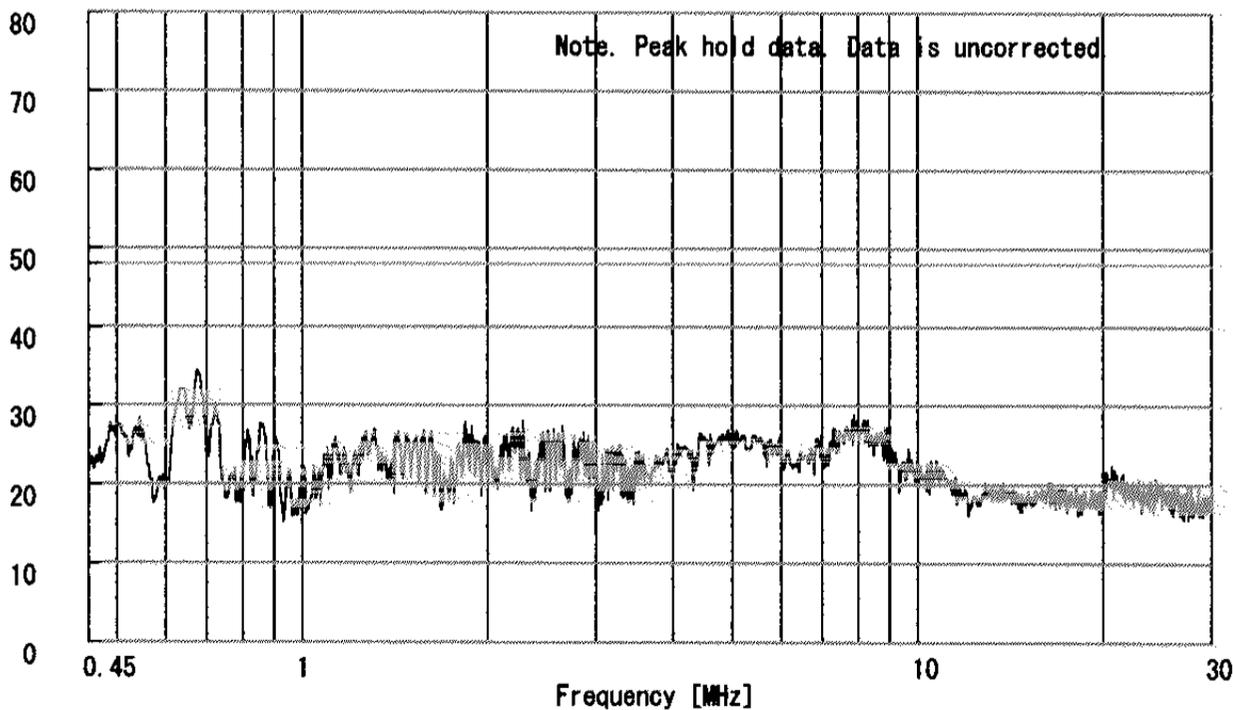
Emission Level [dB $\mu$ V]

PHASE:N



Emission Level [dB $\mu$ V]

PHASE:L1

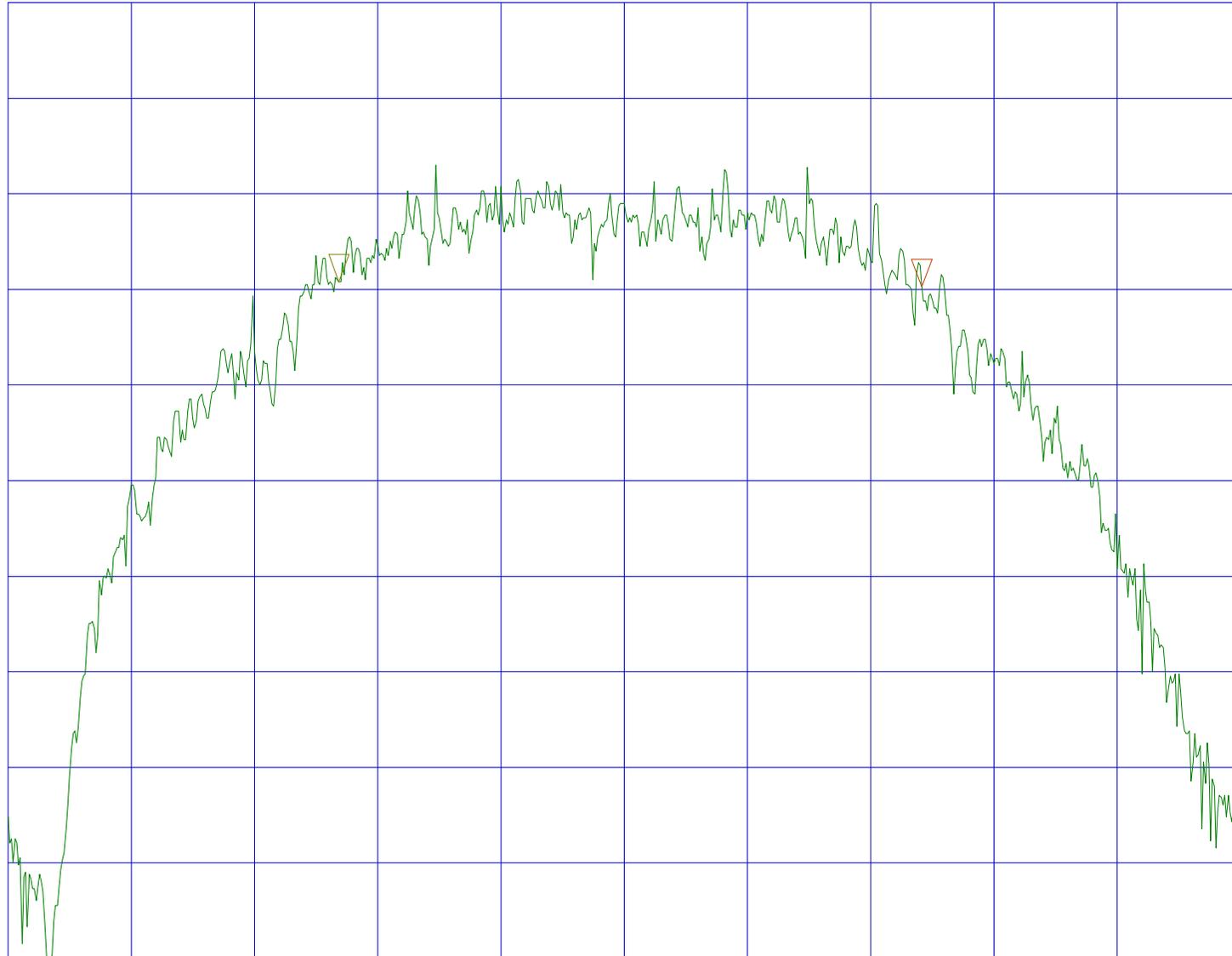


Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/Page.A6  
15.247(a)(2)6dB Bandwidth/2412MHz/22DE0015-YW-1  
REF 117 dBuV  
ATT 20 dB

MAKER  
2.4168 GHz  
102.13 dBuV

MAKER  
-9.4571 MHz  
.25 dBuV

5dB/



START 2.402000GHz  
RBW 100kHz

VBW 100kHz

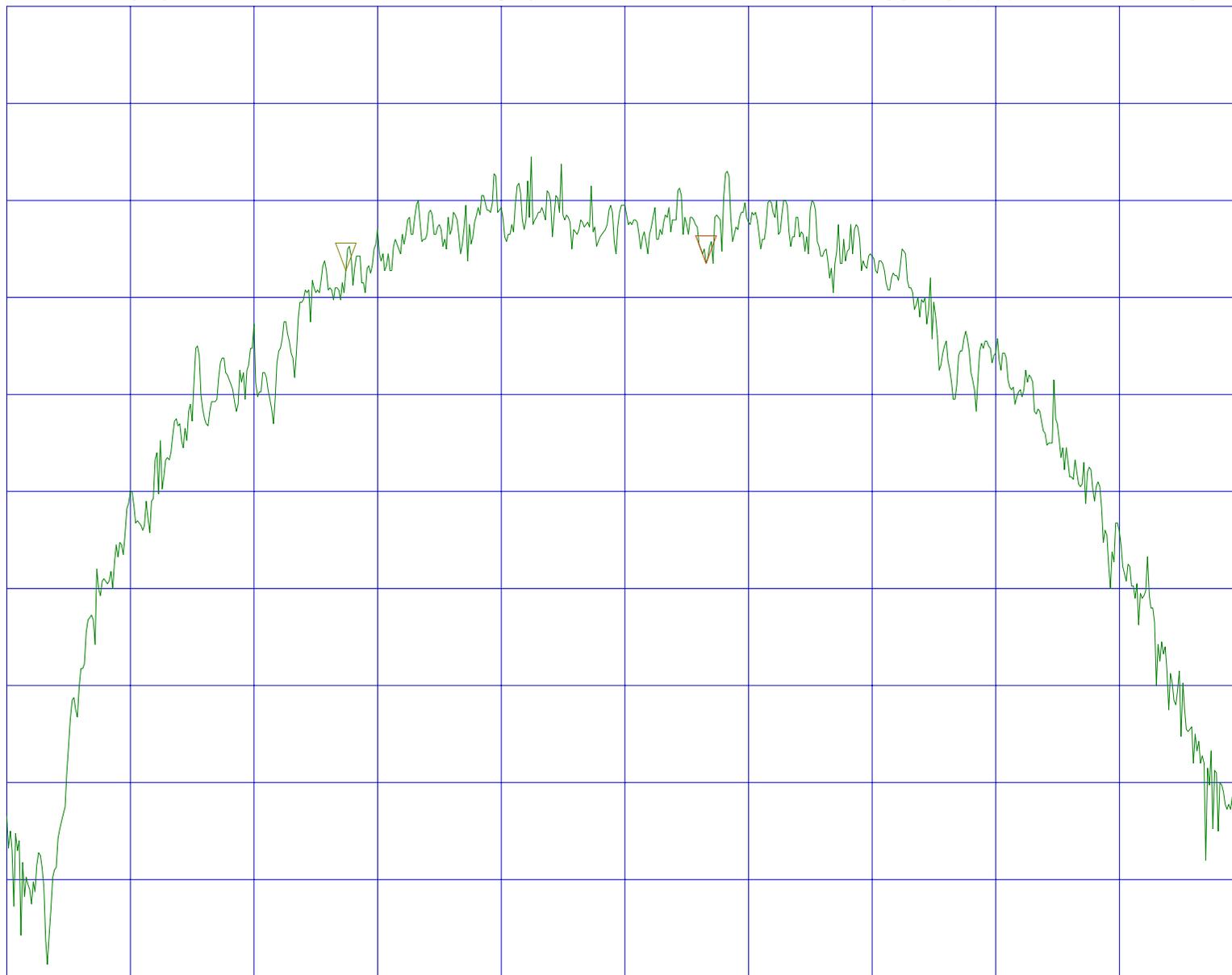
STOP 2.422000GHz  
SWP 500ms

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/Page.A7  
15.247(a)(2)6dB Bandwidth/2437MHz/22DE0015-YW-1  
REF 117 dBuV ATT 20 dB

MAKER  
2.4383 GHz  
103.75 dBuV

MAKER  
-5.8286 MHz  
-.37 dBuV

5dB/



START 2.427000GHz  
RBW 100kHz

VBW 100kHz

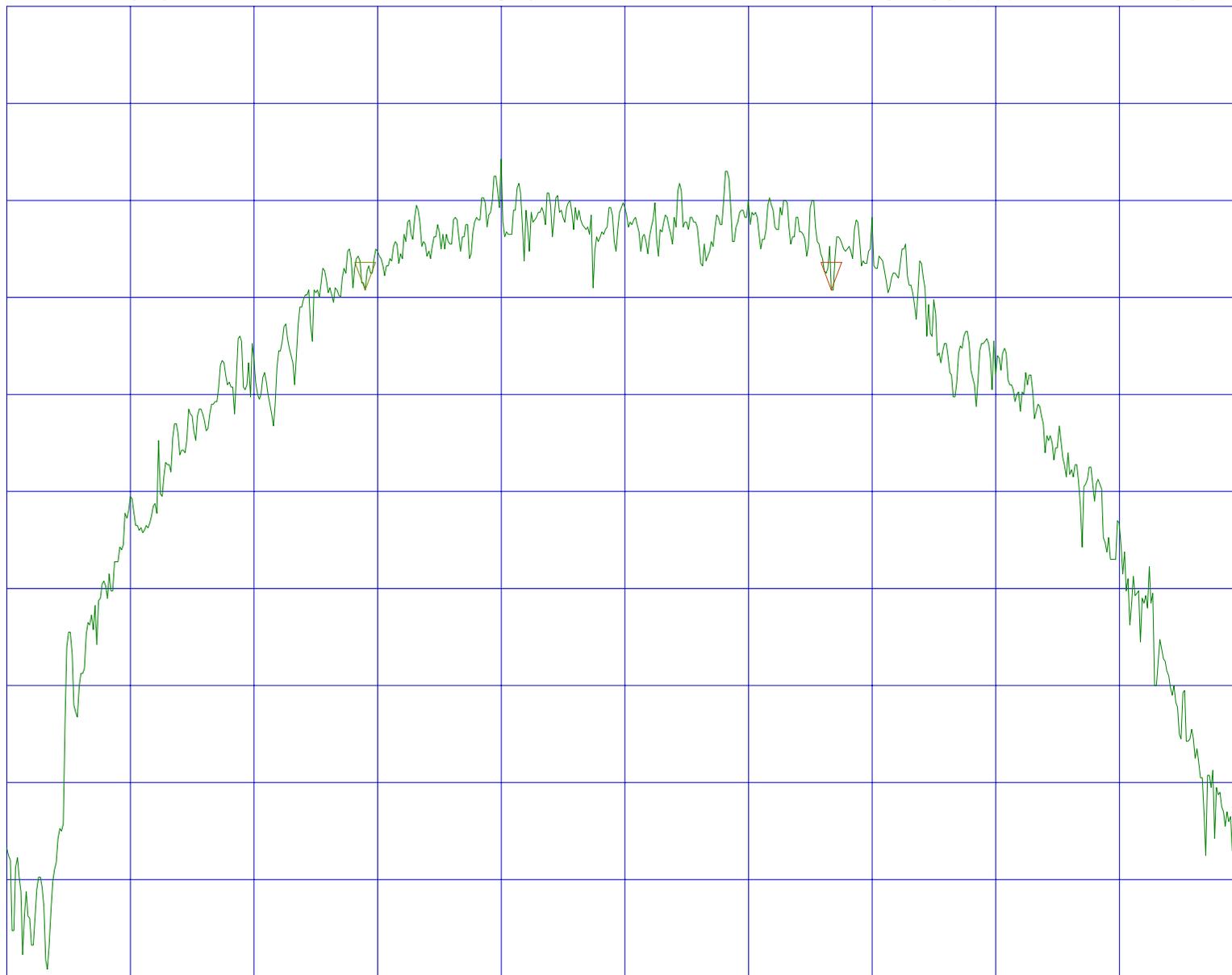
STOP 2.447000GHz  
SWP 500ms

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/Page.A8  
15.247(a)(2)6dB Bandwidth/2462MHz/22DE0015-YW-1  
REF 117 dBuV ATT 20 dB

MAKER  
2.4653 GHz  
102.38 dBuV

MAKER  
-7.5429 MHz  
.00 dBuV

5dB/



START 2.452000GHz  
RBW 100kHz

VBW 100kHz

STOP 2.472000GHz  
SWP 500ms

## Peak Out Put Power(Radiated)

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA NO.3 OPEN SITE

COMPANY : Sony Corporation  
EQUIPMENT : Notebook Computer  
MODEL : PCG-441L  
FCC ID : AK8PCG441L  
POWER : AC120V/60Hz  
Mode : Transmitting

REPORT NO : 22DE0015-YW-1  
REGULATION : Fcc Part15 SubpartC 247(b)  
TEST DISTANCE : 3m  
DATE : 11/21/2001.  
Temp./Humi. : 22°C/48%

ENGINEER : Naoki Sakamoto

PK DETECT(S/A : RBW 3MHz and VBW 3MHz)

Ch	FREQ [GHz]	S/A READING		All Factor [dB]	E1		E		Limit (1W) [mW]	Result	
		HOR	VER		HOR	VER	HOR	VER		HOR	VER
		[dB $\mu$ V]			[dB $\mu$ V/m]		[V/m]			[mW]	
Low	2.4120	102.5	100.8	5.9	108.4	106.7	0.2630	0.2150	1000.0	12.7	8.5
Mid	2.4370	102.4	101.3	5.9	108.3	107.2	0.2594	0.2278	1000.0	12.3	9.5
High	2.4620	100.4	102.1	6.1	106.5	108.2	0.2109	0.2579	1000.0	8.1	12.2

Sample Calculation :

All Factor = ANT Factor - Amp Gain + CABLE LOSS + ATTEN

Low(2412MHz):ANT Factor(31.4dB) - Amp Gain(34.5dB) + CABLE LOSS(3.0dB) + ATTEN(6.0dB)

Mid(2437MHz):ANT Factor(31.4dB) - Amp Gain(34.5dB) + CABLE LOSS(3.0dB) + ATTEN(6.0dB)

High(2462MHz):ANT Factor(31.5dB) - Amp Gain(34.5dB) + CABLE LOSS(3.1dB) + ATTEN(6.0dB)

RESULT = (E\*d) (E\*d)/(30G)

E : Converted to V/m

E1: S/A Reading + All Factor

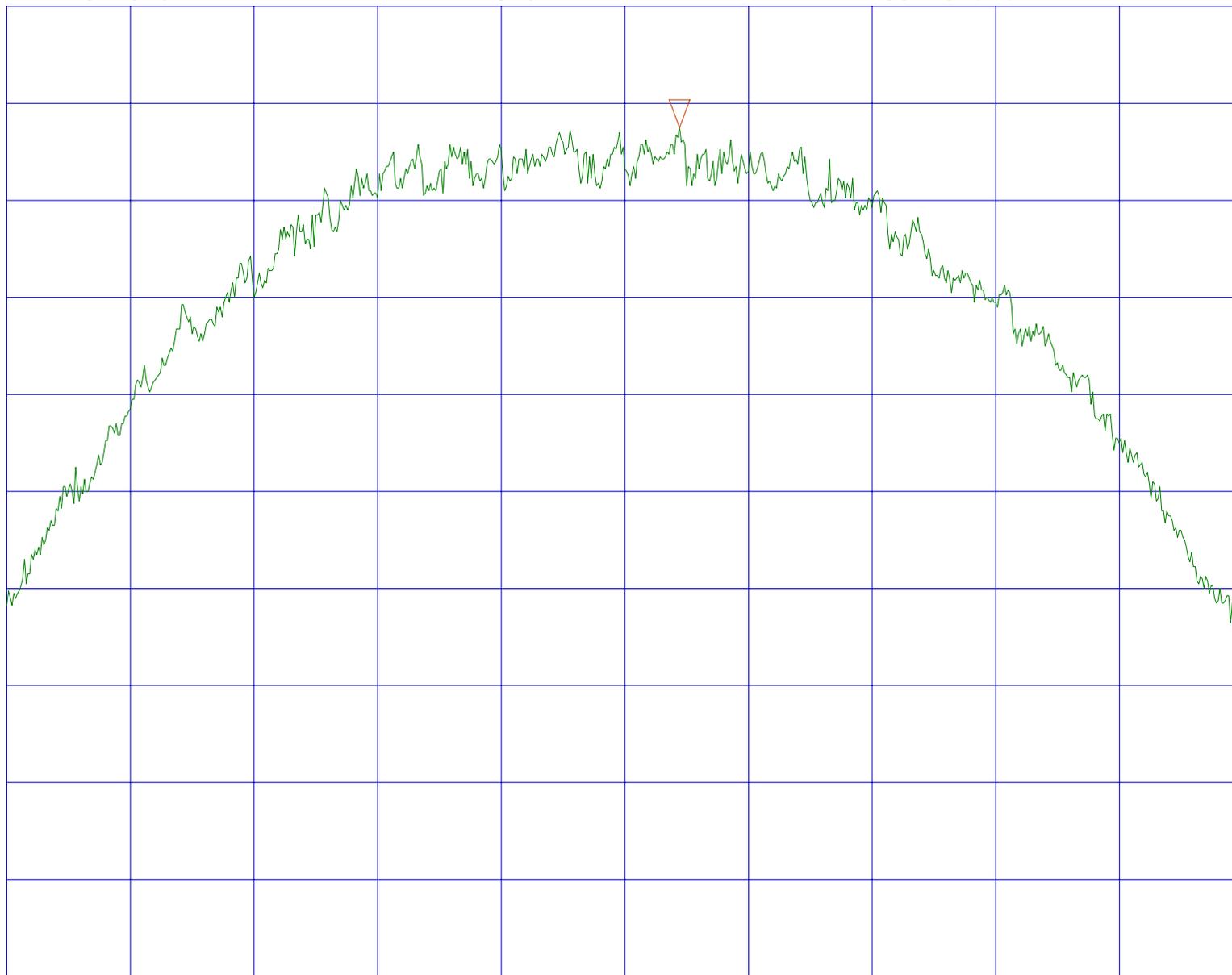
d : Test distance(3.0m)

G : Antenna Gaine(1.64)

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA10  
15.247(c)PeakOutPower/2412MHz(VER)/22DE0015-YW-1  
REF 107 dBuV ATT 20 dB

MAKER  
2.4129 GHz  
100.75 dBuV

5dB/



START 2.402000GHz  
RBW 3MHz

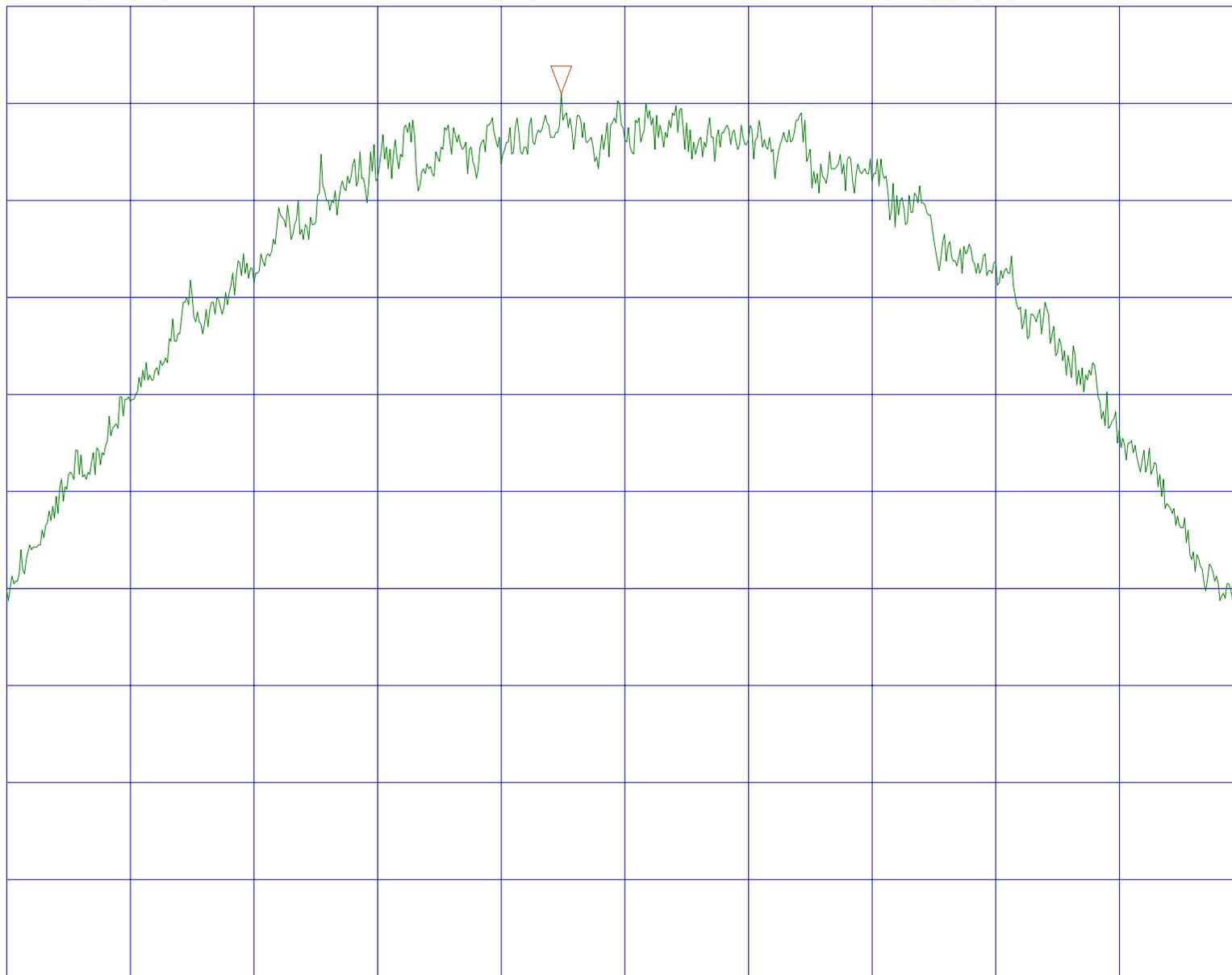
VBW 3MHz

STOP 2.422000GHz  
SWP 500ms

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA11  
15.247(c)PeakOutPower/2412MHz(HOR)/22DE0015-YW-1  
REF 107 dBuV ATT 20 dB

MAKER  
2.4110 GHz  
102.50 dBuV

5dB/



START 2.402000GHz  
RBW 3MHz

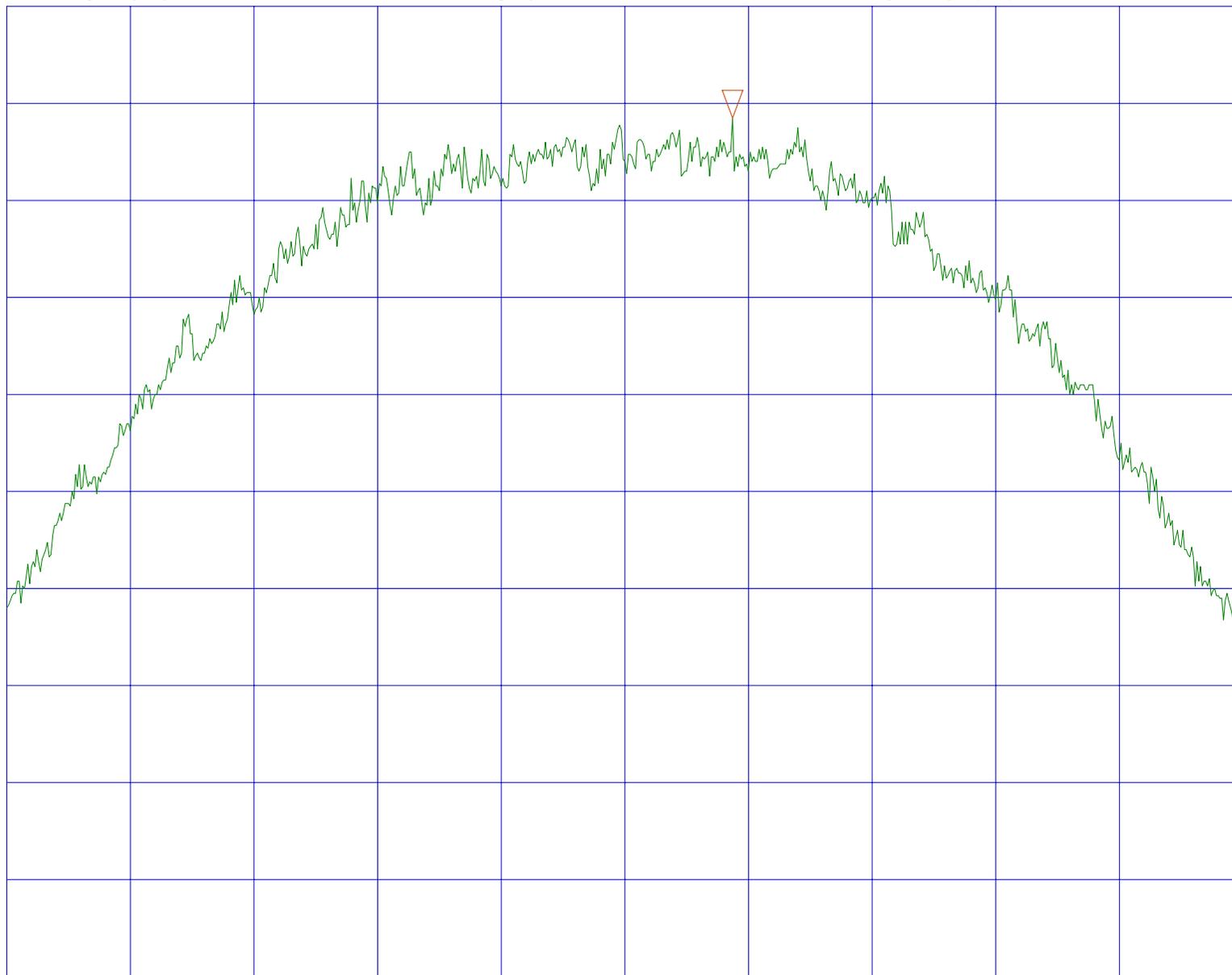
VBW 3MHz

STOP 2.422000GHz  
SWP 500ms

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA12  
15.247(c)PeakOutPower/2437MHz(VER)/22DE0015-YW-1  
REF 107 dBuV ATT 20 dB

MAKER  
2.4387 GHz  
101.25 dBuV

5dB/



START 2.427000GHz  
RBW 3MHz

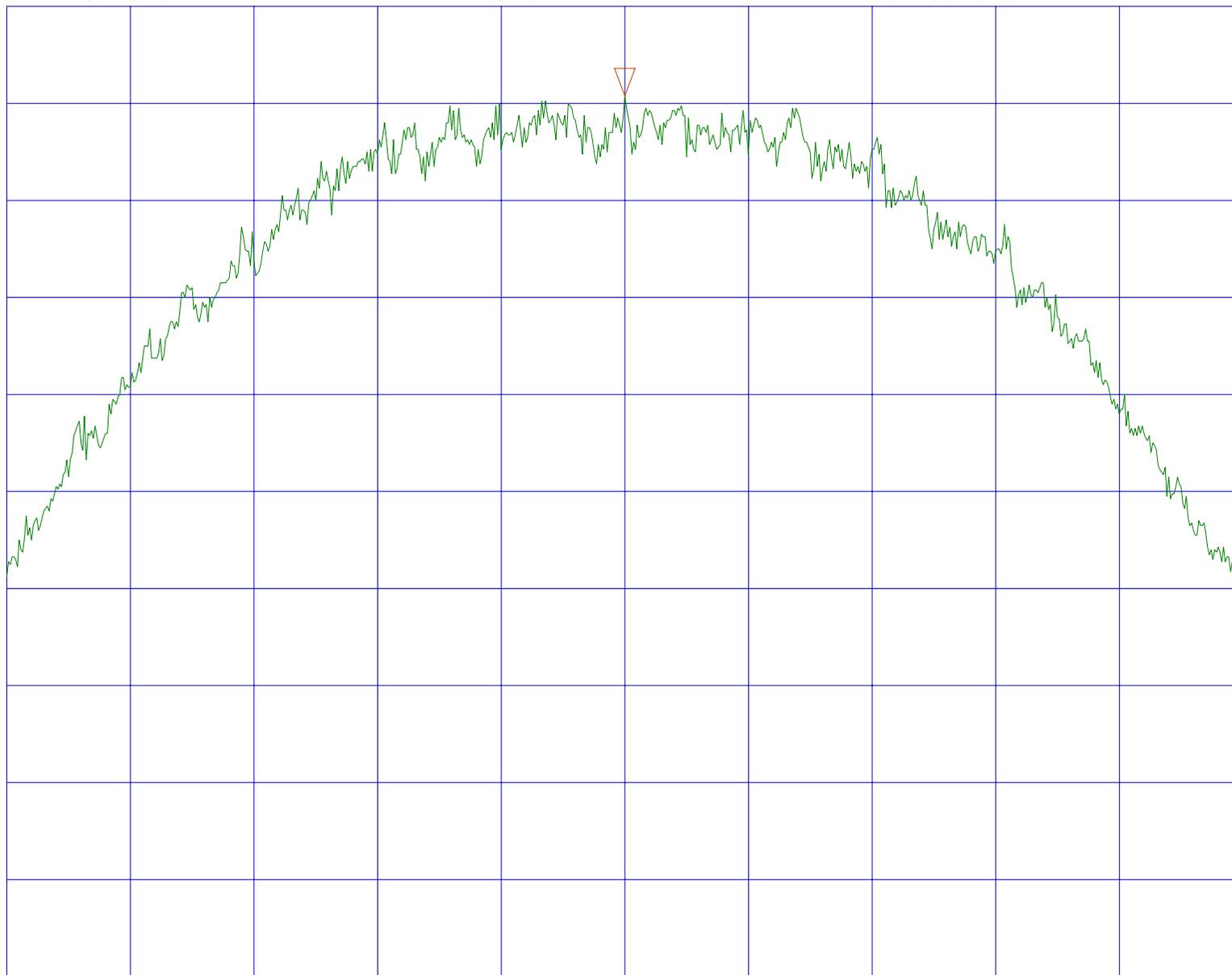
VBW 3MHz

STOP 2.447000GHz  
SWP 500ms

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA13  
15.247(c)PeakOutPower/2437MHz(HOR)/22DE0015-YW-1  
REF 107 dBuV ATT 20 dB

MAKER  
2.4370 GHz  
102.38 dBuV

5dB/



START 2.427000GHz  
RBW 3MHz

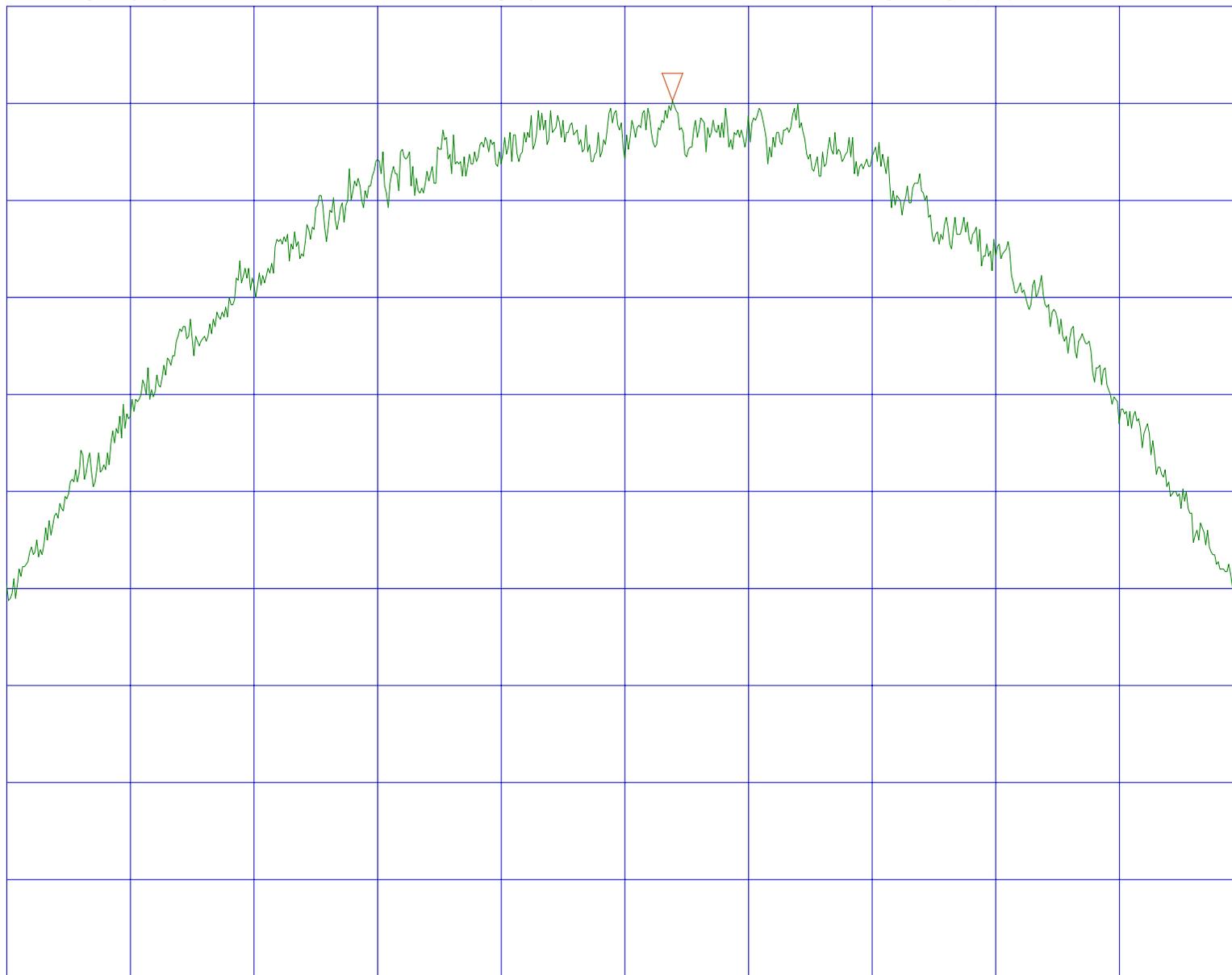
VBW 3MHz

STOP 2.447000GHz  
SWP 500ms

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA14  
15.247(c)PeakOutPower/2462MHz(VER)/22DE0015-YW-1  
REF 107 dBuV ATT 20 dB

MAKER  
2.4628 GHz  
102.13 dBuV

5dB/



START 2.452000GHz  
RBW 3MHz

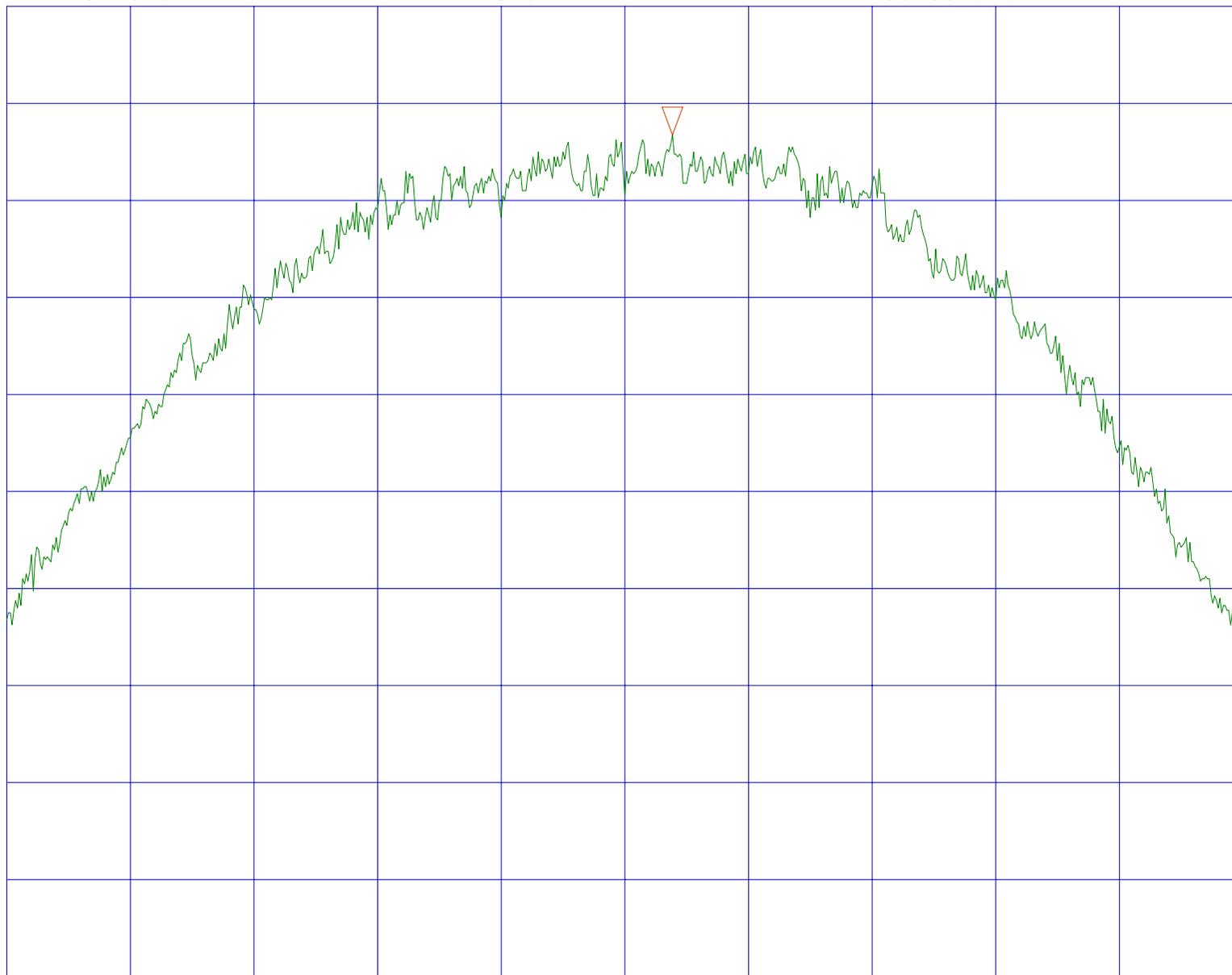
VBW 3MHz

STOP 2.472000GHz  
SWP 500ms

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA15  
15.247(c)PeakOutPower/2462MHz(HOR)/22DE0015-YW-1  
REF 107 dBuV ATT 20 dB

MAKER  
2.4628 GHz  
100.38 dBuV

5dB/



START 2.452000GHz  
RBW 3MHz

VBW 3MHz

STOP 2.472000GHz  
SWP 500ms

# Peak Out Put Power(Conducted)

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA NO.3 OPEN SITE

COMPANY : Sony Corporation  
EQUIPMENT : Notebook Computer  
MODEL : PCG-441L  
FCC ID : AK8PCG441L  
POWER : AC120V/60Hz  
Mode : Transmitting

REPORT NO : 22DE0015-YW-1  
REGULATION : Fcc Part15 SubpartC 247(b)  
DATE : 2001/11/19  
Temp./Humi. : 20°C/43%

ENGINEER : Naoki Sakamoto

CH	FREQ [GHz]	PM Reading [dBm]	Limit [dBm]	MARGIN [dB]
Low	2.41200	14.6	30.0	15.4
Mid	2.43800	14.7	30.0	15.3
High	2.46200	14.7	30.0	15.3

# DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA No.3 OPEN TEST SITE  
Report No. : 22DE0015-YW-1

Applicant : Sony Corporation  
 Kind of Equipment : Notebook Computer  
 Model No. : PCG-441L  
 Serial No. :  
 Power : AC120V/60Hz  
 Mode : Transmitting (Ch1)  
 Remarks : FCC ID: AK8PCG441L  
 Date : 11/19/2001  
 Test Distance : 3 m  
 Temperature : 25 °C  
 Humidity : 35 %  
 Regulation : Fcc 15C § 15.209(a)

  
 Engineer : Naoki Sakamoto

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER					HOR [dB μ V/m]	VER		HOR [dB]	VER
1.	81.31	BB	26.9	38.6	6.5	27.9	1.7	5.9	13.1	24.8	40.0	26.9	15.2
2.	325.06	BB	42.1	38.2	14.5	27.6	3.6	5.8	38.4	34.5	46.0	7.6	11.5
3.	364.41	BB	35.6	33.2	15.0	27.6	3.9	5.8	32.7	30.3	46.0	13.3	15.7
4.	390.06	BB	33.7	33.7	15.3	27.5	4.1	5.8	31.4	31.4	46.0	14.6	14.6
5.	397.54	BB	33.1	32.0	15.4	27.5	4.1	5.8	30.9	29.8	46.0	15.1	16.2
6.	520.10	BB	34.1	35.2	18.2	27.5	4.9	5.9	35.6	36.7	46.0	10.4	9.3
7.	528.09	BB	30.8	30.9	18.3	27.5	4.9	5.9	32.4	32.5	46.0	13.6	13.5
8.	585.09	BB	36.4	36.5	18.7	27.3	5.2	5.9	38.9	39.0	46.0	7.1	7.0
9.	780.13	BB	27.7	25.0	21.1	26.7	6.0	5.8	33.9	31.2	46.0	12.1	14.8

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

All other spurious emissions are more than 20dB below the limits.  
 ANT. TYPE: 30-300MHz Biconical, 300-1000MHz Logperiodic

# DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA No.3 OPEN TEST SITE  
Report No. : 22DE0015-YW-1

Applicant : Sony Corporation  
 Kind of Equipment : Notebook Computer  
 Model No. : PCG-441L  
 Serial No. :  
 Power : AC120V/60Hz  
 Mode : Transmitting(Ch6)  
 Remarks : FCC ID: AK8PCG441L  
 Date : 11/20/2001  
 Test Distance : 3 m  
 Temperature : 20 °C  
 Humidity : 43 %  
 Regulation : Fcc 15C § 15.209(a)

  
Engineer : Naoki Sakamoto

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER					HOR [dB μ V/m]	VER		HOR [dB]	VER
1.	81.31	BB	26.9	37.4	6.5	27.9	1.7	5.9	13.1	23.6	40.0	26.9	16.4
2.	325.06	BB	42.9	38.4	14.5	27.6	3.6	5.8	39.2	34.7	46.0	6.8	11.3
3.	364.41	BB	35.3	32.2	15.0	27.6	3.9	5.8	32.4	29.3	46.0	13.6	16.7
4.	390.08	BB	32.1	33.3	15.3	27.5	4.1	5.8	29.8	31.0	46.0	16.2	15.0
5.	397.55	BB	33.4	32.4	15.4	27.5	4.1	5.8	31.2	30.2	46.0	14.8	15.8
6.	520.10	BB	32.2	33.4	18.2	27.5	4.9	5.9	33.7	34.9	46.0	12.3	11.1
7.	528.09	BB	30.5	30.2	18.3	27.5	4.9	5.9	32.1	31.8	46.0	13.9	14.2
8.	585.10	BB	36.0	35.9	18.7	27.3	5.2	5.9	38.5	38.4	46.0	7.5	7.6
9.	780.13	BB	28.5	24.9	21.1	26.7	6.0	5.8	34.7	31.1	46.0	11.3	14.9

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

All other spurious emissions are more than 20dB below the limits.  
 ANT. TYPE: 30-300MHz Biconical, 300-1000MHz Logperiodic

# DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA No.3 OPEN TEST SITE  
Report No. : 22DE0015-YW-1

Applicant : Sony Corporation  
 Kind of Equipment : Notebook Computer  
 Model No. : PCG-441L  
 Serial No. :  
 Power : AC120V/60Hz  
 Mode : Transmitting(Ch11)  
 Remarks : FCC ID: AK8PCG441L  
 Date : 11/20/2001  
 Test Distance : 3 m  
 Temperature : 20 °C  
 Humidity : 43 %  
 Regulation : Fcc 15C § 15.209 (a)

  
 Engineer : Naoki Sakamoto

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
			HOR [dB μ V]	VER					HOR [dB μ V/m]	VER	HOR [dB]	VER		
1.	81.31	BB	26.8	38.0	6.5	27.9	1.7	5.9	13.0	24.2	40.0	27.0	15.8	
2.	325.06	BB	42.4	37.3	14.5	27.6	3.6	5.8	38.7	33.6	46.0	7.3	12.4	
3.	364.45	BB	36.4	32.1	15.0	27.6	3.9	5.8	33.5	29.2	46.0	12.5	16.8	
4.	390.06	BB	32.6	33.1	15.3	27.5	4.1	5.8	30.3	30.8	46.0	15.7	15.2	
5.	396.53	BB	33.9	32.3	15.4	27.5	4.1	5.8	31.7	30.1	46.0	14.3	15.9	
6.	520.10	BB	33.2	33.3	18.2	27.5	4.9	5.9	34.7	34.8	46.0	11.3	11.2	
7.	528.09	BB	30.4	30.2	18.3	27.5	4.9	5.9	32.0	31.8	46.0	14.0	14.2	
8.	585.09	BB	38.5	35.8	18.7	27.3	5.2	5.9	41.0	38.3	46.0	5.0	7.7	
9.	780.13	BB	30.1	25.2	21.1	26.7	6.0	5.8	36.3	31.4	46.0	9.7	14.6	

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

All other spurious emissions are more than 20dB below the limits.  
 ANT. TYPE: 30-300MHz Biconical, 300-1000MHz Logperiodic

# DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA No.3 OPEN TEST SITE  
Report No. : 22DE0015-YW-1

Applicant : Sony Corporation  
 Kind of Equipment : Notebook Computer  
 Model No. : PCG-441L  
 Serial No. :  
 Power : AC120V/60Hz  
 Mode : Receiving  
 Remarks : FCC ID: AK8PCG441L  
 Date : 11/20/2001  
 Test Distance : 3 m  
 Temperature : 20 °C  
 Humidity : 43 %  
 Regulation : Fcc 15C § 15.209(a)

Engineer : Naoki Sakamoto

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]	HOR [dB]	VER [dB]		
1.	81.33	BB	26.2	38.8	6.5	27.9	1.7	5.9	12.4	25.0	40.0	27.6	15.0	
2.	325.06	BB	43.3	40.5	14.5	27.6	3.6	5.8	39.6	36.8	46.0	6.4	9.2	
3.	364.45	BB	36.2	33.3	15.0	27.6	3.9	5.8	33.3	30.4	46.0	12.7	15.6	
4.	390.09	BB	33.2	33.7	15.3	27.5	4.1	5.8	30.9	31.4	46.0	15.1	14.6	
5.	396.48	BB	34.1	33.2	15.4	27.5	4.1	5.8	31.9	31.0	46.0	14.1	15.0	
6.	520.09	BB	34.0	34.2	18.2	27.5	4.9	5.9	35.5	35.7	46.0	10.5	10.3	
7.	528.08	BB	31.4	30.8	18.3	27.5	4.9	5.9	33.0	32.4	46.0	13.0	13.6	
8.	585.10	BB	38.8	36.6	18.7	27.3	5.2	5.9	41.3	39.1	46.0	4.7	6.9	
9.	780.13	BB	28.8	23.7	21.1	26.7	6.0	5.8	35.0	29.9	46.0	11.0	16.1	

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

All other spurious emissions are more than 20dB below the limits.  
 ANT. TYPE: 30-300MHz Biconical, 300-1000MHz Logperiodic

# DATA OF SUPURIOUS EMISSIONS(1GHz to 26GHz)

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA NO.3 OPEN SITE

COMPANY : Sony Corporation  
EQUIPMENT : Notebook Computer  
MODEL : PCG-441L  
FCC ID : AK8PCG441L  
POWER : AC120V/60Hz  
Mode : Transmitting (ch1:2412MHz)

REPORT NO : 22DE0015-YW-1  
REGULATION : Fcc Part15 SubpartC 247/209  
TEST DISTANCE : 3m / 1m  
DATE : 11/19/2001, 11/21/2001  
Temp./Humi. : 20°C/43%, 22°C/48%

ENGINEER : Naoki Sakamoto

PK DETECT(S/A : RBW 1MHz and VBW 1MHz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	H.P.Filter or ATTEN [dB]	RESULT		Limit PK [dB μV/m]	MARGIN	
		HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
#1	1.04018	52.6	55.0	24.9	35.4	2.2	6.0	49.3	49.8	74.0	24.7	24.2
#2	1.16674	48.7	52.0	25.6	35.2	2.3	6.0	47.4	50.7	74.0	26.6	23.3
#3	1.31586	57.4	59.0	26.4	35.0	2.4	6.0	57.2	58.8	74.0	16.8	15.2
#4	1.36139	50.7	52.3	26.7	34.9	2.4	6.0	50.9	52.5	74.0	23.1	21.5
#5	1.57403	50.5	53.2	27.8	34.7	2.6	6.0	52.2	54.9	74.0	21.8	19.1
#6	2.39000	46.0	49.5	31.3	34.5	3.4	6.0	52.2	55.7	74.0	21.8	18.3
7	4.82400	39.8	39.0	35.4	34.5	8.0	1.2	49.9	49.1	74.0	24.1	24.9
8	7.23600	38.2	39.4	39.1	34.8	9.4	1.0	52.9	54.1	74.0	21.1	19.9
9	9.64800	41.8	42.2	39.2	35.0	11.0	1.3	58.3	58.7	74.0	15.7	15.3
*10	12.06000	38.9	39.5	43.5	34.4	12.1	1.5	61.6	62.2	83.5	21.9	21.3
*11	14.47200	39.3	39.1	42.2	33.1	13.5	1.1	63.0	62.8	83.5	20.5	20.7
*12	16.88400	41.3	40.2	43.8	33.4	14.8	1.1	67.6	66.5	83.5	15.9	17.0
*13	19.29600	43.9	43.5	38.0	33.4	15.8	1.0	65.3	64.9	83.5	18.2	18.6
*14	21.70800	43.8	44.3	37.8	33.0	16.5	0.8	65.9	66.4	83.5	17.6	17.1
*15	24.12000	44.9	44.6	39.6	33.2	15.8	0.7	67.8	67.5	83.5	15.7	16.0

AV DETECT(S/A : RBW 1MHz and VBW 10Hz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	H.P.Filter or ATTEN [dB]	RESULT		Limit AV [dB μV/m]	MARGIN	
		HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
#1	1.04018	38.3	42.4	24.9	35.4	2.2	6.0	36.0	40.1	54.0	18.0	13.9
#2	1.16674	35.7	36.7	25.6	35.2	2.3	6.0	34.4	35.4	54.0	19.6	18.6
#3	1.31586	35.5	35.9	26.4	35.0	2.4	6.0	35.3	35.7	54.0	18.7	18.3
#4	1.36139	35.3	36.3	26.7	34.9	2.4	6.0	35.5	36.5	54.0	18.5	17.5
#5	1.57403	35.3	36.4	27.8	34.7	2.6	6.0	37.0	38.1	54.0	17.0	15.9
#6	2.39000	35.5	39.2	31.1	34.5	3.4	6.0	41.5	45.2	54.0	12.5	8.8
7	4.82400	28.2	28.0	35.4	34.5	8.0	1.2	38.3	38.1	54.0	15.7	15.9
8	7.23600	27.4	28.5	39.1	34.8	9.4	1.0	42.1	43.2	54.0	11.9	10.8
9	9.64800	31.0	31.0	39.2	35.0	11.0	1.3	47.5	47.5	54.0	6.5	6.5
*10	12.06000	28.5	28.6	43.5	34.4	12.1	1.5	51.2	51.3	63.5	12.3	12.2
*11	14.47200	28.3	28.3	42.2	33.1	13.5	1.1	52.0	52.0	63.5	11.5	11.5
*12	16.88400	30.4	30.2	43.8	33.4	14.8	1.1	56.7	56.5	63.5	6.8	7.0
*13	19.29600	32.7	32.5	38.0	33.4	15.8	1.0	54.1	53.9	63.5	9.4	9.6
*14	21.70800	32.8	32.5	37.8	33.0	16.5	0.8	54.9	54.6	63.5	8.6	8.9
*15	24.12000	33.6	34.0	39.6	33.2	15.8	0.7	56.5	56.9	63.5	7.1	6.7

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + High Pass Filter or ATTEN.

Except for the above table : All other spurious emissions are more than 20dB below the limit.

\* Test Distance 1m, 1m Limit = 3m Limit + 20log(3/1)

# Use ATTEN, Other points use high pass filter.

# DATA OF SUPURIOUS EMISSIONS(1GHz to 26GHz)

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA NO.3 OPEN SITE

COMPANY : Sony Corporation  
EQUIPMENT : Notebook Computer  
MODEL : PCG-441L  
FCC ID : AK8PCG441L  
POWER : AC120V/60Hz  
Mode : Transmitting (ch6:2437MHz)

REPORT NO : 22DE0015-YW-1  
REGULATION : Fcc Part15 SubpartC 247/209  
TEST DISTANCE : 3m / 1m  
DATE : 11/19/2001, 11/21/2001  
Temp./Humi. : 20°C/43%, 22°C/48%

ENGINEER : Naoki Sakamoto

PK DETECT(S/A : RBW 1MHz and VBW 1MHz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	H. P. Filter or ATTEN [dB]	RESULT		Limit PK [dB μ V/m]	MARGIN	
		HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
#1	1.04018	53.0	55.3	24.9	35.4	2.2	6.0	50.7	53.0	74.0	23.3	21.0
#2	1.16674	49.1	51.8	25.6	35.2	2.3	6.0	47.8	50.5	74.0	26.2	23.5
#3	1.31586	57.5	58.8	26.4	35.0	2.4	6.0	57.3	58.6	74.0	16.7	15.4
#4	1.36139	50.7	52.3	26.7	34.9	2.4	6.0	50.9	52.5	74.0	23.1	21.5
#5	1.57403	50.2	53.2	27.8	34.7	2.6	6.0	51.9	54.9	74.0	22.1	19.1
6	4.87400	38.7	38.5	35.6	34.5	7.8	1.3	48.9	48.7	74.0	25.1	25.3
7	7.31100	40.0	39.9	39.2	34.9	9.4	1.0	54.7	54.6	74.0	19.3	19.4
8	9.74800	42.4	42.7	39.2	35.0	11.0	1.3	58.9	59.2	74.0	15.1	14.8
*9	12.18500	39.2	40.6	43.4	34.3	12.3	1.5	62.1	63.5	83.5	21.4	20.0
*10	14.62200	38.4	38.5	42.6	33.1	13.6	1.1	62.6	62.7	83.5	20.9	20.8
*11	17.05900	40.4	41.5	43.8	33.2	14.8	1.1	66.9	68.0	83.5	16.6	15.5
*12	19.49600	43.3	41.9	38.0	33.4	15.9	1.4	65.2	63.8	83.5	18.3	19.7
*13	21.93300	42.1	43.2	37.8	33.0	16.5	0.6	64.0	65.1	83.5	19.5	18.4
*14	24.37000	44.9	44.4	39.5	33.2	15.7	0.5	67.4	66.9	83.5	16.1	16.6

AV DETECT(S/A : RBW 1MHz and VBW 10Hz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	H. P. Filter or ATTEN [dB]	RESULT		Limit AV [dB μ V/m]	MARGIN	
		HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
#1	1.04018	38.6	43.0	24.9	35.4	2.2	6.0	36.3	40.7	54.0	17.7	13.3
#2	1.16674	35.8	36.8	25.6	35.2	2.3	6.0	34.5	35.5	54.0	19.5	18.5
#3	1.31586	35.5	36.0	26.4	35.0	2.4	6.0	35.3	35.8	54.0	18.7	18.2
#4	1.36139	35.6	36.4	26.7	34.9	2.4	6.0	35.8	36.6	54.0	18.2	17.4
#5	1.57403	35.5	36.5	27.8	34.7	2.6	6.0	37.2	38.2	54.0	16.8	15.8
6	4.87400	28.6	28.5	35.6	34.5	7.8	1.3	38.8	38.7	54.0	15.2	15.3
7	7.31100	28.9	27.9	39.2	34.9	9.4	1.0	43.6	42.6	54.0	10.4	11.4
8	9.74800	31.9	32.0	39.2	35.0	11.0	1.3	48.4	48.5	63.5	15.1	15.0
9	12.18500	28.7	29.3	43.4	34.3	12.3	1.5	51.6	52.2	63.5	11.9	11.3
*10	14.62200	27.4	27.7	42.6	33.1	13.6	1.1	51.6	51.9	63.5	11.9	11.6
*11	17.05900	31.1	31.2	43.8	33.2	14.8	1.1	57.6	57.7	63.5	5.9	5.8
*12	19.49600	32.4	32.3	38.0	33.4	15.9	1.4	54.3	54.2	63.5	9.2	9.3
*13	21.93300	32.7	33.1	37.8	33.0	16.5	0.6	54.6	55.0	63.5	8.9	8.5
*14	24.37000	34.1	34.3	39.5	33.2	15.7	0.5	56.6	56.8	63.5	7.0	6.8

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + High Pass Filter or ATTEN.

Except for the above table : All other spurious emissions are more than 20dB below the limit.

\* Test Distance 1m, 1m Limit = 3m Limit + 20log(3/1)

# Use ATTEN, Other points use high pass filter.

# DATA OF SUPURIOUS EMISSIONS(1GHz to 26GHz)

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA NO.3 OPEN SITE

COMPANY : Sony Corporation  
EQUIPMENT : Notebook Computer  
MODEL : PCG-441L  
FCC ID : AK8PCG441L  
POWER : AC120V/60Hz  
Mode : Transmitting (ch11:2462MHz)

REPORT NO : 22DE0015-YW-1  
REGULATION : Fcc Part15 SubpartC 247/209  
TEST DISTANCE : 3m / 1m  
DATE : 11/19/2001, 11/21/2001  
Temp./Humi. : 20°C/43%, 22°C/48%

ENGINEER : Naoki Sakamoto

PK DETECT(S/A : RBW 1MHz and VBW 1MHz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	H. P. Filter or ATTEN [dB]	RESULT		Limit PK [dB μV/m]	MARGIN	
		HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
#1	1.04018	52.7	55.2	24.9	35.4	2.2	6.0	50.4	52.9	74.0	23.6	21.1
#2	1.16674	49.0	51.9	25.6	35.2	2.3	6.0	47.7	50.6	74.0	26.3	23.4
#3	1.31586	57.2	59.2	26.4	35.0	2.4	6.0	57.0	59.0	74.0	17.0	15.0
#4	1.36139	50.9	52.5	26.7	34.9	2.4	6.0	51.1	52.7	74.0	22.9	21.3
#5	1.57403	50.4	52.0	27.8	34.7	2.6	6.0	52.1	53.7	74.0	21.9	20.3
#6	2.48350	45.9	49.7	31.3	34.5	3.5	6.0	52.2	56.0	74.0	21.8	18.0
7	4.92400	39.4	39.7	35.8	34.5	7.9	1.3	49.9	50.2	74.0	24.1	23.8
8	7.38600	39.5	39.2	39.2	34.9	9.5	0.9	54.2	53.9	74.0	19.8	20.1
9	9.84800	42.8	42.1	39.2	34.9	11.0	1.1	59.2	58.5	74.0	14.8	15.5
*10	12.31000	39.5	39.2	43.3	34.2	12.3	1.5	62.4	62.1	83.5	21.1	21.4
*11	14.77200	39.4	38.9	42.9	33.0	13.7	1.2	64.2	63.7	83.5	19.3	19.8
*12	17.23400	42.0	41.6	43.9	33.1	14.8	0.8	68.4	68.0	83.5	15.1	15.5
*13	19.69600	41.6	42.3	38.0	33.4	16.0	1.6	63.8	64.5	83.5	19.7	19.0
*14	22.15800	42.4	41.2	38.3	33.0	16.5	0.7	64.9	63.7	83.5	18.7	19.9
*15	24.62000	44.5	44.4	39.4	33.2	15.4	0.6	66.7	66.6	83.5	16.8	16.9

AV DETECT(S/A : RBW 1MHz and VBW 10Hz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	H. P. Filter or ATTEN [dB]	RESULT		Limit AV [dB μV/m]	MARGIN	
		HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
#1	1.04018	38.2	43.1	24.9	35.4	2.2	6.0	35.9	40.8	54.0	18.1	13.2
#2	1.16674	36.0	36.9	25.6	35.2	2.3	6.0	34.7	35.6	54.0	19.3	18.4
#3	1.31586	35.7	35.6	26.4	35.0	2.4	6.0	35.5	35.4	54.0	18.5	18.6
#4	1.36139	35.8	36.6	26.7	34.9	2.4	6.0	36.0	36.8	54.0	18.0	17.2
#5	1.57403	35.4	36.6	27.8	34.7	2.6	6.0	37.1	38.3	54.0	16.9	15.7
#6	2.48350	35.5	39.8	31.3	34.5	3.5	6.0	41.8	46.1	54.0	12.2	7.9
7	4.92400	28.1	28.4	35.8	34.5	7.9	1.3	38.6	38.9	54.0	15.4	15.1
8	7.38600	27.9	28.1	39.2	34.9	9.5	0.9	42.6	42.8	54.0	11.4	11.2
9	9.84800	31.8	31.8	39.2	34.9	11.0	1.1	48.2	48.2	54.0	5.8	5.8
*10	12.31000	28.2	27.9	43.3	34.2	12.3	1.5	51.1	50.8	63.5	12.4	12.7
*11	14.77200	27.9	28.5	42.9	33.0	13.7	1.2	52.7	53.3	63.5	10.8	10.2
*12	17.23400	30.7	31.4	43.9	33.1	14.8	0.8	57.1	57.8	63.5	6.4	5.7
*13	19.69600	30.4	31.4	38.0	33.4	16.0	1.6	52.6	53.6	63.5	10.9	9.9
*14	22.15800	30.4	32.0	38.3	33.0	16.5	0.7	52.9	54.5	63.5	10.7	9.1
*15	24.62000	33.9	34.2	39.4	33.2	15.4	0.6	56.1	56.4	63.5	7.4	7.1

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + High Pass Filter or ATTEN.

Except for the above table : All other spurious emissions are more than 20dB below the limit.

\* Test Distance 1m, 1m Limit = 3m Limit + 20log(3/1)

# Use ATTEN, Other points use high pass filter.

# DATA OF SUPURIOUS EMISSIONS(1GHz to 5GHz)

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA NO.3 OPEN SITE

COMPANY : Sony Corporation  
EQUIPMENT : Notebook Computer  
MODEL : PCG-441L  
FCC ID : AK8PCG441L  
POWER : AC120V/60Hz  
Mode : Receiving

REPORT NO : 22DE0015-YW-1  
REGULATION : Fcc Part15 SubpartC 247/209  
TEST DISTANCE : 3m  
DATE : 2001/11/19  
Temp. /Humi. : 20°C/43%

ENGINEER : Naoki Sakamoto

PK DETECT(S/A : RBW 1MHz and VBW 1MHz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	RESULT		Limit PK [dB μ V/m]	MARGIN	
		HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1	1.03987	53.5	56.5	24.9	35.4	2.2	6.0	51.2	54.2	74.0	22.8	19.8
2	1.16676	49.8	51.4	25.6	35.2	2.3	6.0	48.5	50.1	74.0	25.5	23.9
3	1.36138	51.0	52.4	26.7	34.9	2.4	6.0	51.2	52.6	74.0	22.8	21.4
4	1.57203	48.2	53.8	27.8	34.7	2.6	6.0	49.9	55.5	74.0	24.1	18.5

AV DETECT(S/A : RBW 1MHz and VBW 10Hz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	RESULT		Limit AV [dB μ V/m]	MARGIN	
		HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1	1.03987	39.0	38.3	24.9	35.4	2.2	6.0	36.7	36.0	54.0	17.3	18.0
2	1.16676	36.2	36.5	25.6	35.2	2.3	6.0	34.9	35.2	54.0	19.1	18.8
3	1.36138	36.1	36.5	26.7	34.9	2.4	6.0	36.3	36.7	54.0	17.7	17.3
4	1.57203	35.5	36.5	27.8	34.7	2.6	6.0	37.2	38.2	54.0	16.8	15.8

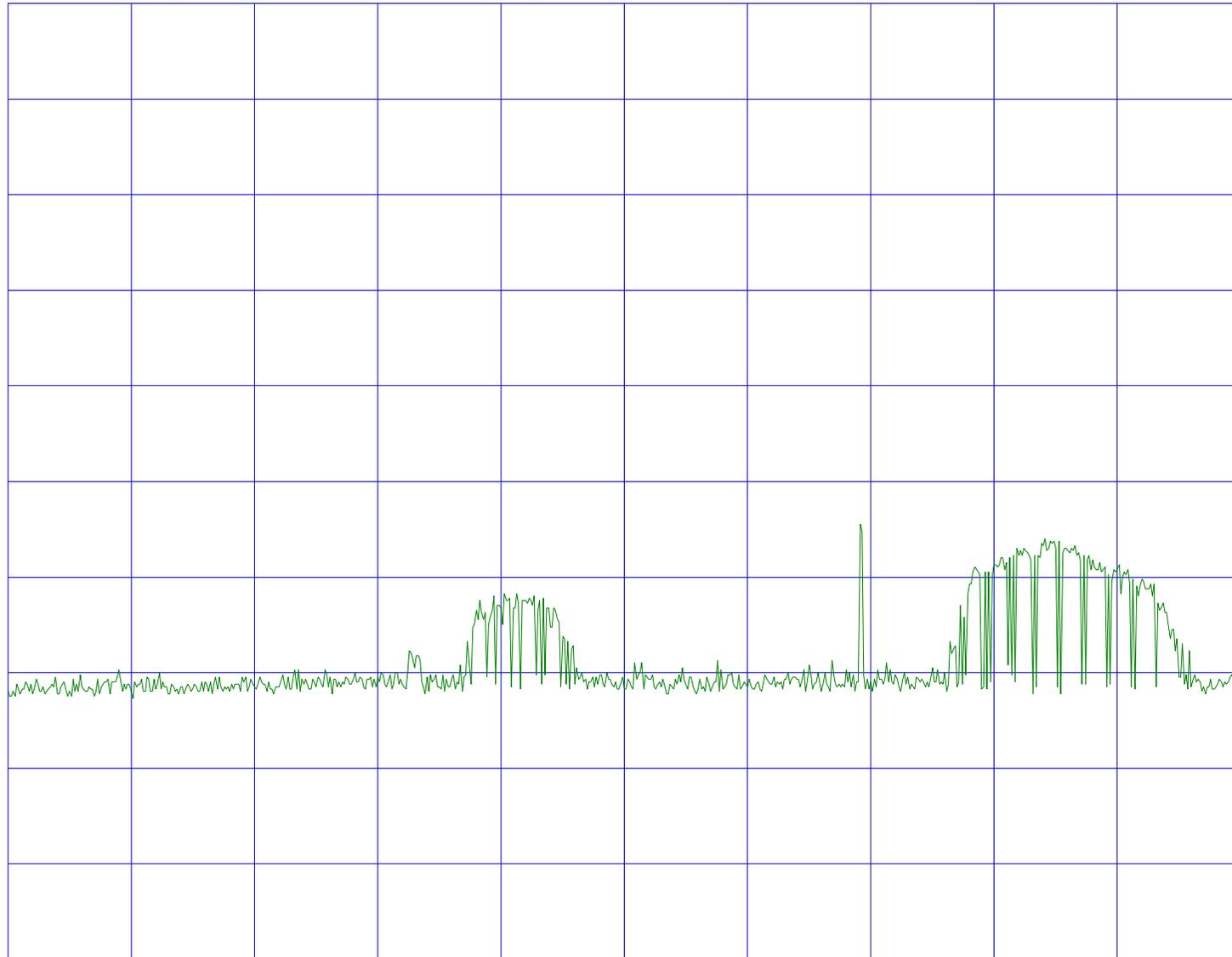
Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + ATTEN.

Except for the above table : All other spurious emissions are more than 20dB below the limit.

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA25  
15.247(c)OutOfBand/2412MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



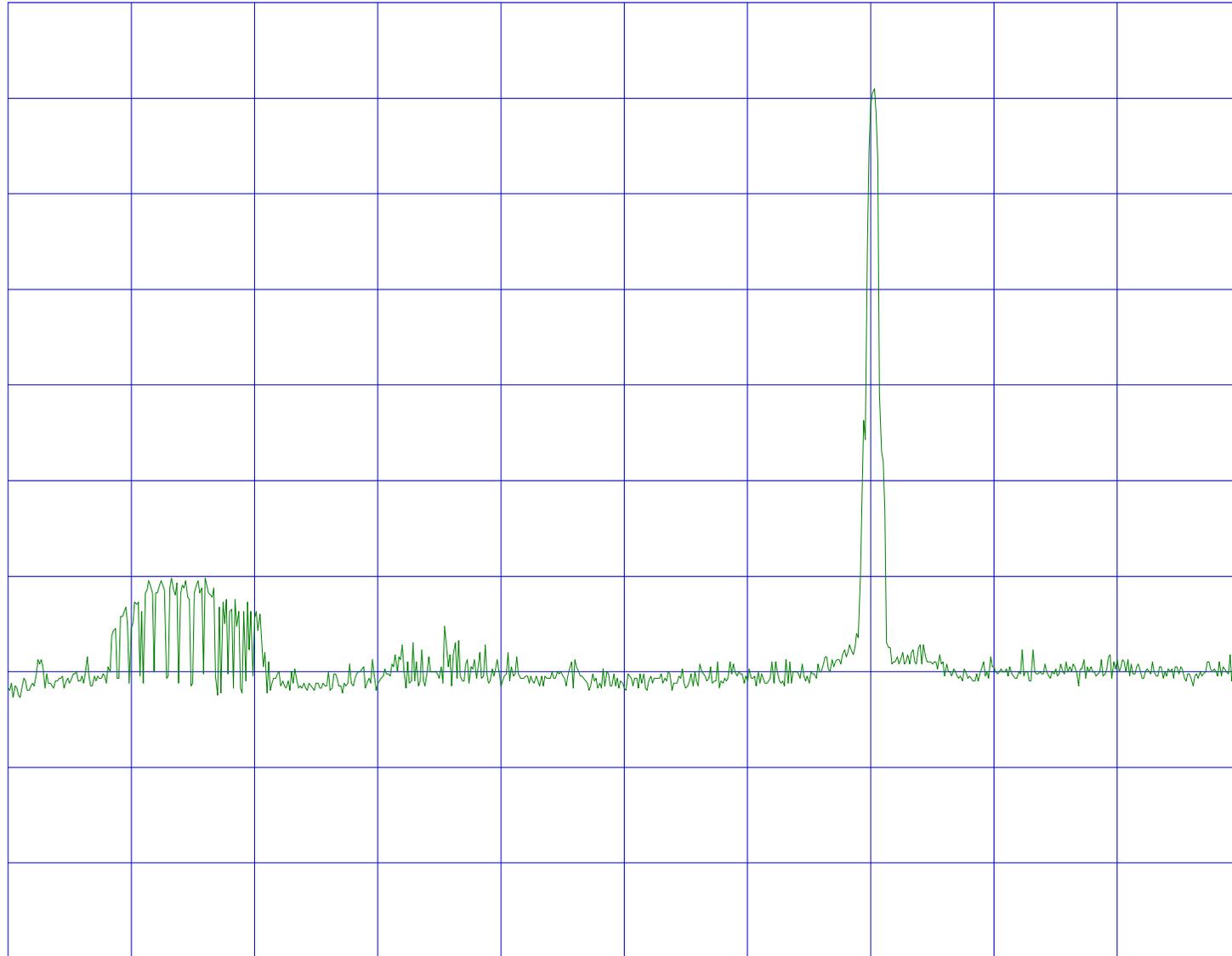
START 30.00MHz  
RBW 100kHz

VBW 100kHz

STOP 1.00000GHz  
SWP 500ms

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA26  
15.247(c)OutOfBand/2412MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



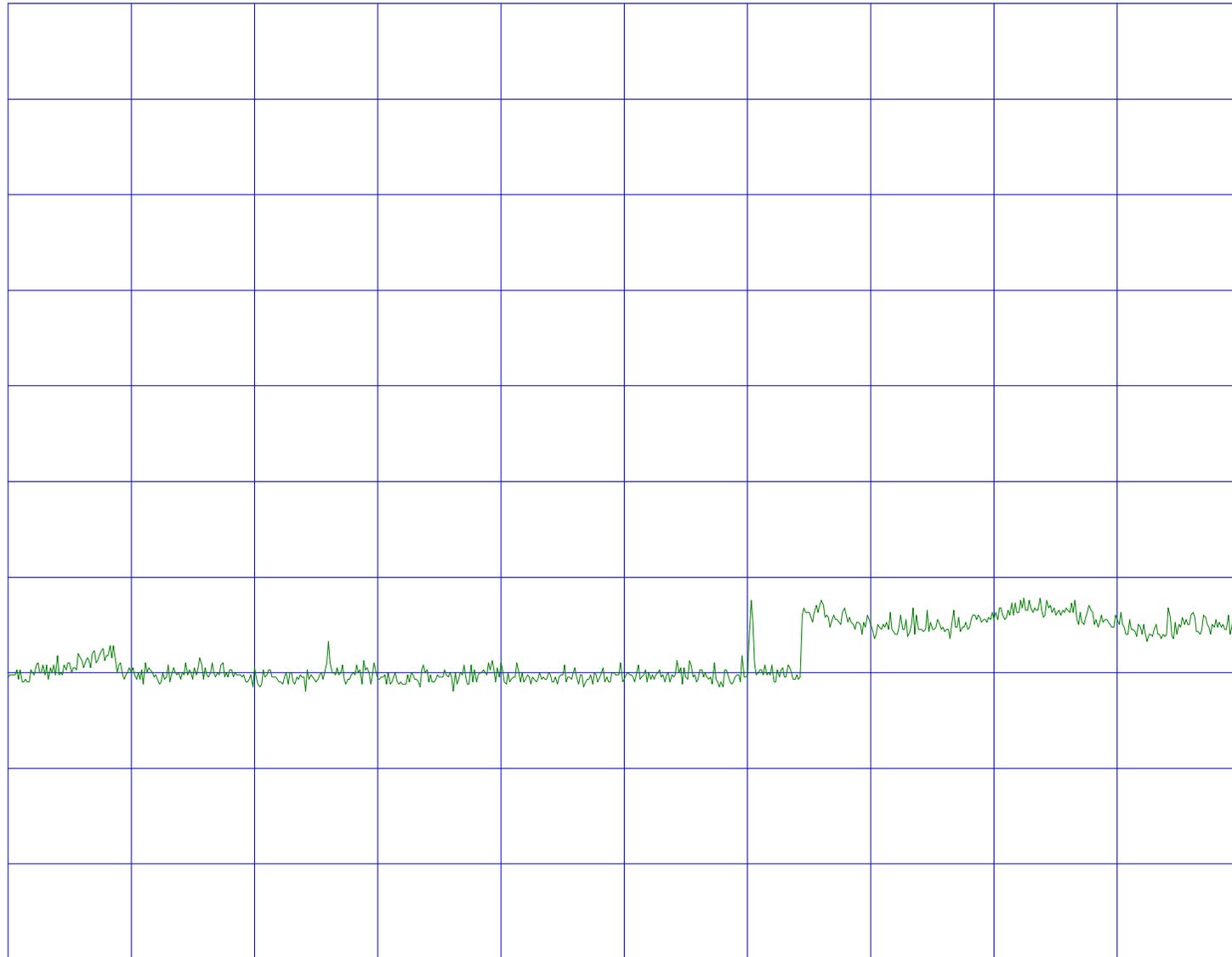
START 1.000000GHz  
RBW 100kHz

VBW 100kHz

STOP 3.000000GHz  
SWP 1s

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA27  
15.247(c)OutOfBand/2412MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



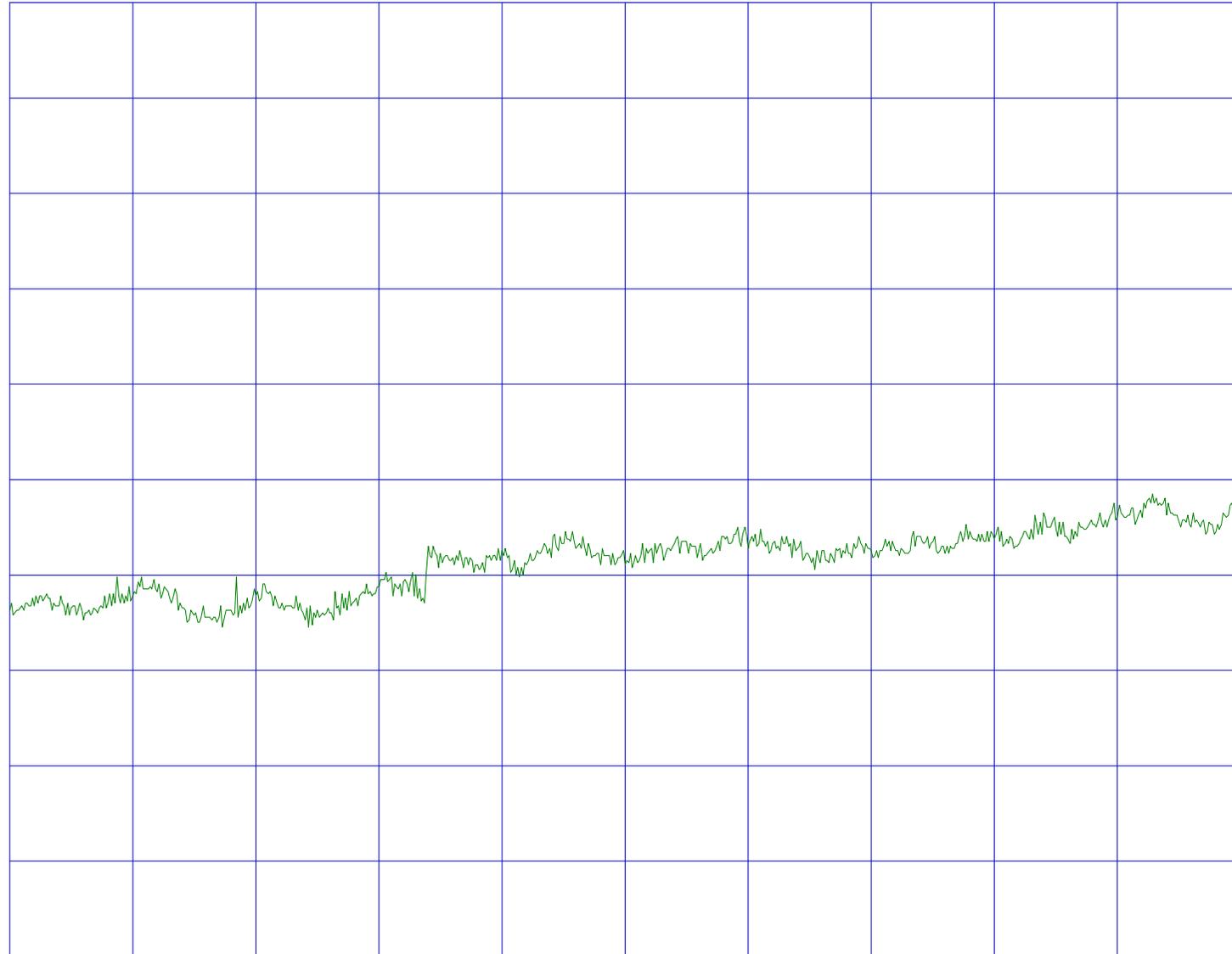
START 3.000000GHz  
RBW 100kHz

VBW 100kHz

STOP 10.000000GHz  
SWP 2s

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA28  
15.247(c)OutOfBand/2412MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



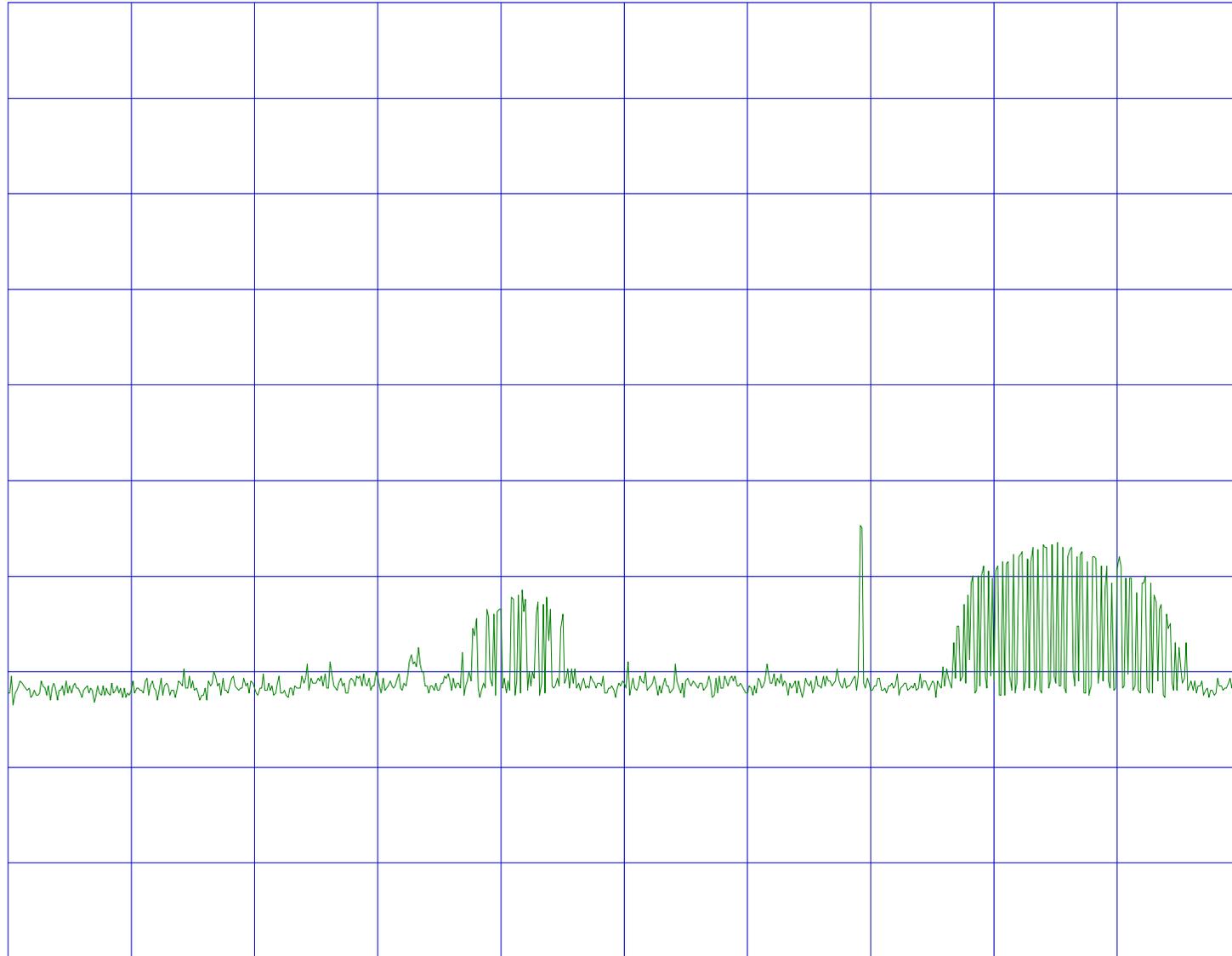
START 10.000000GHz  
RBW 100kHz

VBW 100kHz

STOP 26.000000GHz  
SWP 5s

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA29  
15.247(c)OutOfBand/2437MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



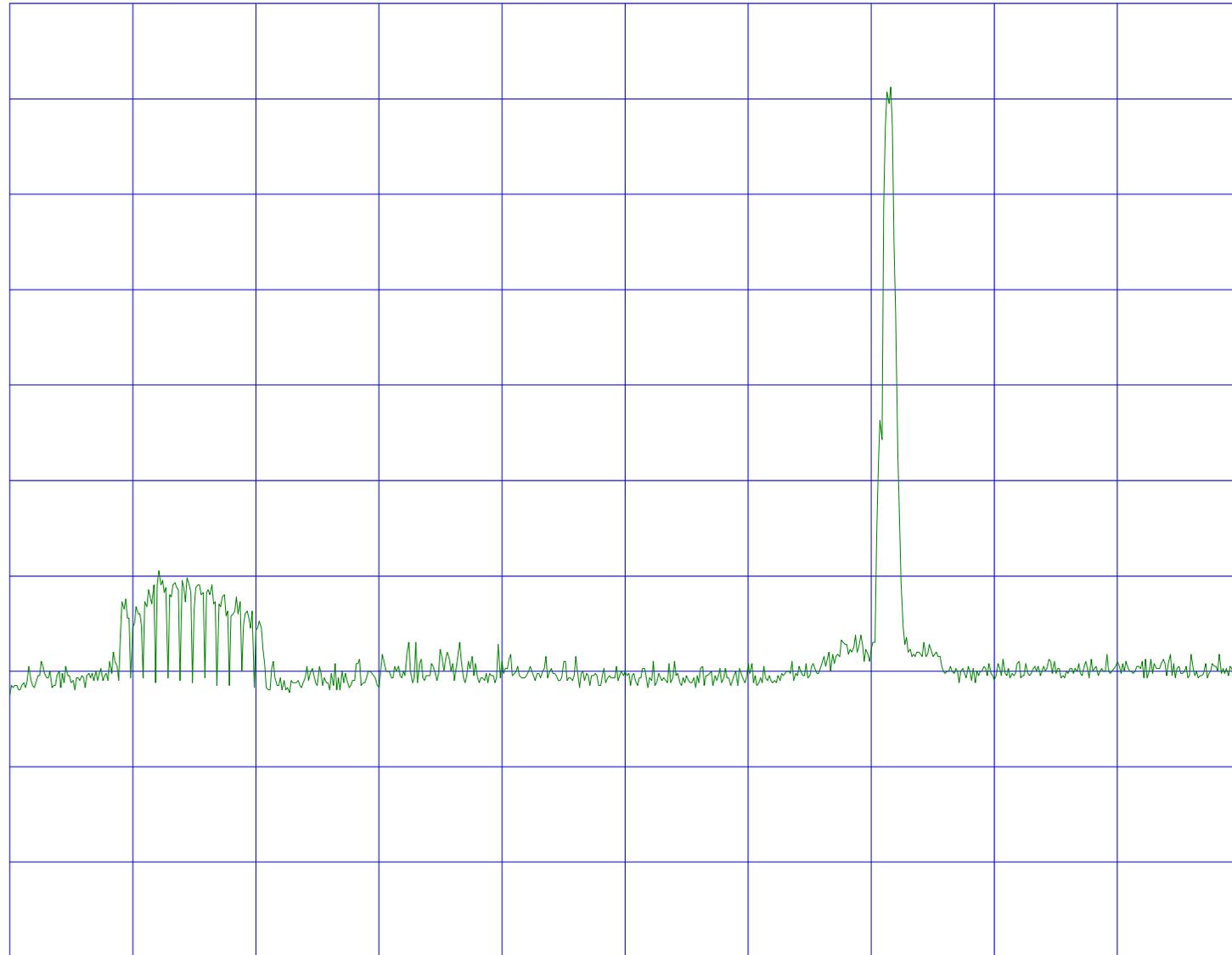
START 30.00MHz  
RBW 100kHz

VBW 100kHz

STOP 1.00000GHz  
SWP 500ms

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA30  
15.247(c)OutOfBand/2437MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



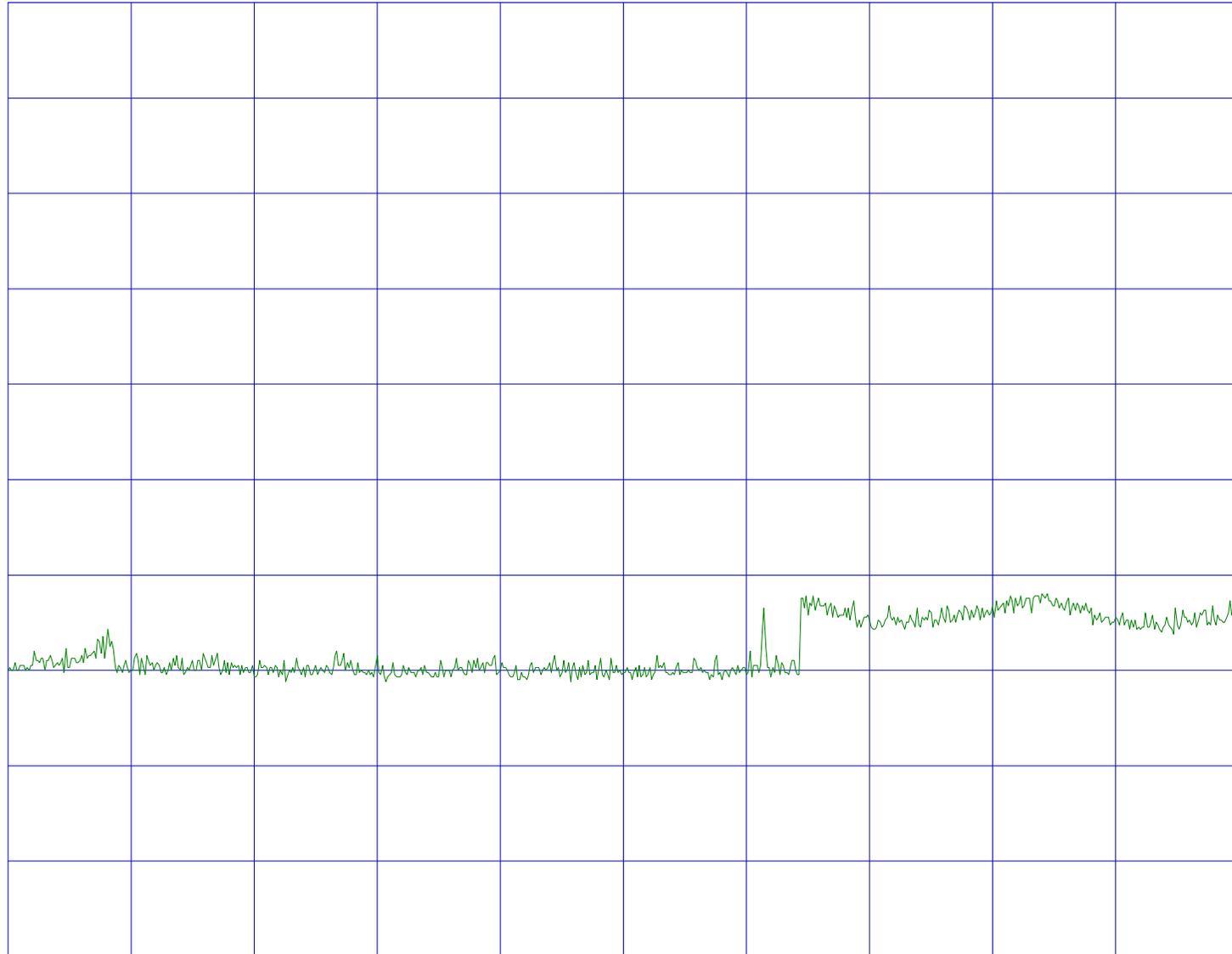
START 1.000000GHz  
RBW 100kHz

VBW 100kHz

STOP 3.000000GHz  
SWP 1s

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA31  
15.247(c)OutOfBand/2437MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



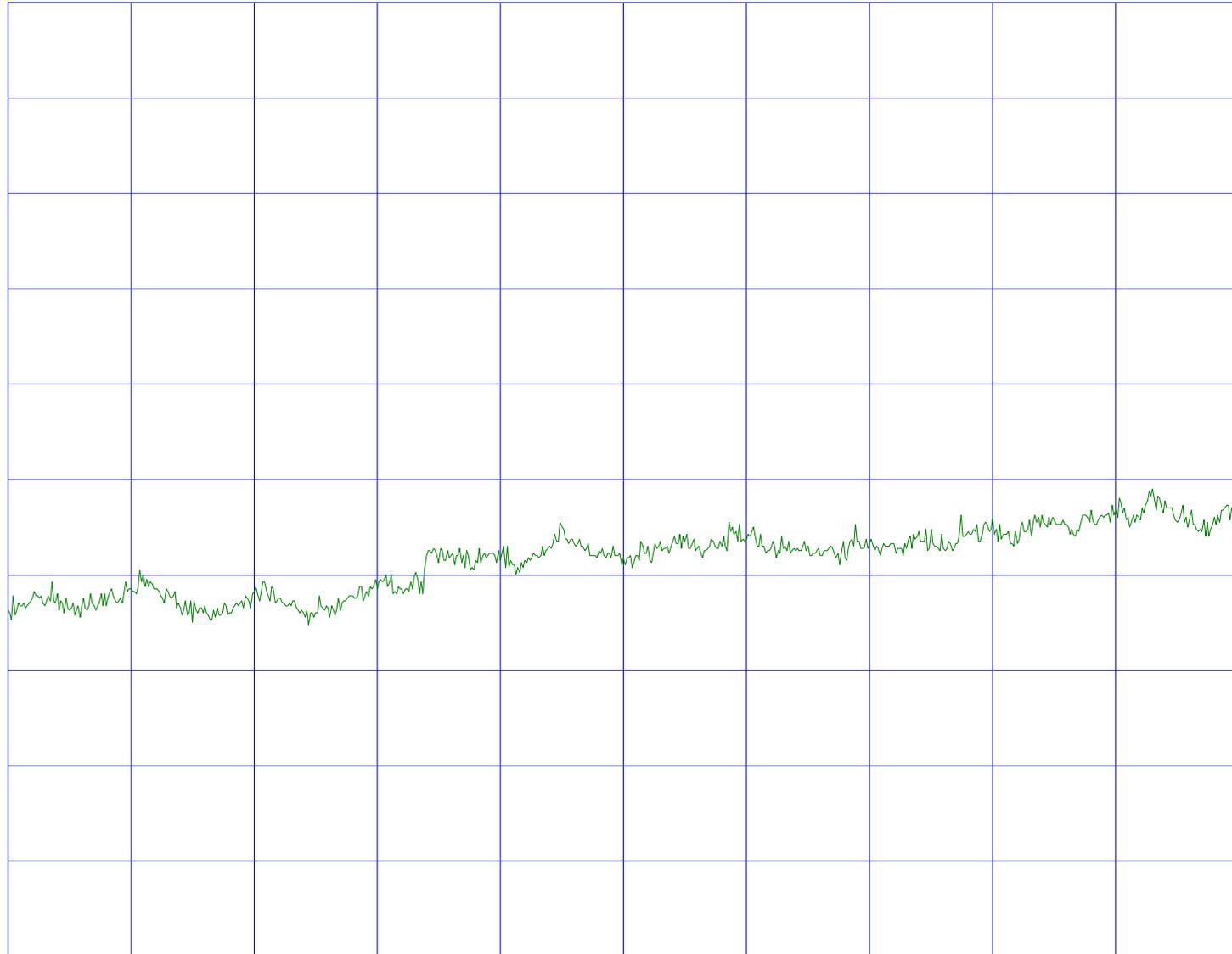
START 3.000000GHz  
RBW 100kHz

VBW 100kHz

STOP 10.000000GHz  
SWP 2s

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA32  
15.247(c)OutOfBand/2437MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



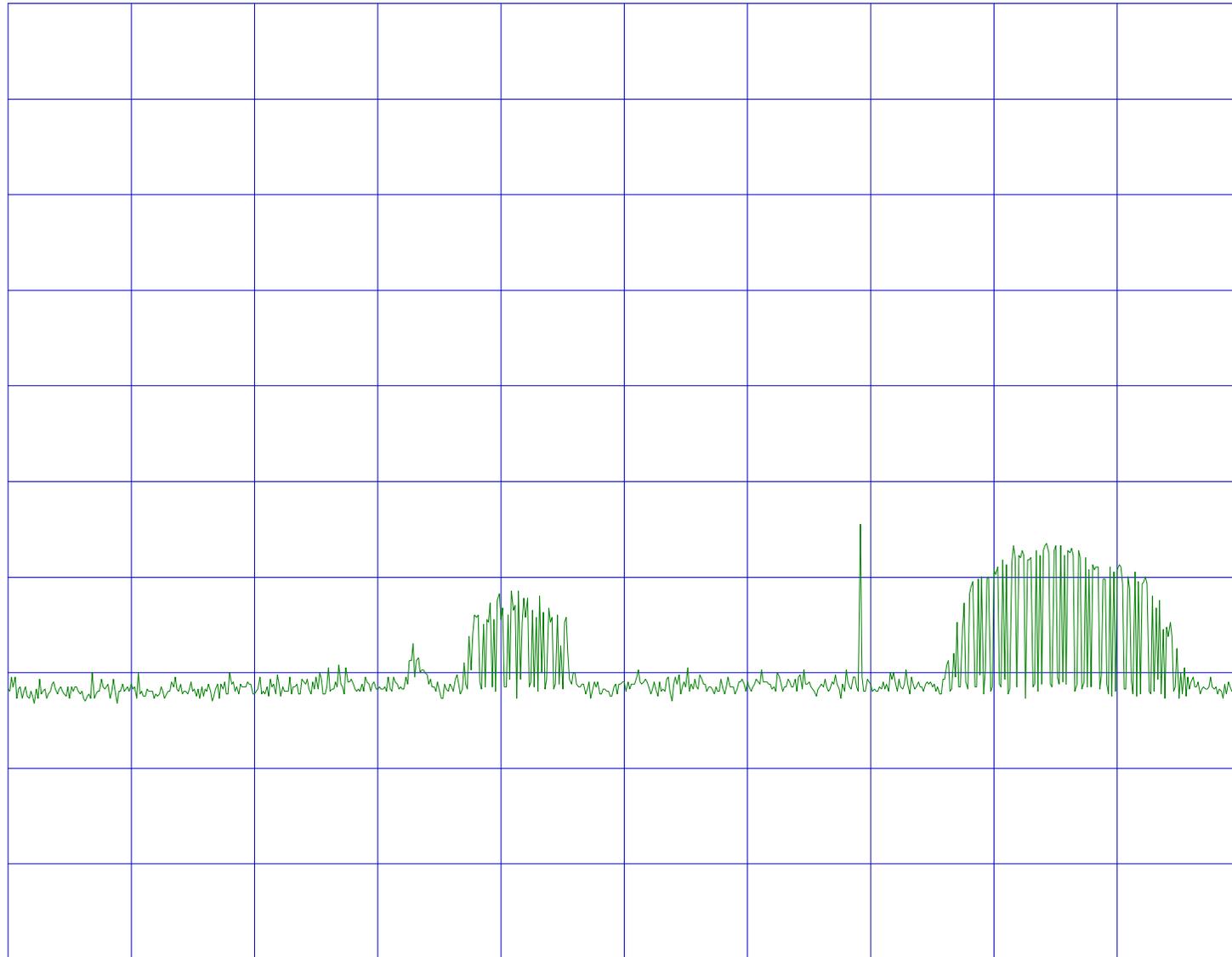
START 10.000000GHz  
RBW 100kHz

VBW 100kHz

STOP 26.000000GHz  
SWP 5s

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA33  
15.247(c)OutOfBand/2462MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



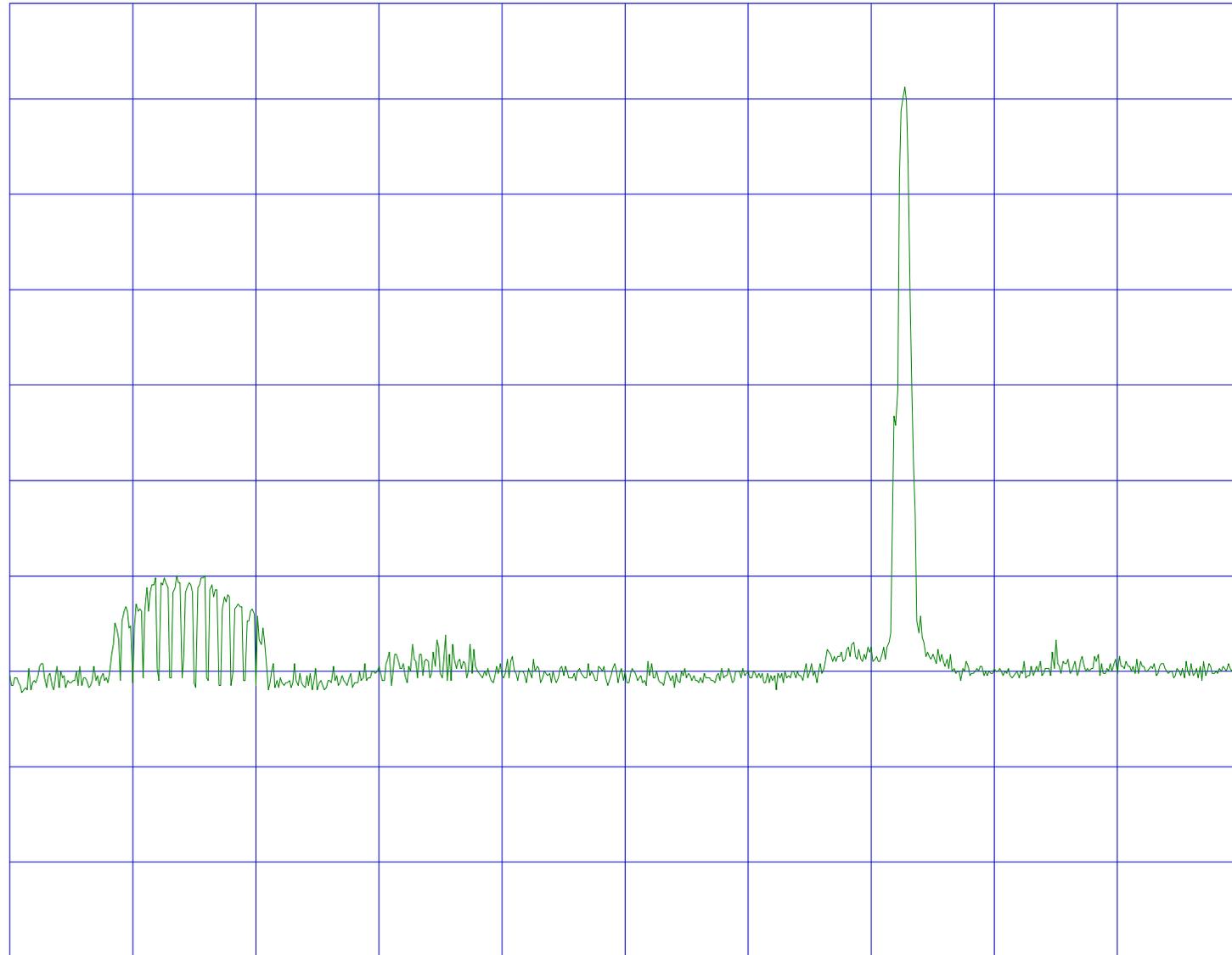
START 30.00MHz  
RBW 100kHz

VBW 100kHz

STOP 1.00000GHz  
SWP 500ms

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA34  
15.247(c)OutOfBand/2462MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



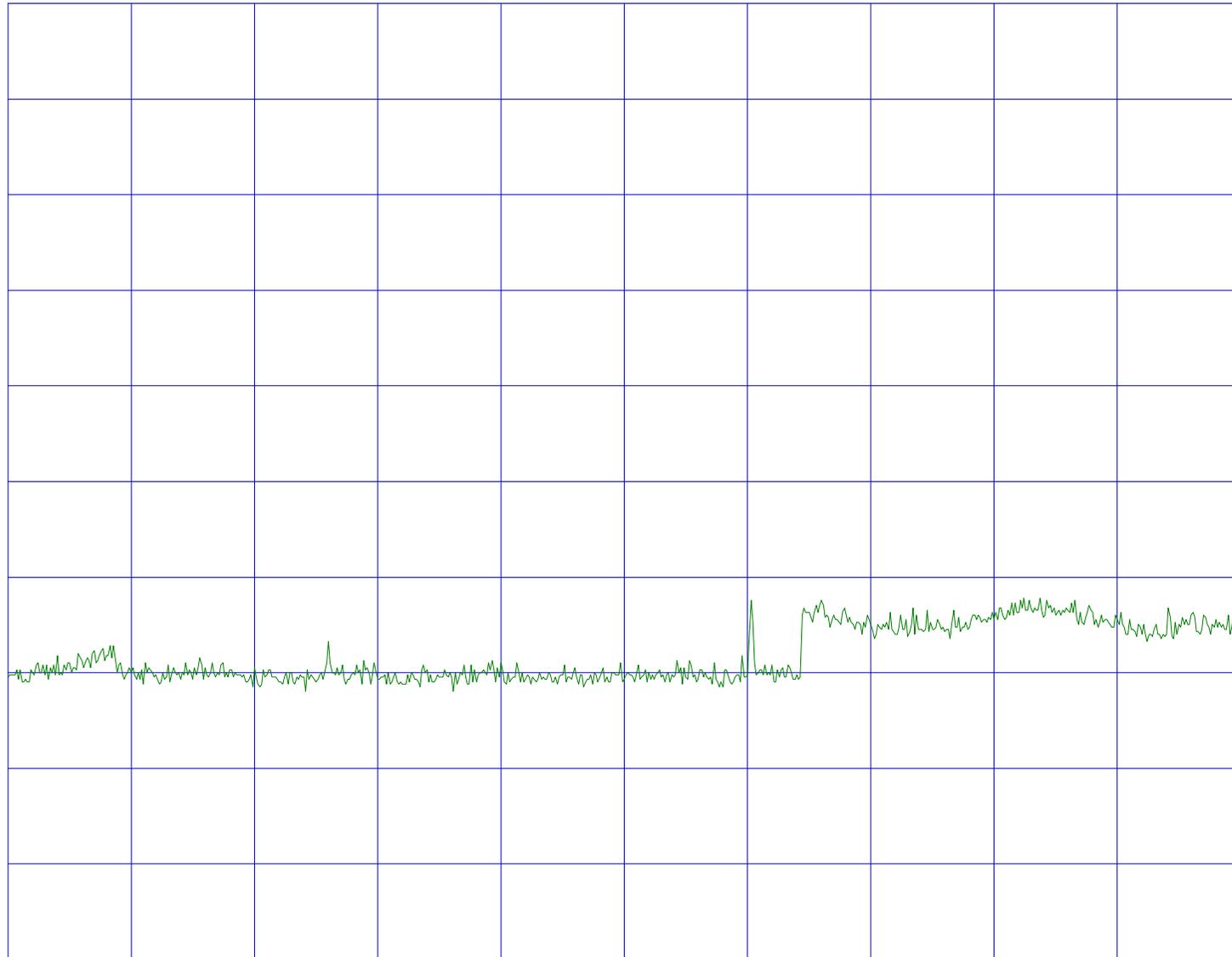
START 1.000000GHz  
RBW 100kHz

VBW 100kHz

STOP 3.000000GHz  
SWP 1s

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA35  
15.247(c)OutOfBand/2462MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



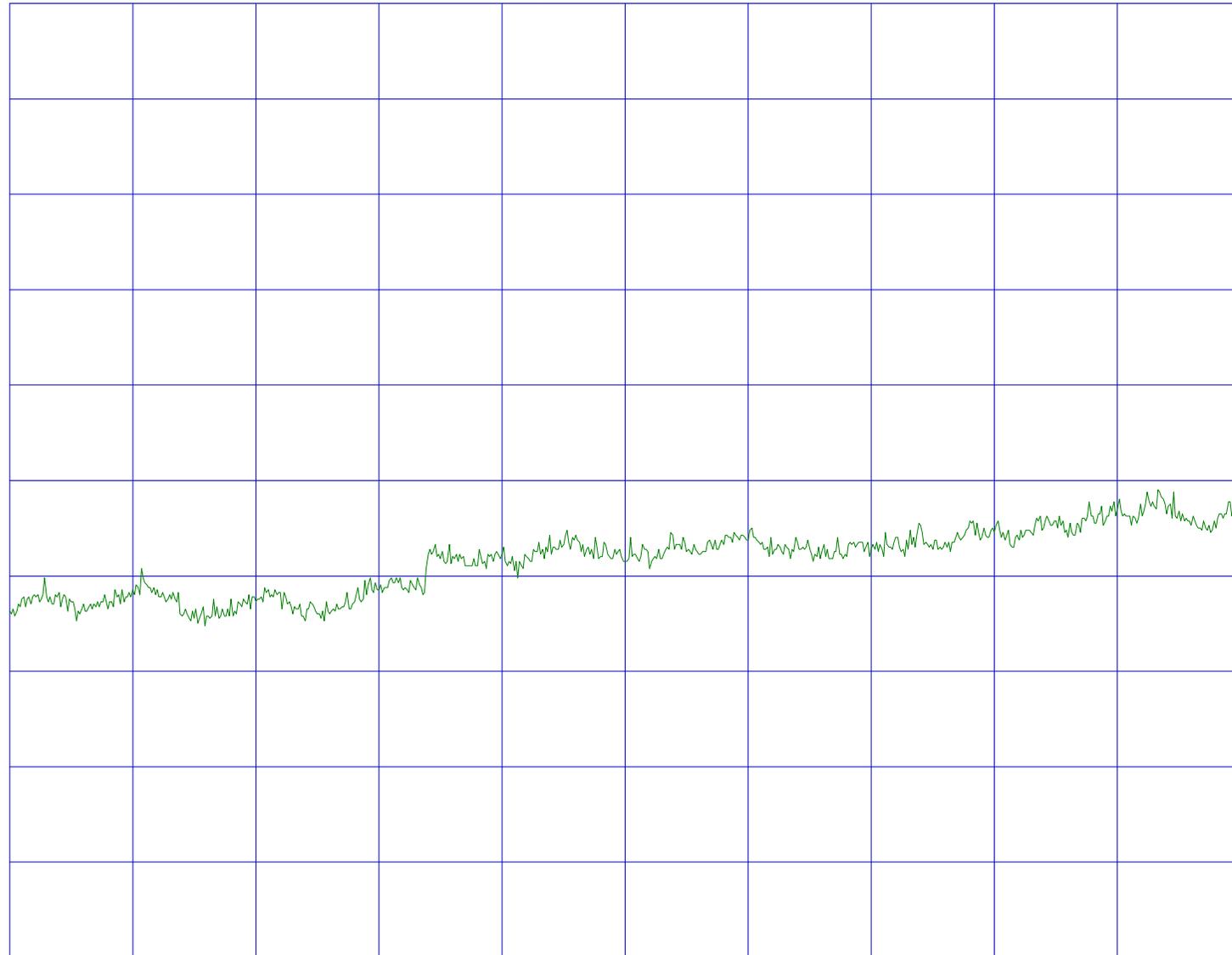
START 3.000000GHz  
RBW 100kHz

VBW 100kHz

STOP 10.000000GHz  
SWP 2s

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA36  
15.247(c)OutOfBand/2462MHz/22DE0015-YW-1  
REF 117 dBuV ATT 30 dB

10dB/



START 10.000000GHz  
RBW 100kHz

VBW 100kHz

STOP 26.000000GHz  
SWP 5s

# Power Density(Conducted)

A-PEX INTERNATIONAL CO., LTD.  
YOKOWA NO.3 OPEN SITE

COMPANY : Sony Corporation  
EQUIPMENT : Notebook Computer  
MODEL : PCG-441L  
FCC ID : AK8PCG441L  
POWER : AC120V/60Hz  
Mode : Transmitting

REPORT NO : 22DE0015-YW-1  
REGULATION : Fcc Part15 SubpartC.247(d)  
DATE : 11/21/2001  
Temp./Humi. : 22°C/46%

  
ENGINEER : Naoki Sakamoto

CH	FREQ [GHz]	S/A Reading [dBuV]	Cable Loss [dB]	ATTEN. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2.4106	108.6	0.5	0.0	2.1	8.0	5.9
Mid	2.4370	103.3	0.5	0.0	-3.3	8.0	11.3
High	2.4620	103.1	0.5	0.0	-3.4	8.0	11.4

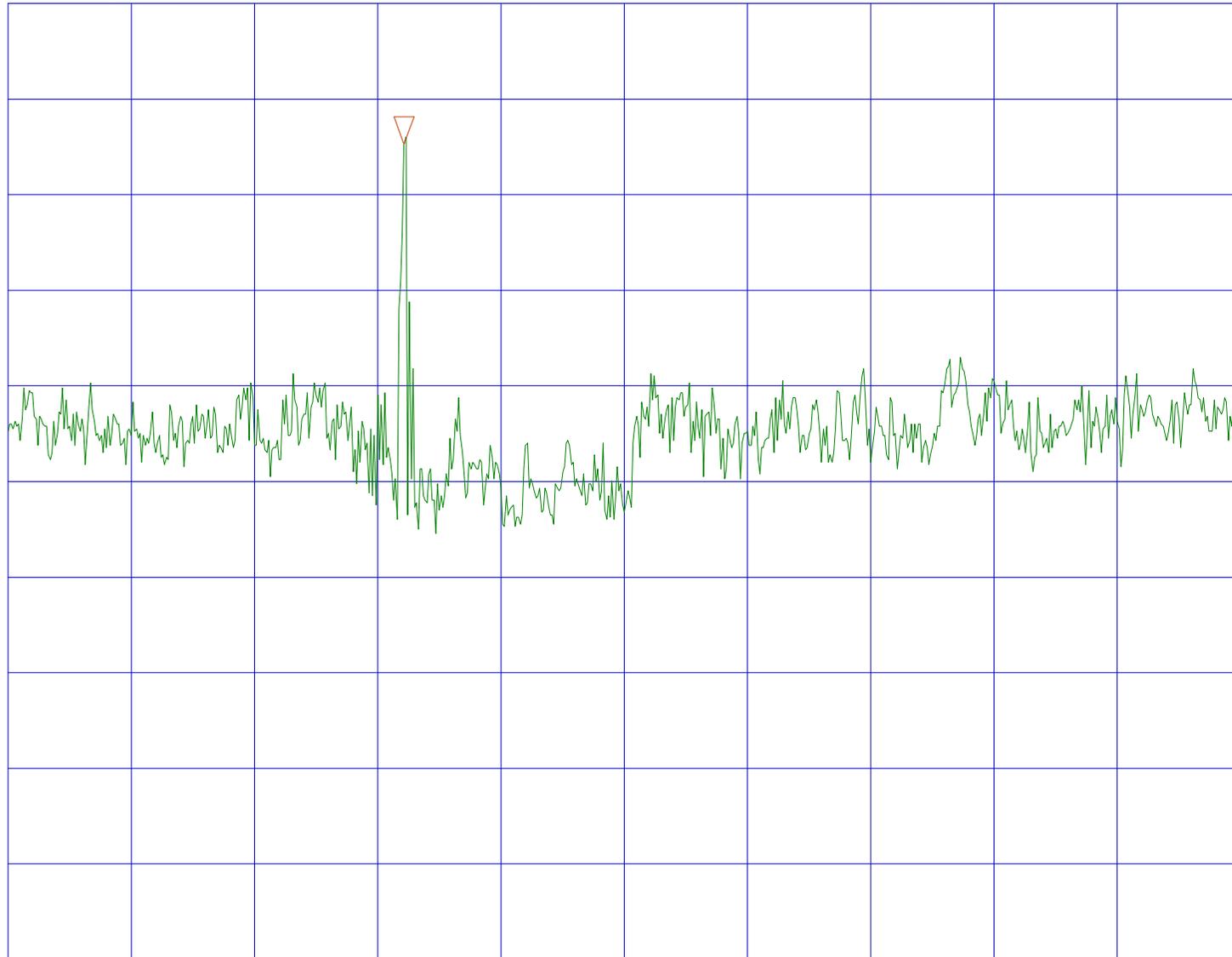
Sample Calculation :

RESULT-Reading(-107:Converted to dBm) + CABLE LOSS + ATTEN.

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA38  
15.247(d)PowerDensity/2412MHz/22DE0015-YW-1  
REF 116 dBuV ATT 30 dB

MAKER  
2.4106 GHz  
108.63 dBuV

5dB/



START 2.410314GHz  
RBW 3kHz

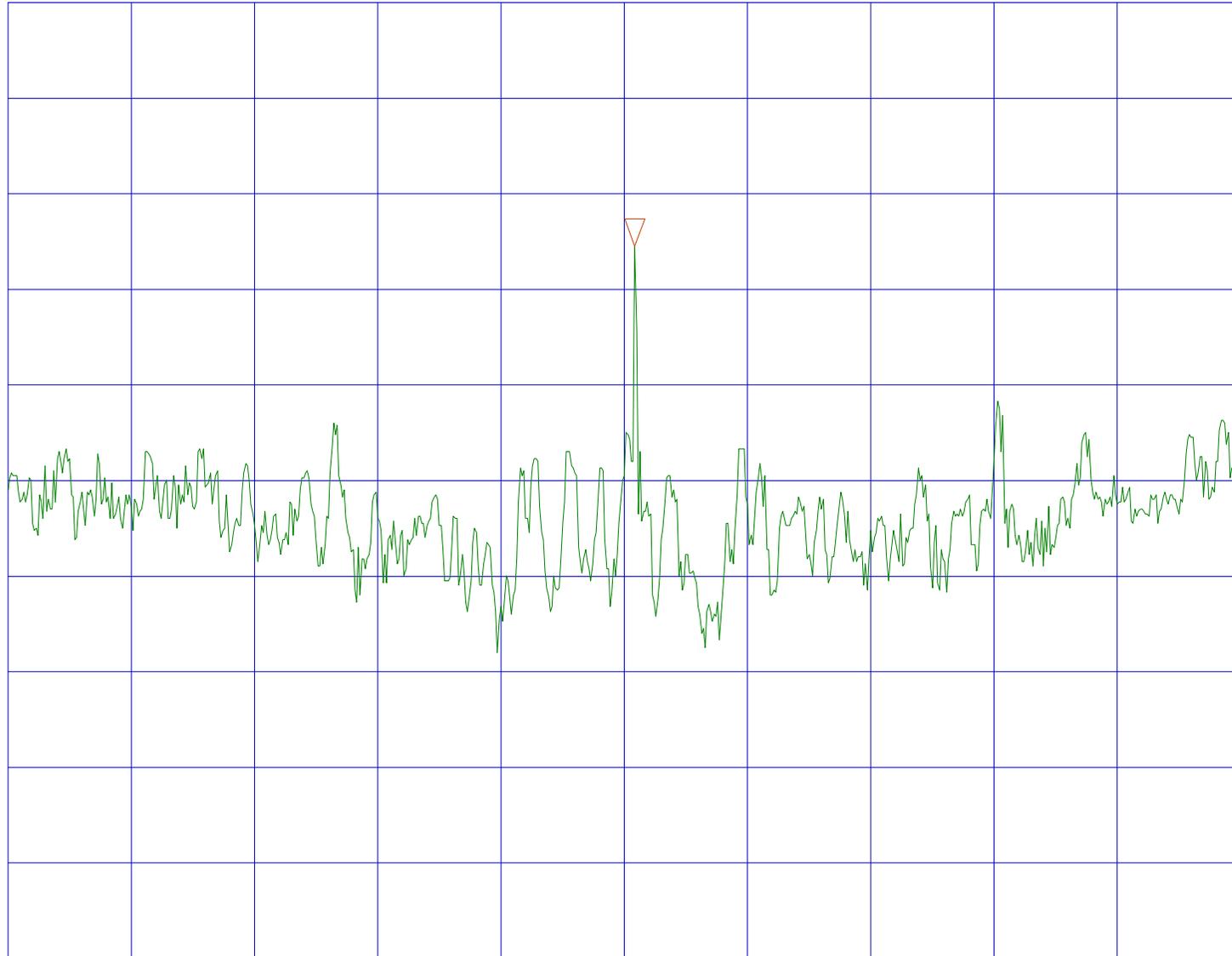
VBW 10kHz

STOP 2.411314GHz  
SWP 500s

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA39  
15.247(d)PowerDensity/2437MHz/22DE0015-YW-1  
REF 116 dBuV ATT 30 dB

MAKER  
2.4370 GHz  
103.25 dBuV

5dB/



START 2.436500GHz  
RBW 3kHz

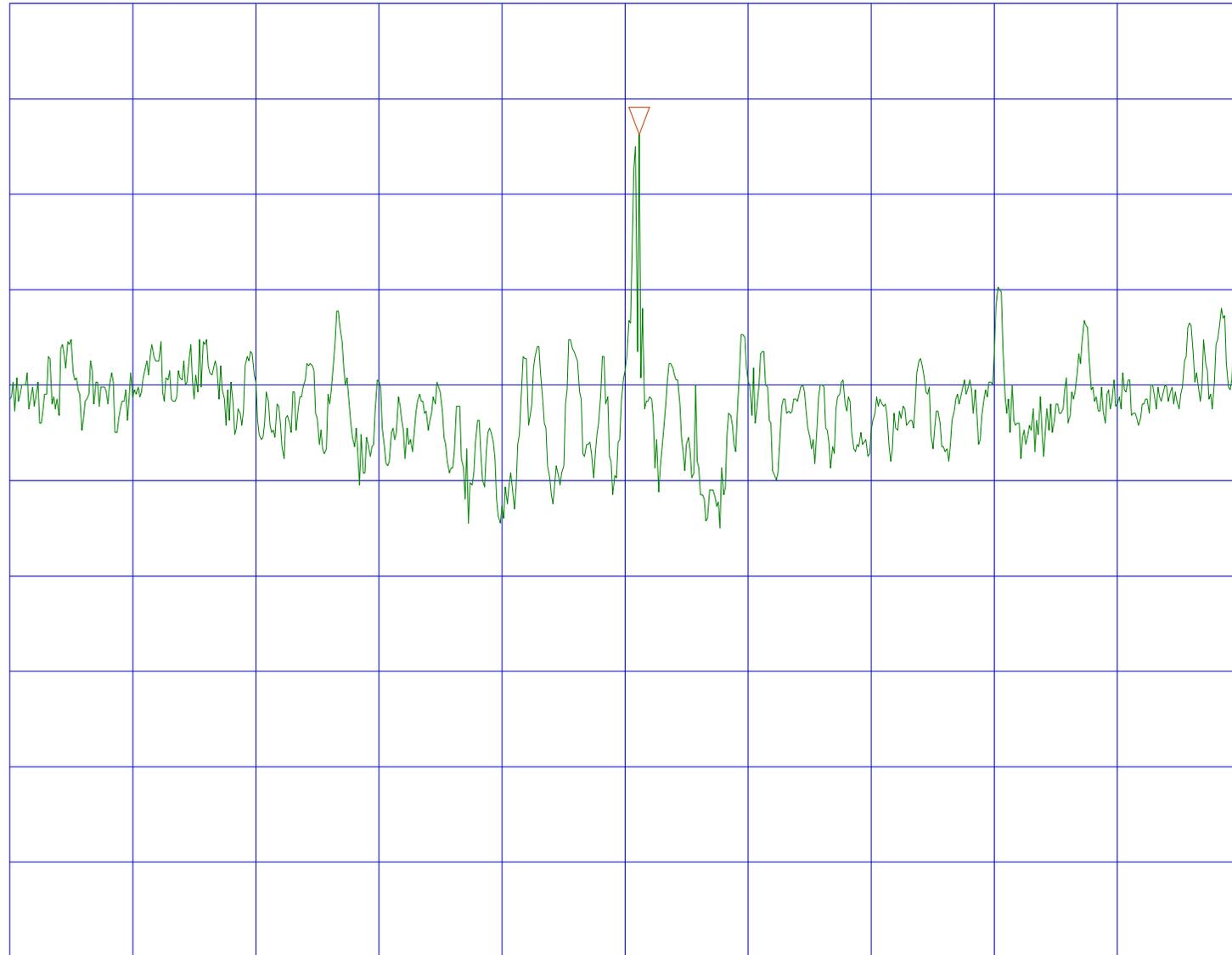
VBW 10kHz

STOP 2.437500GHz  
SWP 500s

Sony Corporaton/PCG-441L/FCC ID:AK8PCG441L/PageA40  
15.247(d)PowerDensity/2462MHz/22DE0015-YW-1  
REF 110 dBuV ATT 30 dB

MAKER  
2.4620 GHz  
103.13 dBuV

5dB/



START 2.461500GHz  
RBW 3kHz

VBW 10kHz

STOP 2.462500GHz  
SWP 500s