

EMI TEST REPORT

Test Report No. : 22GE0013-YW-1

Applicant: Sony Corporation

Type of Equipment: Wireless LAN built in Notebook Computer

Model No.: PCG-551L

FCC ID: AK8PCG551L

Test standard: FCC Part15 Subpart C, Section 15.247
*Except FCC 15.247(e) Processing Gain

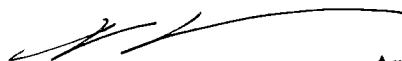
Test Result: Complied

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

Date of test: February 20-22, 2002

Tested by:



Naoki Sakamoto

Group Leader of EMC section

Approved by:



Kazutoyo Nakanishi

Site Operation Manager of EMC section

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 : 81-3-5795-8033
FAX : 81-3-5795-8346

REGULATION(S) : FCC Part15 Subpart C, Section 15.247
* Except FCC15.247(e) Processing Gain

MODEL NUMBER : PCG-551L

SERIAL NUMBER : 040 (Antenna Port Conducted tests)
: 041 (Radiated and AC Main Conducted Emissions tests)

KIND OF EQUIPMENT : Wireless LAN built in Notebook Computer

TESTED DATE : February 20-22, 2002

RECEIPT DATE OF SAMPLE : February 14, 2002

REPORT FILE NUMBER : 22GE0013-YW-1

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

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.

2 PRODUCT DESCRIPTION

Sony Corporation, Model PCG-551L (referred to as the EUT in this report) is a Wireless LAN built in Notebook Computer. The specification is as following :

Clock frequency used in the EUT : 850MHz, 100MHz, 48MHz, 40MHz, 33MHz, 25MHz, 24.276MHz, 20MHz, 16.0MHz, 14.31MHz, 10MHz, 32.768kHz

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 : $\lambda/4$ mono-pole Antenna (Integral)
Antenna Gain : 0 dBi

*FccPart15.31(e)

The host device PCG-551L 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-551L 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-551L S/N: 040(Antenna Port Conducted tests) : 041(Radiated and AC Main Conducted Emissions tests) *FccPart15 Subpart B Class B Digital Device : DOC	AK8PCG551L	Notebook Computer
(2) Sony Corporation M/N: PCGA-AC16V3 S/N: 0111A0038521P	DOC	AC Adapter

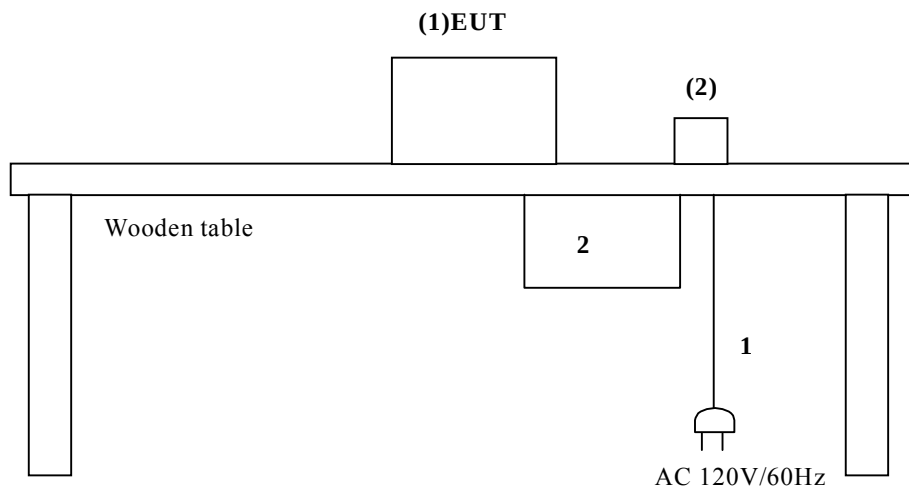
3 SYSTEM TEST CONFIGURATION

3.1 Justification

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

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

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
1	AC Power Cable	0.8	N	Polyvinyl chloride
2	DC Power Cable	2.0	N	Polyvinyl chloride

4 Measurement Uncertainty

Conducted Emission Test

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

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 $\pm 4.4\text{dB}$.

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

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

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

Test report

FCC ID : AK8PCG551L
Our reference : 22GE0013-YW-1
Page : 8 of 44
Issued date : March 8, 2002

5 TEST EQUIPMENT USED

Name	Manufacturer	Model	Control No.	Calibrated Until
Pre Amplifier	Hewlett Packard	8447D	AF-01	March 30, 2002
Pre Amplifier	Hewlett Packard	8449B	AF-04	November 3, 2002
Attenuator	Anritsu	MP721B	AT-06	March 30, 2002
Attenuator	Hirose Electric	ATT106	AT-20	December 3, 2002
Biconical Antenna	Schwarzbeck	BBA9106	BA-03	April 30, 2002
Horn Antenna	A.H.Systems	SAS-200/571	HA-01	May 19, 2002
Horn Antenna	Schwarzbeck	BBHA9170	EST-10	October 16, 2004
Logperiodic Antenna	Schwarzbeck	UKLP9140-A	LA-06	April 30, 2002
LISN	Schwarzbeck	NSLK8126	LS-04	November 5, 2002
Spectrum Analyzer	Hewlett Packard	8567A	SA-04	March 30, 2002
Spectrum Analyzer	Advantest	R3273	SA-06	November 19, 2002
Test Receiver	Rohde & Schwarz	ESHS30	TR-05	August 23, 2002
Test Receiver	Rohde & Schwarz	ESVS10	TR-06	November 21, 2002
Power Sensor	Hewlett Packard	ECP-E18A	PS-01	May 28, 2002
Power Meter	Hewlett Packard	EPM-442A	PM-01	May 28, 2002
High Pass Filter	Tokimec	TF323DCA	HF-04	October 14, 2002
Coaxial Cable	A-PEX	CC-35/36/37/38/ SW-31/32	CC-3SC	March 30, 2002
Coaxial Cable	A-PEX	CC-31/32/33/34/ 34/35/36/37/38/ SW-31/32	CC-3ORC	March 30, 2002
Microwave Cable	Storm	421-014(7m)	CC-C10	December 21, 2002
Microwave Cable	Suhner	SUCOFLEX	CC-C13	January 12, 2003

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 flushed with rear of tabletop.

All other surfaces of tabletop were 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, was individually connected through a LISN to the input power source. All unused 50 ohm connectors of the LISN were resistively terminated in 50 ohm 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 Page 14 to 18
Photographs of test setup : Page 11(1)
Test result : Pass
Test instruments : LS-04, SA-04, TR-05

6.2 § 15.247(a)(2) 6dB Bandwidth (Antenna Port Conducted)

Test Procedure

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

1. 2412MHz(Low) : 9.60MHz > 500kHz
2. 2437MHz(Mid) : 9.92MHz > 500kHz
3. 2462MHz(High) : 9.88MHz > 500kHz

Test data : APPENDIX Page 19 to 20
Test result : Pass
Test instruments : SA-06

6.3 § 15.247(b) Maximum Peak Out Put Power (Antenna Port 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 Page 21
Test result : Pass
Test instruments : PS-01, PM-01, SA-06

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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 Page22 to 24 (30 –1000MHz)
: APPENDIX Page25 to 27 (1 – 26GHz)
: APPENDIX Page28 to 31 (2390MHz/2483.5MHz, Restricted band Charts)

Photographs of test setup : Page12(2)

Test result : Pass

Test instruments : AF-01, AF-04, BA-03, LA-06, HA-01, SA-04, SA-05, TR-06

6.5 § 15.247(c) Out of Band Emissions(Antenna Port Conducted)

Test Procedure

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

Test data : APPENDIX Page32 to 42

Test result : Pass

Test instruments : SA-06

6.6 § 15.247(d) Power Density(Antenna Port Conducted)

Test Procedure

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

Test data : APPENDIX Page43 to 44

Test result : Pass

Test instruments : SA-06

A-pex International Co., Ltd.

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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

1 : 6.1 Conducted Emission	<u>14 to 18</u>
2 : 6.2 6dB Bandwidth(Antenna Port Conducted)	<u>19 to 20</u>
3 : 6.3 Maximum peak output power(Antenna Port Conducted)	<u>21</u>
4 : 6.4 Out of band emissions(Radiated)	<u>22 to 27</u>
5 : 6.4 2390MHz/2483.5MHz, Restricted band Charts(Radiated)	<u>28 to 31</u>
6 : 6.5 Out of band emissions(Antenna Port Conducted)	<u>32 to 42</u>
7 : 6.6 Power density(Antenna Port Conducted)	<u>43 to 44</u>

DATA OF CONDUCTION TEST

A-PEX INTERNATIONAL CO., LTD.
YOKOWA No.3 OPEN TEST SITE
Report No. : 22GE0013-YW-1

Applicant : SONY Corp.
Kind of Equipment : Notebook Personal Computer
Model No. : PCG-551L
Serial No. : 041
Power : AC120V/60Hz
Mode : Transmitting (2437MHz)
Remarks : FCC ID : AK8PCG551L
Date : 2/22/2002
Phase : Single Phase
Temperature : 23 °C
Humidity : 51 %
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 [dBuV]	QP [dBuV]	AV [dBuV]				QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]
1.	0.6854	33.3	-	34.2	-	0.1	0.1	0.0	34.4	-	48.0	0.0	13.6	-
2.	0.8249	27.5	-	27.5	-	0.1	0.1	0.0	27.7	-	48.0	0.0	20.3	-
3.	1.4234	26.4	-	25.9	-	0.1	0.1	0.0	26.6	-	48.0	0.0	21.4	-
4.	4.8696	21.8	-	22.1	-	0.2	0.2	0.0	22.5	-	48.0	0.0	25.5	-
5.	7.5359	20.6	-	20.0	-	0.4	0.3	0.0	21.3	-	48.0	0.0	26.7	-
6.	18.4018	16.4	-	16.9	-	0.8	0.4	0.0	18.1	-	48.0	0.0	29.9	-
7.	21.9948	13.1	-	13.3	-	0.9	0.4	0.0	14.6	-	48.0	0.0	33.4	-

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

All other spurious emissions were less than 20dB for the limit.

DATA OF CONDUCTION TEST CHART

A-PEX INTERNATIONAL CO., LTD.

YOKOWA No.3 OPEN TEST SITE

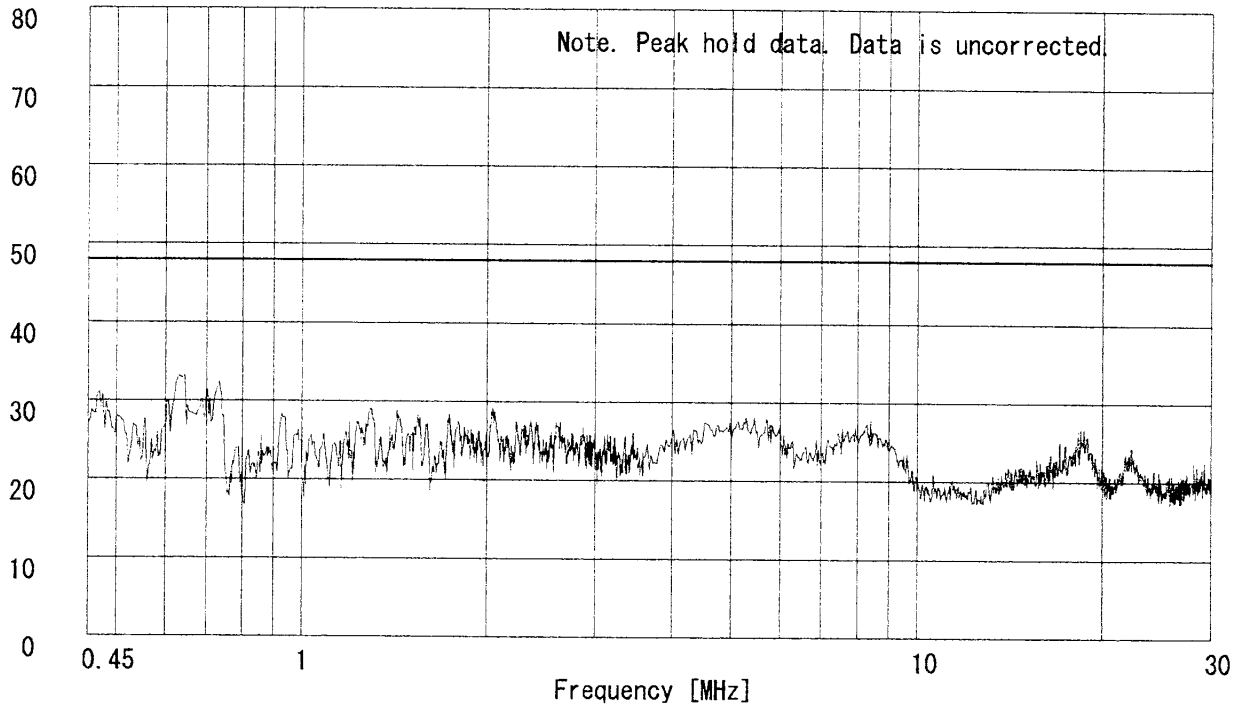
Report No. : 22GE0013-YW-1

Applicant : SONY Corp.
Kind of Equipment : Notebook Personal Computer
Model No. : PCG-551L
Serial No. : 041
Power : AC120V/60Hz
Mode : Transmitting (2412MHz)
Remarks : FCC ID : AK8PCG551L
Date : 2/22/2002
Phase : Single Phase
Temperature : 23 °C
Humidity : 51 %
Regulation 1 : FCC Part15.207
Regulation 2 : FCC Part15.207

Engineer : Naoki Sakamoto

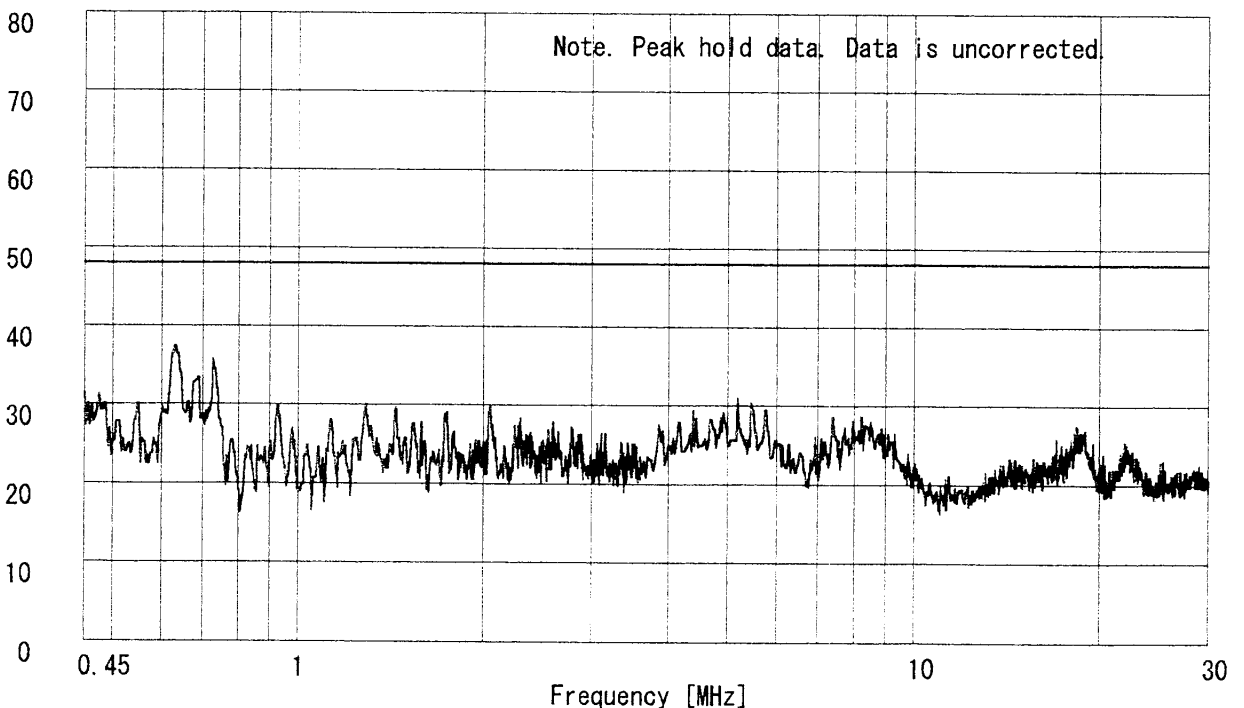
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

A-PEX INTERNATIONAL CO., LTD.

YOKOWA No.3 OPEN TEST SITE

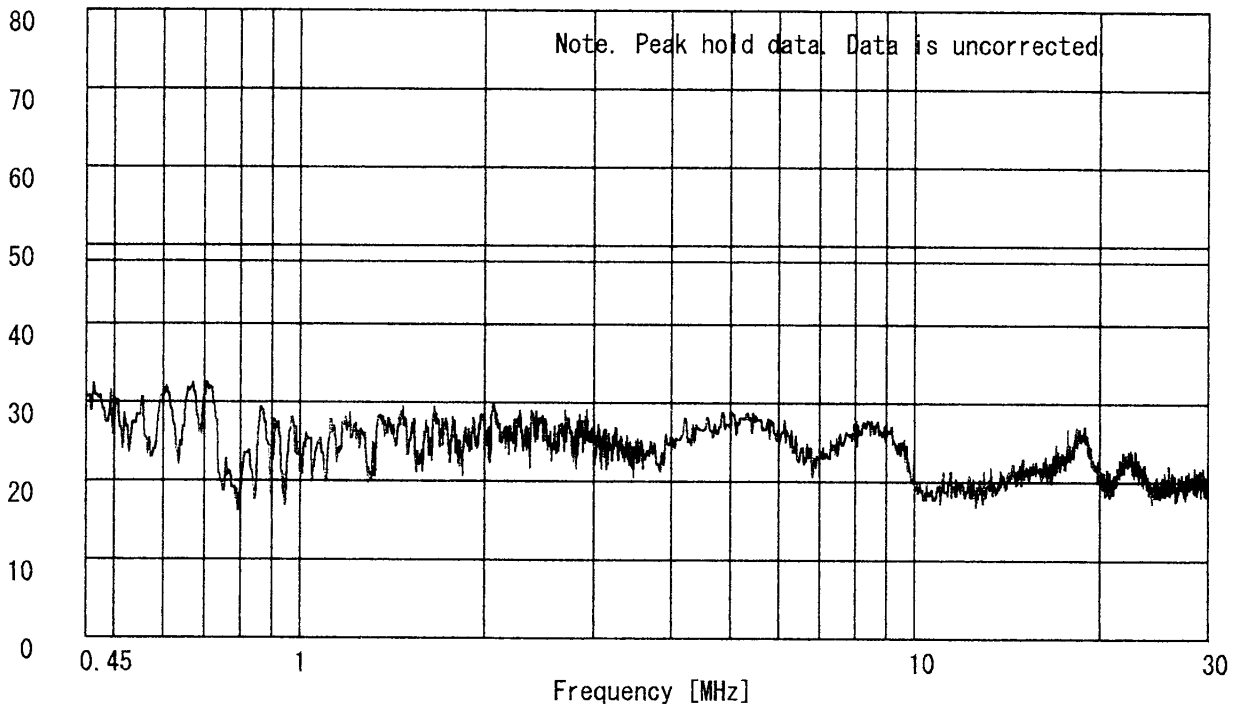
Report No. : 22GE0013-YW-1

Applicant : SONY Corp.
Kind of Equipment : Notebook Personal Computer
Model No. : PCG-551L
Serial No. : 041
Power : AC120V/60Hz
Mode : Transmitting (2437MHz)
Remarks : FCC ID : AK8PCG551L
Date : 2/22/2002
Phase : Single Phase
Temperature : 23 °C
Humidity : 51 %
Regulation 1 : FCC Part15.207
Regulation 2 : FCC Part15.207

Engineer : Naoki Sakamoto

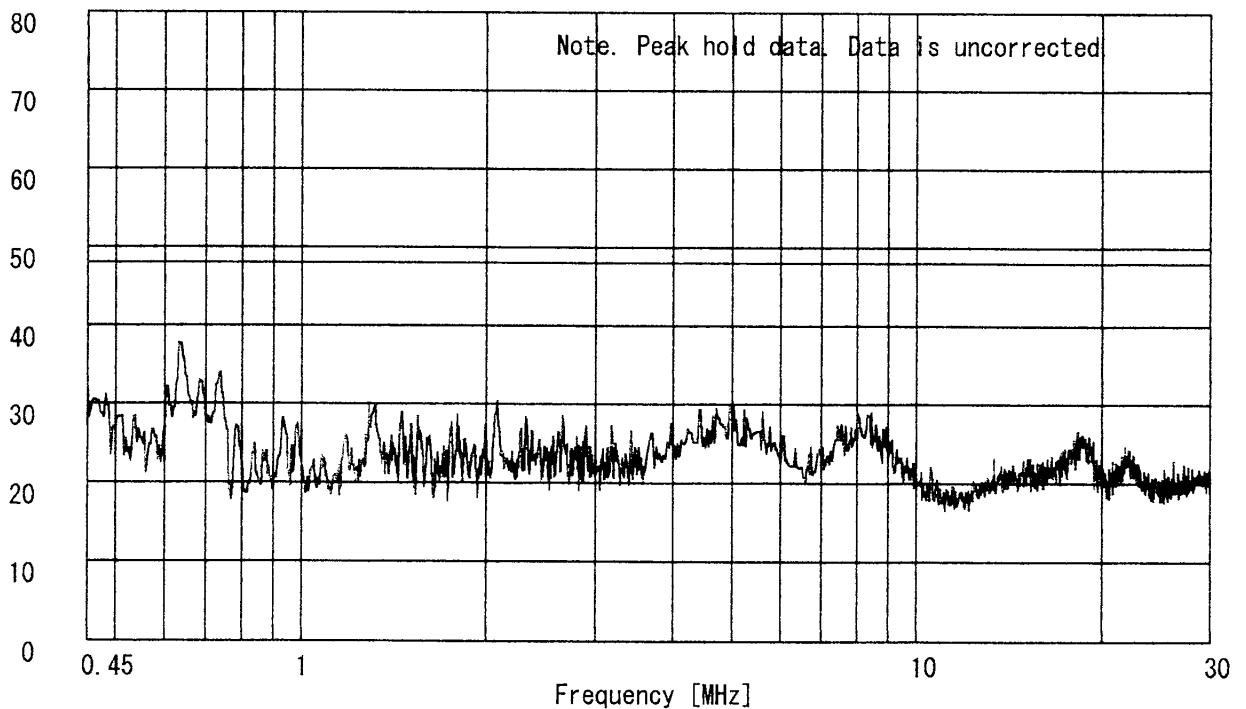
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

A-PEX INTERNATIONAL CO., LTD.

YOKOWA No.3 OPEN TEST SITE

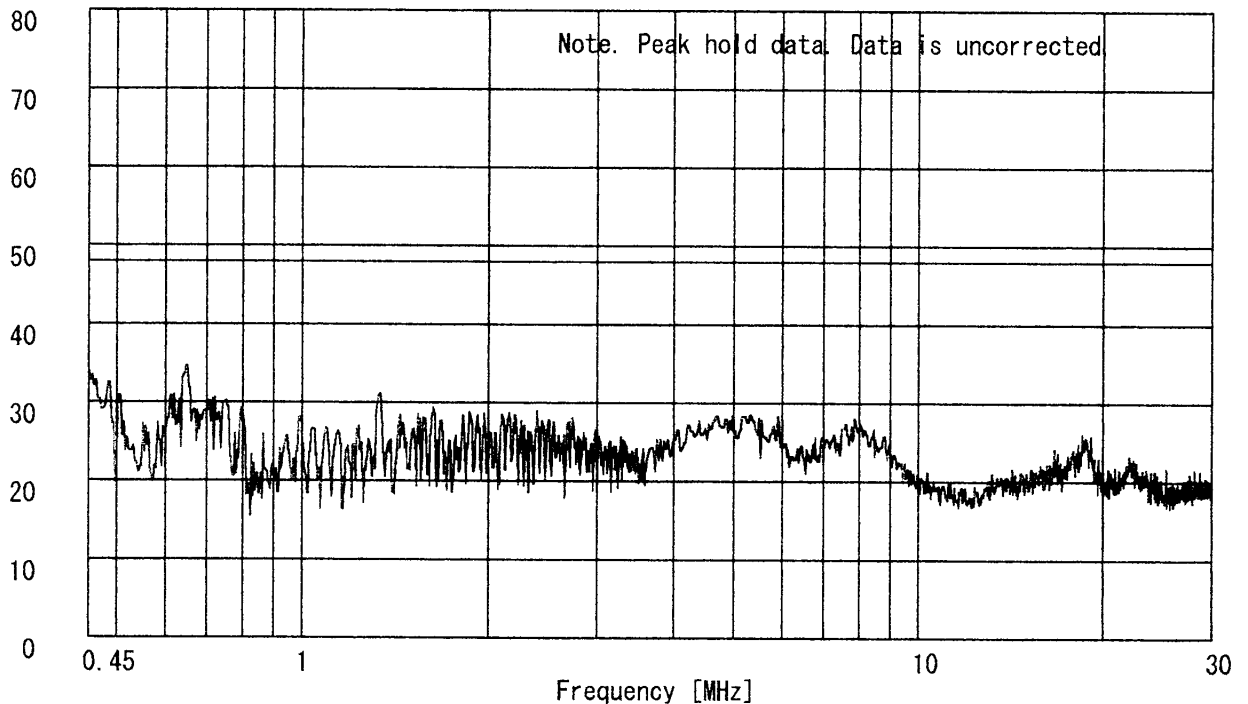
Report No. : 22GE0013-YW-1

Applicant : SONY Corp.
Kind of Equipment : Notebook Personal Computer
Model No. : PCG-551L
Serial No. : 041
Power : AC120V/60Hz
Mode : Transmitting (2462MHz)
Remarks : FCC ID : AK8PCG551L
Date : 2/22/2002
Phase : Single Phase
Temperature : 23 °C
Humidity : 51 %
Regulation 1 : FCC Part15.207
Regulation 2 : FCC Part15.207

Engineer : Naoki Sakamoto

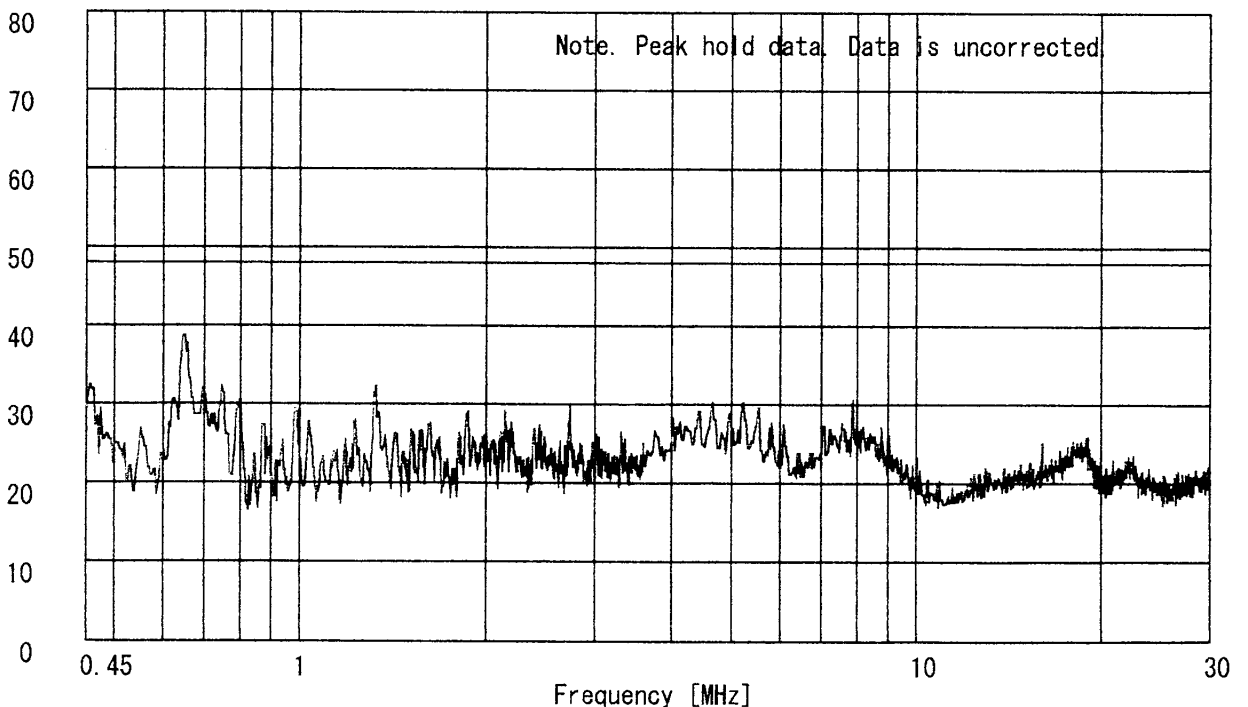
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

A-PEX INTERNATIONAL CO., LTD.

YOKOWA No.3 OPEN TEST SITE

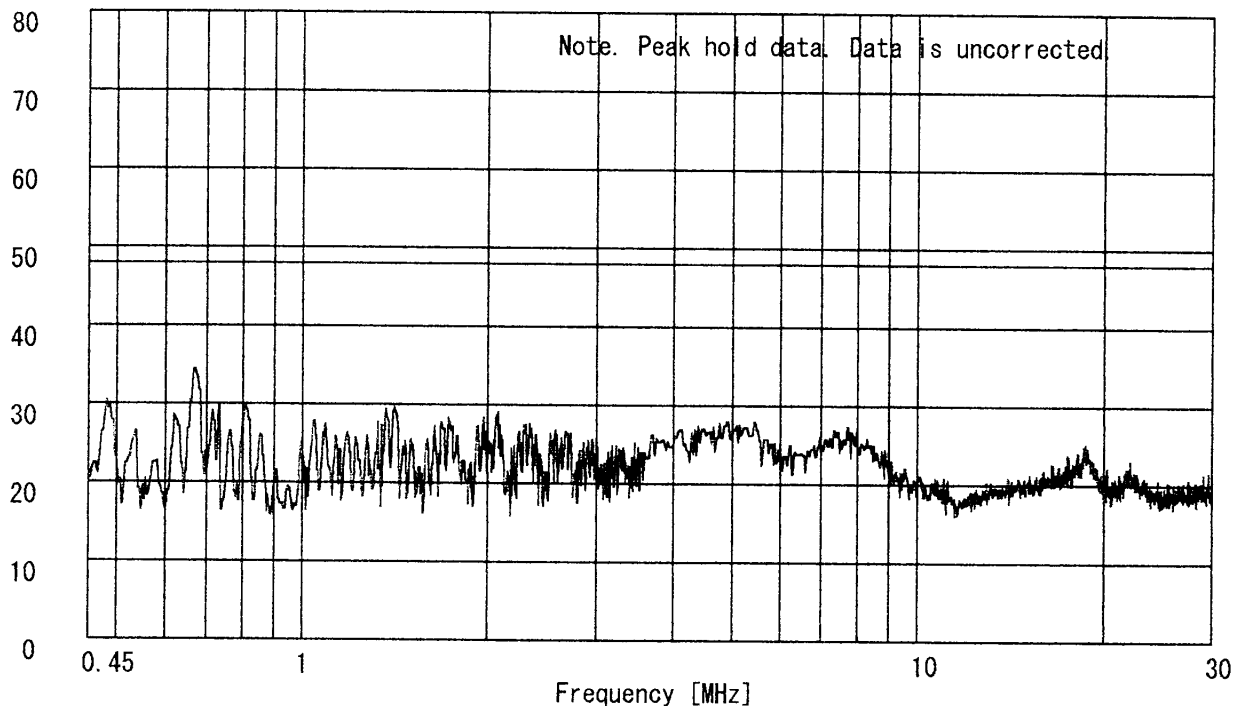
Report No. : 22GE0013-YW-1

Applicant : SONY Corp.
Kind of Equipment : Notebook Personal Computer
Model No. : PCG-551L
Serial No. : 041
Power : AC120V/60Hz
Mode : Receiving
Remarks : FCC ID : AK8PCG551L
Date : 2/22/2002
Phase : Single Phase
Temperature : 23 °C
Humidity : 51 %
Regulation 1 : FCC Part15.207
Regulation 2 : FCC Part15.207

Engineer : Naoki Sakamoto

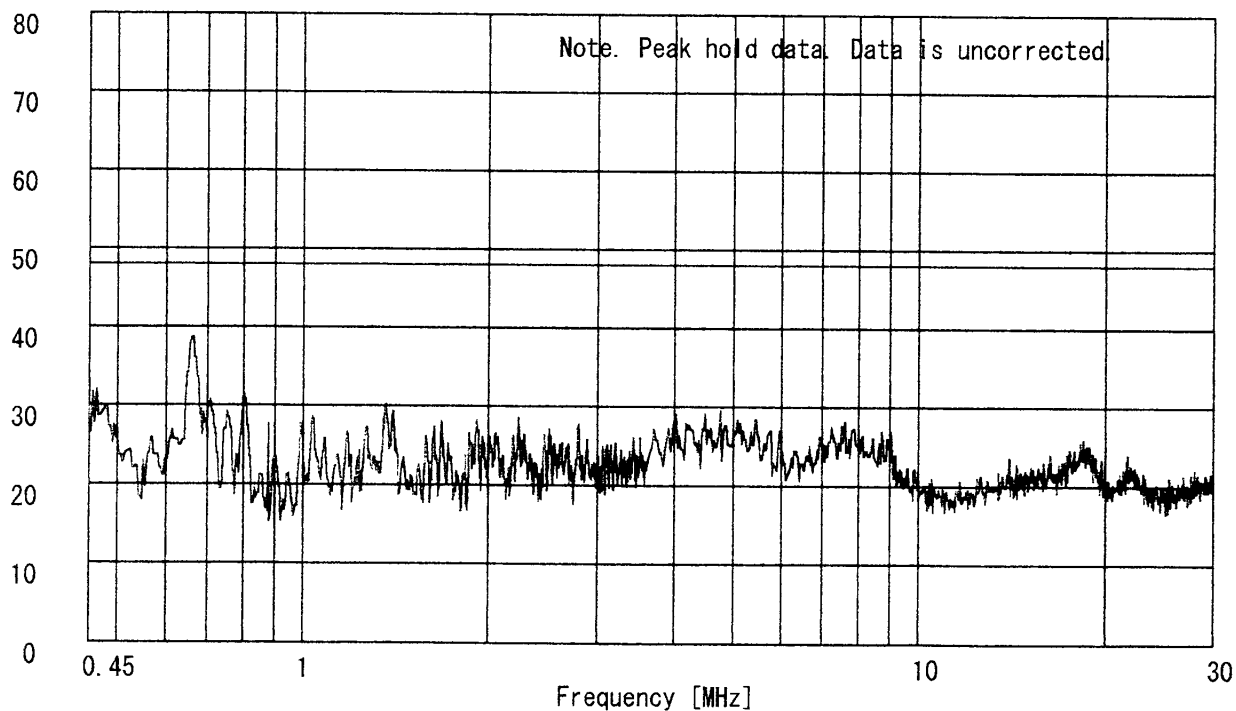
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



6dB Bandwidth (Antenna Port Conducted)

2.412GHz(ch1)



2.437GHz(ch6)



6dB Bandwidth (Antenna Port Conducted)

2.462GHz(ch11)



Peak Out Put Power(Conducted)

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

COMPANY : SONY Corp.
EQUIPMENT : Wireless LAN builtin PC
MODEL : PCG-551L
FCC ID : AK8PCG551L
POWER : AC120V/60Hz
Mode : Transmitting

REPORT NO : 22GE0013-YW-1
REGULATION : Fcc Part15SubpartC 247(b)(1)
DATE : 2002/ 2/22
Temp./Humi. : 23°C/51%


ENGINEER : Naoki Sakamoto

CH	FREQ [GHz]	PM Reading [dBm]	Limit (1W) [dBm]	MARGIN [dB]
Low	2.41200	14.6	30.0	15.4
Mid	2.43700	14.6	30.0	15.4
High	2.46200	14.6	30.0	15.4

DATA OF RADIATION TEST

A-PEX INTERNATIONAL CO., LTD.
YOKOWA No.3 OPEN TEST SITE
Report No. : 22GE0013-YW-1

Applicant : SONY Corp.
Kind of Equipment : Notebook Personal Computer
Model No. : PCG-551L
Serial No. : 041
Power : AC120V/50Hz
Mode : Transmitting (2412MHz)
Remarks : FCC ID:AK8PCG551L
Date : 2/20/2002
Test Distance : 3 m
Temperature : 19 °C
Humidity : 42 %
Regulation : FCC Part15C § 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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	47.93	BB	25.3	29.5	11.7	28.1	1.3	6.0	16.2	20.4	40.0	23.8	19.6
2.	96.03	BB	32.2	32.0	9.2	27.9	1.9	5.9	21.3	21.1	43.5	22.2	22.4
3.	100.00	BB	28.1	31.0	10.1	27.9	1.9	5.9	18.1	21.0	43.5	25.4	22.5
4.	112.01	BB	29.0	36.1	12.0	27.9	2.0	5.9	21.0	28.1	43.5	22.5	15.4
5.	128.00	BB	29.6	31.6	13.6	27.8	2.2	5.9	23.5	25.5	43.5	20.0	18.0
6.	497.03	BB	32.8	34.7	18.0	27.5	4.8	5.9	34.0	35.9	46.0	12.0	10.1
7.	850.07	BB	28.7	27.4	21.9	26.6	6.7	5.9	36.6	35.3	46.0	9.4	10.7

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

All other spurious emissions were less than 20dB for the limit.
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. : 22GE0013-YW-1

Applicant : SONY Corp.
Kind of Equipment : Notebook Personal Computer
Model No. : PCG-551L
Serial No. : 041
Power : AC120V/50Hz
Mode : Transmitting (2437MHz)
Remarks : FCC ID:AK8PCG551L
Date : 2/20/2002
Test Distance : 3 m
Temperature : 19 °C
Humidity : 42 %
Regulation : FCC Part15C § 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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	47.97	BB	26.1	28.8	11.6	28.1	1.3	6.0	16.9	19.6	40.0	23.1	20.4
2.	96.01	BB	31.8	32.4	9.2	27.9	1.9	5.9	20.9	21.5	43.5	22.6	22.0
3.	100.00	BB	28.5	29.2	10.1	27.9	1.9	5.9	18.5	19.2	43.5	25.0	24.3
4.	112.00	BB	27.2	30.2	12.0	27.9	2.0	5.9	19.2	22.2	43.5	24.3	21.3
5.	128.00	BB	28.0	28.1	13.6	27.8	2.2	5.9	21.9	22.0	43.5	21.6	21.5
6.	497.03	BB	35.4	34.3	18.0	27.5	4.8	5.9	36.6	35.5	46.0	9.4	10.5
7.	850.03	BB	27.4	25.4	21.9	26.6	6.7	5.9	35.3	33.3	46.0	10.7	12.7

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

All other spurious emissions were less than 20dB for the limit.
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. : 22GE0013-YW-1

Applicant : SONY Corp.
Kind of Equipment : Notebook Personal Computer
Model No. : PCG-551L
Serial No. : 041
Power : AC120V/50Hz
Mode : Transmitting (2462MHz)
Remarks : FCC ID:AK8PCG551L
Date : 2/20/2002
Test Distance : 3 m
Temperature : 19 °C
Humidity : 42 %
Regulation : FCC Part15C § 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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	47.90	BB	25.5	29.3	11.7	28.1	1.3	6.0	16.4	20.2	40.0	23.6	19.8
2.	96.00	BB	31.8	30.1	9.2	27.9	1.9	5.9	20.9	19.2	43.5	22.6	24.3
3.	100.00	BB	28.7	29.1	10.1	27.9	1.9	5.9	18.7	19.1	43.5	24.8	24.4
4.	112.00	BB	28.6	31.4	12.0	27.9	2.0	5.9	20.6	23.4	43.5	22.9	20.1
5.	128.00	BB	30.5	28.3	13.6	27.8	2.2	5.9	24.4	22.2	43.5	19.1	21.3
6.	497.04	BB	36.2	36.6	18.0	27.5	4.8	5.9	37.4	37.8	46.0	8.6	8.2
7.	850.07	BB	26.6	23.2	21.9	26.6	6.7	5.9	34.5	31.1	46.0	11.5	14.9

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

All other spurious emissions were less than 20dB for the limit.
ANT. TYPE: 30-300MHz Biconical, 300-1000MHz Logperiodic.

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

COMPANY : SONY Corporation
EQUIPMENT : Notebook Personal Computer
MODEL : PCG-551L
S/N : 041
FCC ID : AK8PCG551L
POWER : AC120V/60Hz
Mode : Transmitting (ch1: 2412MHz / 11Mbps)

REPORT NO : 22GE0013-YW-1
REGULATION : Fcc Part15SubpartC 247(b)(1)
TEST DISTANCE : 1m(10-26GHz)/3m(1-10GHz)
DATE : 2002/2/21
Temperature : 25degrees centigrade
Humidity : 41%

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-Pass Filter [dB]	ATTEN [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER						HOR	VER		HOR	VER
		[dBuV]		[dB]	[dB]	[dB]	[dB]	[dB]	[dBuV/m]		[dBuV/m]	[dB]	[dB]
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + (High Pass or ATTEN).													
1	1.39152	59.6	60.0	26.8	38.6	1.8	0.0	6.0	55.6	56.0	74.0	18.4	18.0
2	1.58997	56.0	64.2	27.9	38.4	2.0	0.0	6.0	53.5	61.7	74.0	20.5	12.3
3	2.39000	47.0	46.8	31.3	38.0	2.8	0.0	6.0	49.1	48.9	74.0	24.9	25.1
4	4.82400	45.7	45.9	35.4	38.0	4.2	1.1	0.0	48.4	48.6	74.0	25.6	25.4
5	7.23600	44.9	43.9	39.1	38.2	5.7	0.5	0.0	52.0	51.0	74.0	22.0	23.0
6	9.64800	45.3	45.0	39.2	38.5	6.2	0.5	0.0	52.7	52.4	74.0	21.3	21.6
Test distance 1.0meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + High Pass - Dfac													
7	12.06000	44.4	44.8	43.5	38.5	7.5	0.5	0.0	47.9	48.3	74.0	26.1	25.7
8	14.47283	43.4	43.0	42.2	38.5	8.0	0.6	0.0	46.2	45.8	74.0	27.8	28.2
9	16.88484	45.8	45.4	43.8	38.5	8.1	0.6	0.0	50.3	49.9	74.0	23.7	24.1
10	19.29685	44.5	44.6	37.5	38.5	8.8	1.1	0.0	43.9	44.0	74.0	30.1	30.0
11	21.70885	45.2	45.6	38.2	38.5	10.0	0.5	0.0	45.9	46.3	74.0	28.2	27.7
12	24.12085	45.8	46.4	38.6	38.5	12.6	0.7	0.0	49.7	50.3	74.0	24.3	23.7

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-Pass Filter [dB]	ATTEN [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER						HOR	VER		HOR	VER
		[dBuV]		[dB]	[dB]	[dB]	[dB]	[dB]	[dBuV/m]		[dBuV/m]	[dB]	[dB]
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + (High Pass or ATTEN).													
1	1.39152	42.4	42.4	26.8	38.6	1.8	0.0	6.0	38.4	38.4	54.0	15.6	15.6
2	1.58997	39.4	46.0	27.9	38.4	2.0	0.0	6.0	36.9	43.5	54.0	17.1	10.5
3	2.39000	37.6	36.0	31.3	38.0	2.8	0.0	6.0	39.7	38.1	54.0	14.3	15.9
4	4.82400	33.4	33.5	35.4	38.0	4.2	1.1	0.0	36.1	36.2	54.0	17.9	17.8
5	7.23600	32.8	32.6	39.1	38.2	5.7	0.5	0.0	39.9	39.7	54.0	14.1	14.3
6	9.64800	34.0	34.1	39.2	38.5	6.2	0.5	0.0	41.4	41.5	54.0	12.6	12.5
Test distance 1.0meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + High Pass - Dfac													
7	12.06000	33.8	33.6	43.5	38.5	7.5	0.5	0.0	37.3	37.1	54.0	16.7	16.9
8	14.47200	33.0	32.7	42.2	38.5	8.0	0.6	0.0	35.8	35.5	54.0	18.2	18.5
9	16.88400	34.5	34.4	43.8	38.5	8.1	0.6	0.0	39.0	38.9	54.0	15.0	15.1
10	19.29600	34.1	34.1	37.5	38.5	8.8	1.1	0.0	33.5	33.5	54.0	20.5	20.5
11	21.70800	34.8	34.7	38.2	38.5	10.0	0.5	0.0	35.5	35.4	54.0	18.5	18.6
12	24.12000	34.7	34.8	38.6	38.5	12.6	0.7	0.0	38.6	38.7	54.0	15.4	15.3

Test Distance 1.0m : Distance Factor(Dfac) = $20\log(3/1) = 9.5$ dB

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

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

COMPANY : SONY Corporation
EQUIPMENT : Notebook Personal Computer
MODEL : PCG-551L
S/N : 041
FCC ID : AK8PCG551L
POWER : AC120V/60Hz
Mode : Transmitting (ch6: 2437MHz / 11Mbps)

REPORT NO : 22GE0013-YW-1
REGULATION : Fcc Part15SubpartC 247(b)(1)
TEST DISTANCE : 1m(10-26GHz)/3m(1-10GHz)
DATE : 2002/2/21
Temperature : 25degrees centigrade
Humidity : 41%

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-Pass Filter [dB]	ATTEN [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER						HOR	VER		HOR	VER
		[dBuV]	[dBuV]						[dB]	[dB]		[dB]	[dB]
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + (High Pass or ATTEN).													
1	1.39120	60.5	62.4	26.8	38.6	1.8	0.0	6.0	56.5	58.4	74.0	17.5	15.6
2	1.58998	57.6	60.2	27.9	38.4	2.0	0.0	6.0	55.1	57.7	74.0	18.9	16.3
4	4.87400	45.5	45.0	35.6	37.9	4.2	1.1	0.0	48.5	48.0	74.0	25.5	26.0
5	7.31100	42.9	44.4	39.2	38.2	5.7	0.5	0.0	50.1	51.6	74.0	23.9	22.4
6	9.74800	45.7	45.6	39.2	38.5	6.2	0.5	0.0	53.1	53.0	74.0	20.9	21.0
Test distance 1.0meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + High Pass - Dfac													
7	12.18500	45.6	45.5	43.4	38.5	7.5	0.5	0.0	49.0	48.9	74.0	25.0	25.1
8	14.62200	44.3	45.0	42.6	38.5	8.0	0.5	0.0	47.4	48.1	74.0	26.6	25.9
9	17.05900	45.4	45.2	43.8	38.5	8.1	0.6	0.0	49.9	49.7	74.0	24.1	24.3
10	19.49600	45.4	44.8	37.4	38.5	9.3	1.3	0.0	45.4	44.8	74.0	28.6	29.2
11	21.93300	45.1	44.6	38.2	38.5	9.6	0.3	0.0	45.2	44.7	74.0	28.8	29.3
12	24.37000	45.2	44.5	38.8	38.5	12.5	0.8	0.0	49.3	48.6	74.0	24.7	25.5

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

No.	FREQ [GHz]	S/A READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	H-Pass Filter [dB]	ATTEN [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER						HOR	VER		HOR	VER
		[dBuV]	[dBuV]						[dB]	[dB]		[dB]	[dB]
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + (High Pass or ATTEN).													
1	1.39120	42.9	44.2	26.8	38.6	1.8	0.0	6.0	38.9	40.2	54.0	15.1	13.8
2	1.58998	40.4	41.9	27.9	38.4	2.0	0.0	6.0	37.9	39.4	54.0	16.1	14.6
4	4.87400	33.1	33.2	35.6	37.9	4.2	1.1	0.0	36.1	36.2	54.0	18.0	17.8
5	7.31100	32.8	32.8	39.2	38.2	5.7	0.5	0.0	40.0	40.0	54.0	14.0	14.0
6	9.74800	33.9	33.8	39.2	38.5	6.2	0.5	0.0	41.3	41.2	54.0	12.7	12.8
Test distance 1.0meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + High Pass - Dfac													
7	12.18500	34.0	34.0	43.4	38.5	7.5	0.5	0.0	37.4	37.4	54.0	16.6	16.6
8	14.62200	33.7	33.6	42.6	38.5	8.0	0.5	0.0	36.8	36.7	54.0	17.2	17.3
9	17.05900	33.7	33.6	43.8	38.5	8.1	0.6	0.0	38.2	38.1	54.0	15.8	15.9
10	19.49600	33.7	33.8	37.4	38.5	9.3	1.3	0.0	33.7	33.8	54.0	20.3	20.2
11	21.93300	34.8	34.6	38.2	38.5	9.6	0.3	0.0	34.9	34.7	54.0	19.1	19.3
12	24.37000	35.0	35.3	38.8	38.5	12.5	0.8	0.0	39.1	39.4	54.0	14.9	14.6

Test Distance 1.0m : Distance Factor(Dfac) = $20\log(3/1) = 9.5$ dB

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

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

COMPANY : SONY Corporation
EQUIPMENT : Notebook Personal Computer
MODEL : PCG-551L
S/N : 041
FCC ID : AK8PCG551L
POWER : AC120V/60Hz
Mode : Transmitting (ch1: 2462MHz / 11Mbps)

REPORT NO : 22GE0013-YW-1
REGULATION : Fcc Part15SubpartC 247(b)(1)
TEST DISTANCE : 1m(10-26GHz)/3m(1-10GHz)
DATE : 2002/2/21
Temperature : 25degrees centigrade
Humidity : 41%

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-Pass Filter [dB]	ATTEN [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER						HOR	VER		HOR	VER
		[dBuV]							[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + (High Pass or ATTEN).													
1	1.39148	60.1	63.4	26.8	38.6	1.8	0.0	6.0	56.1	59.4	74.0	17.9	14.6
2	1.58997	57.3	60.9	27.9	38.4	2.0	0.0	6.0	54.8	58.4	74.0	19.2	15.6
3	2.48350	50.3	48.3	31.6	38.0	2.9	0.0	6.0	52.8	50.8	74.0	21.2	23.3
4	4.92600	45.8	46.5	35.8	37.9	4.3	1.1	0.0	49.1	49.8	74.0	24.9	24.2
5	7.38654	43.8	44.2	39.2	38.3	5.8	0.5	0.0	51.0	51.4	74.0	23.0	22.6
6	9.84830	46.3	44.9	39.2	38.5	6.2	0.5	0.0	53.7	52.3	74.0	20.3	21.7
Test distance 1.0meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + High Pass - Dfac													
7	12.31000	45.0	45.0	43.3	38.5	7.4	0.5	0.0	48.2	48.2	74.0	25.8	25.8
8	14.77200	44.9	44.6	42.9	38.5	8.1	0.5	0.0	48.4	48.1	74.0	25.6	25.9
9	17.23400	46.2	46.2	43.9	38.5	8.2	0.6	0.0	50.9	50.9	74.0	23.1	23.1
10	19.69600	45.4	46.7	37.5	38.5	9.9	1.5	0.0	46.3	47.6	74.0	27.7	26.4
11	22.15800	45.8	46.1	38.2	38.5	9.6	0.3	0.0	45.9	46.2	74.0	28.1	27.8
12	24.62000	47.0	47.2	38.8	38.5	12.5	0.9	0.0	51.2	51.4	74.0	22.8	22.6

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

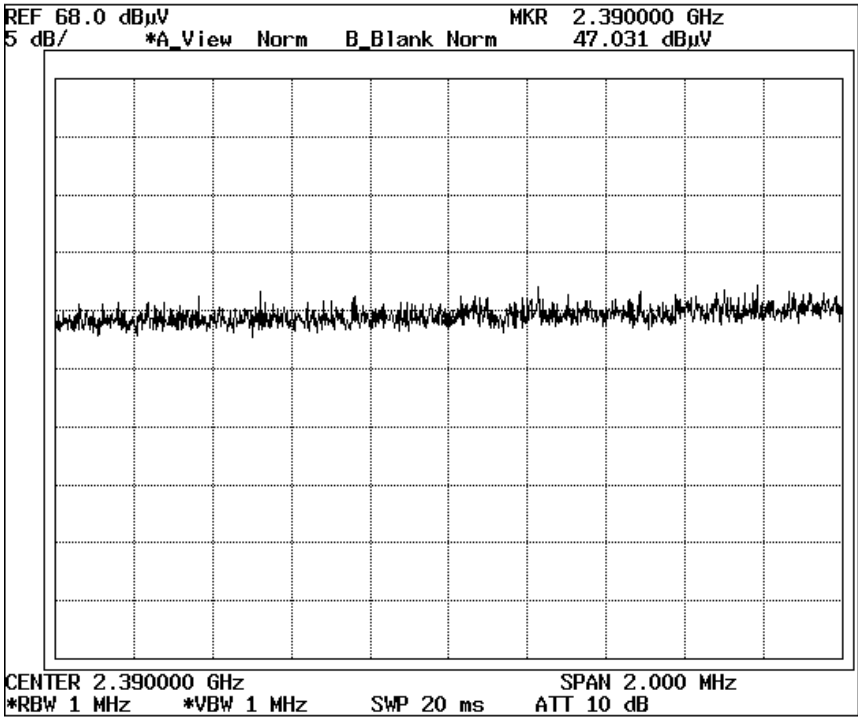
No.	FREQ [GHz]	S/A READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	H-Pass Filter [dB]	ATTEN [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER						HOR	VER		HOR	VER
		[dBuV]							[dBuV/m]			[dB]	[dB]
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + (High Pass or ATTEN).													
1	1.39148	42.8	44.0	26.8	38.6	1.8	0.0	6.0	38.8	40.0	54.0	15.2	14.0
2	1.58997	40.5	42.1	27.9	38.4	2.0	0.0	6.0	38.0	39.6	54.0	16.0	14.4
3	2.48350	40.0	37.5	31.6	38.0	2.9	0.0	6.0	42.5	40.0	54.0	11.5	14.0
4	4.92600	34.6	35.0	35.8	37.9	4.3	1.1	0.0	37.9	38.3	54.0	16.1	15.7
5	7.38654	32.9	33.0	39.2	38.3	5.8	0.5	0.0	40.1	40.2	54.0	13.9	13.8
6	9.84830	34.1	34.0	39.2	38.5	6.2	0.5	0.0	41.5	41.4	54.0	12.5	12.6
Test distance 1.0meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + High Pass - Dfac													
7	12.31000	33.8	33.9	43.3	38.5	7.4	0.5	0.0	37.0	37.1	54.0	17.0	16.9
8	14.77200	33.3	33.7	42.9	38.5	8.1	0.5	0.0	36.8	37.2	54.0	17.2	16.8
9	17.23400	34.5	34.6	43.9	38.5	8.2	0.6	0.0	39.2	39.3	54.0	14.8	14.7
10	19.69600	35.0	35.1	37.5	38.5	9.9	1.5	0.0	35.9	36.0	54.0	18.1	18.0
11	22.15800	34.2	34.4	38.2	38.5	9.6	0.3	0.0	34.3	34.5	54.0	19.7	19.5
12	24.62000	36.0	36.6	38.8	38.5	12.5	0.9	0.0	40.2	40.8	54.0	13.8	13.2

Test Distance 1.0m : Distance Factor(Dfac) = $20\log(3/1.0) = 9.5$ dB

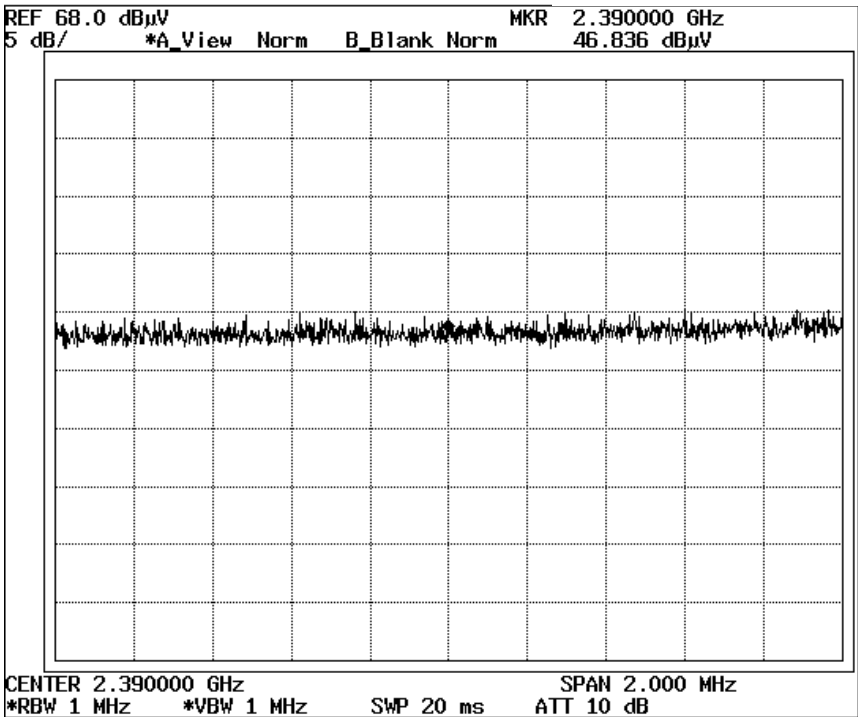
*Except for the above table : All other spurious emissions were less than 20dB for the limit.

Band Edges (Radiated)

2.39GHz(ch1)
PK Detector
Horizontal

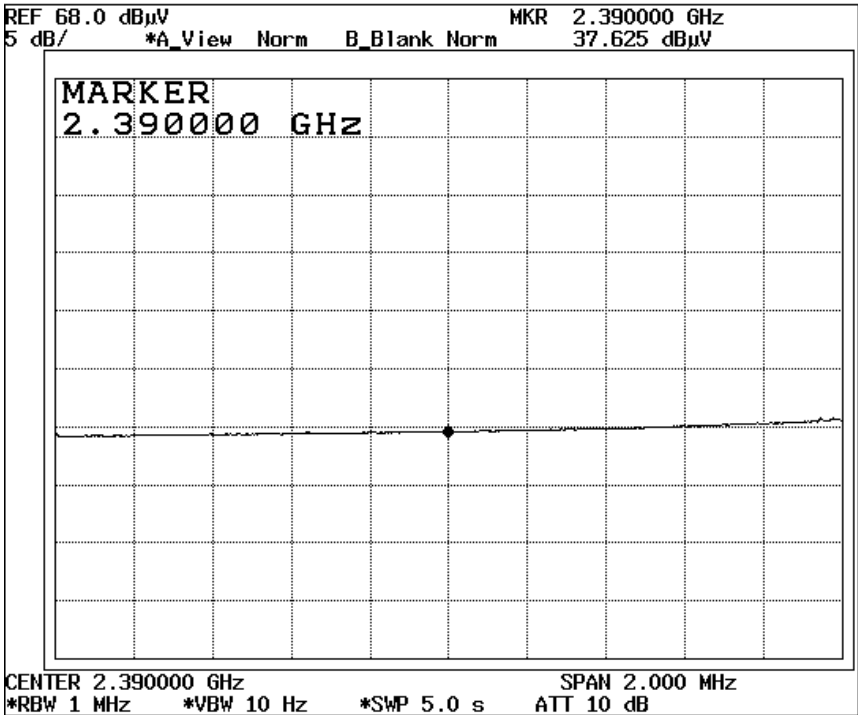


Vertical

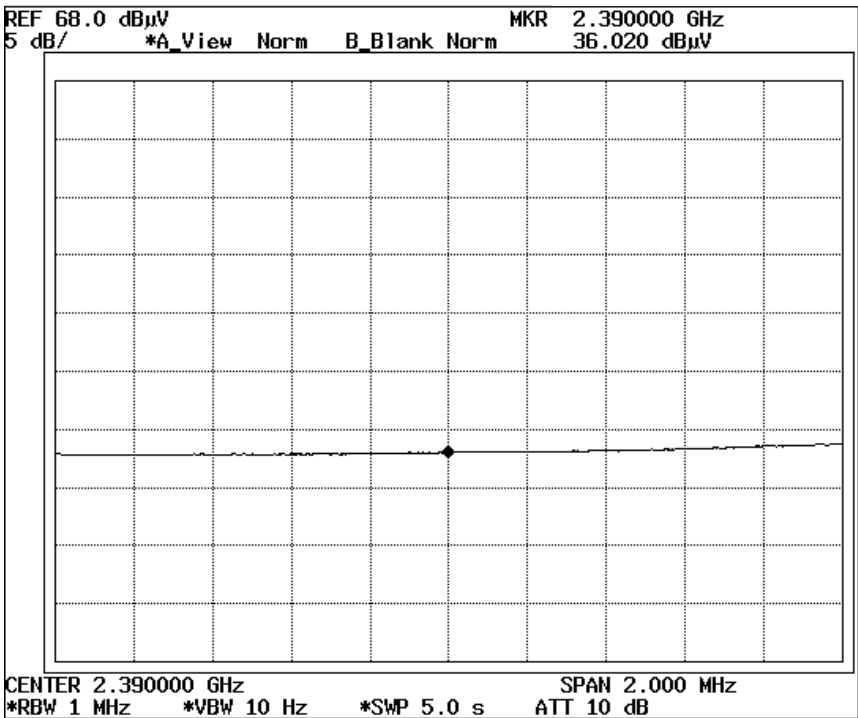


Band Edges (Radiated)

2.39GHz(ch1)
AV Detector
Horizontal

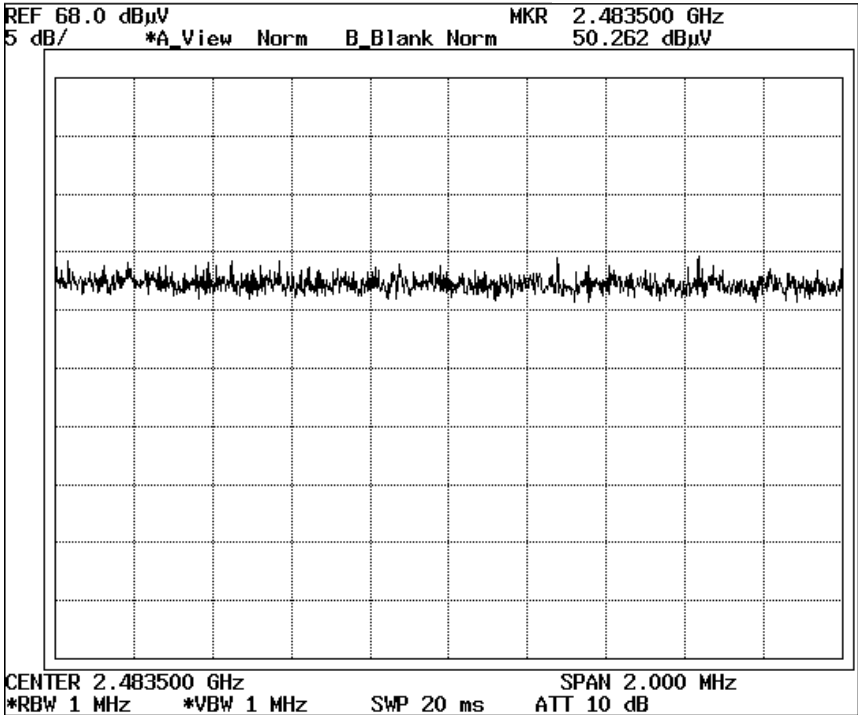


Vertical

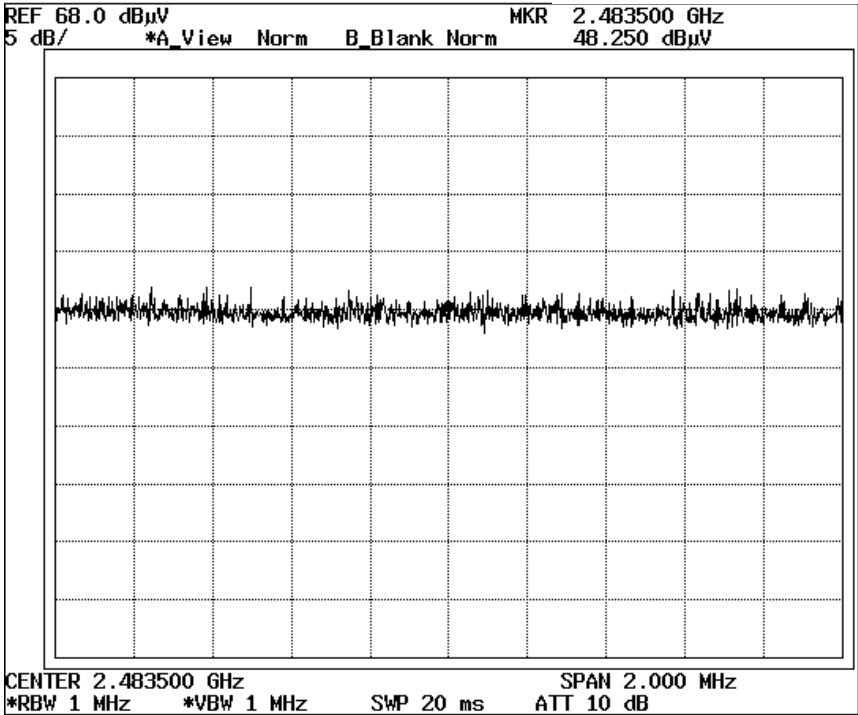


Band Edges (Radiated)

2.4835GHz(ch11)
PK Detector
Horizontal

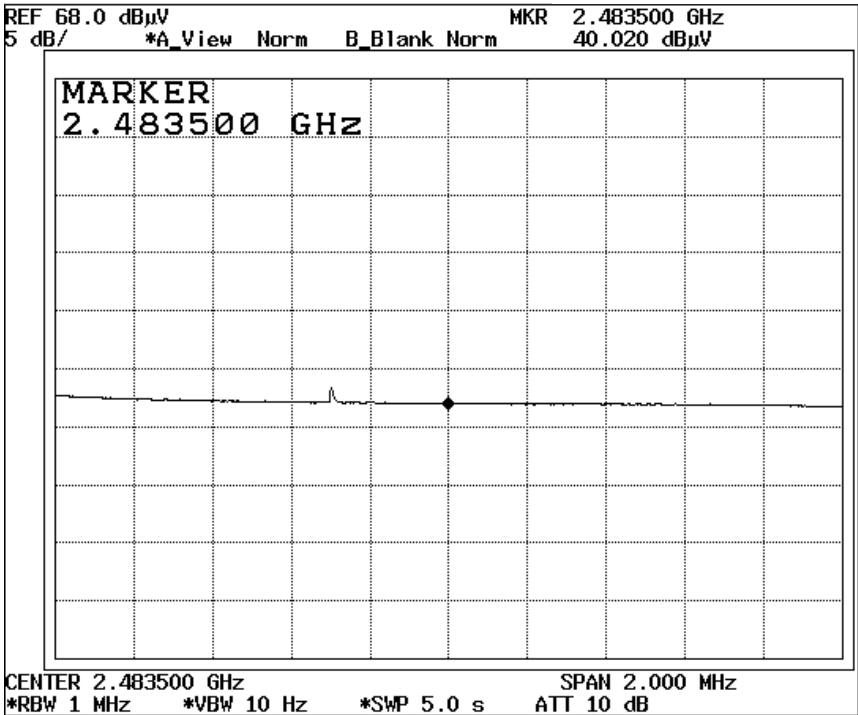


Vertical

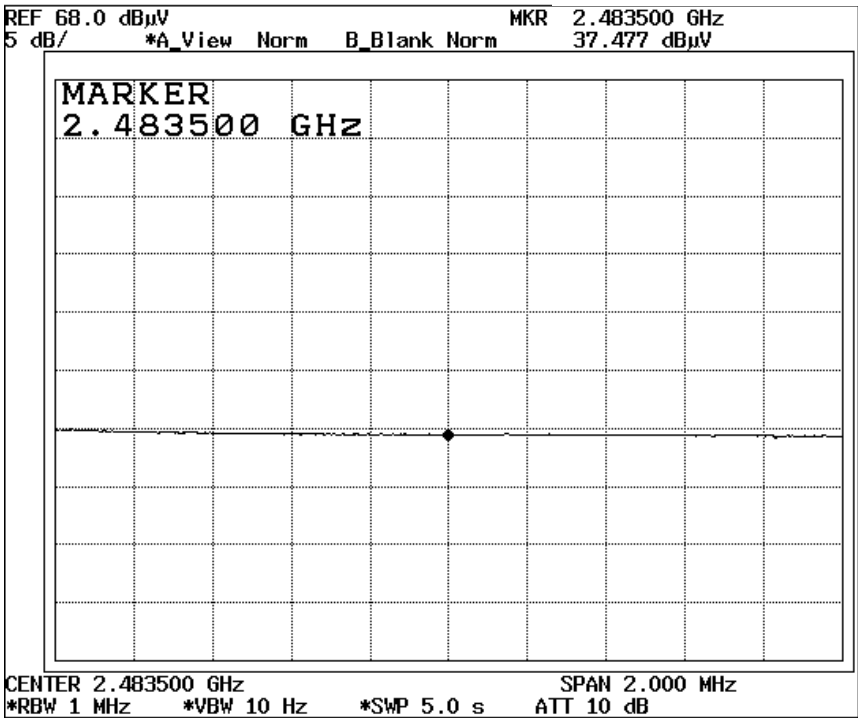


Band Edges (Radiated)

2.4835GHz(ch11)
AV Detector
Horizontal

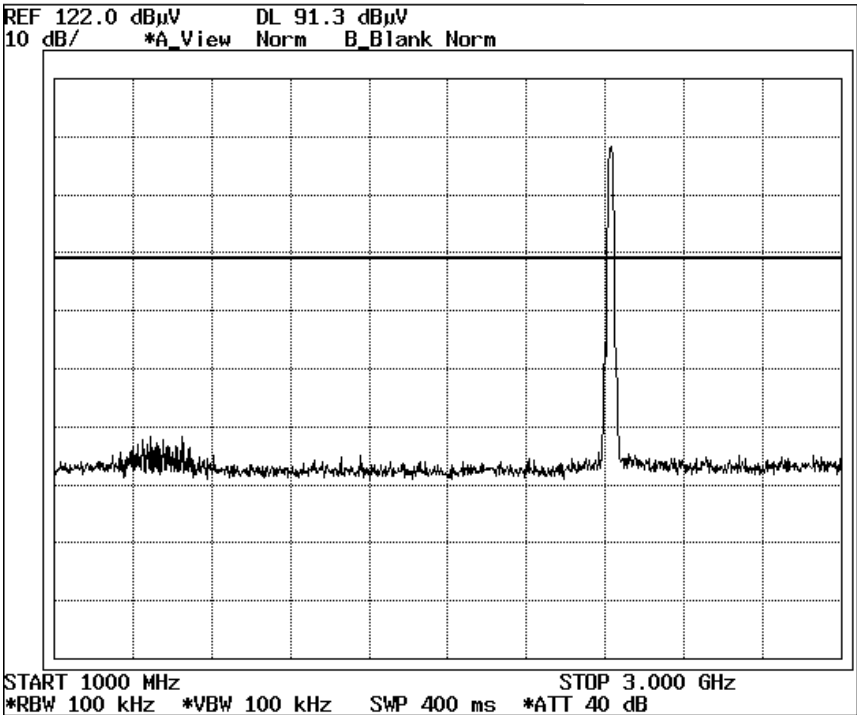
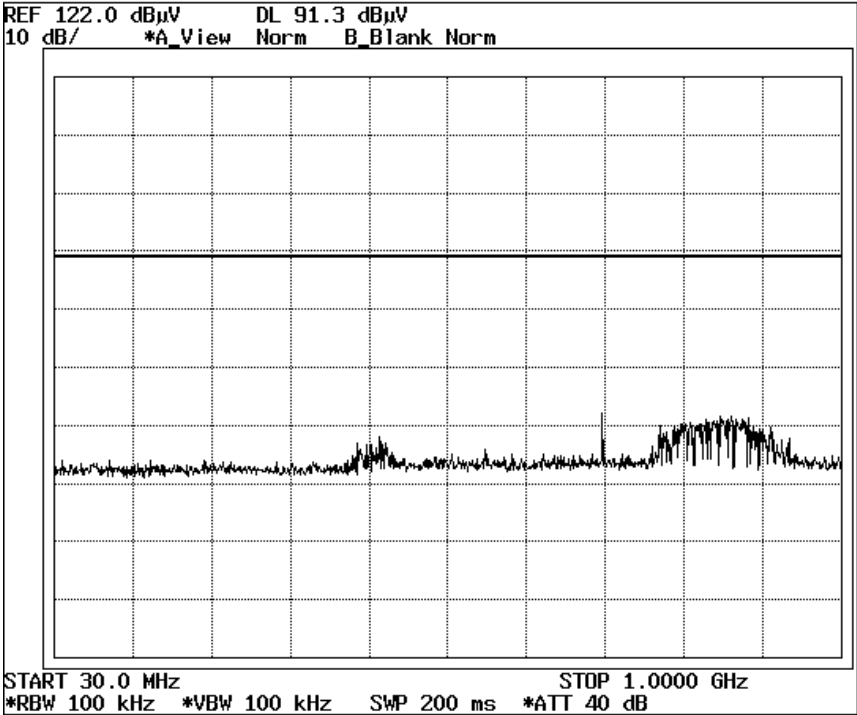


Vertical



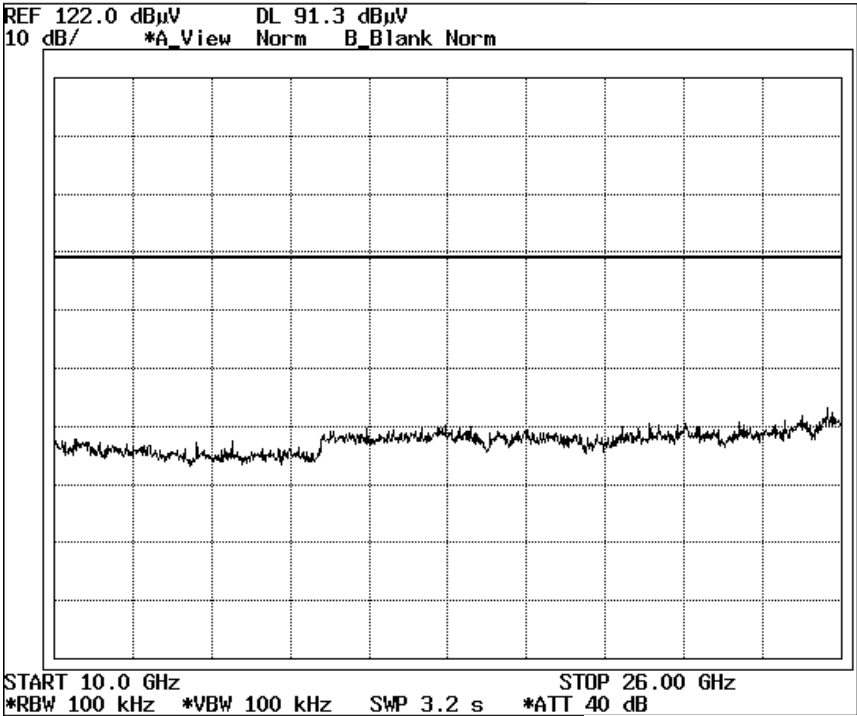
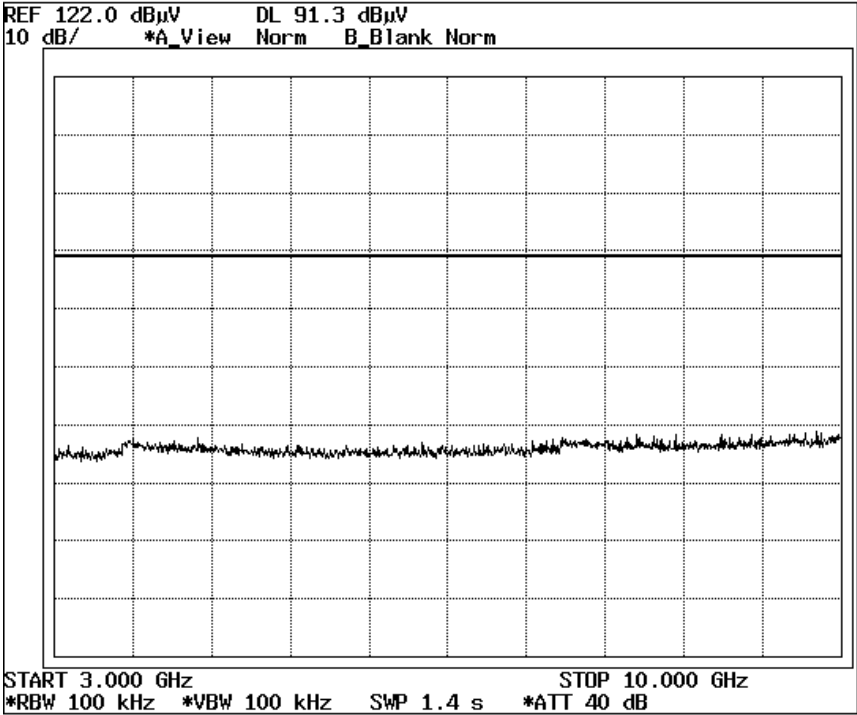
Out of Band Emissions (Antenna Port Conducted)

2.412GHz(ch1)



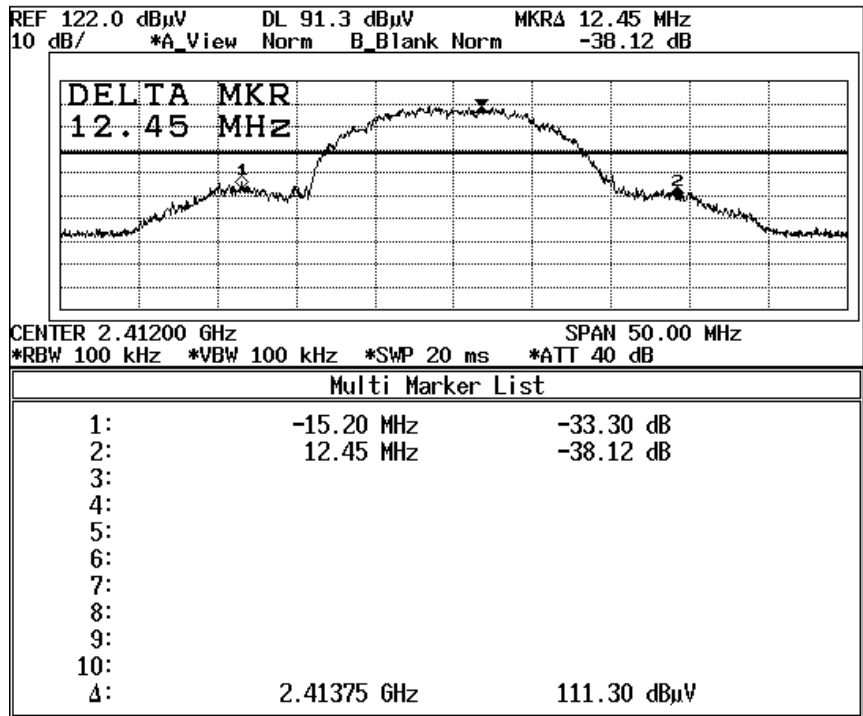
Out of Band Emissions (Antenna Port Conducted)

2.412GHz(ch1)



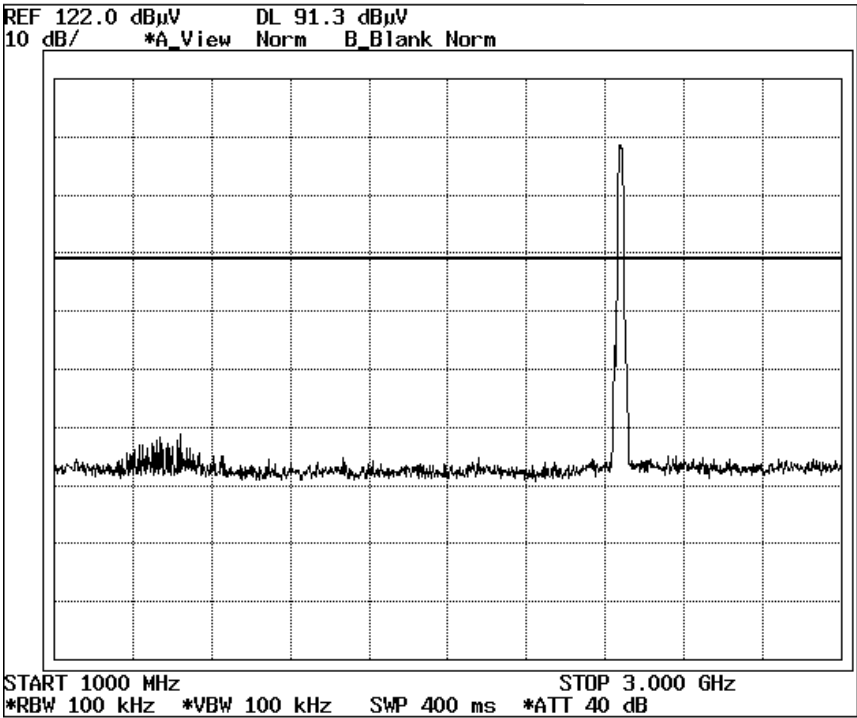
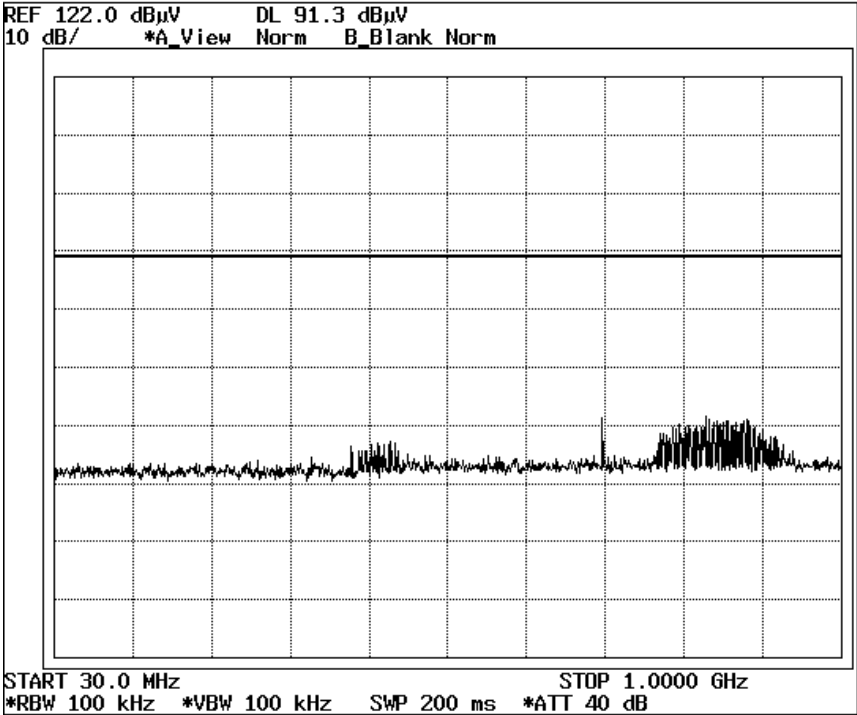
Out of Band Emissions (Antenna Port Conducted)

2.412GHz(ch1)



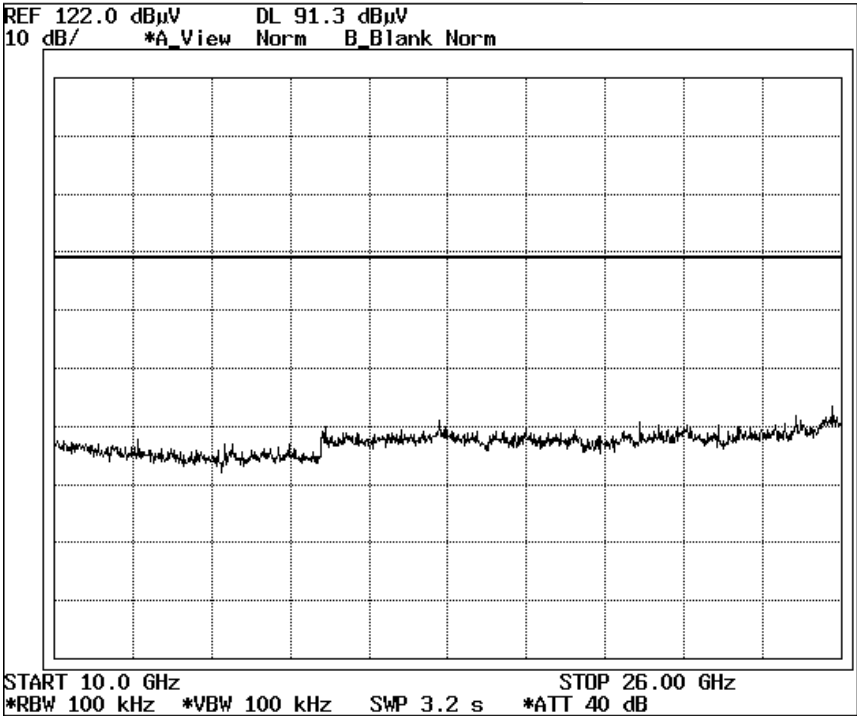
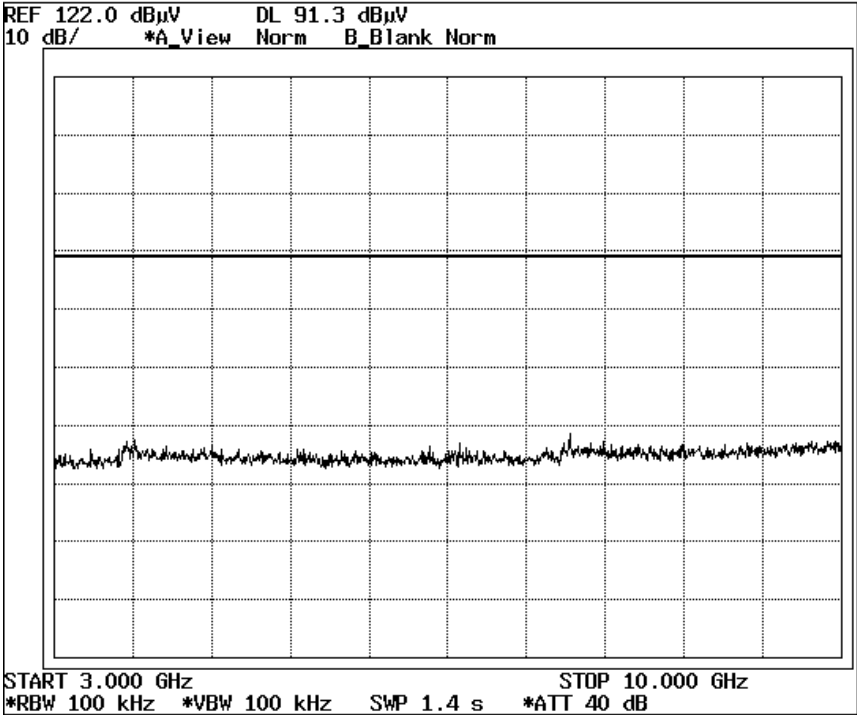
Out of Band Emissions (Antenna Port Conducted)

2.437GHz(ch6)



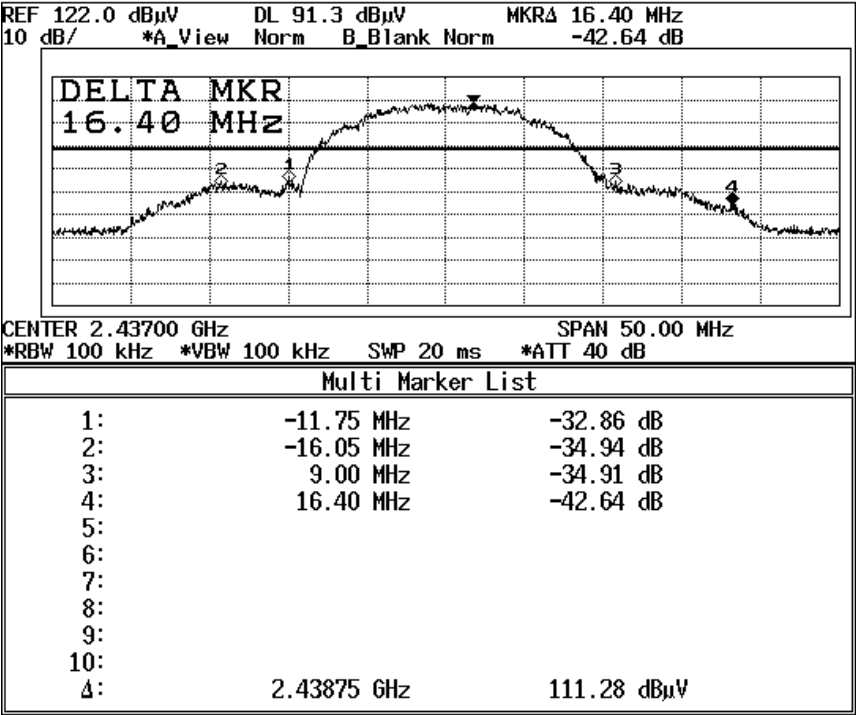
Out of Band Emissions (Antenna Port Conducted)

2.437GHz(ch6)



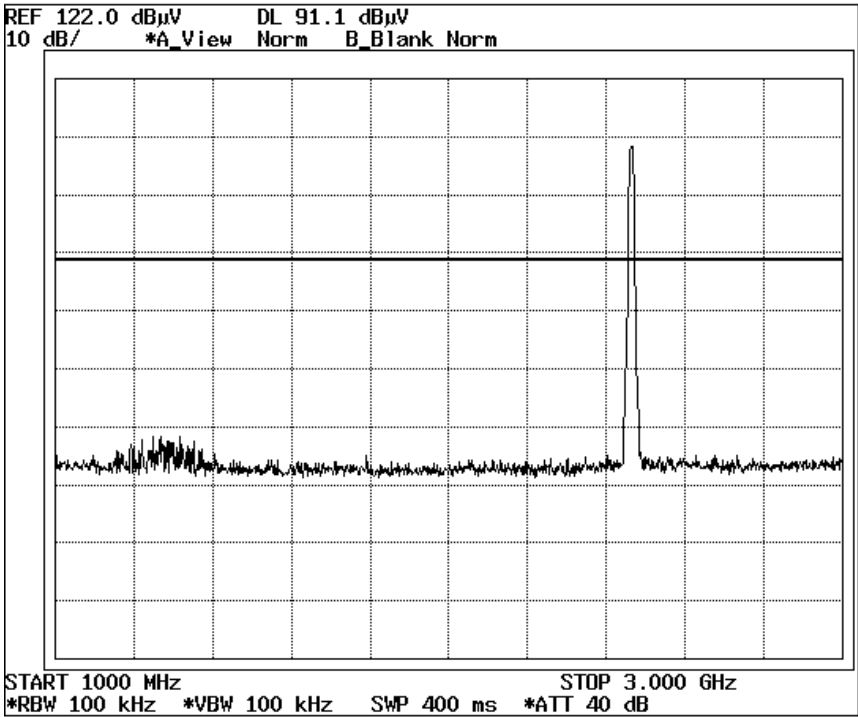
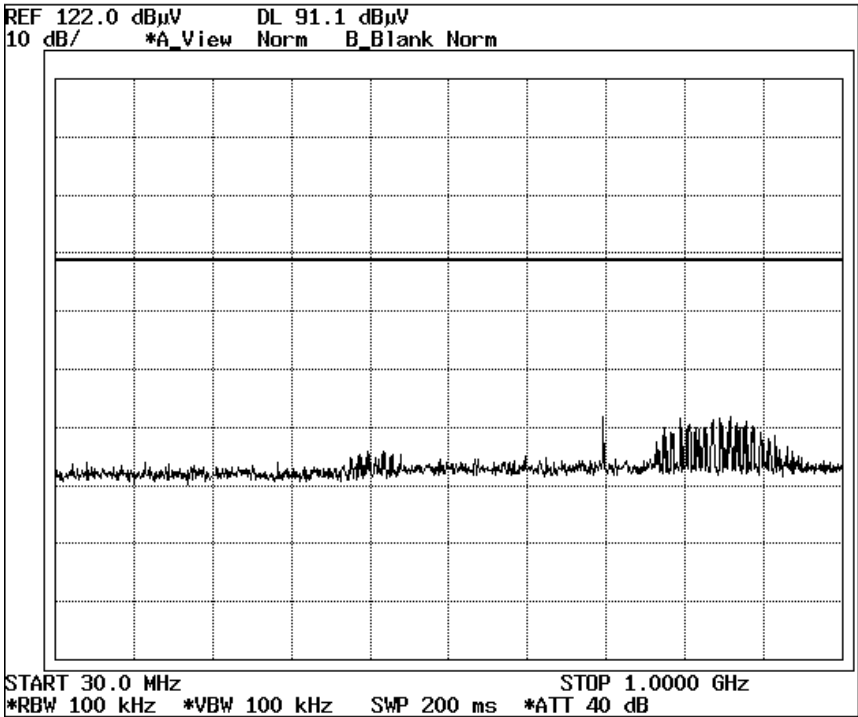
Out of Band Emissions (Antenna Port Conducted)

2.437GHz(ch6)



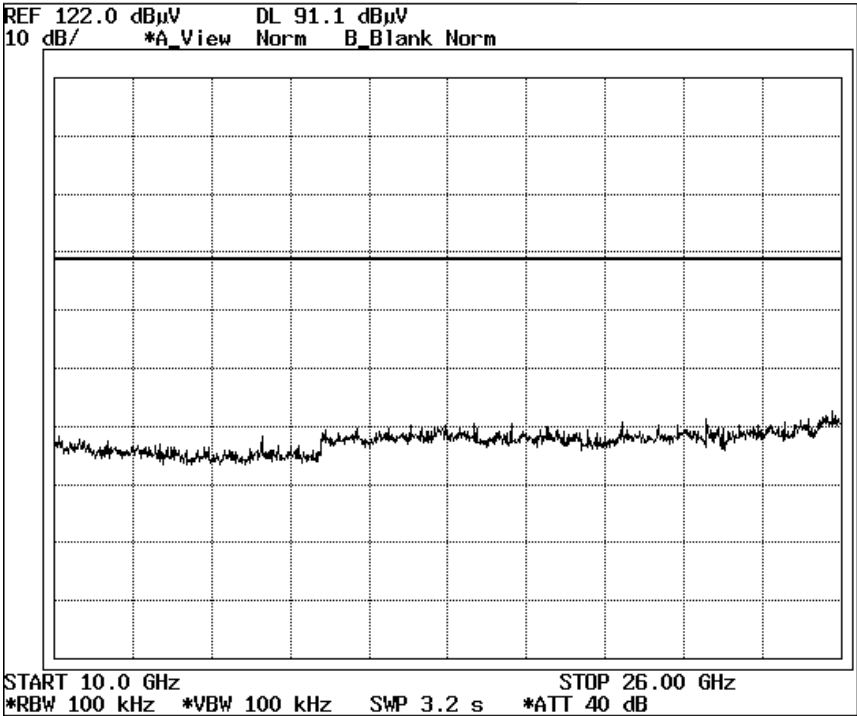
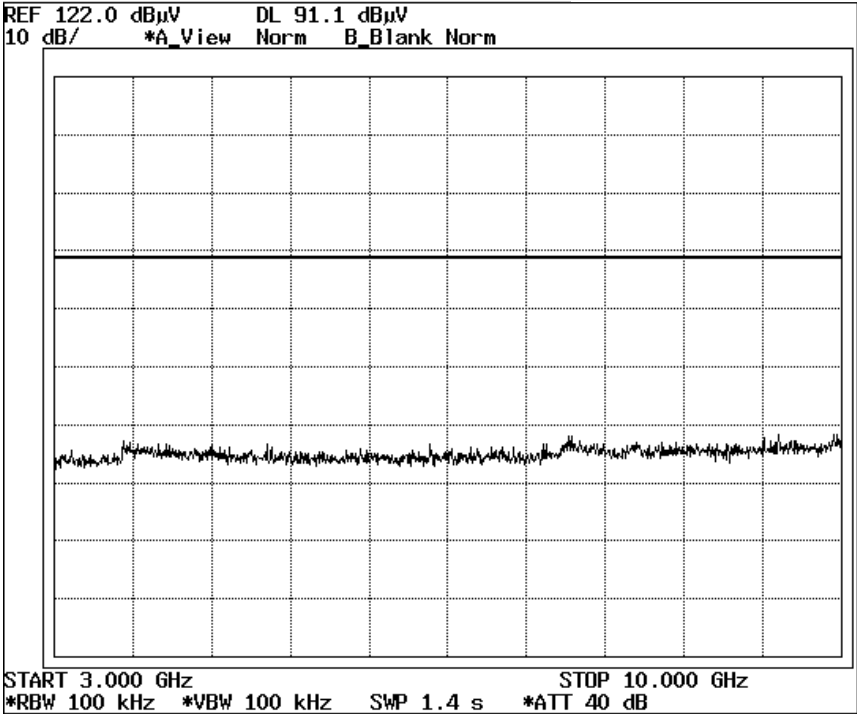
Out of Band Emissions (Antenna Port Conducted)

2.462GHz(ch11)



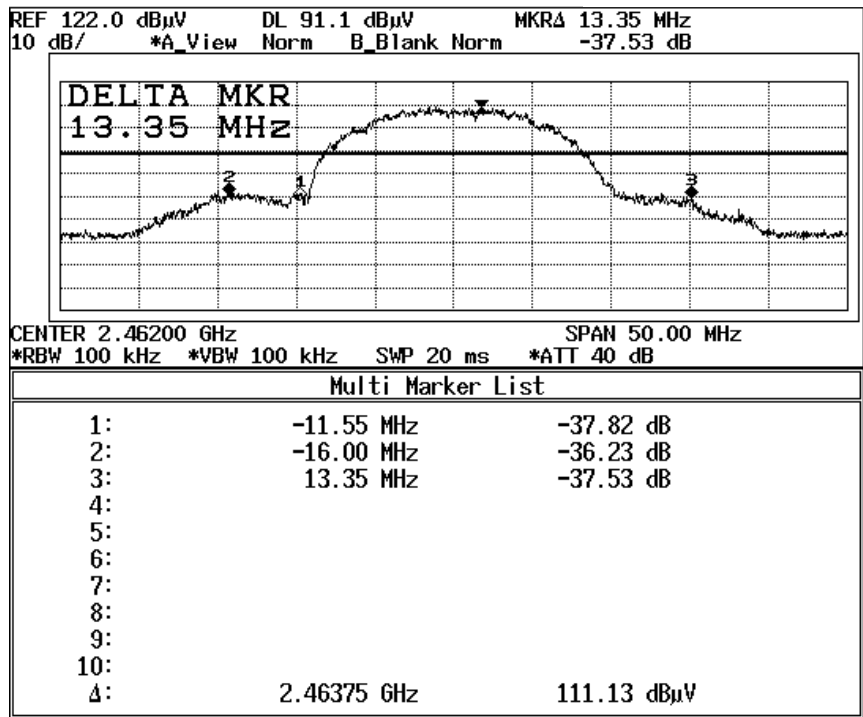
Out of Band Emissions (Antenna Port Conducted)

2.462GHz(ch11)



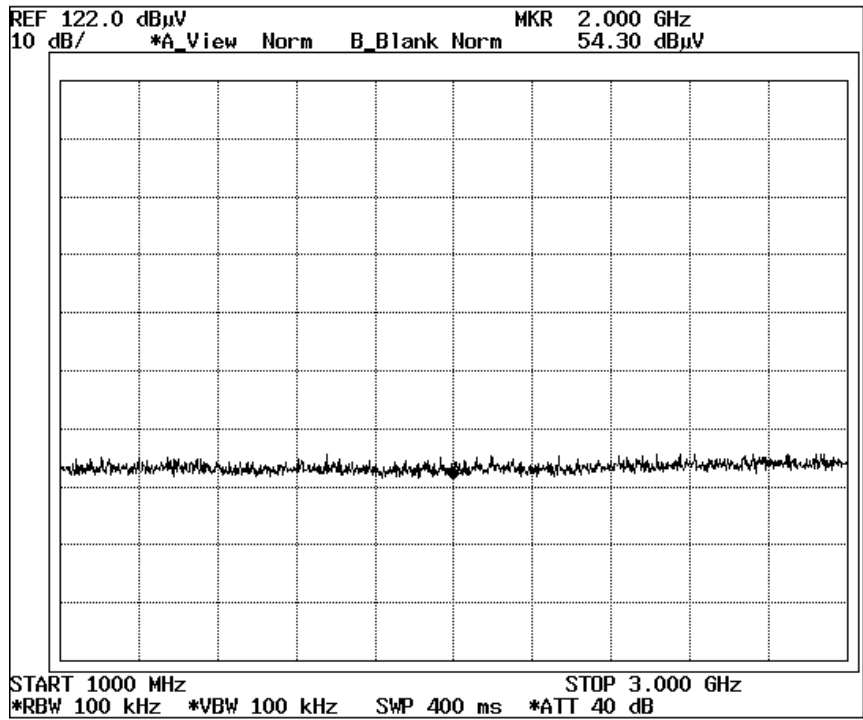
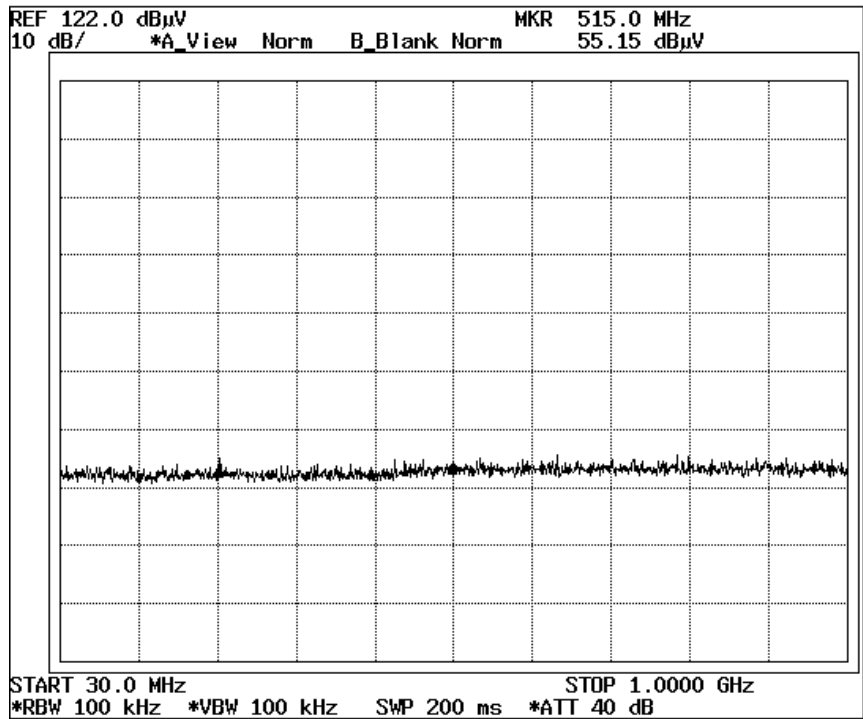
Out of Band Emissions (Antenna Port Conducted)

2.462GHz(ch11)



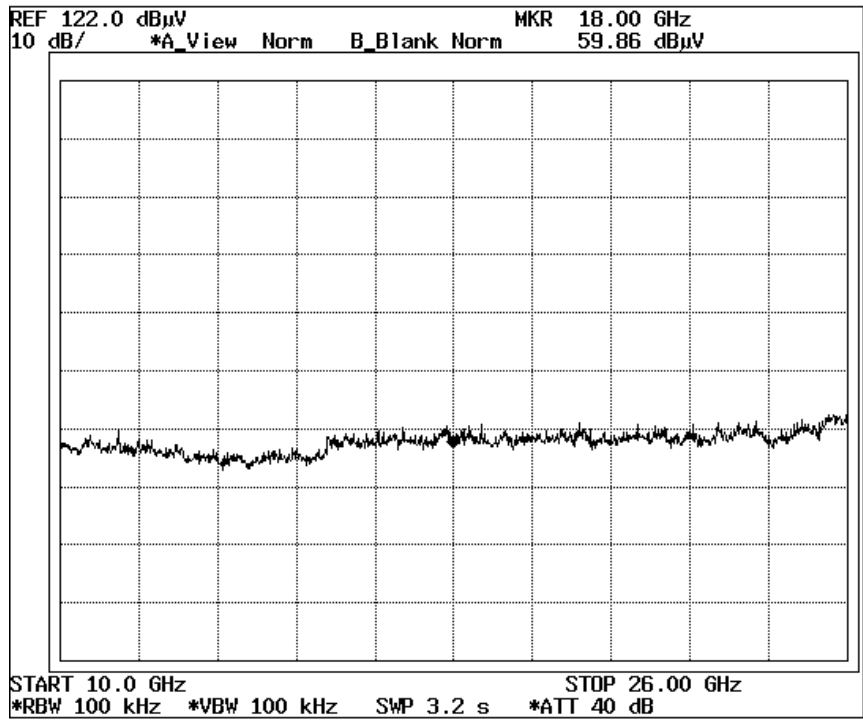
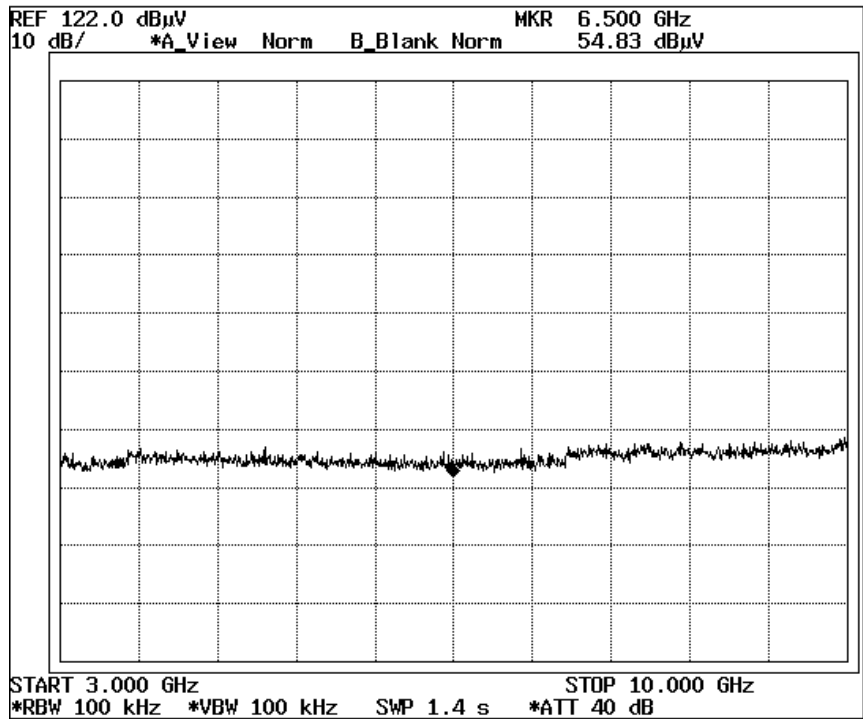
Out of Band Emissions (Antenna Port Conducted)

Receiving



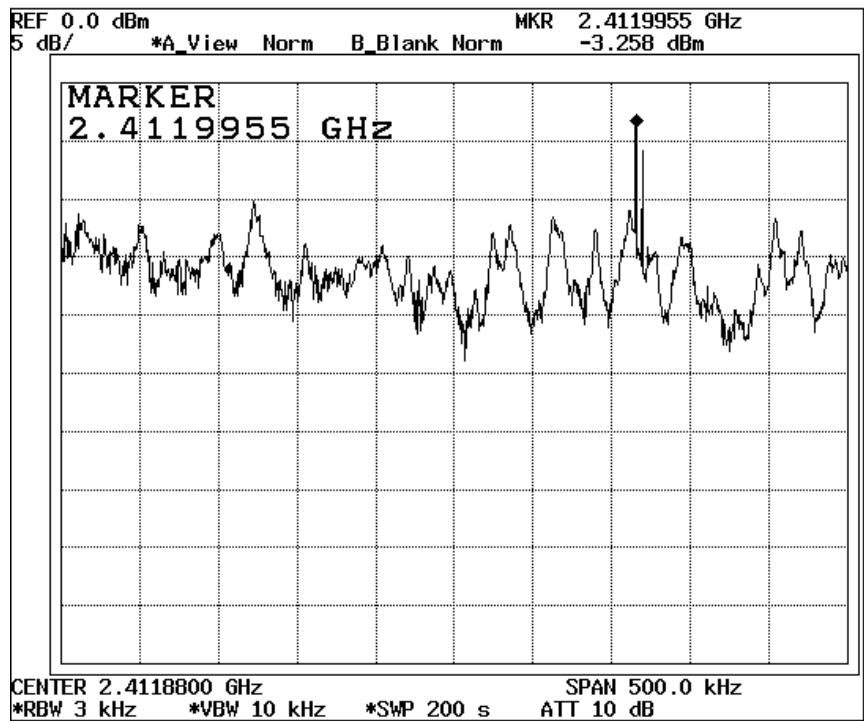
Out of Band Emissions (Antenna Port Conducted)

Receiving

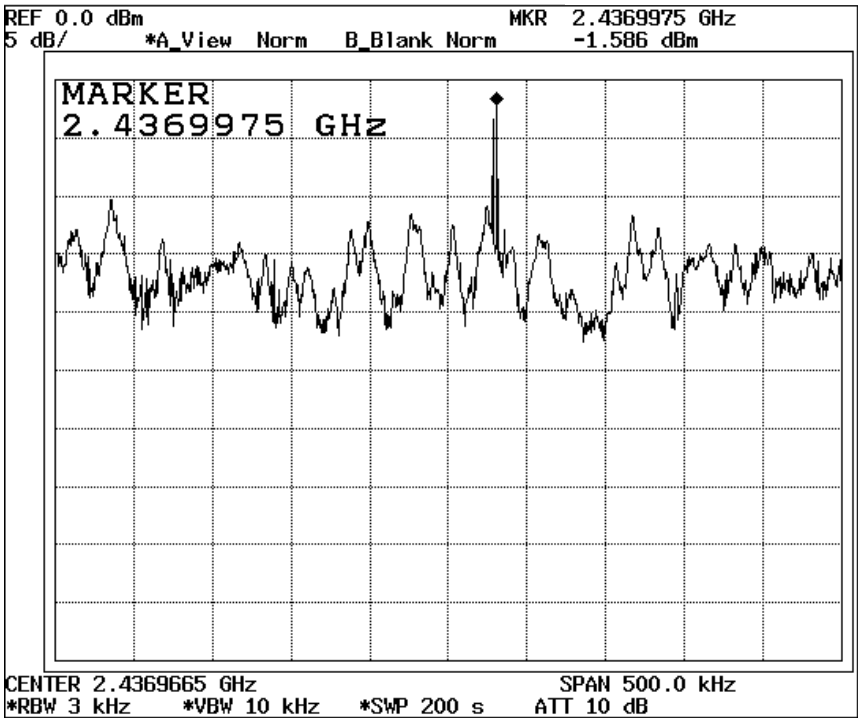


Power Density (Antenna Port Conducted)

2.412GHz(ch1)



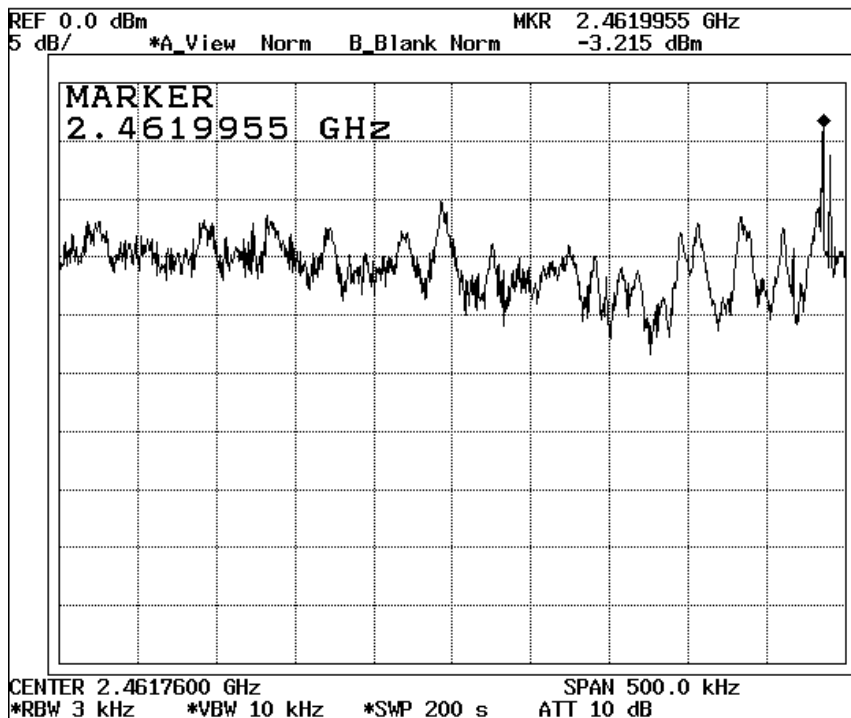
2.437GHz(ch6)



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 Our reference : 22GE0013-YW-1
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Power Density (Antenna Port Conducted)

2.462GHz(ch11)

**Power Density (Antenna Port Conducted) data**

CH	FREQ	S/A Reading	Cable Loss	Results	Limit	MARGIN
	[GHz]	[dBm]	[dB]	[dBm]	[dBm]	[dB]
2412MHz(ch1)	2.411.99	-3.3	0.4	-2.9	8.0	10.9
2437MHz(ch6)	2.436.99	-1.6	0.4	-1.2	8.0	9.2
2462MHz(ch11)	2.461.99	-3.2	0.4	-2.8	8.0	10.8