



# EMI TEST REPORT

Test Report No. : 25EE0063-HO-1

Applicant : Sony Corporation  
Type of Equipment : Wireless LAN Module  
Model No. : IRF303J  
Test standard : FCC Part 15 Subpart C  
Section 15.207, Section 15.247 : 2004  
FCC ID : AK8IRF303J  
Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with above regulation. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.

Date of test:

January 17 to 20, 2005

Tested by:

Keiichi Aoki  
EMC Service

Yufaka Yoshida  
EMC Service

Hiroka Umeyama  
EMC Service

Approved by :

Hironobu Shimoji  
Group Leader of  
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## **SECTION 1: Client information**

Company Name : Sony Corporation  
Address : Gate City Osaki West Tower Osaki East Tec.  
1-11-1 Osaki Shinagawa-ku, Tokyo, 141-0032 Japan  
Telephone Number : +81-3-5435-3977  
Facsimile Number : +81-3-5435-3963  
Contact Person : Masaki Nishimura

## **SECTION 2: Equipment under test (E.U.T.)**

### **2.1 Identification of E.U.T.**

Type of Equipment : Wireless LAN Module  
Model No. : IRF303J  
Serial No. : 64 (for Spurious Emission (Radiated) and Conducted Emission tests)  
62 (for other tests)  
Rating : DC3.3V, 0.81A  
Country of Manufacture : Japan  
Receipt Date of Sample : January 17, 2005  
Condition of EUT : Production prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)

### **2.2 Product Description**

Equipment Type : Transceiver  
Frequency of operation : 2412-2462MHz (IEEE802.11b/g)  
Transmission method : DSSS  
Modulation Techniques : OFDM,CCK,QPSK,BPSK  
Channel number : 11channels  
Power control : Non  
Mode of operation : Duplex  
Antenna Type : Film Antenna  
Antenna Gain : 1.9dBi(MAX)  
Antenna Connector Type : U.FL

### **FCC 15.31 (e)**

This EUT does not have its own power supply, 3.3V is supplied from the limited product of Sony.  
Therefore, this EUT complies with the requirement.

### **FCC Part 15.203 Antenna requirement**

This EUT has the external (particular) antenna connector, and the installation is to be done by the professionals.  
Therefore, the equipment complies with the antenna requirement of Section 15.203.

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## **SECTION 3: Test specification, procedures & results**

### **3.1 Test Specification**

Test Specification : FCC Part15 Subpart C : 2004  
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators  
Section 15.207 Conducted limits : 2004  
Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz : 2004

### **3.2 Procedures and results**

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin *0	Results
1	Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207	-	N/A	13.0dB 7.381MHz, Phase N/L (AV) IEEE802.11g High ch	Complied
2	6dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247(a)(2)	Conducted	N/A	See data.	Complied
3	Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247(b)(3)	Conducted	N/A	See data.	Complied
4	Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (d) Section 15.209	Conducted/ Radiated	N/A	5.1dB 24120MHz,VER IEEE802.11b Low Ch	Complied
5	Restricted Band Edges	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (d)	Conducted/ Radiated	N/A	See data.	Complied
6	Power Density	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (e)	Conducted	N/A	See data.	Complied

Note: UL Apex's EMI Work Procedures No.QPM05 and QPM15.

\*0) The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

#### **Uncertainty:**

\*In case of the margin below the EMC Head Office's uncertainty.

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

#### **Conducted Emission**

The measurement uncertainty (with a 95% confidence level) for this test is  $\pm 1.3$ dB.

#### **Spurious Emission (Radiated)**

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is  $\pm 4.5$ dB(3m)/  $\pm 4.7$ dB(10m).

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is  $\pm 5.2$ dB(3m)/  $\pm 3.8$ dB(10m).

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is  $\pm 6.6$ dB.

#### **Other test except Conducted Emission and Spurious Emission (Radiated)**

The measurement uncertainty (with a 95% confidence level) for this test is  $\pm 3.0$ dB.

\*These tests were also referred to "Guidance on Measurement for Digital Transmission Systems Section 15.247".

\*These tests were performed without any deviations from test procedure except for additions or exclusions.

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### 3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 + Amendment4:2004	RSS210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 + Amendment4:2004	Conducted	N/A	N/A	N/A

### 3.4 Test Location

UL Apex Co., Ltd. Head Office EMC Lab. \*NVLAP Lab. code: 200572-0  
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	Listed date (for FCC)	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	February 01, 2002	313583	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	June 05, 2002	846015	IC4247-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 shielded room	-	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.4 measurement room	-	-	-	3.1 x 5.0 x 2.7m	N/A	-

\* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1 and No.2 semi-anechoic and No.3 shielded room.

### 3.5 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

## **SECTION 4: Operation of E.U.T. during testing**

### **4.1 Operating Modes**

The EUT was operating in a manner similar to typical use during the tests.

PacketType : Maximum  
Payload : PN9  
Operation : Transmitting mode(IEEE802.11b/11g)  
                  Low Channel :2412MHz(Ch1)  
                  Mid Channel :2437MHz(Ch6)  
                  High channel :2462MHz(Ch11)  
Conditions : 1) Data Rate:IEEE802.11b:1,2,5,6,11, IEEE802.11g:6,9,12,18,24,36,48,54 Mbps  
                  2) Antenna:1,2 (same type)  
                  3) Cable length : from 5cm to 19cm  
                  \*We pre-confirmed the above conditions on EUT and performed the final test with the following conditions;

	IEEE802.11b	IEEE802.11g
Conducted emission test	1)Rate:11Mbps	1)Rate:54Mbps
	2)Antenna:2	
	3)Cable:19cm	
Radiated emission test	1)Rate:11Mbps	1)Rate:54Mbps
	2)Antenna:2	
	3)Cable:19cm	
Other tests	1)Rate:11Mbps	1)Rate:12Mbps, 54Mbps
	2)Antenna:1	
	3)Cable:19cm	

<The details>

Conducted emission test : The above conditions did not affect the test result so that the test was made with these conditions in the above table.

Radiated emission test : As for Rate, 11Mbps (Maximum transmission rate of 11b) and 54Mbps (Maximum transmission rate of 11g) had worst margins.  
The result of Antenna 2 had worst margin.  
We confirmed the tests with minimum length 5cm and maximum length 19cm, and the result with 19cm had worst margin.

Other tests : As for Rate, 11Mbps(Maximum transmission rate of 11b) and 12Mbps (11g) had worst margins.  
The test was also performed with Maximum transmission rate 54Mbps of 11g.  
The result of Antenna 1 had worst margin.  
The Cable length did not affect the test result so that the test was made with 19cm.

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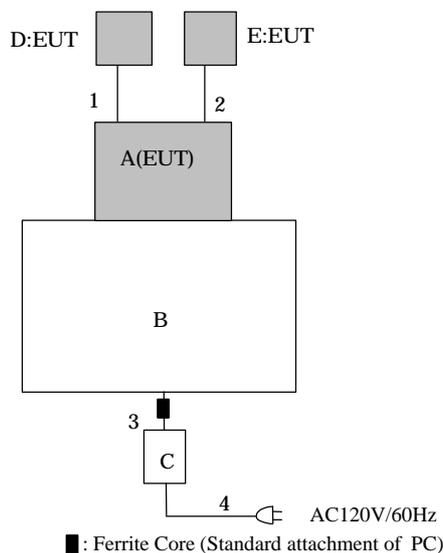
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## 4.2 Configuration and peripherals



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

### Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID	Remarks
A	Wireless LAN Module	IRF303J	64*1 62*2	SONY	AK8IRF303J	EUT
B	Notebook Personal Computer	PP01L	CN-04P449-48155-28N-1004	DELL	-	-
C	AC Adaptor	AA20031	CN-09364U-16291-289-00YA	DELL	-	-
D	Film Antenna	HFT18	-	HITACHI	AK8IRF303J	EUT
E	Film Antenna	HFT18	-	HITACHI	AK8IRF303J	EUT

\*1 : for Spurious Emission (Radiated) and Conducted Emission tests

\*2 : for other tests

### List of cables used

No.	Name	Length (m)	Shield	Backshell Material
1	Antenna Cable	0.19	Y	FEP
2	Antenna Cable	0.19	Y	FEP
3	DC Cable	1.8	N	Polyvinyl chloride
4	AC Cable	1.8	N	Polyvinyl chloride

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## **SECTION 5: Conducted Emission**

### **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. EUT was located 80cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center .

1) For the tests on EUT with other peripherals (as a whole system)

I/O cable 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.

2) For the tests on EUT itself (as a stand alone equipment)

Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN /(AMN) to the input power source. All unused 50ohm connectors of the LISN(AMN) were resistively terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

The measurements have been performed with a CISPR quasi-peak detector (IF BW 9 kHz).

Measurement range: 0.15-30MHz

**Test data** : **APPENDIX 3**  
**Test result** : **Pass**

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## **SECTION 6: Spurious Emission**

**[Conducted]**

### **Test Procedure**

The Out of Band Emission was measured with a spectrum analyzer connected to the antenna port.

**Test data** : APPENDIX 3  
**Test result** : Pass

**[Radiated]**

### **Test Procedure**

EUT was placed on the size, 0.5m by 0.5m, raised 80cm above the conducting ground plane.

The Radiated Electric Field Strength intensity has been measured in a Semi Anechoic Chamber with a ground plane and at a distance of 3m(Below 10GHz) and 1m(Upper 10GHz).

The height of the measuring varied between 1 and 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 with the Test Receiver or the Spectrum Analyzer.

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.

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver / Spectrum Analyzer	Spectrum Analyzer
Detector	QP: BW 120kHz(T/R)	PK: RBW:1MHz/VBW: 1MHz
IF Bandwidth	20dBc : RBW:100kHz/VBW: 300kHz (S/A)	AV: RBW:1MHz/VBW:10Hz 20dBc : RBW:100kHz/VBW:300kHz

**Test data** : APPENDIX 3  
**Test result** : Pass

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

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## **SECTION 7: Bandwidth**

### **Test Procedure**

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

**Test data** : APPENDIX 3  
**Test result** : Pass

## **SECTION 8: Maximum Peak Output Power**

### **Test Procedure**

The Maximum Peak Output Power was measured with a spectrum analyzer connected to the antenna port.  
The test was made with the spectrum analyzer that has a function of channel-power measurement.

**Test data** : APPENDIX 3  
**Test result** : Pass

## **SECTION 9: Peak Power Density**

### **Test Procedure**

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

**Test data** : APPENDIX 3  
**Test result** : Pass

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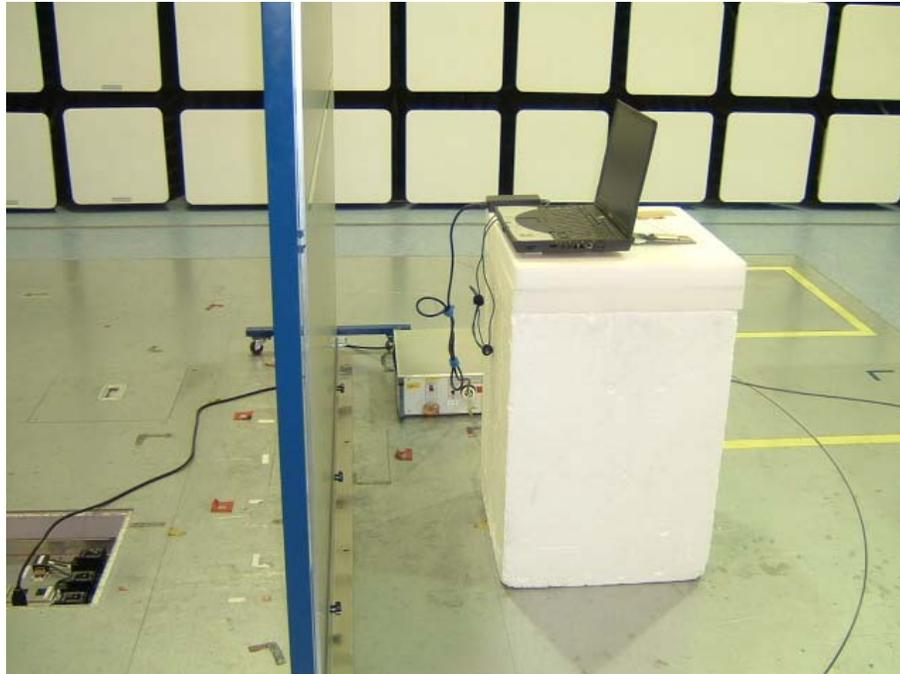
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**APPENDIX 1: Photographs of test setup**

**Conducted Emission**  
**Front**

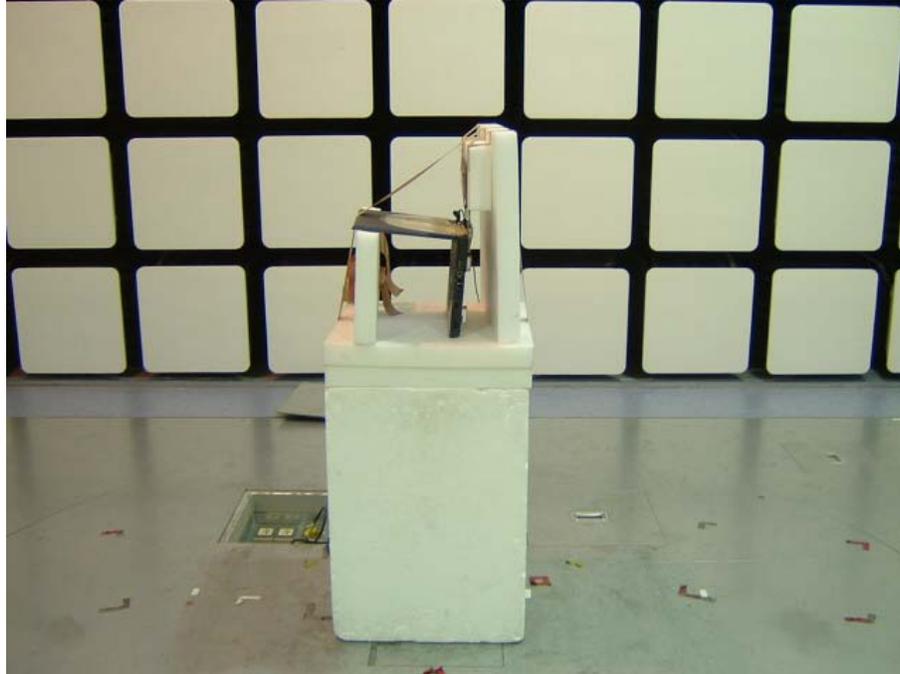


**Rear**

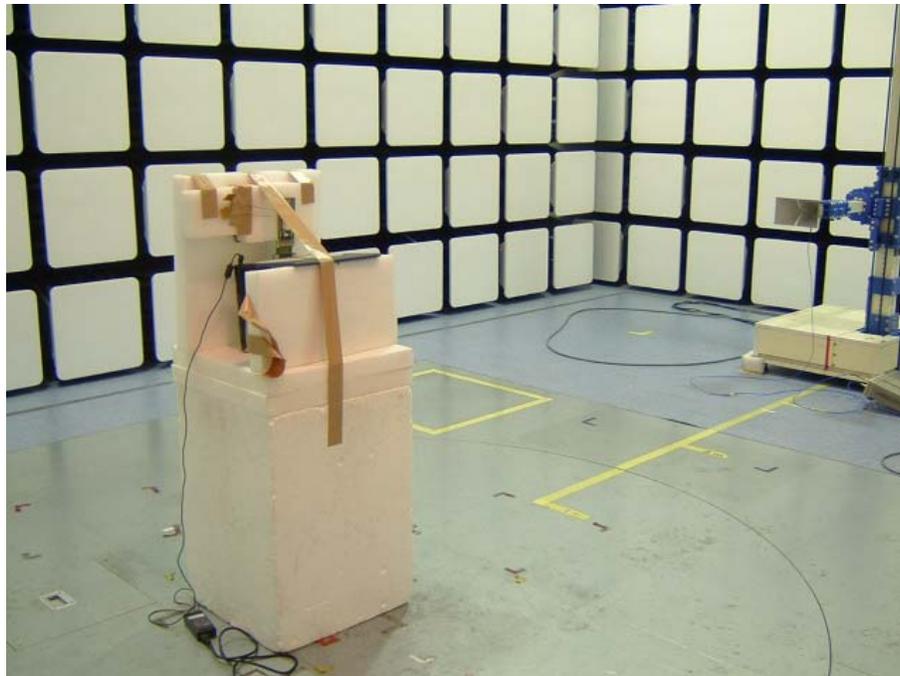


### Spurious Emission (Radiated)

Front

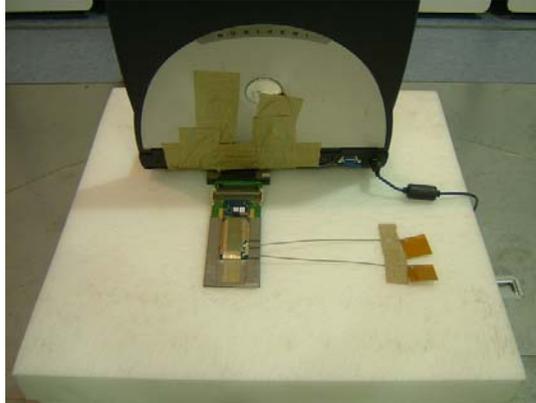


Rear

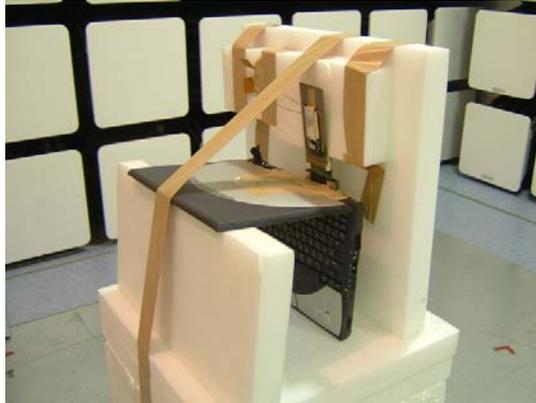


**Worst Case Position (Z-axis:Horizontal / Y-axis:Vertical)**

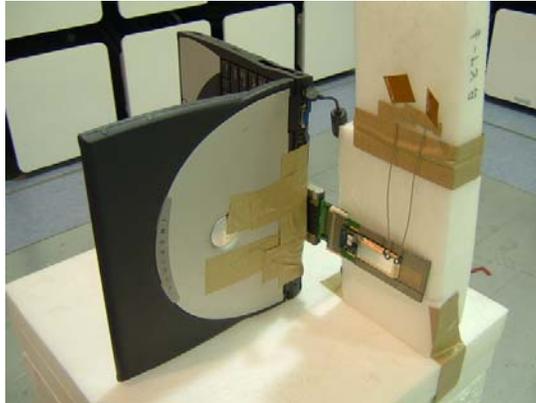
**X-axis**



**Y-axis**



**Z-axis**



## APPENDIX 2: Test instruments

### EMI test equipment

Control No.	(Conducted Emission)Instrument	Manufacturer	Model No	Item	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE/CE	2004/04/12 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2005/01/10 * 12
MHA-02	Horn Antenna	EMCO	3160-09	RE	2005/01/10 * 12
MAT-22	Attenuator(10dB)(above 1GHz)	Orient Microwave	BX10-0476-00	RE, AT	2004/03/30 * 12
MHF-02	High Pass Filter	Tokimec	TF323DCA	RE	2004/11/01 * 12
MCC-04	Microwave Cable 1-40G	Storm	421-011	RE	2005/01/05 * 12
MCC-21	Microwave Cable	Storm	-	RE	2004/05/01 * 12
MCC-22	Microwave Cable	Storm	-	RE	2004/05/01 * 12
MRENT-09	Spectrum Analyzer	Advantest	R3273	RE /CE	2004/02/18 * 12
MPA-01	Pre Amplifier	Agilent	8449B	RE	2004/02/06 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2004/02/24 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2004/12/16 * 12
MPA-06	Pre Amplifier	Hewlett Packard	8447D	RE	2004/08/29 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2004/10/14 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2004/10/14 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	CE(EUT)	2004/02/17 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	CE	2004/02/24 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE/CE	2004/02/03 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	AT	2004/06/12 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

#### Test Item :

- CE: Conducted emission
- RE: Spurious emission(Radiated)
- AT: Other tests

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**APPENDIX 3: Data of EMI test**

**Conducted Emission**

**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2005/01/19 22:32:37

Applicant	: Sony Corporation	Report No.	: 25EE0063-HO
Kind of EUT	: Wireless LAN Module	Power	: AC120V/60Hz
Model No.	: IRF303J	Temp°C/Humi%	: 25deg.C / 27%
Serial No.	: 64	Operator	: Yutaka Yoshida

Mode / Remarks : Tx IEEE802.11b/2412MHz/11Mbps Antenna 2

LIMIT : FCC15C § 15.207 (QP)  
FCC15C § 15.207 (AV)

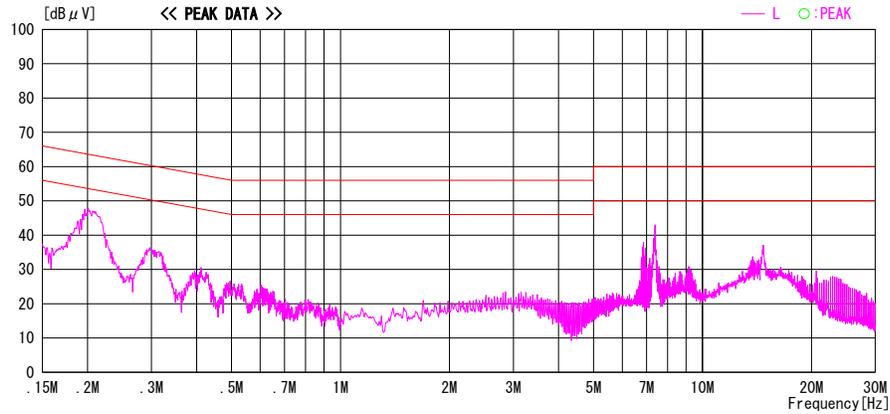
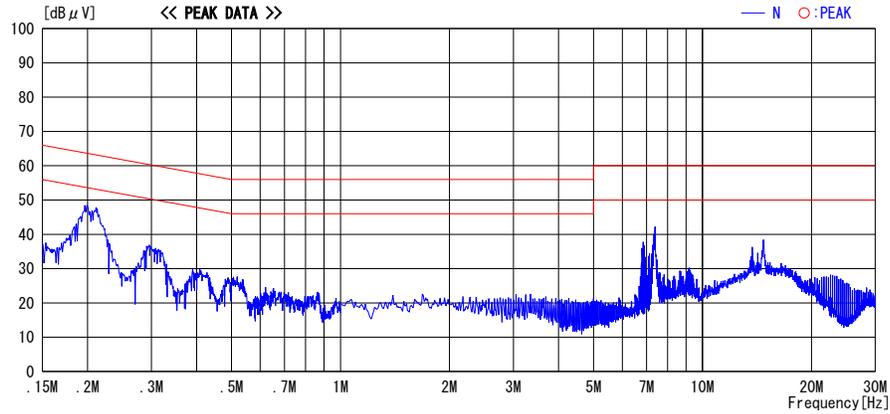


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F(LISN LOSS+CABLE LOSS)  
Except for the above table : adequate margin data below the limits.

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/01/19 22:38:05

Applicant	: Sony Corporation	Report No.	: 25EE0063-HO
Kind of EUT	: Wireless LAN Module	Power	: AC120V/60Hz
Model No.	: IRF303J	Temp°C/Humi%	: 25deg. C / 27%
Serial No.	: 64	Operator	: Yutaka Yoshida

Mode / Remarks : Tx IEEE802.11b/2437MHz/11Mbps Antenna 2

LIMIT : FCC15C § 15.207 (QP)  
 FCC15C § 15.207 (AV)

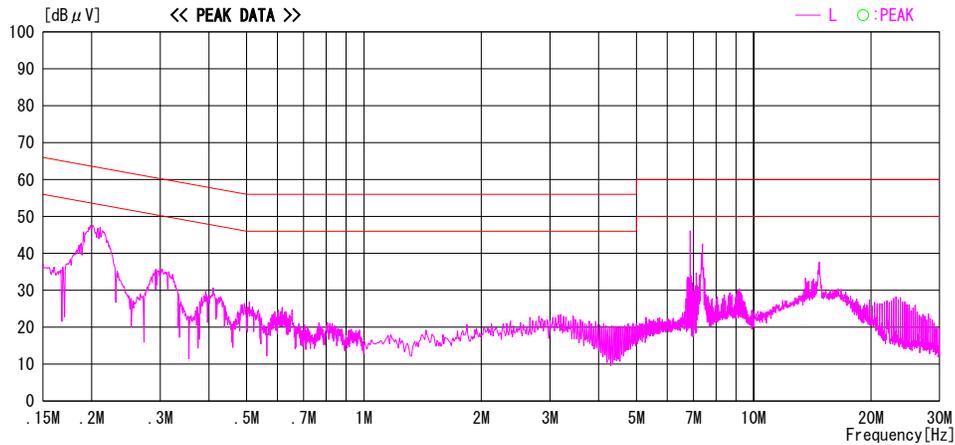
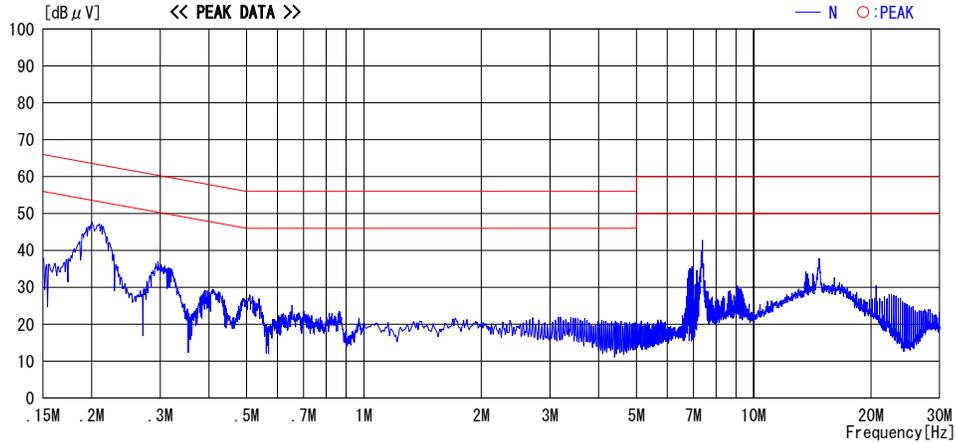


CHART:WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C. F (L1SN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/01/19 22:48:38

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF303J Serial No. : 64	Report No. : 25EE0063-HO Power : AC120V/60Hz Temp°C/Humi% : 25deg. C / 27% Operator : Yutaka Yoshida
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Mode / Remarks : Tx IEEE802.11b/2462MHz/11Mbps Antenna 2

LIMIT : FCC15C § 15.207 (QP)  
 FCC15C § 15.207 (AV)

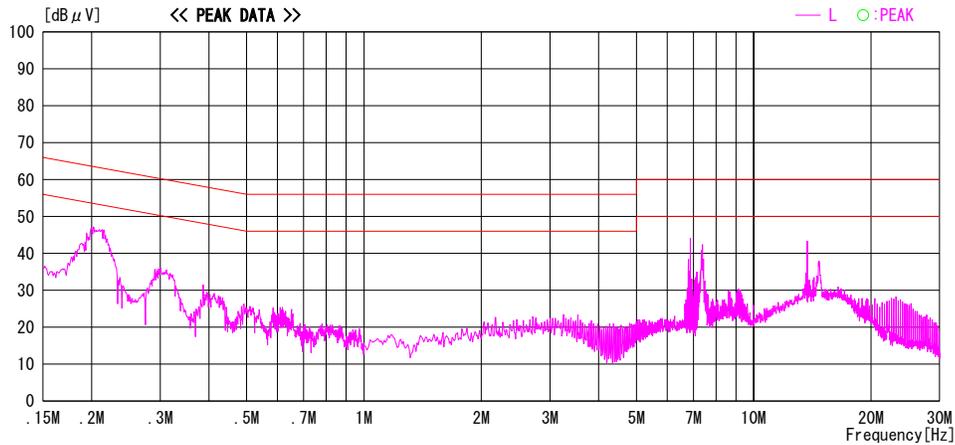
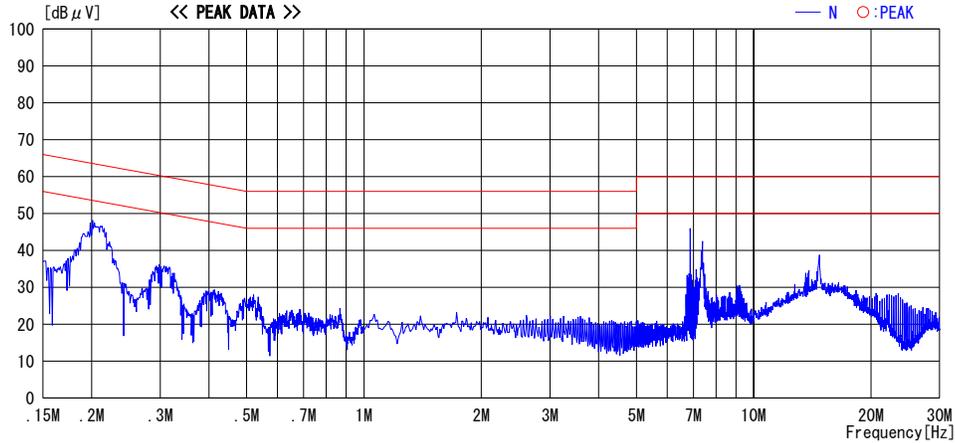


CHART:WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION:RESULT=READING+C.F(LI SN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/01/19 22:57:55

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF303J Serial No. : 64	Report No. : 25EE0063-HO Power : AC120V/60Hz Temp°C/Humi% : 25deg. C / 27% Operator : Yutaka Yoshida
---	---

Mode / Remarks : Tx IEEE802.11g/2412MHz/54Mbps Antenna 2

LIMIT : FCC15C § 15.207 (QP)  
 FCC15C § 15.207 (AV)

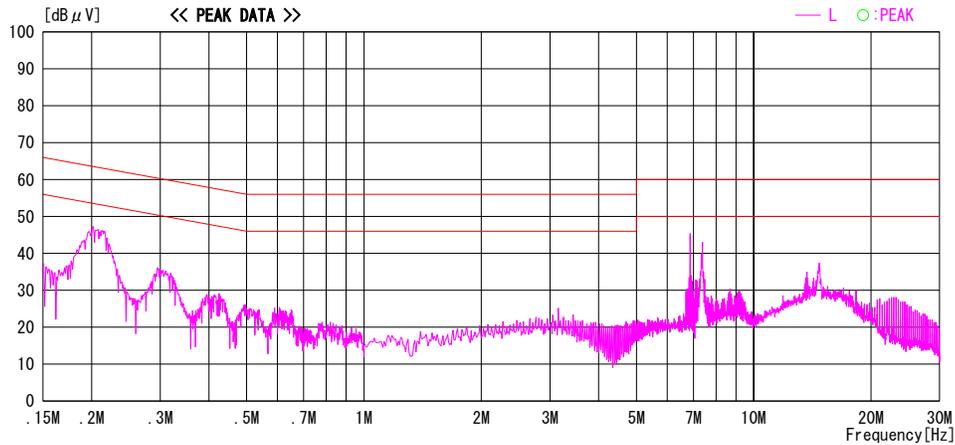
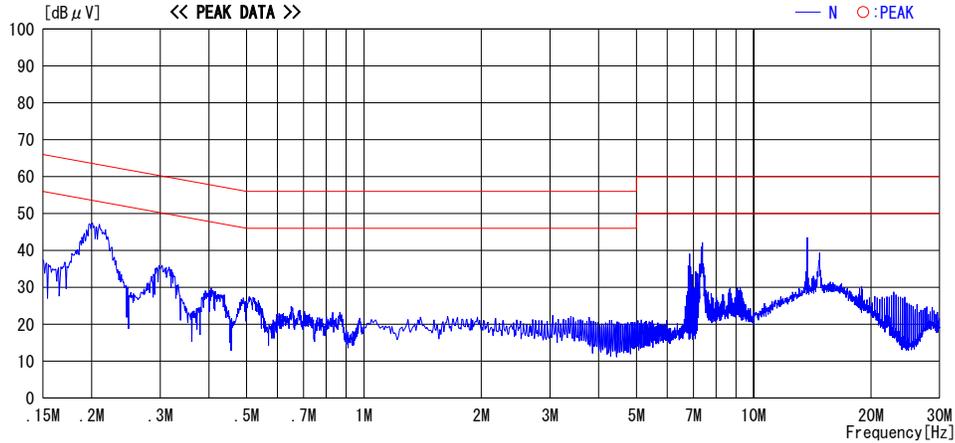


CHART:WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION:RESULT=READING+C.F(LI SN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/01/19 23:16:43

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF303J Serial No. : 64	Report No. : 25EE0063-HO Power : AC120V/60Hz Temp°C/Humi% : 25deg. C / 27% Operator : Yutaka Yoshida
---	---

Mode / Remarks : Tx IEEE802.11g/2437MHz/54Mbps Antenna 2

LIMIT : FCC15C § 15.207 (QP)  
 FCC15C § 15.207 (AV)

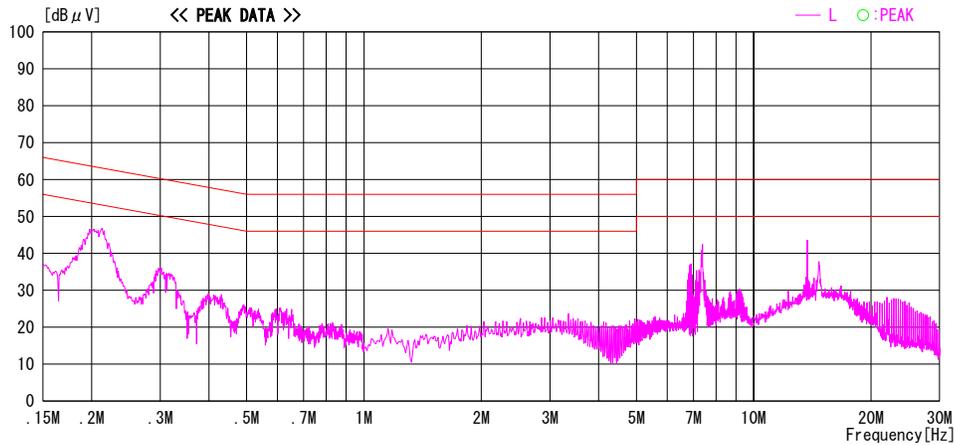
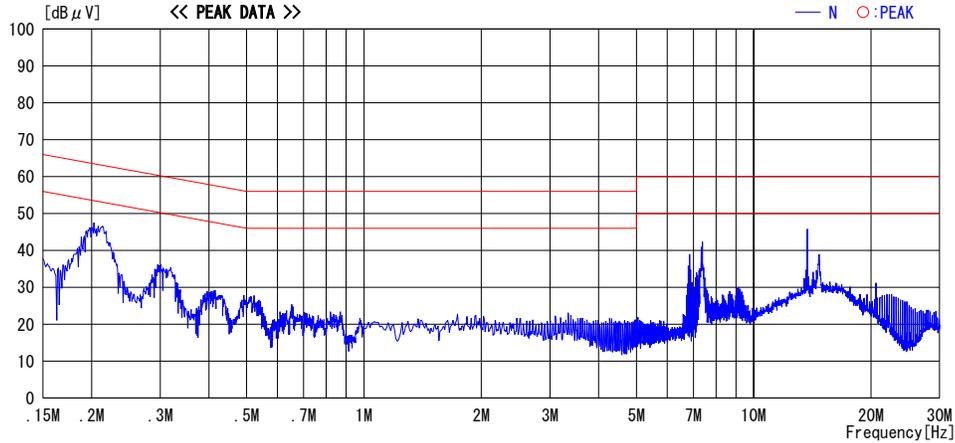


CHART:WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION:RESULT=READING+C.F(LI SN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

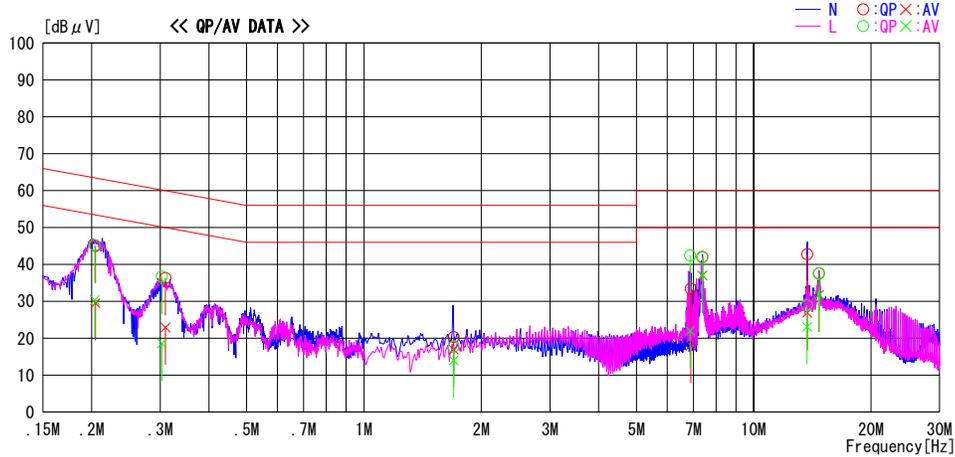
## DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2005/01/19 23:21:35

Applicant : Sony Corporation	Report No. : 25EE0063-HO
Kind of EUT : Wireless LAN Module	Power : AC120V/60Hz
Model No. : IRF303J	Temp°C/Humi% : 25deg. C / 27%
Serial No. : 64	Operator : Yutaka Yoshida

Mode / Remarks : Tx IEEE802.11g/2462MHz/54Mbps Antenna 2

LIMIT : FCC15C § 15.207 (QP)  
FCC15C § 15.207 (AV)



NO	FREQ [MHz]	READING		C. F	RESULT		LIMIT		MARGIN		PHASE
		QP [dB μV]	AV [dB μV]		QP [dB μV]	AV [dB μV]	QP [dB]	AV [dB]			
1	0.2046	44.9	29.4	0.1	45.0	29.5	63.4	53.4	18.4	23.9	N
2	0.3096	36.2	22.8	0.1	36.3	22.9	60.0	50.0	23.7	27.1	N
3	1.6995	20.0	16.6	0.3	20.3	16.9	56.0	46.0	35.7	29.1	N
4	6.8950	32.6	17.2	0.8	33.4	18.0	60.0	50.0	26.6	32.0	N
5	7.3811	41.2	36.2	0.8	42.0	37.0	60.0	50.0	18.0	13.0	N
6	13.7240	41.4	25.6	1.3	42.7	26.9	60.0	50.0	17.3	23.1	N
7	14.7081	36.1	30.4	1.4	37.5	31.8	60.0	50.0	22.5	18.2	N
8	0.2038	45.1	30.2	0.1	45.2	30.3	63.5	53.5	18.3	23.2	L
9	0.3030	36.6	18.5	0.1	36.7	18.6	60.2	50.2	23.5	31.6	L
10	1.6996	17.4	13.7	0.3	17.7	14.0	56.0	46.0	38.3	32.0	L
11	6.8660	41.6	21.2	0.8	42.4	22.0	60.0	50.0	17.6	28.0	L
12	7.3810	41.1	36.2	0.8	41.9	37.0	60.0	50.0	18.1	13.0	L
13	13.7023	27.6	21.8	1.3	28.9	23.1	60.0	50.0	31.1	26.9	L
14	14.7120	36.2	30.4	1.4	37.6	31.8	60.0	50.0	22.4	18.2	L

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C. F (LISN LOSS+CABLE LOSS)  
Except for the above table : adequate margin data below the limits.

## 6dB Bandwidth(DSSS and other forms of modulation)

UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Measurement Room

Company : Sony Corporation  
Equipment : Wireless LAN Module  
Model : IRF303J  
Sample No. : 62  
Power : DC3.3V  
Mode : Tx IEEE 802.11a/b/g  
Antenna : 1

REPORT NO : 25EE0063-HO  
REGULATION : FCC 15.247(a)(2)  
TEST DISTANCE : -  
DATE : 2005/01/20  
TEMPERATURE : 24deg.C  
HUMIDITY : 30%  
ENGINEER : Hiroka Umeyama

### [ IEEE802.11b : 11Mbps ]

Ch	Freq. [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2412.0	12.202	500.0
Mid	2437.0	12.123	500.0
High	2462.0	12.146	500.0

### [ IEEE802.11g : 54Mbps ]

Ch	Freq. [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2412.0	16.582	500.0
Mid	2437.0	16.585	500.0
High	2462.0	16.598	500.0

### [ IEEE802.11g : 12Mbps ]

Ch	Freq. [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2412.0	16.533	500.0
Mid	2437.0	16.512	500.0
High	2462.0	16.525	500.0

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

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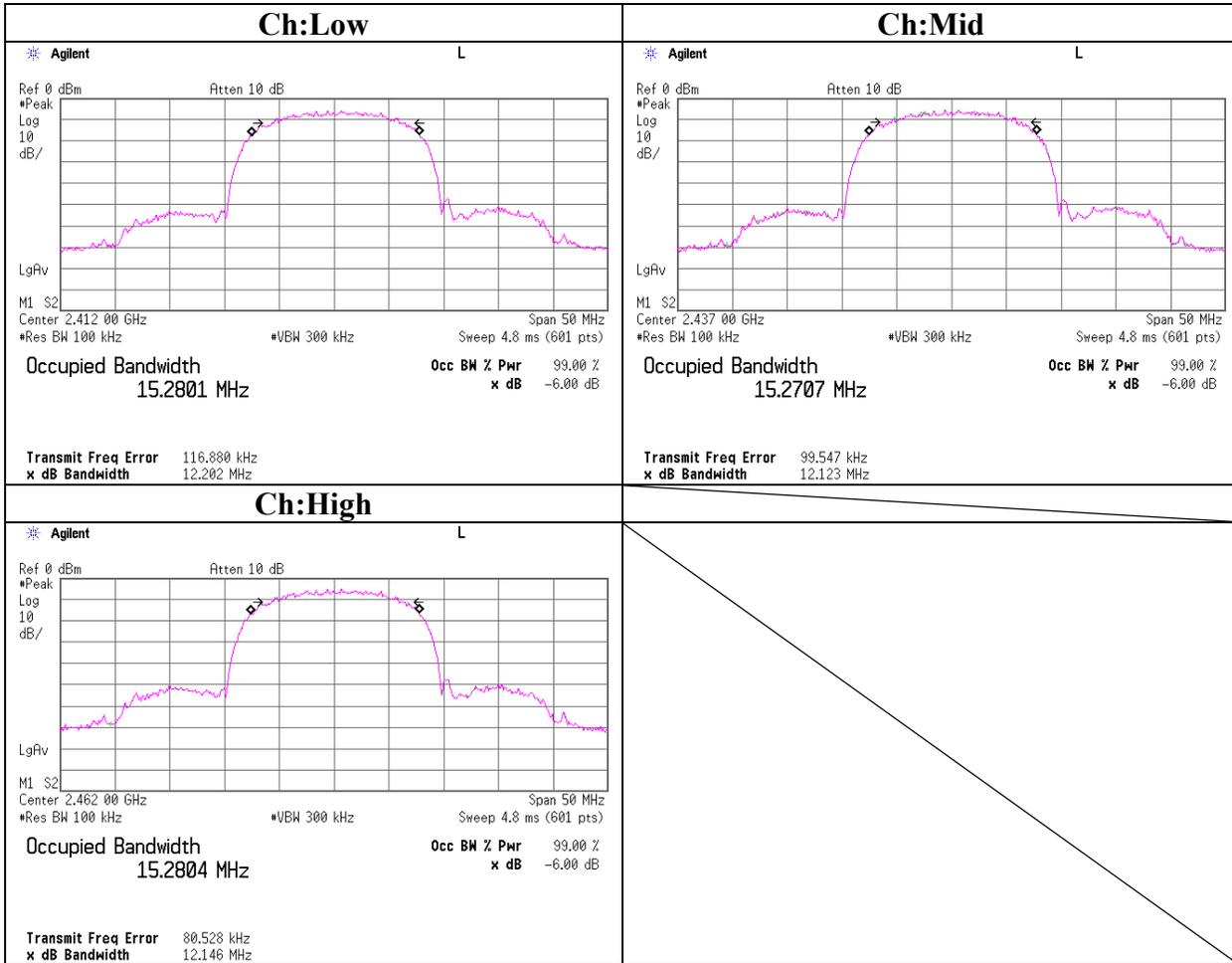
Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

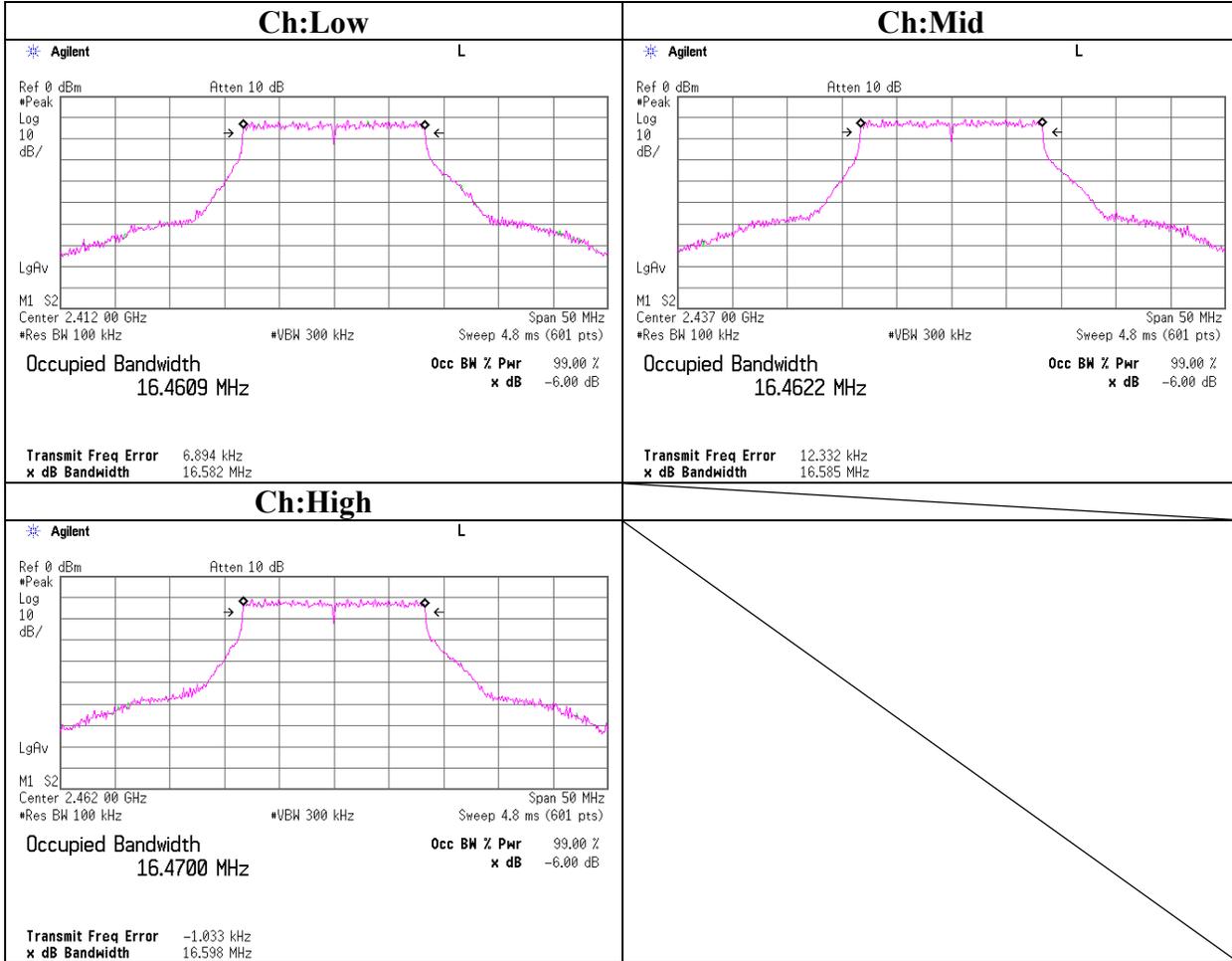
**6dB Bandwidth(DSSS and other forms of modulation)**

**IEEE802.11b 11Mbps Antenna:1**



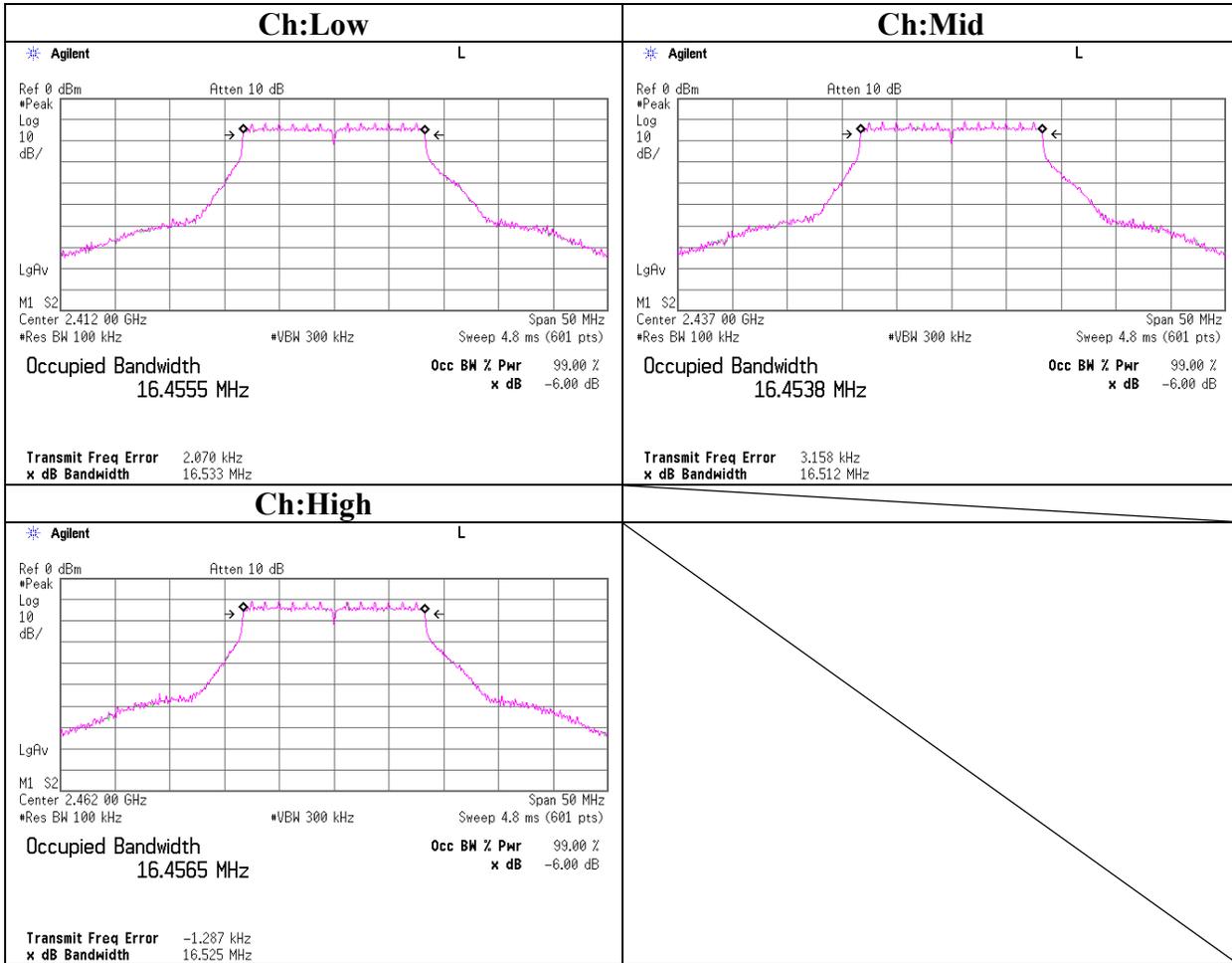
**6dB Bandwidth(DSSS and other forms of modulation)**

**IEEE802.11g 54Mbps Antenna:1**



**6dB Bandwidth(DSSS and other forms of modulation)**

**IEEE802.11g 12Mbps Antenna:1**



**Maximum Peak OutPut Power (DSSS and other forms of modulation)**

UL Apex Co., Ltd. Head Office EMC Lab. No.4 Measurement Room

Company : Sony Corporation REPORT NO : 25EE0063-HO  
Equipment : Wireless LAN Module REGULATION : FCC 15.247(b)(3)  
Model : IRF303J TEST DISTANCE : -  
Sample No. : 62 DATE : 2005/1/17  
Power : DC3.3V TEMPERATURE : 23deg.C  
Mode : Tx IEEE 802.11b/g HUMIDITY : 34%  
Antenna : 1 ENGINEER : Hiroka Umeyama

**[IEEE802.11b : 11Mbps : Antenna 1 ]**

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	6.62	0.63	10.00	17.25	30.00	12.75
Mid	2437.0	6.80	0.63	10.00	17.43	30.00	12.57
High	2462.0	7.36	0.63	10.00	17.99	30.00	12.01

**[IEEE802.11b : 11Mbps : Antenna 2 ]**

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	6.50	0.63	10.00	17.13	30.00	12.87
Mid	2437.0	7.03	0.63	10.00	17.66	30.00	12.34
High	2462.0	7.29	0.63	10.00	17.92	30.00	12.08

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

\* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

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Facsimile : +81 596 24 8124

MF060b(10.04.03)

**Maximum Peak OutPut Power (DSSS and other forms of modulation)**

	UL Apex Co., Ltd.	Head Office EMC Lab. No.4 Measurement Room
Company	: Sony Corporation	REPORT NO : 25EE0063-HO
Equipment	: Wireless LAN Module	REGULATION : FCC 15.247(b)(3)
Model	: IRF303J	TEST DISTANCE : -
Sample No.	: 62	DATE : 2005/1/17
Power	: DC3.3V	TEMPERATURE : 23deg.C
Mode	: Tx IEEE 802.11b/g	HUMIDITY : 34%
Antenna	: 1	ENGINEER : Hiroka Umeyama

**[IEEE802.11g : 54Mbps : Antenna 1 ]**

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	3.12	0.63	10.00	13.75	30.00	16.25
Mid	2437.0	3.38	0.63	10.00	14.01	30.00	15.99
High	2462.0	3.83	0.63	10.00	14.46	30.00	15.54

**[IEEE802.11g : 12Mbps : Antenna 1 ]**

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	3.24	0.63	10.00	13.87	30.00	16.13
Mid	2437.0	3.80	0.63	10.00	14.43	30.00	15.57
High	2462.0	4.08	0.63	10.00	14.71	30.00	15.29

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

\* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

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Facsimile : +81 596 24 8124

MF060b(10.04.03)

**Maximum Peak OutPut Power (DSSS and other forms of modulation)**

UL Apex Co., Ltd. Head Office EMC Lab. No.4 Measurement Room  
Company : Sony Corporation REPORT NO : 25EE0063-HO  
Equipment : Wireless LAN Module REGULATION : FCC 15.247(b)(3)  
Model : IRF303J TEST DISTANCE : -  
Sample No. : 62 DATE : 2005/1/17  
Power : DC3.3V TEMPERATURE : 23deg.C  
Mode : Tx IEEE 802.11g HUMIDITY : 34%  
Antenna : 2 ENGINEER : Hiroka Umeyama

**[IEEE802.11g : 54Mbps : Antenna 2 ]**

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	3.06	0.63	10.00	13.69	30.00	16.31
Mid	2437.0	3.62	0.63	10.00	14.25	30.00	15.75
High	2462.0	3.80	0.63	10.00	14.43	30.00	15.57

**[IEEE802.11g : 12Mbps : Antenna 2 ]**

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	3.22	0.63	10.00	13.85	30.00	16.15
Mid	2437.0	3.84	0.63	10.00	14.47	30.00	15.53
High	2462.0	4.03	0.63	10.00	14.66	30.00	15.34

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

\* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

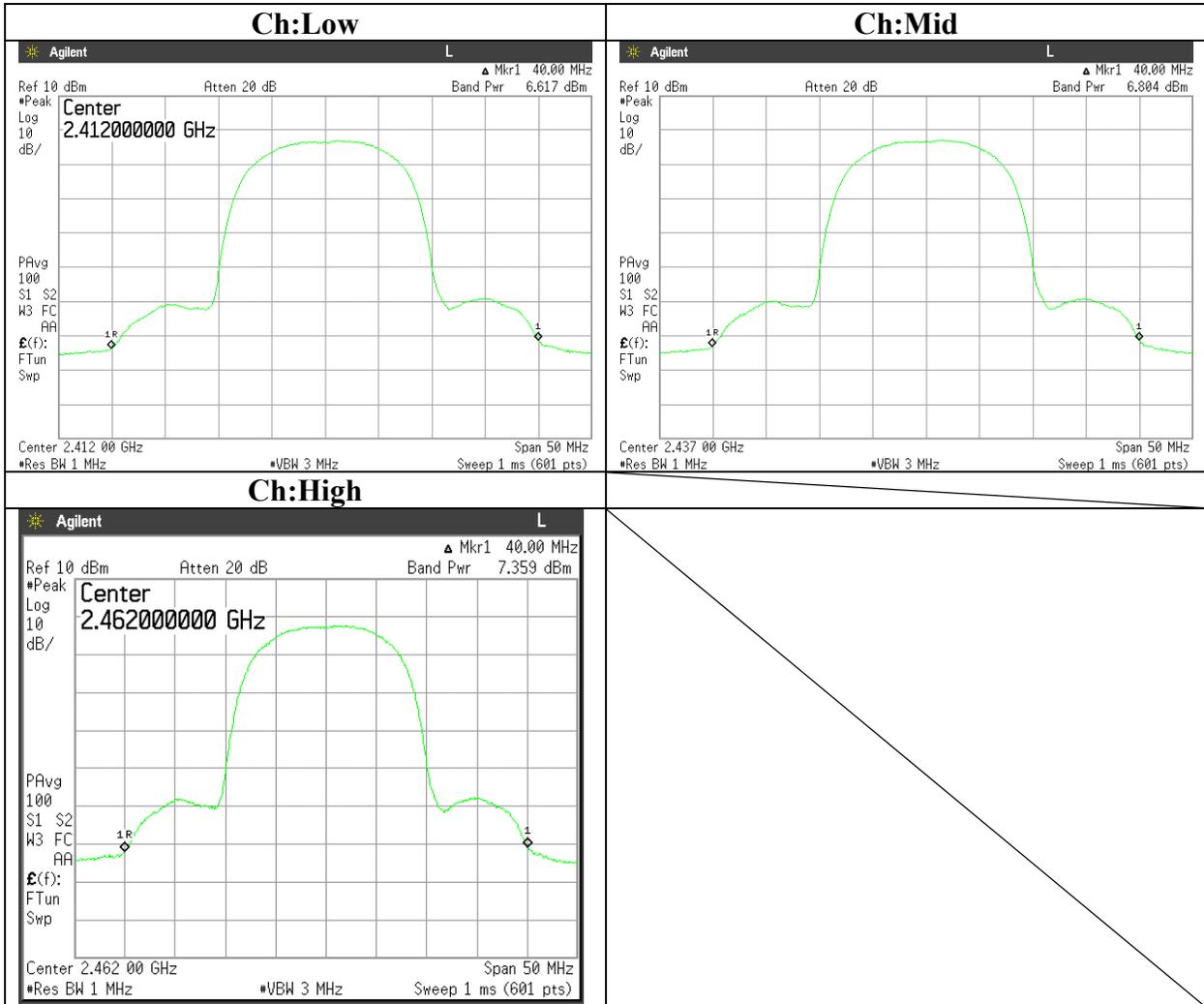
Telephone : +81 596 24 8116

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MF060b(10.04.03)

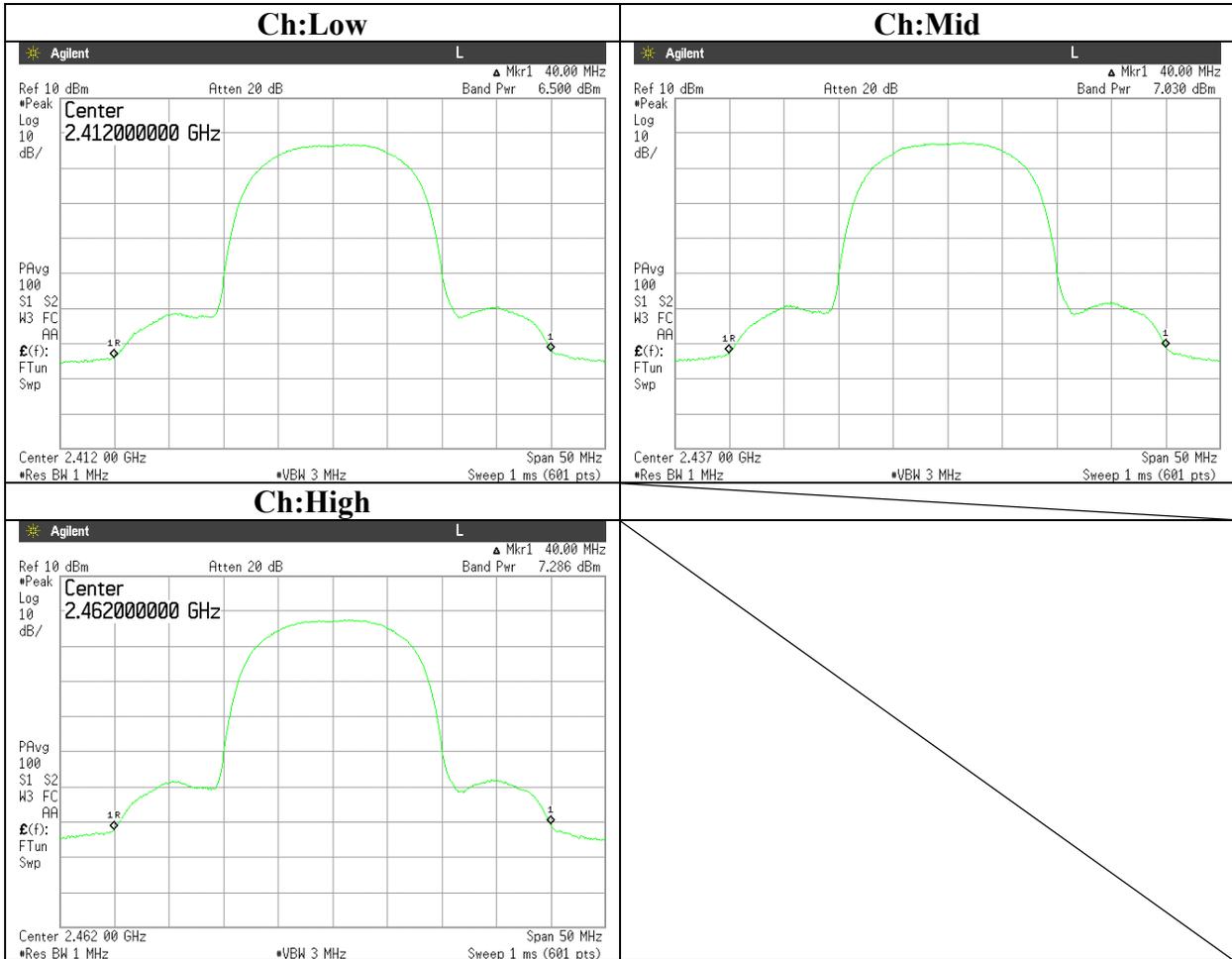
**Maximum Peak OutPut Power (DSSS and other forms of modulation)**

**IEEE802.11b 11Mbps Antenna:1**



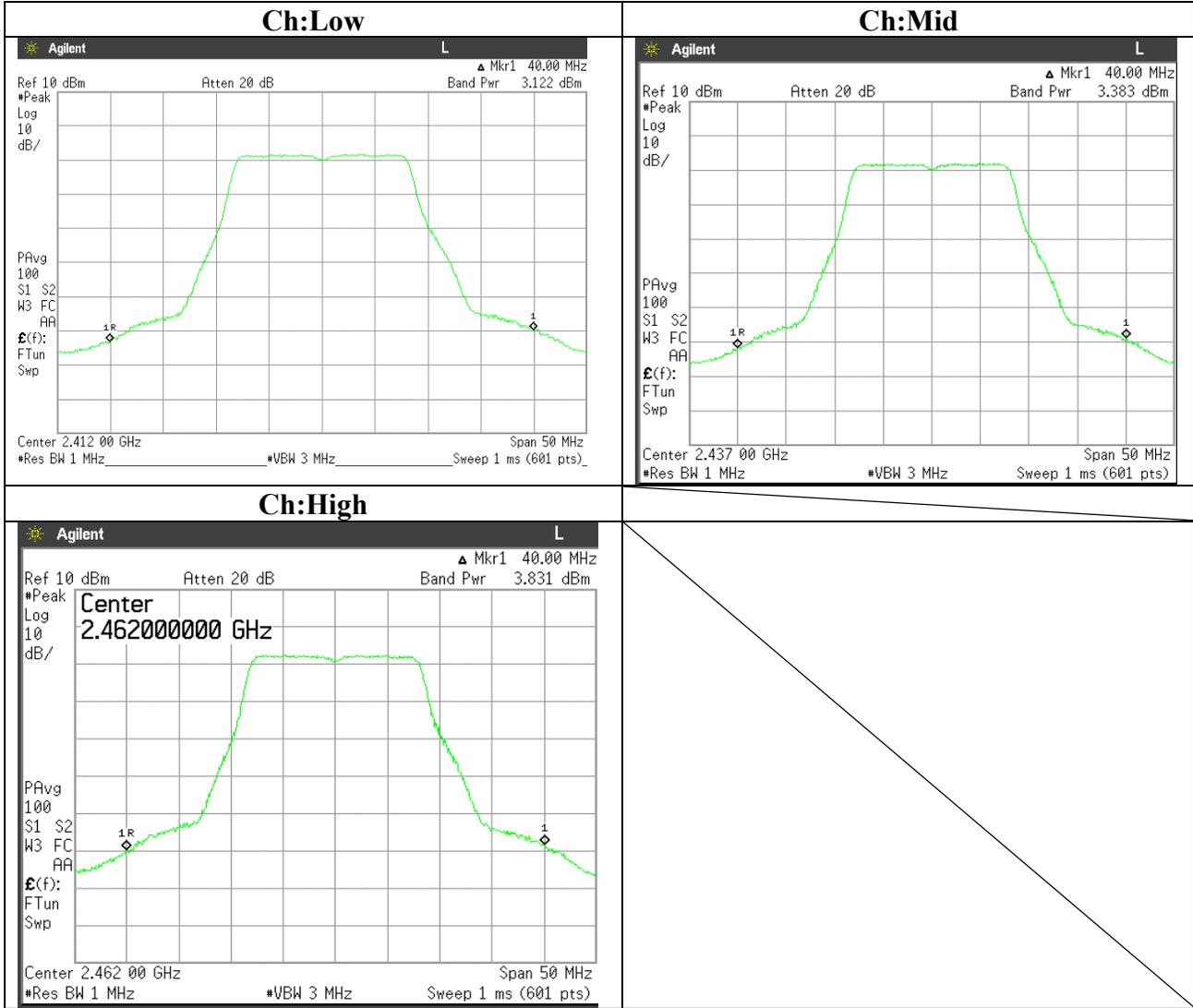
**Maximum Peak OutPut Power (DSSS and other forms of modulation)**

**IEEE802.11b 11Mbps Antenna:2**



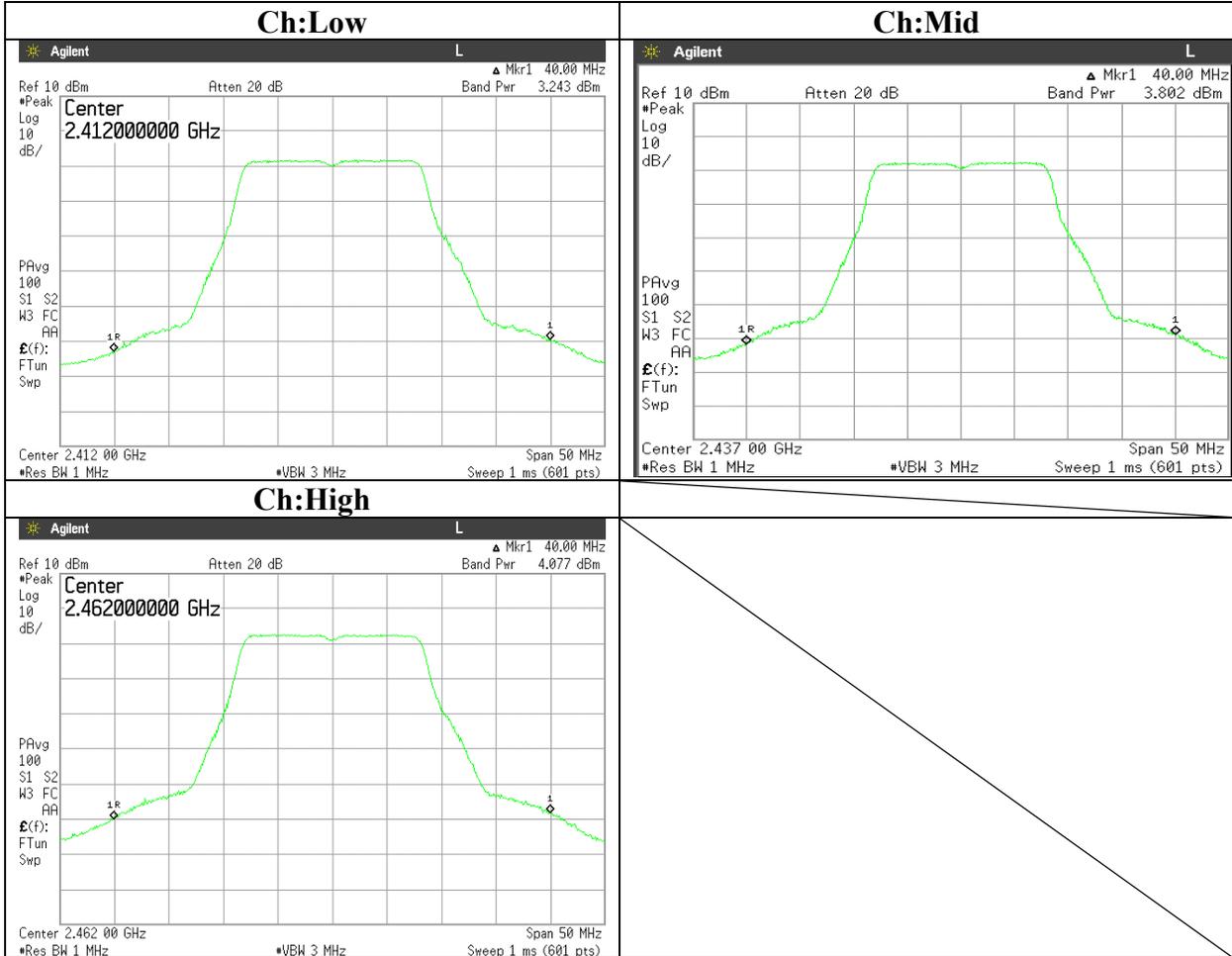
**Maximum Peak OutPut Power (DSSS and other forms of modulation)**

**IEEE802.11g 54Mbps Antenna:1**



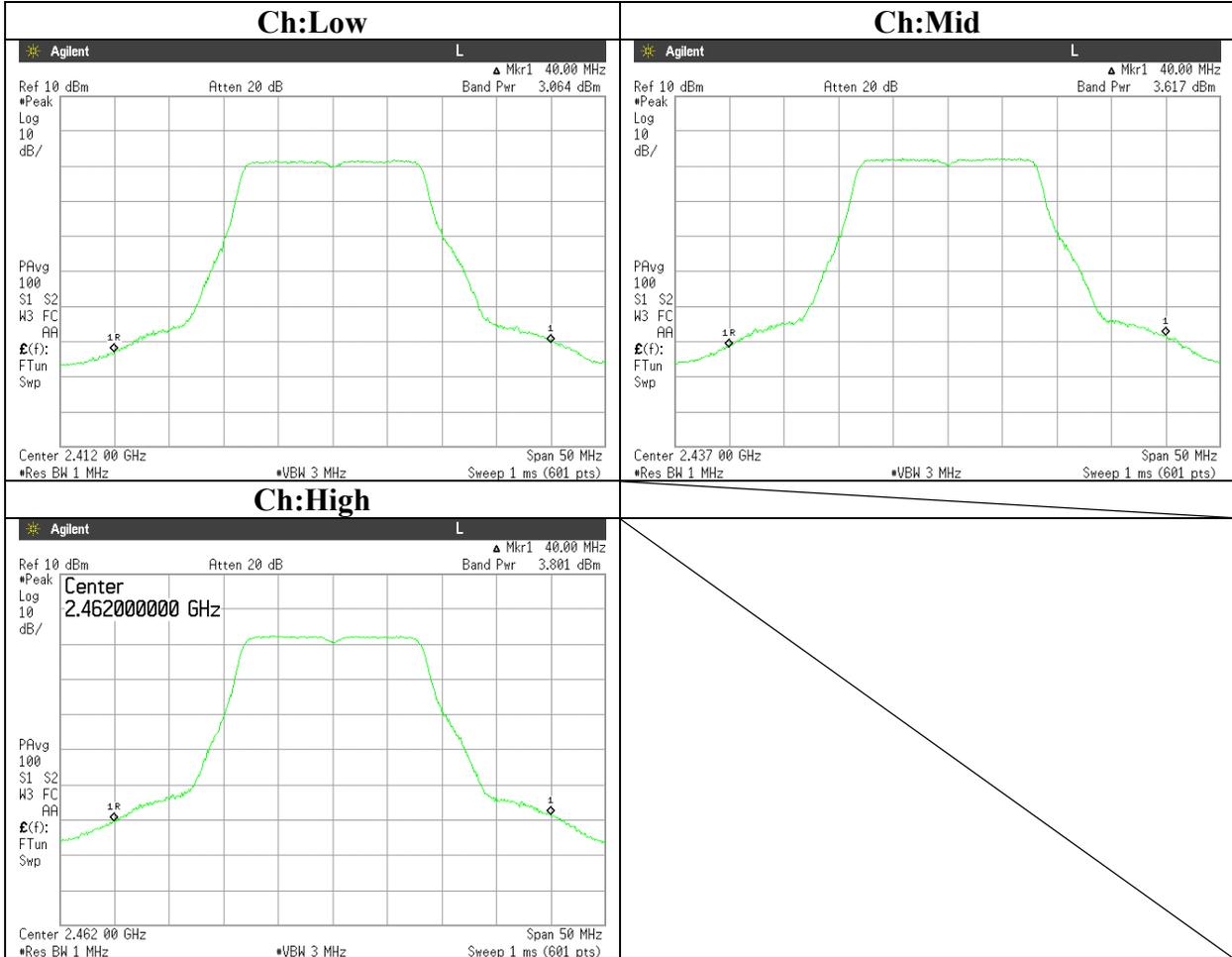
**Maximum Peak OutPut Power (DSSS and other forms of modulation)**

**IEEE802.11g 12Mbps Antenna:1**



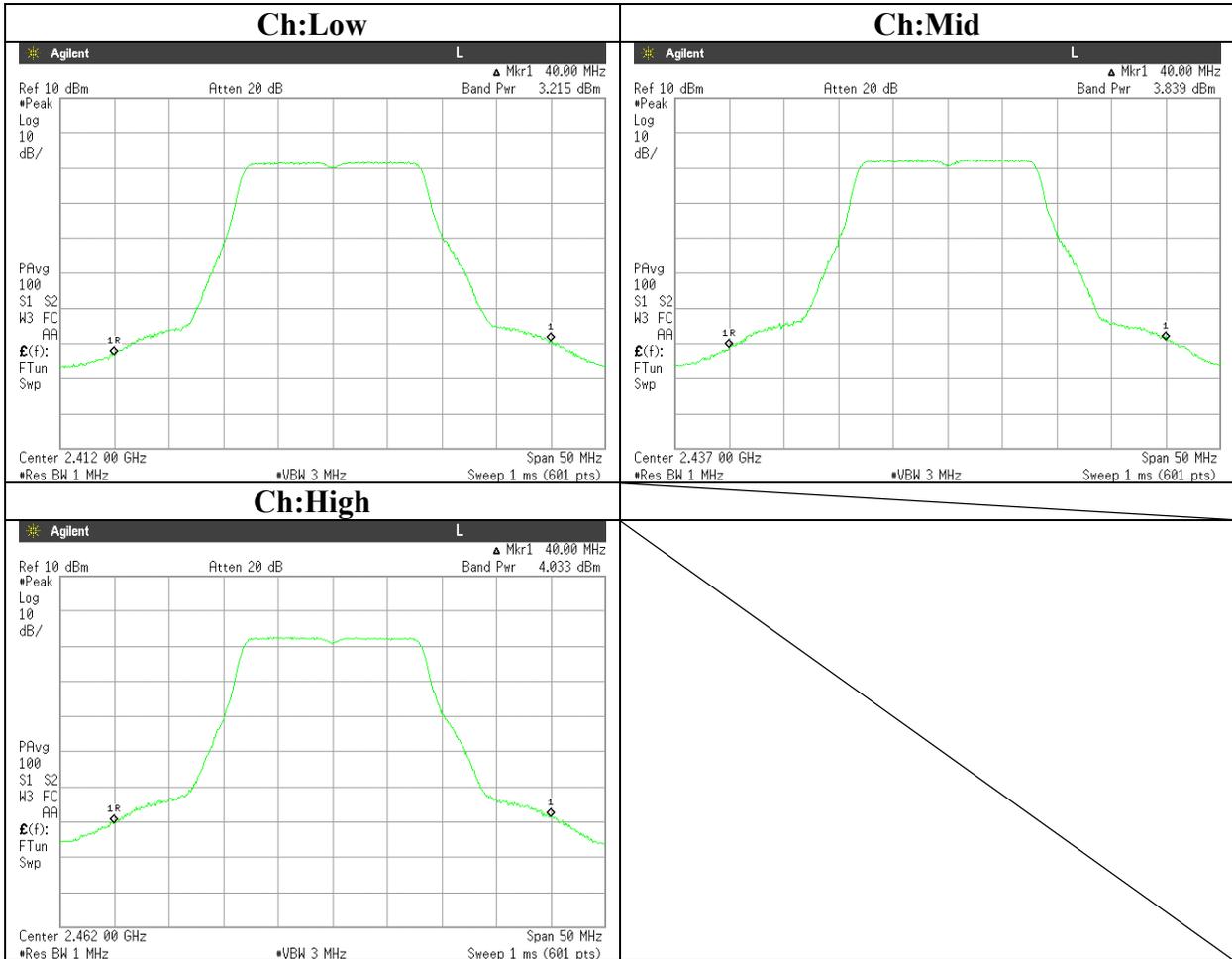
**Maximum Peak OutPut Power (DSSS and other forms of modulation)**

**IEEE802.11g 54Mbps Antenna:2**



**Maximum Peak OutPut Power (DSSS and other forms of modulation)**

**IEEE802.11g 12Mbps Antenna:2**



**Radiated Spurious Emission(DSSS and other forms of modulation)**

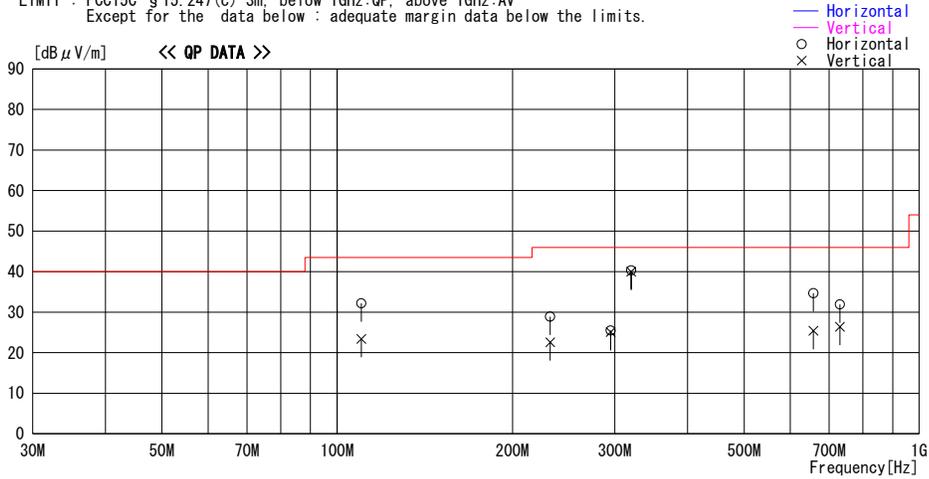
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber

Applicant : Sony Corporation Report No. : 25EE0063-HO  
Kind of EUT : Wireless LAN Module Power : PC:AC120V / 60Hz  
Model No. : IRF303J Temp°C/Humi% : 18deg.C / 33%  
Sample No. : 64 Operator : Keiichi Aoki

Mode / Remarks : Tx IEEE802.11b/2412MHz/11Mbps/Hor:Z, Ver:Y/Antenna 2

LIMIT : FCC15C §15.247(c) 3m, below 1GHz:QP, above 1GHz:AV  
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING QP [dB μV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB μV/m]	LIMIT [dB μV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
---- Horizontal ----										
1	110.007	40.8	11.8	7.1	27.5	32.2	43.5	11.3	163	198
2	232.276	30.9	17.1	7.8	26.9	28.9	46.0	17.1	100	69
3	295.004	24.1	20.1	8.1	26.8	25.5	46.0	20.5	111	0
4	320.005	43.4	15.6	8.2	26.9	40.3	46.0	5.7	100	202
5	657.608	33.1	20.2	9.7	28.3	34.7	46.0	11.3	100	318
6	730.701	29.1	21.0	10.0	28.2	31.9	46.0	14.1	100	193
---- Vertical ----										
7	110.007	32.0	11.8	7.1	27.5	23.4	43.5	20.1	100	249
8	232.276	24.6	17.1	7.8	26.9	22.6	46.0	23.4	100	311
9	295.004	23.7	20.1	8.1	26.8	25.1	46.0	20.9	158	325
10	320.005	43.1	15.6	8.2	26.9	40.0	46.0	6.0	141	101
11	657.608	23.8	20.2	9.7	28.3	25.4	46.0	20.6	100	326
12	730.701	23.6	21.0	10.0	28.2	26.4	46.0	19.6	100	128

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN Page:

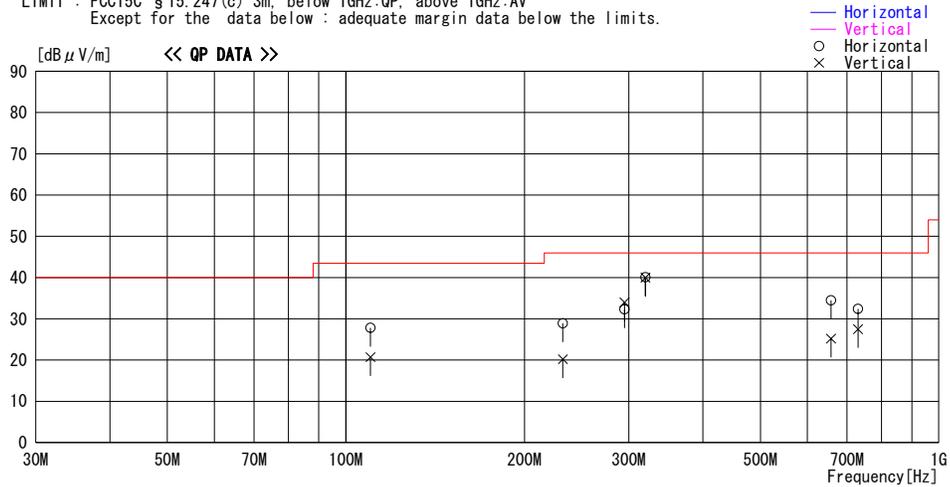
## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber

Applicant : Sony Corporation	Report No. : 25EE0063-HO
Kind of EUT : Wireless LAN Module	Power : PC:AC120V / 60Hz
Model No. : IRF303J	Temp°C/Humi% : 18deg. C / 33%
Sample No. : 64	Operator : Keiichi Aoki

Mode / Remarks : Tx IEEE802.11b/2437MHz/11Mbps/Hor:Z, Ver:Y/Antenna 2

LIMIT : FCC15C § 15.247(c) 3m, below 1GHz:QP, above 1GHz:AV  
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING QP [dB μV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB μV/m]	LIMIT [dB μV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	110.002	36.4	11.8	7.1	27.5	27.8	43.5	15.7	148	188
2	232.276	30.9	17.1	7.8	26.9	28.9	46.0	17.1	100	74
3	295.005	30.9	20.1	8.1	26.8	32.3	46.0	13.7	216	0
4	320.003	43.2	15.6	8.2	26.9	40.1	46.0	5.9	100	174
5	657.608	32.9	20.2	9.7	28.3	34.5	46.0	11.5	100	324
6	730.713	29.6	21.0	10.0	28.2	32.4	46.0	13.6	100	215
----- Vertical -----										
7	110.002	29.3	11.8	7.1	27.5	20.7	43.5	22.8	100	161
8	232.276	22.2	17.1	7.8	26.9	20.2	46.0	25.8	100	93
9	295.005	32.6	20.1	8.1	26.8	34.0	46.0	12.0	143	274
10	320.003	43.1	15.6	8.2	26.9	40.0	46.0	6.0	148	116
11	657.608	23.6	20.2	9.7	28.3	25.2	46.0	20.8	100	346
12	730.713	24.7	21.0	10.0	28.2	27.5	46.0	18.5	100	118

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN. ) - AMP. GAIN  
Page:

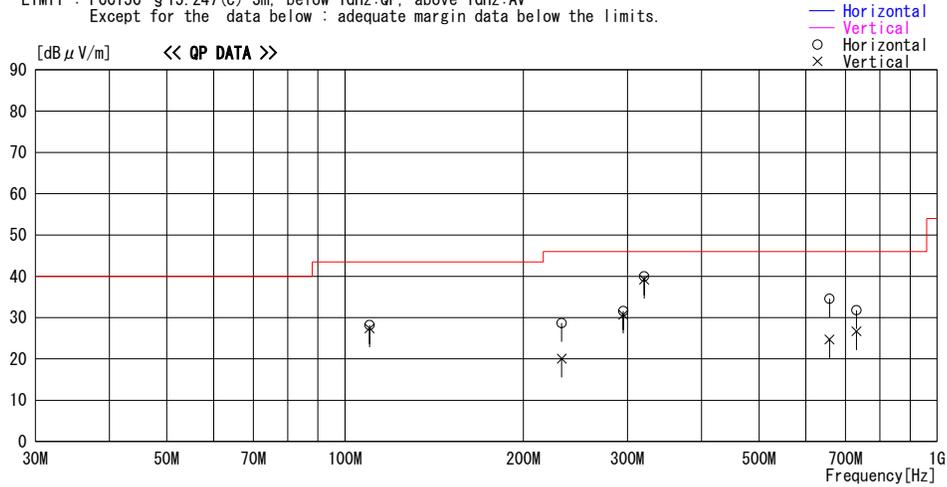
## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber

Applicant : Sony Corporation	Report No. : 25EE0063-HO
Kind of EUT : Wireless LAN Module	Power : PC:AC120V / 60Hz
Model No. : IRF303J	Temp°C/Humi% : 18deg. C / 33%
Sample No. : 64	Operator : Keiichi Aoki

Mode / Remarks : Tx IEEE802.11b/2462MHz/11Mbps/Hor:Z, Ver:Y/Antenna 2

LIMIT : FCC15C § 15.247(c) 3m, below 1GHz:QP, above 1GHz:AV  
 Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING QP [dB μV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB μV/m]	LIMIT [dB μV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	109.999	36.9	11.7	7.1	27.5	28.2	43.5	15.3	159	214
2	232.279	30.7	17.1	7.8	26.9	28.7	46.0	17.3	100	78
3	295.012	30.2	20.1	8.1	26.8	31.6	46.0	14.4	213	0
4	320.003	43.1	15.6	8.2	26.9	40.0	46.0	6.0	100	197
5	657.608	33.0	20.2	9.7	28.3	34.6	46.0	11.4	100	319
6	730.678	29.0	21.0	10.0	28.2	31.8	46.0	14.2	100	173
----- Vertical -----										
7	109.999	36.1	11.7	7.1	27.5	27.4	43.5	16.1	100	155
8	232.279	22.1	17.1	7.8	26.9	20.1	46.0	25.9	100	336
9	295.012	29.3	20.1	8.1	26.8	30.7	46.0	15.3	215	176
10	320.003	42.3	15.6	8.2	26.9	39.2	46.0	6.8	165	99
11	657.608	23.1	20.2	9.7	28.3	24.7	46.0	21.3	100	332
12	730.678	23.9	21.0	10.0	28.2	26.7	46.0	19.3	100	131

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN  
 Page: 36

## DATA OF RADIATED EMISSION TEST

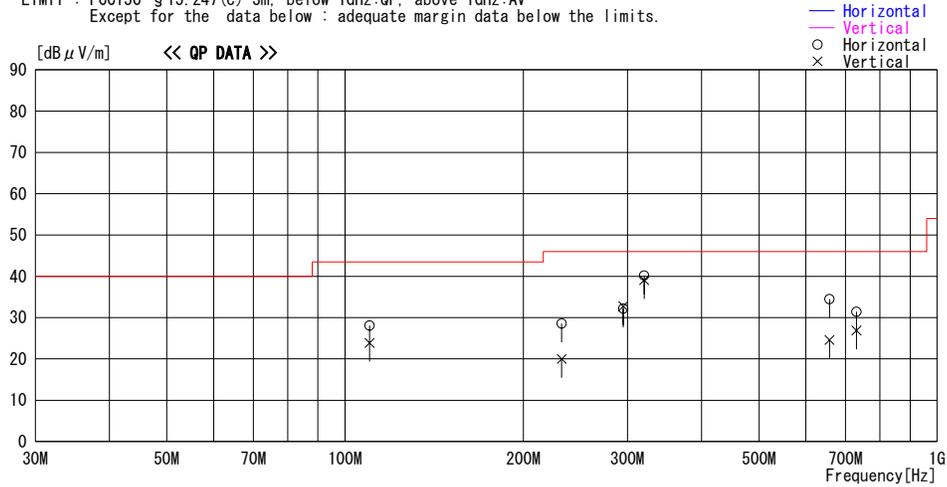
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber

Applicant : Sony Corporation  
Kind of EUT : Wireless LAN Module  
Model No. : IRF303J  
Sample No. : 64

Report No. : 25EE0063-HO  
Power : PC:AC120V / 60Hz  
Temp°C/Humi% : 18deg. C / 33%  
Operator : Keiichi Aoki

Mode / Remarks : Tx IEEE802.11g/2412MHz/54Mbps/Hor:Z, Ver:Y/Antenna 2

LIMIT : FCC15C § 15.247(c) 3m, below 1GHz:QP, above 1GHz:AV  
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING QP [dB μV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB μV/m]	LIMIT [dB μV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	110.004	36.7	11.8	7.1	27.5	28.1	43.5	15.4	287	0
2	232.276	30.6	17.1	7.8	26.9	28.6	46.0	17.4	100	65
3	295.004	30.8	20.1	8.1	26.8	32.2	46.0	13.8	182	0
4	320.003	43.3	15.6	8.2	26.9	40.2	46.0	5.8	100	211
5	657.605	32.9	20.2	9.7	28.3	34.5	46.0	11.5	100	332
6	730.665	28.6	21.0	10.0	28.2	31.4	46.0	14.6	100	189
----- Vertical -----										
7	110.004	32.5	11.8	7.1	27.5	23.9	43.5	19.6	259	171
8	232.276	22.0	17.1	7.8	26.9	20.0	46.0	26.0	100	289
9	295.004	31.4	20.1	8.1	26.8	32.8	46.0	13.2	195	253
10	320.003	42.2	15.6	8.2	26.9	39.1	46.0	6.9	146	131
11	657.605	23.0	20.2	9.7	28.3	24.6	46.0	21.4	100	322
12	730.665	24.1	21.0	10.0	28.2	26.9	46.0	19.1	100	105

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP. GAIN Page:

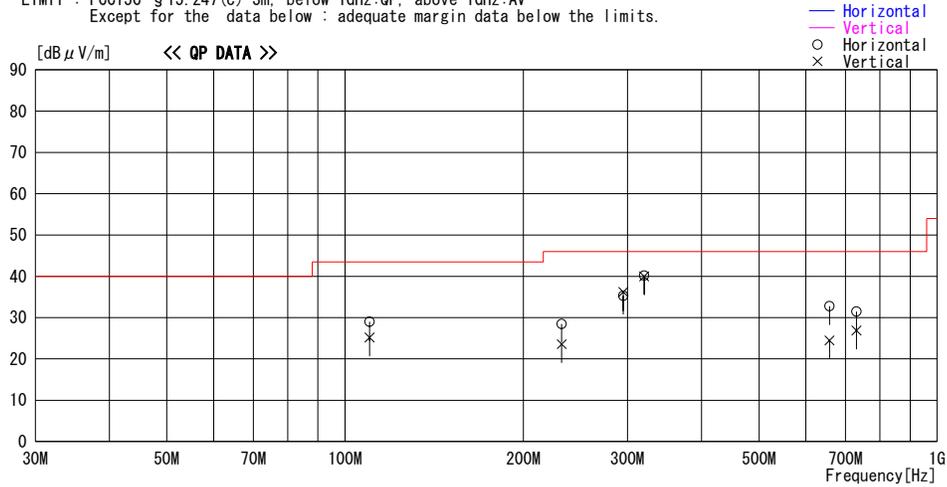
## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber

Applicant : Sony Corporation	Report No. : 25EE0063-HO
Kind of EUT : Wireless LAN Module	Power : PC:AC120V / 60Hz
Model No. : IRF303J	Temp°C/Humi% : 18deg. C / 33%
Sample No. : 64	Operator : Keiichi Aoki

Mode / Remarks : Tx IEEE802.11g/2437MHz/54Mbps/Hor:Z, Ver:Y/Antenna 2

LIMIT : FCC15C § 15.247(c) 3m, below 1GHz:QP, above 1GHz:AV  
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING QP [dB μV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB μV/m]	LIMIT [dB μV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	110.004	37.6	11.8	7.1	27.5	29.0	43.5	14.5	176	188
2	232.282	30.5	17.1	7.8	26.9	28.5	46.0	17.5	100	70
3	295.007	33.9	20.1	8.1	26.8	35.3	46.0	10.7	209	0
4	320.005	43.3	15.6	8.2	26.9	40.2	46.0	5.8	100	193
5	657.608	31.2	20.2	9.7	28.3	32.8	46.0	13.2	100	319
6	730.661	28.7	21.0	10.0	28.2	31.5	46.0	14.5	100	220
----- Vertical -----										
7	110.004	33.8	11.8	7.1	27.5	25.2	43.5	18.3	273	115
8	232.282	25.6	17.1	7.8	26.9	23.6	46.0	22.4	176	0
9	295.007	34.8	20.1	8.1	26.8	36.2	46.0	9.8	100	353
10	320.005	43.1	15.6	8.2	26.9	40.0	46.0	6.0	138	134
11	657.608	22.9	20.2	9.7	28.3	24.5	46.0	21.5	100	291
12	730.661	24.1	21.0	10.0	28.2	26.9	46.0	19.1	100	260

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

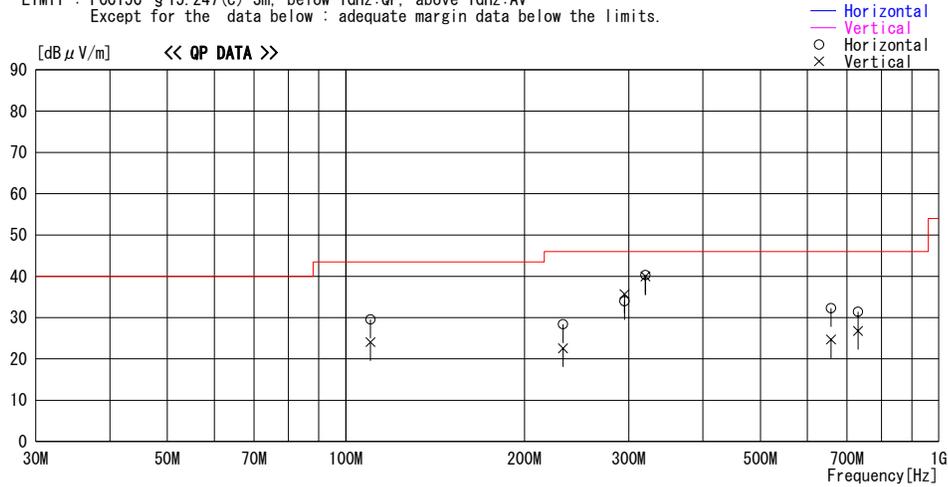
## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber

Applicant : Sony Corporation	Report No. : 25EE0063-HO
Kind of EUT : Wireless LAN Module	Power : PC:AC120V / 60Hz
Model No. : IRF303J	Temp°C/Humi% : 18deg. C / 33%
Sample No. : 64	Operator : Keiichi Aoki

Mode / Remarks : Tx IEEE802.11g/2462MHz/54Mbps/Hor:Z, Ver:Y/Antenna 2

LIMIT : FCC15C § 15.247(c) 3m, below 1GHz:QP, above 1GHz:AV  
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING QP [dB μV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB μV/m]	LIMIT [dB μV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	110.000	38.2	11.8	7.1	27.5	29.6	43.5	13.9	148	0
2	232.285	30.4	17.1	7.8	26.9	28.4	46.0	17.6	100	225
3	295.007	32.6	20.1	8.1	26.8	34.0	46.0	12.0	223	234
4	320.002	43.4	15.6	8.2	26.9	40.3	46.0	5.7	100	195
5	657.609	30.7	20.2	9.7	28.3	32.3	46.0	13.7	100	306
6	730.669	28.6	21.0	10.0	28.2	31.4	46.0	14.6	100	180
----- Vertical -----										
7	110.000	32.7	11.8	7.1	27.5	24.1	43.5	19.4	271	234
8	232.285	24.6	17.1	7.8	26.9	22.6	46.0	23.4	156	174
9	295.007	34.3	20.1	8.1	26.8	35.7	46.0	10.3	111	350
10	320.002	43.1	15.6	8.2	26.9	40.0	46.0	6.0	141	126
11	657.609	23.1	20.2	9.7	28.3	24.7	46.0	21.3	100	133
12	730.669	24.0	21.0	10.0	28.2	26.8	46.0	19.2	100	36

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN Page:

## Radiated Spurious Emission(DSSS and other forms of modulation)

<p>COMPANY : Sony Corporation  EQUIPMENT : Wireless LAN Module  MODEL : IRF303J  SAMPLE NO. : 64  POWER : DC3.3V(AC120V/60Hz)  MODE : Transmitting (11b / 11Mbps / CH1:2412MHz)  : Antenna 2</p>	<p style="text-align: center;">UL Apex Co., Ltd.  Head Office EMC Lab. No.2 Semi Anechoic Chamber</p> <p>REGULATION : Fcc Part15 Subpart C 15.247 (d)  TEST DISTANCE : 3m / 1m  DATE : 01/17/2005  TEMPERATURE : 18deg.C  HUMIDITY : 29%  ENGINEER : Yutaka Yoshida</p>
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**PK DETECT** (RBW: 1MHz, VBW:1MHz)

No.	Freq. [MHz]	Reading [dBuV]		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result [dBuV/m]		Limit PK [dBuV/m]	Margin [dB]	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	2390.0	45.0	44.3	30.5	36.3	5.7	9.9	54.8	54.1	74.0	19.2	19.9
2	4824.0	48.5	44.2	35.2	36.1	8.3	1.0	56.9	52.6	74.0	17.1	21.4
3	7236.0	42.0	42.3	37.7	35.6	10.1	0.4	54.6	54.9	74.0	19.4	19.1
4	9648.0	43.4	42.7	37.0	36.3	12.4	0.1	56.6	55.9	74.0	17.4	18.1
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
5	12060.0	42.2	43.0	41.6	35.7	14.3	0.2	53.1	53.9	74.0	20.9	20.1
6	14472.0	40.0	40.5	41.8	34.6	15.3	0.0	53.0	53.5	74.0	21.0	20.5
7	16884.0	42.1	42.5	45.2	35.5	16.6	1.1	60.0	60.4	74.0	14.0	13.6
8	19296.0	42.1	41.7	40.2	34.9	18.6	2.1	58.6	58.2	74.0	15.4	15.8
9	21708.0	42.6	43.2	39.8	35.3	18.9	2.5	59.0	59.6	74.0	15.0	14.4
10	24120.0	45.6	45.6	40.4	36.0	22.0	0.2	62.7	62.7	74.0	11.3	11.3

**AV DETECT** (RBW: 1MHz, VBW:10Hz)

No.	Freq. [MHz]	Reading [dBuV]		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result [dBuV/m]		Limit AV [dBuV/m]	Margin [dB]	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	2390.0	34.0	32.7	30.5	36.3	5.7	9.9	43.8	42.5	54.0	10.2	11.5
2	4824.0	34.6	31.2	35.2	36.1	8.3	1.0	43.0	39.6	54.0	11.0	14.4
3	7236.0	30.3	30.2	37.7	35.6	10.1	0.4	42.9	42.8	54.0	11.1	11.2
4	9648.0	30.9	31.0	37.0	36.3	12.4	0.1	44.1	44.2	54.0	9.9	9.8
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
5	12060.0	29.4	29.7	41.6	35.7	14.3	0.2	40.3	40.6	54.0	13.7	13.4
6	14472.0	28.5	28.0	41.8	34.6	15.3	0.0	41.5	41.0	54.0	12.5	13.0
7	16884.0	30.4	30.2	45.2	35.5	16.6	1.1	48.3	48.1	54.0	5.7	5.9
8	19296.0	30.1	29.9	40.2	34.9	18.6	2.1	46.6	46.4	54.0	7.4	7.6
9	21708.0	30.5	30.5	39.8	35.3	18.9	2.5	46.9	46.9	54.0	7.1	7.1
10	24120.0	32.1	32.2	40.4	36.0	22.0	0.2	49.2	49.3	54.0	4.8	4.7

**20dBc(Fundamental 2412MHz)** (RBW: 100kHz, VBW:300kHz)

No.	FREQ [MHz]	S/A READING [dBuV/m]		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Atten. or Filter [dB]	RESULT [dBuV/m]		Limit 20dBc [dBuV/m]	MARGIN [dB]	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass</b>												
1	2412.0	94.8	91.5	30.5	36.3	5.7	9.9	104.6	101.3	-	-	-
2	2400.0	46.3	44.7	30.5	36.3	5.7	9.9	56.1	54.5	Funda-20dB	28.5	26.8

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

- \* Except for the above table : All other spurious emissions were less than 20dB for the limit.
- \* Atten. : 1 to 3.5GHz, Filter : 3.5 to 26GHz
- \* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.
- \* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

**Radiated Spurious Emission(DSSS and other forms of modulation )**

UL Apex Co., Ltd.  
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : Sony Corporation  
EQUIPMENT : Wireless LAN Module  
MODEL : IRF303J  
SAMPLE NO. : 64  
POWER : DC3.3V(AC120V/60Hz)  
MODE : Transmitting (11b / 11Mbps / CH6:2437MHz)

REGULATION : Fcc Part15 Subpart C 15.247 (d)  
TEST DISTANCE : 3m / 1m  
DATE : 01 /17/2005  
TEMPERATURE : 18deg.C  
HUMIDITY : 29%  
ENGINEER : Yutaka Yoshida

**PK DETECT** (RBW: 1MHz, VBW:1MHz)

No.	Freq. [MHz]	Reading		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result		Limit PK [dBuV/m]	Margin	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER [dB]
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	4874.0	43.5	43.5	35.5	36.1	8.4	1.0	52.3	52.3	74.0	21.7	21.7
2	7311.0	42.5	41.5	37.9	35.7	10.2	0.5	55.4	54.4	74.0	18.6	19.6
3	9748.0	42.6	42.5	36.9	36.3	12.5	0.2	55.8	55.7	74.0	18.2	18.3
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
4	12185.0	41.8	43.4	41.6	35.6	13.6	1.1	53.0	54.6	74.0	21.0	19.4
5	14622.0	40.8	40.6	42.1	34.8	15.3	0.2	54.1	53.9	74.0	19.9	20.1
6	17059.0	42.2	42.7	45.3	35.4	16.6	1.1	60.3	60.8	74.0	13.7	13.2
7	19496.0	41.8	41.8	40.3	34.9	18.9	2.3	58.9	58.9	74.0	15.1	15.1
8	21933.0	43.2	42.6	39.8	35.0	18.3	2.1	58.9	58.3	74.0	15.1	15.7
9	24370.0	43.7	43.3	40.4	36.6	21.8	0.4	60.2	59.8	74.0	13.8	14.2

**AV DETECT** (RBW: 1MHz, VBW:10Hz)

No.	Freq. [MHz]	Reading		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result		Limit AV [dBuV/m]	Margin	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER [dB]
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	4874.0	31.9	32.2	35.5	36.1	8.4	1.0	40.7	41.0	54.0	13.3	13.0
2	7311.0	30.3	30.4	37.9	35.7	10.2	0.5	43.2	43.3	54.0	10.8	10.7
3	9748.0	30.9	30.9	36.9	36.3	12.5	0.2	44.1	44.1	54.0	9.9	9.9
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
4	12185.0	29.6	30.7	41.6	35.6	13.6	1.1	40.8	41.9	54.0	13.2	12.1
5	14622.0	28.1	28.1	42.1	34.8	15.3	0.2	41.4	41.4	54.0	12.6	12.6
6	17059.0	30.3	30.2	45.3	35.4	16.6	1.1	48.4	48.3	54.0	5.6	5.7
7	19496.0	29.8	29.9	40.3	34.9	18.9	2.3	46.9	47.0	54.0	7.1	7.0
8	21933.0	30.6	30.6	39.8	35.0	18.3	2.1	46.3	46.3	54.0	7.7	7.7
9	24370.0	31.3	31.5	40.4	36.6	21.8	0.4	47.8	48.0	54.0	6.2	6.0

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

- \* Except for the above table : All other spurious emissions were less than 20dB for the limit.
- \* Atten. : 1 to 3.5GHz, Filter : 3.5 to 26GHz
- \* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.
- \* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

**Radiated Spurious Emission(DSSS and other forms of modulation )**

COMPANY : Sony Corporation  
EQUIPMENT : Wireless LAN Module  
MODEL : IRF303J  
SAMPLE NO. : 64  
POWER : DC3.3V(AC120V/60Hz)  
MODE : Transmitting (11b / 11bps / CH11:2462MHz)  
Antenna 2

UL Apex Co., Ltd.  
Head Office EMC Lab. No.2 Semi Anechoic Chamber  
REGULATION : Fcc Part15 Subpart C 15.247 (d)  
TEST DISTANCE : 3m / 1m  
DATE : 01/17/2005  
TEMPERATURE : 18deg.C  
HUMIDITY : 29%  
ENGINEER : Yutaka Yoshida

**PK DETECT** (RBW: 1MHz , VBW:1MHz)

No.	Freq. [MHz]	Reading [dBuV]		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result [dBuV/m]		Limit PK [dBuV/m]	Margin [dB]	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	2483.5	45.9	45.2	30.5	36.2	5.8	9.9	55.9	55.2	74.0	18.1	18.8
2	4924.0	48.5	42.5	35.8	36.1	8.4	1.0	57.6	51.6	74.0	16.4	22.4
3	7386.0	42.3	41.6	38.0	35.7	10.2	0.6	55.4	54.7	74.0	18.6	19.3
4	9848.0	43.0	43.7	36.8	36.3	12.5	0.2	56.2	56.9	74.0	17.8	17.1
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
5	12310.0	42.6	41.9	41.7	35.6	14.4	0.4	54.0	53.3	74.0	20.0	20.7
6	14772.0	39.9	40.7	42.4	34.9	15.6	0.3	53.8	54.6	74.0	20.2	19.4
7	17234.0	42.2	42.9	44.9	35.3	16.7	1.0	60.0	60.7	74.0	14.0	13.3
8	19696.0	41.5	41.6	40.3	35.2	19.1	1.8	58.0	58.1	74.0	16.0	15.9
9	22158.0	42.9	43.3	39.8	35.0	19.5	0.9	58.6	59.0	74.0	15.4	15.0
10	24620.0	43.8	44.2	40.5	36.8	21.6	0.9	60.5	60.9	74.0	13.5	13.1

**AV DETECT** (RBW: 1MHz , VBW:10Hz)

No.	Freq. [MHz]	Reading [dBuV]		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result [dBuV/m]		Limit AV [dBuV/m]	Margin [dB]	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	2483.5	33.4	32.9	30.5	36.2	5.8	9.9	43.4	42.9	54.0	10.6	11.1
2	4924.0	35.1	31.1	35.8	36.1	8.4	1.0	44.2	40.2	54.0	9.8	13.8
3	7386.0	30.5	30.3	38.0	35.7	10.2	0.6	43.6	43.4	54.0	10.4	10.6
4	9848.0	31.3	31.4	36.8	36.3	12.5	0.2	44.5	44.6	54.0	9.5	9.4
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
5	12310.0	30.5	29.8	41.7	35.6	14.4	0.4	41.9	41.2	54.0	12.1	12.8
6	14772.0	28.1	28.7	42.4	34.9	15.6	0.3	42.0	42.6	54.0	12.0	11.4
7	17234.0	30.2	30.4	44.9	35.3	16.7	1.0	48.0	48.2	54.0	6.0	5.8
8	19696.0	29.9	29.7	40.3	35.2	19.1	1.8	46.4	46.2	54.0	7.6	7.8
9	22158.0	31.2	30.8	39.8	35.0	19.5	0.9	46.9	46.5	54.0	7.1	7.5
10	24620.0	31.7	31.7	40.5	36.8	21.6	0.9	48.4	48.4	54.0	5.6	5.6

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5 dB  
\* Except for the above table : All other spurious emissions were less than 20dB for the limit.  
\* Atten. : 1 to 3.5GHz, Filter : 3.5 to 26GHz  
\* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.  
\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

## Radiated Spurious Emission(DSSS and other forms of modulation)

<p>COMPANY : Sony Corporation  EQUIPMENT : Wireless LAN Module  MODEL : IRF303J  SAMPLE NO. : 64  POWER : DC3.3V(AC120V/60Hz)  MODE : Transmitting (11g / 54Mbps / CH1:2412MHz)  : Antenna 2</p>	<p style="text-align: right;">UL Apex Co., Ltd.  Head Office EMC Lab. No.2 Semi Anechoic Chamber</p> <p>REGULATION : Fcc Part15 Subpart C 15.247 (d)  TEST DISTANCE : 3m / 1m  DATE : 01/17/2005  TEMPERATURE : 18deg.C  HUMIDITY : 29%  ENGINEER : Yutaka Yoshida</p>
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**PK DETECT** (RBW: 1MHz, VBW:1MHz)

No.	Freq. [MHz]	Reading [dBuV]		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result [dBuV/m]		Limit PK [dBuV/m]	Margin [dB]	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	2390.0	48.9	47.3	30.5	36.3	5.7	9.9	58.7	57.1	74.0	15.3	16.9
2	4824.0	45.2	43.5	35.2	36.1	8.3	1.0	53.6	51.9	74.0	20.4	22.1
3	7236.0	42.0	41.8	37.7	35.6	10.1	0.4	54.6	54.4	74.0	19.4	19.6
4	9648.0	42.7	43.0	37.0	36.3	12.4	0.1	55.9	56.2	74.0	18.1	17.8
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
5	12060.0	41.0	42.1	41.6	35.7	14.3	0.2	51.9	53.0	74.0	22.1	21.0
6	14472.0	40.0	40.5	41.8	34.6	15.3	0.0	53.0	53.5	74.0	21.0	20.5
7	16884.0	42.1	42.8	45.2	35.5	16.6	1.1	60.0	60.7	74.0	14.0	13.3
8	19296.0	42.0	41.3	40.2	34.9	18.6	2.1	58.5	57.8	74.0	15.5	16.2
9	21708.0	43.0	43.0	39.8	35.3	18.9	2.5	59.4	59.4	74.0	14.6	14.6
10	24120.0	44.0	43.4	40.4	36.0	22.0	-0.2	60.7	60.1	74.0	13.3	13.9

**AV DETECT** (RBW: 1MHz, VBW:10Hz)

No.	Freq. [MHz]	Reading [dBuV]		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result [dBuV/m]		Limit AV [dBuV/m]	Margin [dB]	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	2390.0	33.1	33.0	30.5	36.3	5.7	9.9	42.9	42.8	54.0	11.1	11.2
2	4824.0	33.6	31.2	35.2	36.1	8.3	1.0	42.0	39.6	54.0	12.0	14.4
3	7236.0	30.2	30.1	37.7	35.6	10.1	0.4	42.8	42.7	54.0	11.2	11.3
4	9648.0	31.0	31.0	37.0	36.3	12.4	0.1	44.2	44.2	54.0	9.8	9.8
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
5	12060.0	29.6	30.0	41.6	35.7	14.3	0.2	40.5	40.9	54.0	13.5	13.1
6	14472.0	28.0	28.0	41.8	34.6	15.3	0.0	41.0	41.0	54.0	13.0	13.0
7	16884.0	30.1	30.6	45.2	35.5	16.6	1.1	48.0	48.5	54.0	6.0	5.5
8	19296.0	30.2	30.1	40.2	34.9	18.6	2.1	46.7	46.6	54.0	7.3	7.4
9	21708.0	31.0	30.7	39.8	35.3	18.9	2.5	47.4	47.1	54.0	6.6	6.9
10	24120.0	31.1	32.0	40.4	36.0	22.0	-0.2	47.8	48.7	54.0	6.2	5.3

**20dBc(Fundamental 2412MHz)** (RBW: 100kHz, VBW:300kHz)

No.	FREQ [MHz]	S/A READING [dBuV/m]		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Atten. or Filter [dB]	RESULT [dBuV/m]		Limit 20dBc [dBuV/m]	MARGIN [dB]	
		HOR	VER					HOR	VER		HOR	VER
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass</b>												
1	2412.0	88.1	91.1	30.5	36.3	5.7	9.9	97.9	100.9	-	-	-
2	2400.0	48.2	47.9	30.5	36.3	5.7	9.9	58.0	57.7	Funda-20dB	19.9	23.2

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

- \* Except for the above table : All other spurious emissions were less than 20dB for the limit.
- \* Atten. : 1 to 3.5GHz, Filter : 3.5 to 26GHz
- \* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.
- \* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

**Radiated Spurious Emission(DSSS and other forms of modulation )**

UL Apex Co., Ltd.  
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : Sony Corporation  
EQUIPMENT : Wireless LAN Module  
MODEL : IRF303J  
SAMPLE NO. : 64  
POWER : DC3.3V(AC120V/60Hz)  
MODE : Transmitting (11g / 54Mbps / CH6:2437MHz)

REGULATION : Fcc Part15 Subpart C 15.247 (d)  
TEST DISTANCE : 3m / 1m  
DATE : 01 /17/2005  
TEMPERATURE : 18deg.C  
HUMIDITY : 29%  
ENGINEER : Yutaka Yoshida

**PK DETECT** (RBW: 1MHz, VBW:1MHz)

No.	Freq. [MHz]	Reading		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result		Limit PK [dBuV/m]	Margin	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER [dB]
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	4874.0	44.3	42.7	35.5	36.1	8.4	1.0	53.1	51.5	74.0	20.9	22.5
2	7311.0	41.5	42.3	37.9	35.7	10.2	0.5	54.4	55.2	74.0	19.6	18.8
3	9748.0	44.0	43.1	36.9	36.3	12.5	0.2	57.2	56.3	74.0	16.8	17.7
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
4	12185.0	41.7	43.3	41.6	35.6	13.6	1.1	52.9	54.5	74.0	21.1	19.5
5	14622.0	40.8	40.6	42.1	34.8	15.3	0.2	54.1	53.9	74.0	19.9	20.1
6	17059.0	42.2	42.6	45.3	35.4	16.6	1.1	60.3	60.7	74.0	13.7	13.3
7	19496.0	41.8	41.9	40.3	34.9	18.9	2.3	58.9	59.0	74.0	15.1	15.0
8	21933.0	43.5	42.6	39.8	35.0	18.3	2.1	59.2	58.3	74.0	14.8	15.7
9	24370.0	43.7	43.5	40.4	36.6	21.8	0.4	60.2	60.0	74.0	13.8	14.0

**AV DETECT** (RBW: 1MHz, VBW:10Hz)

No.	Freq. [MHz]	Reading		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result		Limit AV [dBuV/m]	Margin	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER [dB]
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	4874.0	32.6	31.1	35.5	36.1	8.4	1.0	41.4	39.9	54.0	12.6	14.1
2	7311.0	30.1	30.1	37.9	35.7	10.2	0.5	43.0	43.0	54.0	11.0	11.0
3	9748.0	31.0	31.0	36.9	36.3	12.5	0.2	44.2	44.2	54.0	9.8	9.8
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
4	12185.0	29.6	30.6	41.6	35.6	13.6	1.1	40.8	41.8	54.0	13.2	12.2
5	14622.0	28.2	28.2	42.1	34.8	15.3	0.2	41.5	41.5	54.0	12.5	12.5
6	17059.0	30.1	30.2	45.3	35.4	16.6	1.1	48.2	48.3	54.0	5.8	5.7
7	19496.0	29.8	29.8	40.3	34.9	18.9	2.3	46.9	46.9	54.0	7.1	7.1
8	21933.0	30.8	30.7	39.8	35.0	18.3	2.1	46.5	46.4	54.0	7.5	7.6
9	24370.0	31.5	31.5	40.4	36.6	21.8	0.4	48.0	48.0	54.0	6.0	6.0

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

- \* Except for the above table : All other spurious emissions were less than 20dB for the limit.
- \* Atten. : 1 to 3.5GHz, Filter : 3.5 to 26GHz
- \* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.
- \* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

**Radiated Spurious Emission(DSSS and other forms of modulation )**

COMPANY : Sony Corporation  
EQUIPMENT : Wireless LAN Module  
MODEL : IRF303J  
SAMPLE NO. : 64  
POWER : DC3.3V(AC120V/60Hz)  
MODE : Transmitting (11g / 54bps / CH11:2462MHz)  
Antenna 2

UL Apex Co., Ltd.  
Head Office EMC Lab. No.2 Semi Anechoic Chamber  
REGULATION : Fcc Part15 Subpart C 15.247 (d)  
TEST DISTANCE : 3m / 1m  
DATE : 01/17/2005  
TEMPERATURE : 18deg.C  
HUMIDITY : 29%  
ENGINEER : Yutaka Yoshida

**PK DETECT** (RBW: 1MHz, VBW:1MHz)

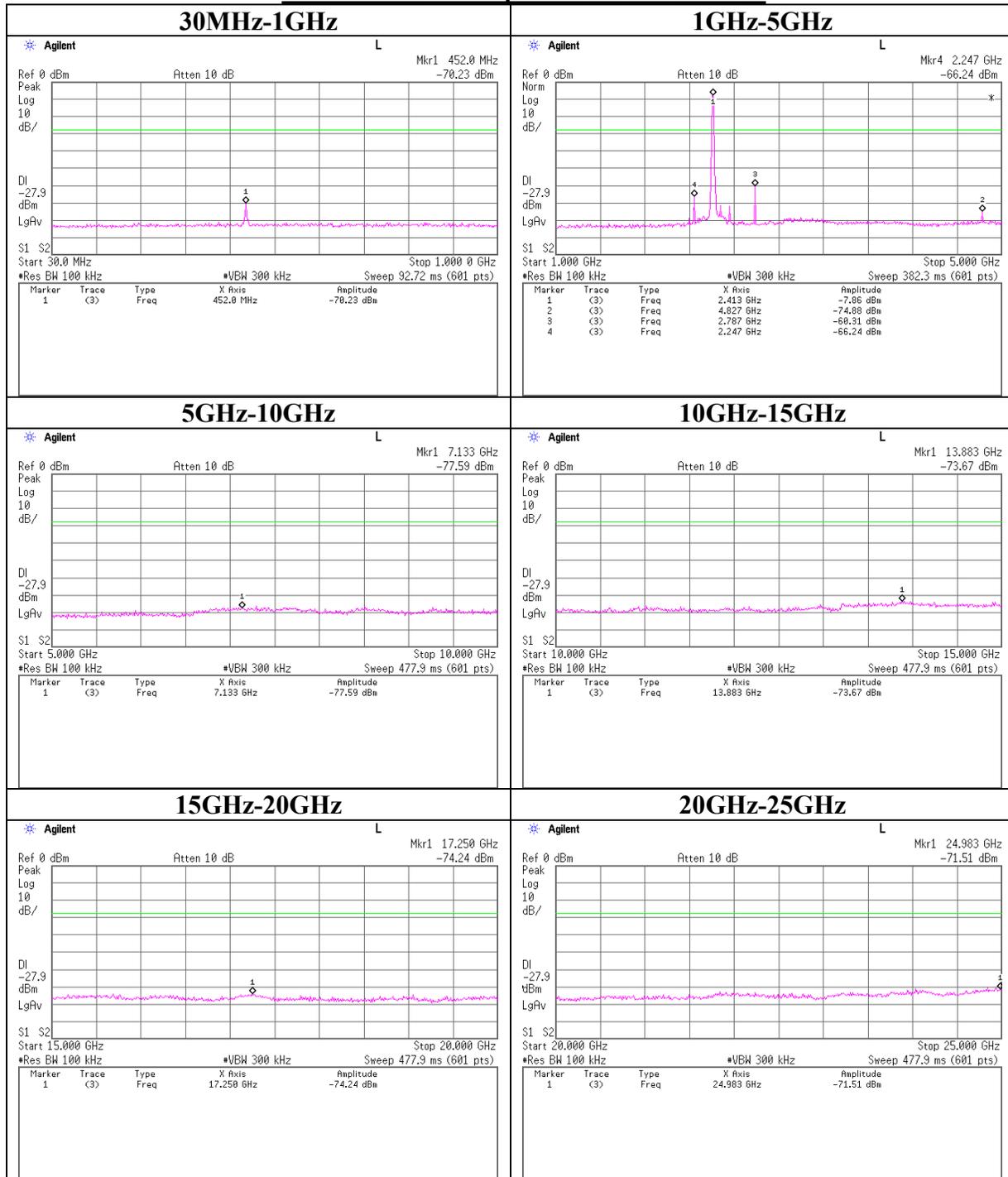
No.	Freq. [MHz]	Reading		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result		Limit PK [dBuV/m]	Margin	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER [dB]
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	2483.5	48.9	47.7	30.5	36.2	5.8	9.9	58.9	57.7	74.0	15.1	16.3
2	4924.0	44.6	42.8	35.8	36.1	8.4	1.0	53.7	51.9	74.0	20.3	22.1
3	7386.0	41.8	42.0	38.0	35.7	10.2	0.6	54.9	55.1	74.0	19.1	18.9
4	9848.0	42.7	43.6	36.8	36.3	12.5	0.2	55.9	56.8	74.0	18.1	17.2
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
5	12310.0	42.5	41.8	41.7	35.6	14.4	0.4	53.9	53.2	74.0	20.1	20.8
6	14772.0	39.9	40.8	42.4	34.9	15.6	0.3	53.8	54.7	74.0	20.2	19.3
7	17234.0	42.4	42.7	44.9	35.3	16.7	1.0	60.2	60.5	74.0	13.8	13.5
8	19696.0	41.2	41.4	40.3	35.2	19.1	1.8	57.7	57.9	74.0	16.3	16.1
9	22158.0	42.9	43.1	39.8	35.0	19.5	0.9	58.6	58.8	74.0	15.4	15.2
10	24620.0	43.9	44.2	40.5	36.8	21.6	0.9	60.6	60.9	74.0	13.4	13.1

**AV DETECT** (RBW: 1MHz, VBW:10Hz)

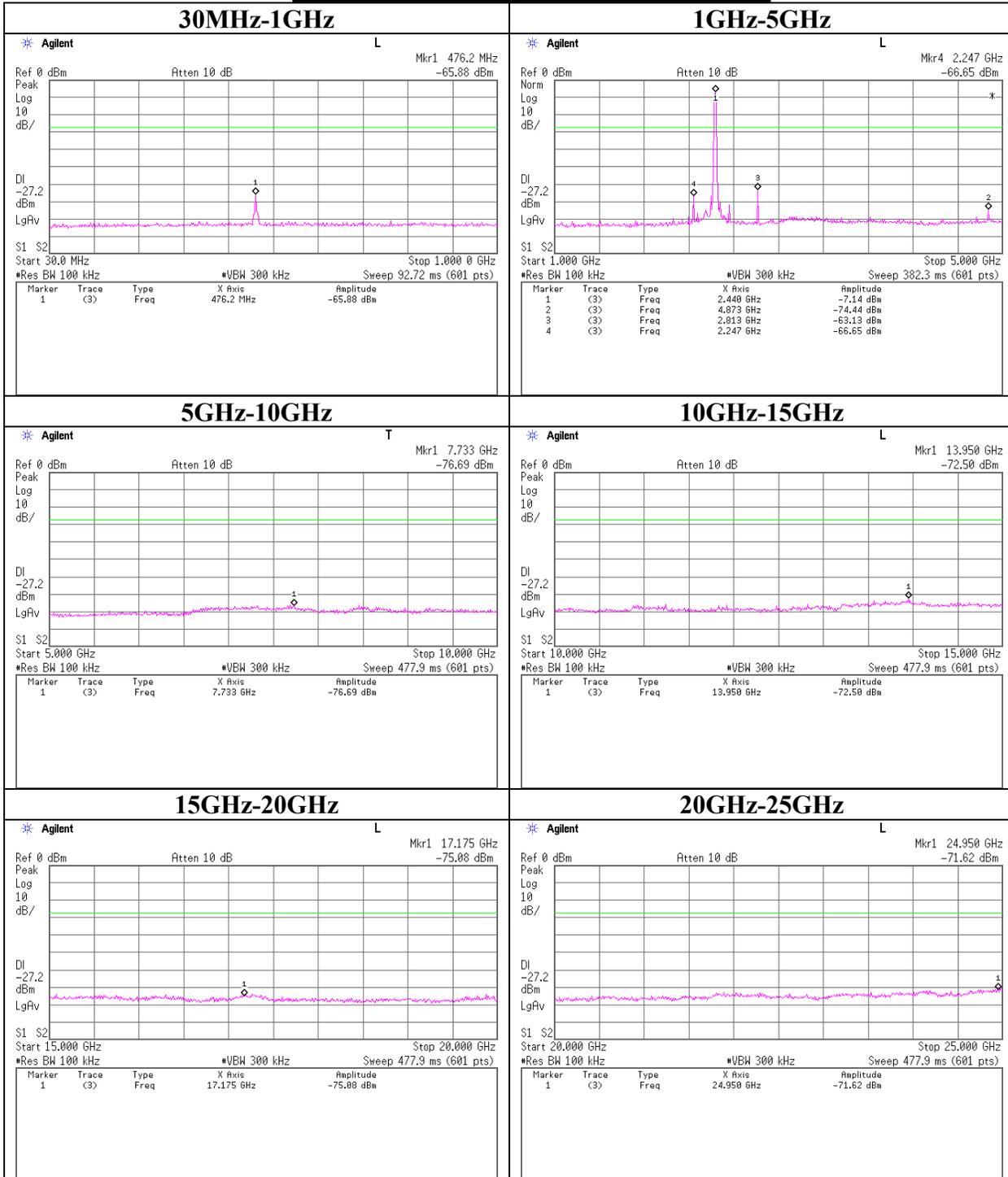
No.	Freq. [MHz]	Reading		Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result		Limit AV [dBuV/m]	Margin	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER [dB]
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)</b>												
1	2483.5	34.2	34.6	30.5	36.2	5.8	9.9	44.2	44.6	54.0	9.8	9.4
2	4924.0	31.9	31.1	35.8	36.1	8.4	1.0	41.0	40.2	54.0	13.0	13.8
3	7386.0	30.3	30.2	38.0	35.7	10.2	0.6	43.4	43.3	54.0	10.6	10.7
4	9848.0	31.3	31.3	36.8	36.3	12.5	0.2	44.5	44.5	54.0	9.5	9.5
<b>Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac</b>												
5	12310.0	30.3	29.9	41.7	35.6	14.4	0.4	41.7	41.3	54.0	12.3	12.7
6	14772.0	28.4	28.9	42.4	34.9	15.6	0.3	42.3	42.8	54.0	11.7	11.2
7	17234.0	30.2	30.3	44.9	35.3	16.7	1.0	48.0	48.1	54.0	6.0	5.9
8	19696.0	29.9	29.9	40.3	35.2	19.1	1.8	46.4	46.4	54.0	7.6	7.6
9	22158.0	31.2	30.7	39.8	35.0	19.5	0.9	46.9	46.4	54.0	7.1	7.6
10	24620.0	31.6	31.7	40.5	36.8	21.6	0.9	48.3	48.4	54.0	5.7	5.6

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5 dB  
\* Except for the above table : All other spurious emissions were less than 20dB for the limit.  
\* Atten. : 1 to 3.5GHz, Filter : 3.5 to 26GHz  
\* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.  
\* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

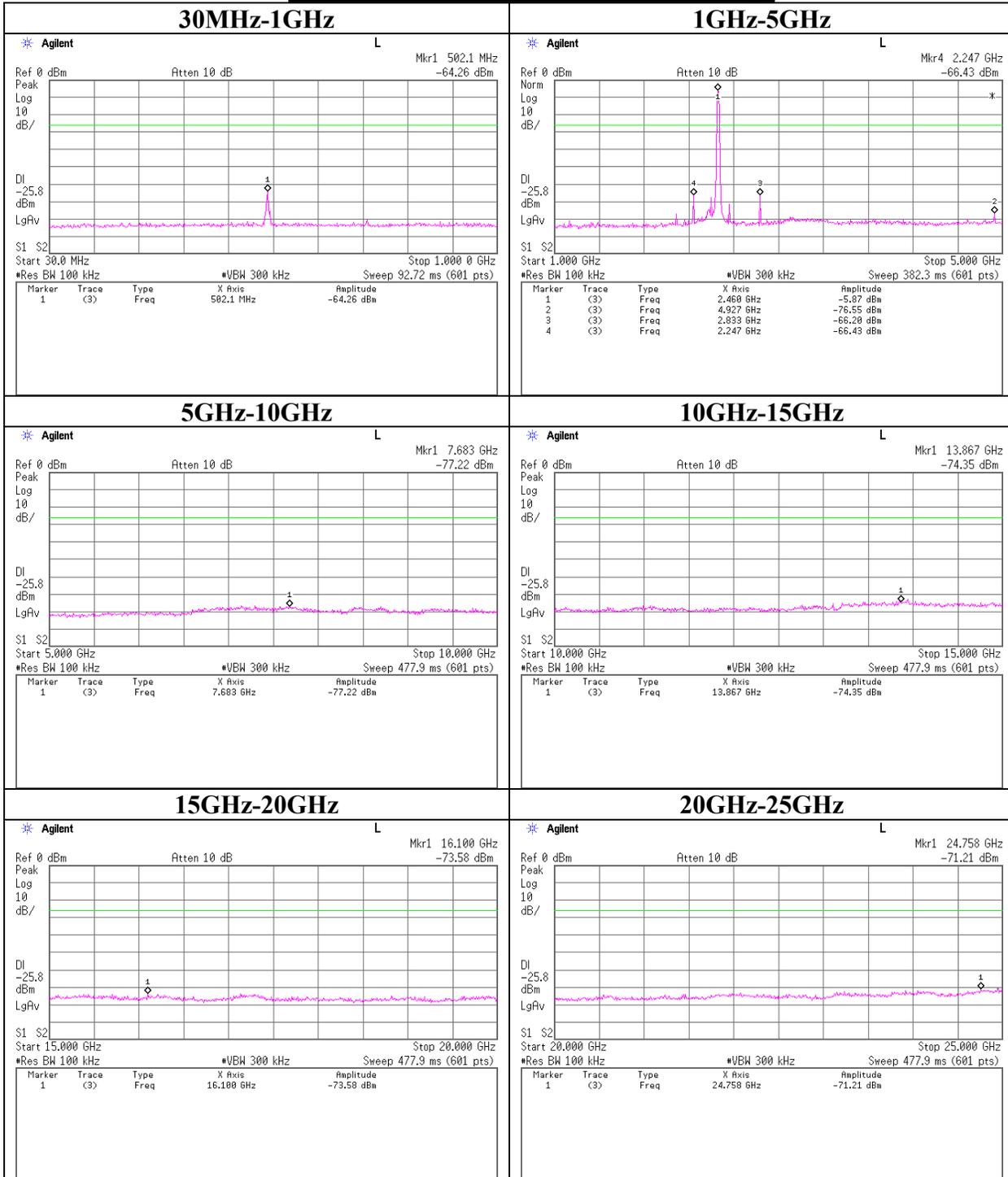
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**IEEE802.11b 11Mbps Antenna:1 Ch : Low**



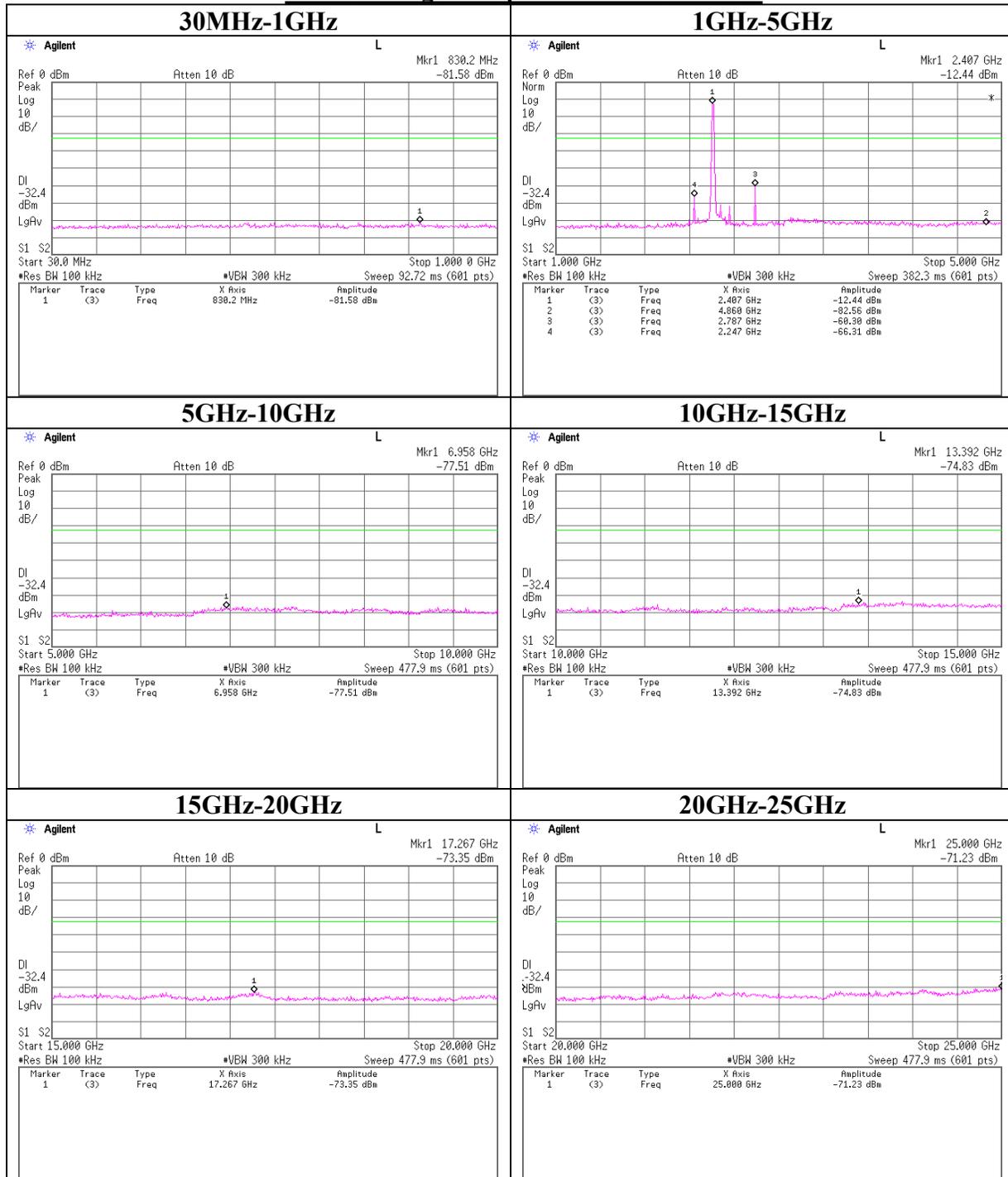
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**IEEE802.11b 11Mbps Antenna:1 Ch : Mid**



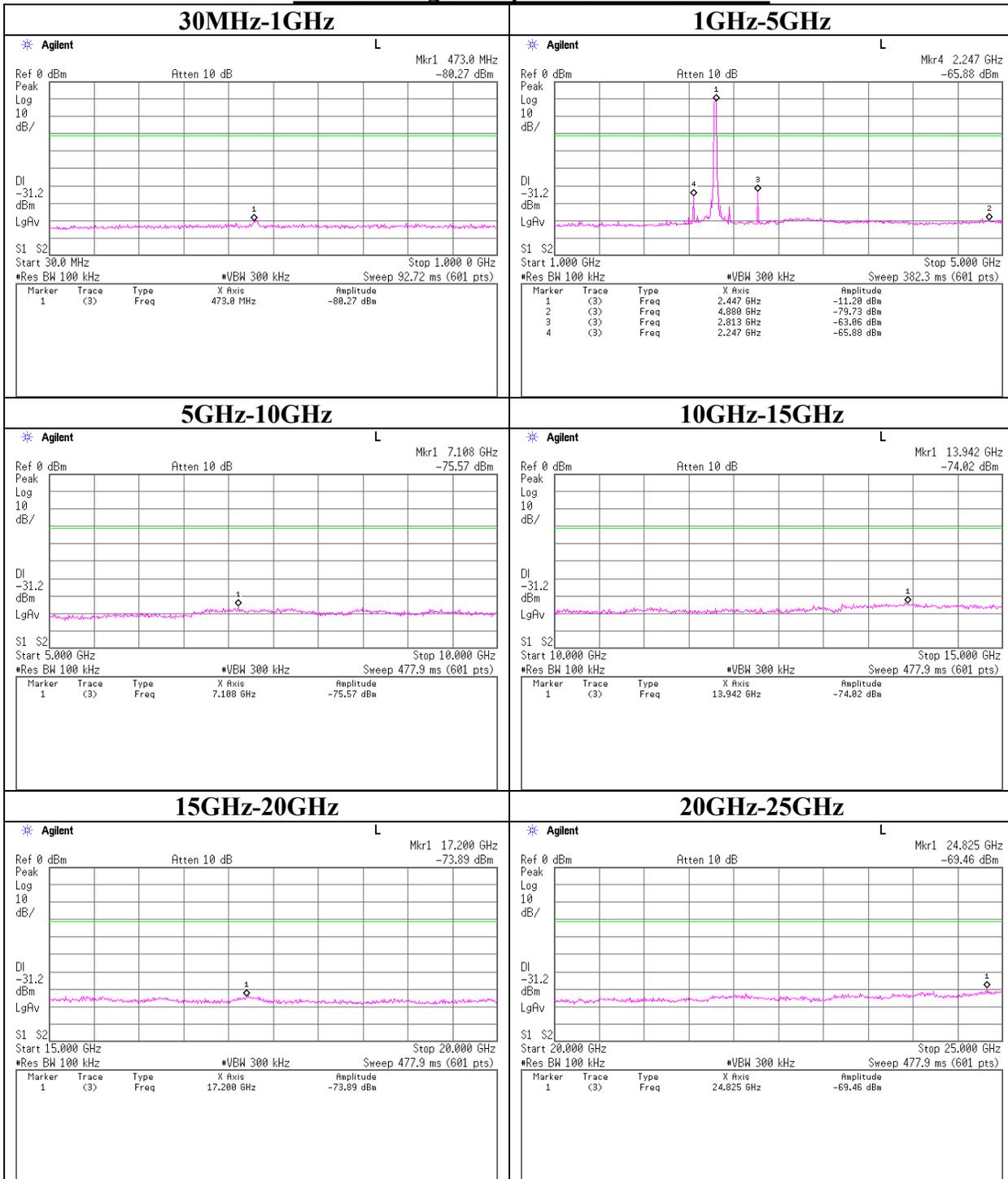
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**IEEE802.11b 11Mbps Antenna:1 Ch : High**



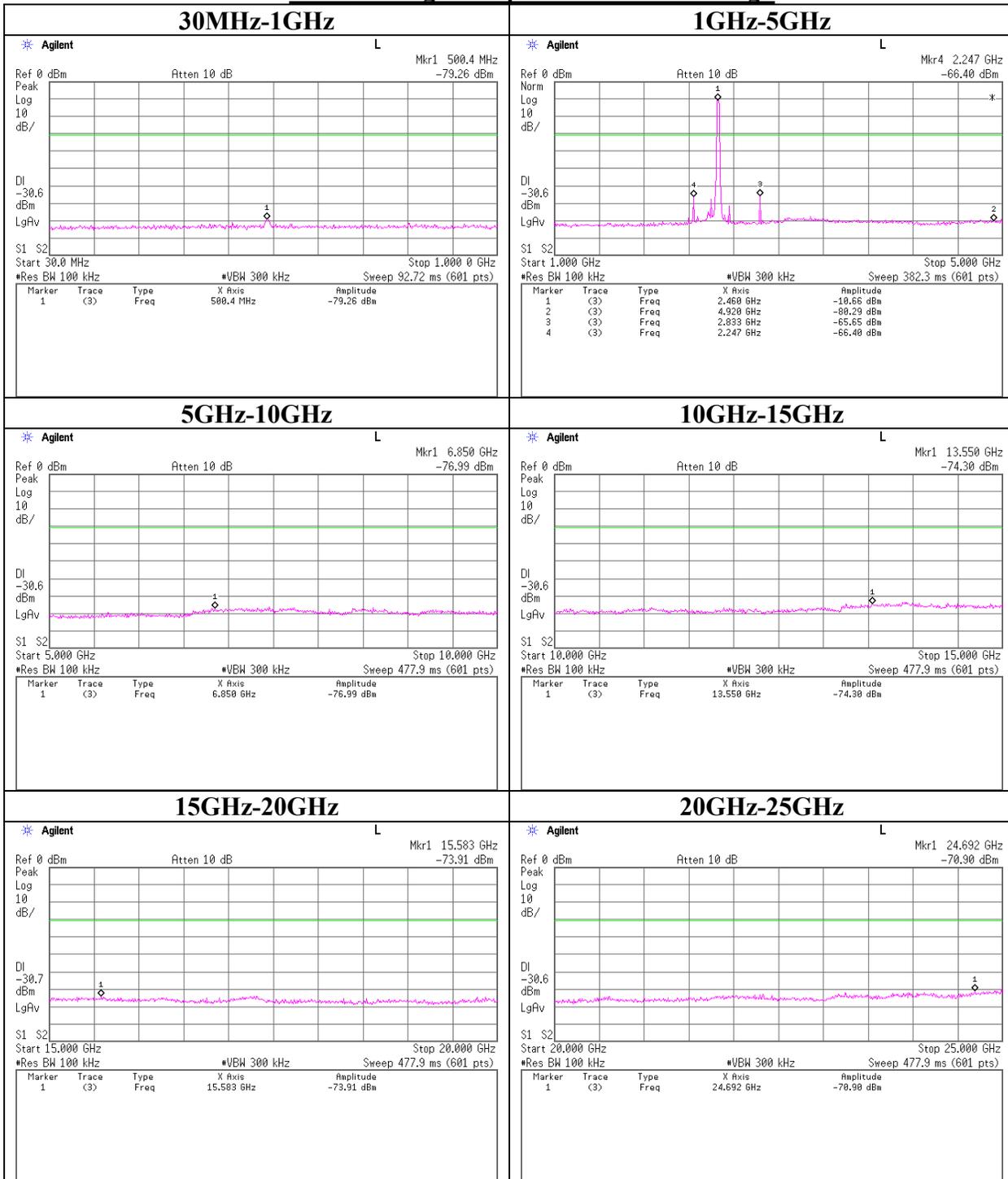
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**IEEE802.11g 54Mbps Antenna:1 Ch : Low**



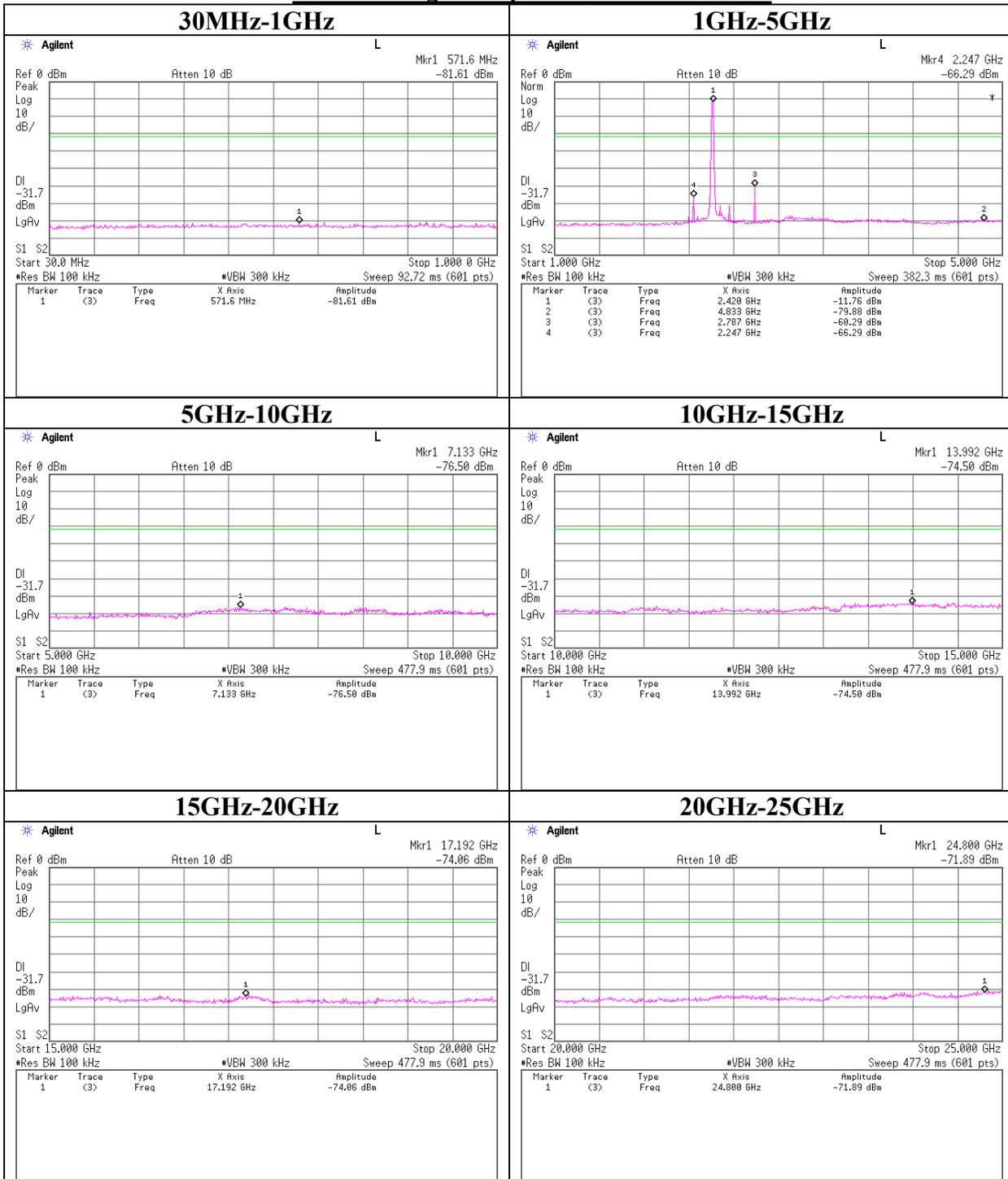
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**IEEE802.11g 54Mbps Antenna:1 Ch : Mid**



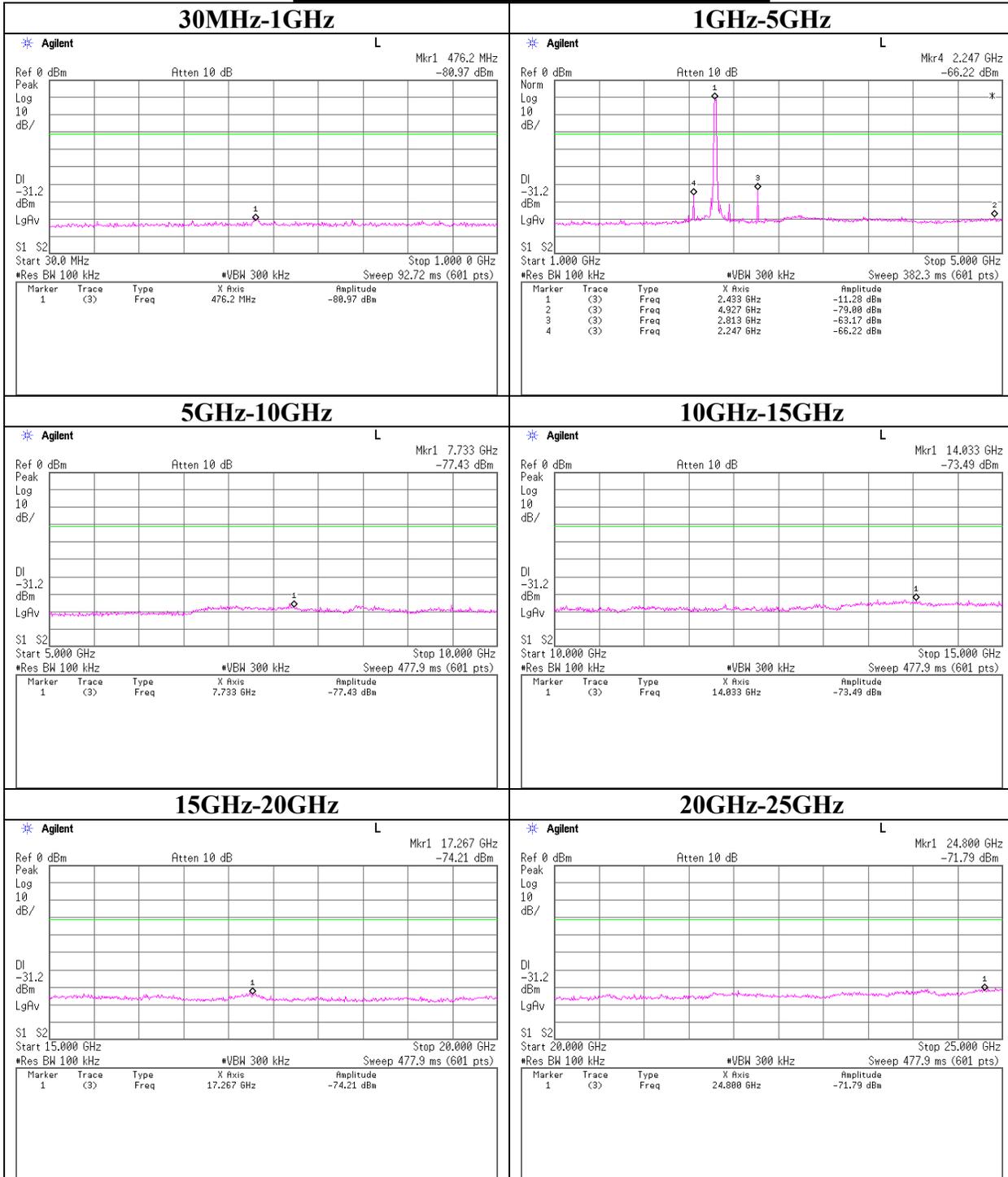
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**IEEE802.11g 54Mbps Antenna:1 Ch : High**



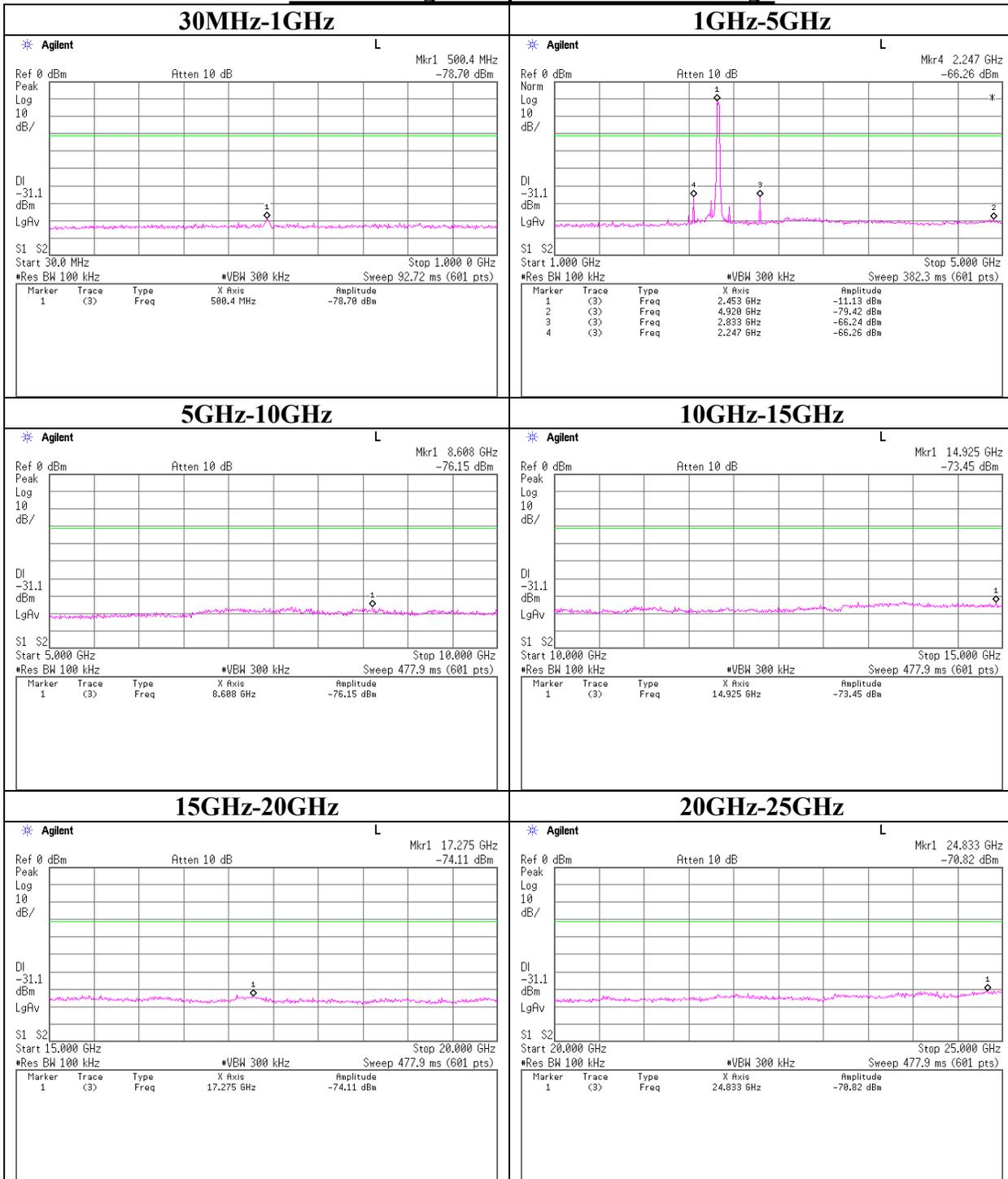
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**IEEE802.11g 12Mbps Antenna:1 Ch : Low**



**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**IEEE802.11g 12Mbps Antenna:1 Ch : Mid**

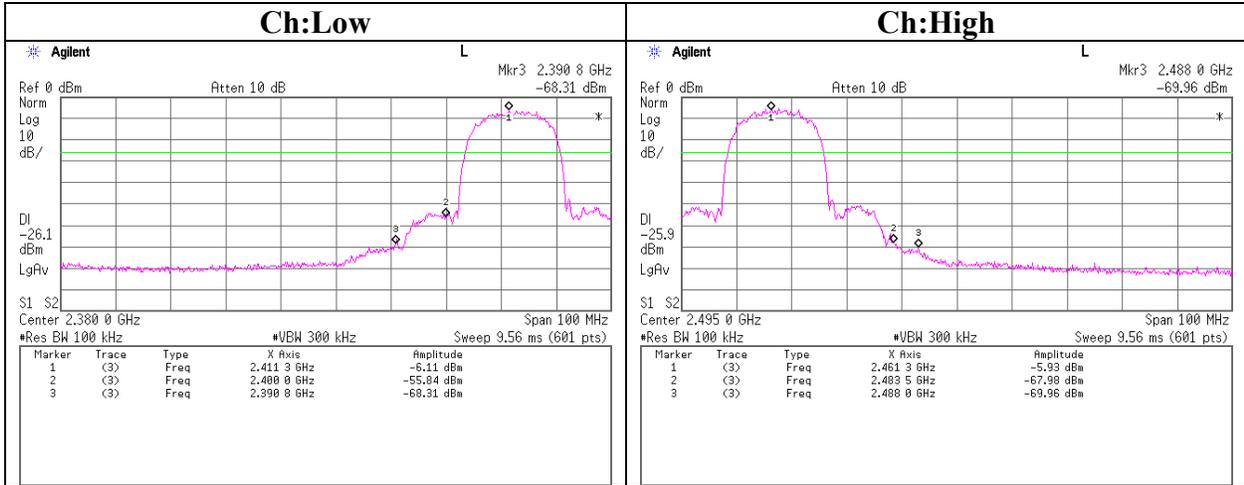


**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**IEEE802.11g 12Mbps Antenna:1 Ch : High**



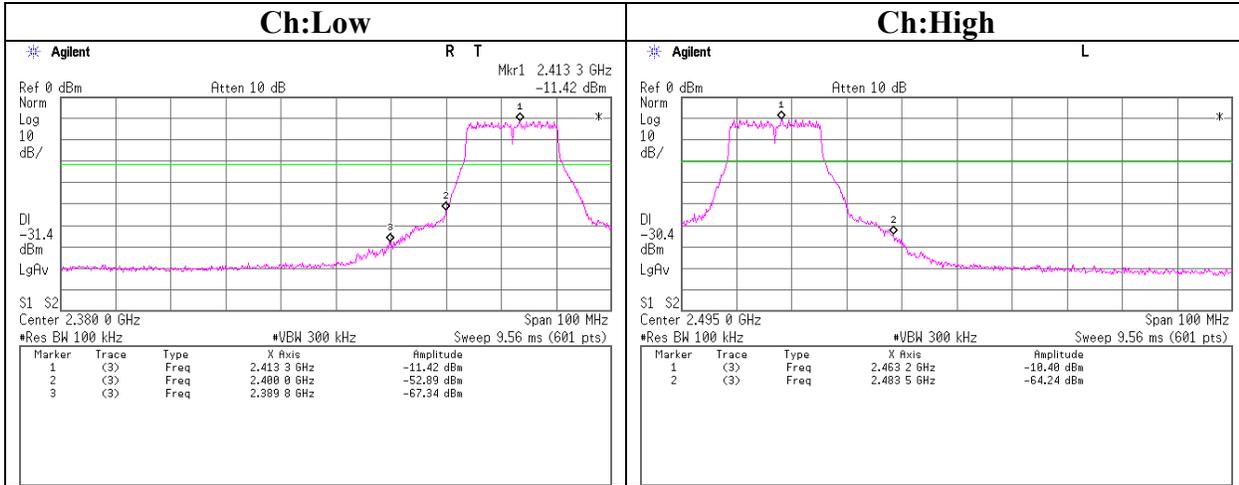
**Conducted emission Band Edge compliance (DSSS and other forms of modulation)**

**IEEE802.11b 11Mbps Antenna:1**



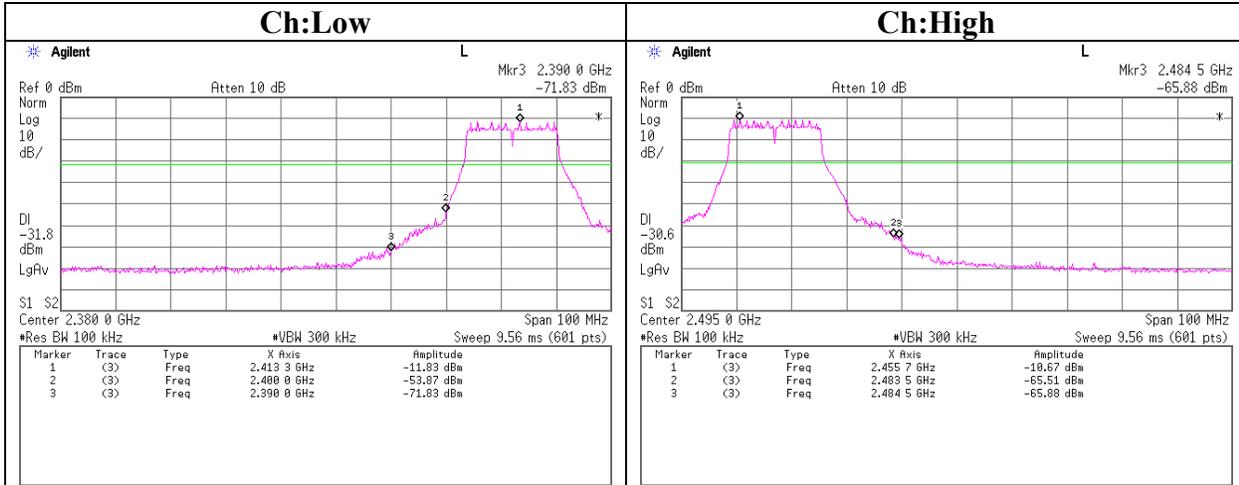
**Conducted emission Band Edge compliance (DSSS and other forms of modulation)**

**IEEE802.11g 54Mbps Antenna:1**



**Conducted emission Band Edge compliance (DSSS and other forms of modulation)**

**IEEE802.11g 12Mbps Antenna:1**



**Power Density (DSSS and other forms of modulation )**

UL Apex Co., Ltd.  
Head Office EMC Lab. No.3 Measurement Room

Company : Sony Corporation  
Equipment : Wireless LAN Module  
Model : IRF303J  
Sample No. : 62  
Power : DC3.3V  
Mode : Tx IEEE 802.11a/b/g  
Antenna : 1

REPORT NO : 25EE0063-HO  
REGULATION : FCC 15.247(e)  
TEST DISTANCE : -  
DATE : 2005/01/20  
TEMPERATURE : 24deg.C  
HUMIDITY : 30%  
ENGINEER : Hiroka Umeyama

**[ IEEE802.11b : 11Mbps ]**

Ch	Freq. [MHz]	Reading [dBm]	Cable [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2412.0	-21.96	0.63	10.0	-11.3	8.0	19.3
Mid	2437.0	-20.61	0.63	10.0	-10.0	8.0	18.0
High	2462.0	-20.72	0.63	10.0	-10.1	8.0	18.1

**[ IEEE802.11g : 54Mbps ]**

Ch	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2412.0	-24.96	0.63	10.0	-14.3	8.0	22.3
Mid	2437.0	-24.02	0.63	10.0	-13.4	8.0	21.4
High	2462.0	-24.27	0.63	10.0	-13.6	8.0	21.6

**[ IEEE802.11g : 12Mbps ]**

Ch	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2412.0	-24.65	0.63	10.0	-14.0	8.0	22.0
Mid	2437.0	-23.24	0.63	10.0	-12.6	8.0	20.6
High	2462.0	-22.75	0.63	10.0	-12.1	8.0	20.1

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

\* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

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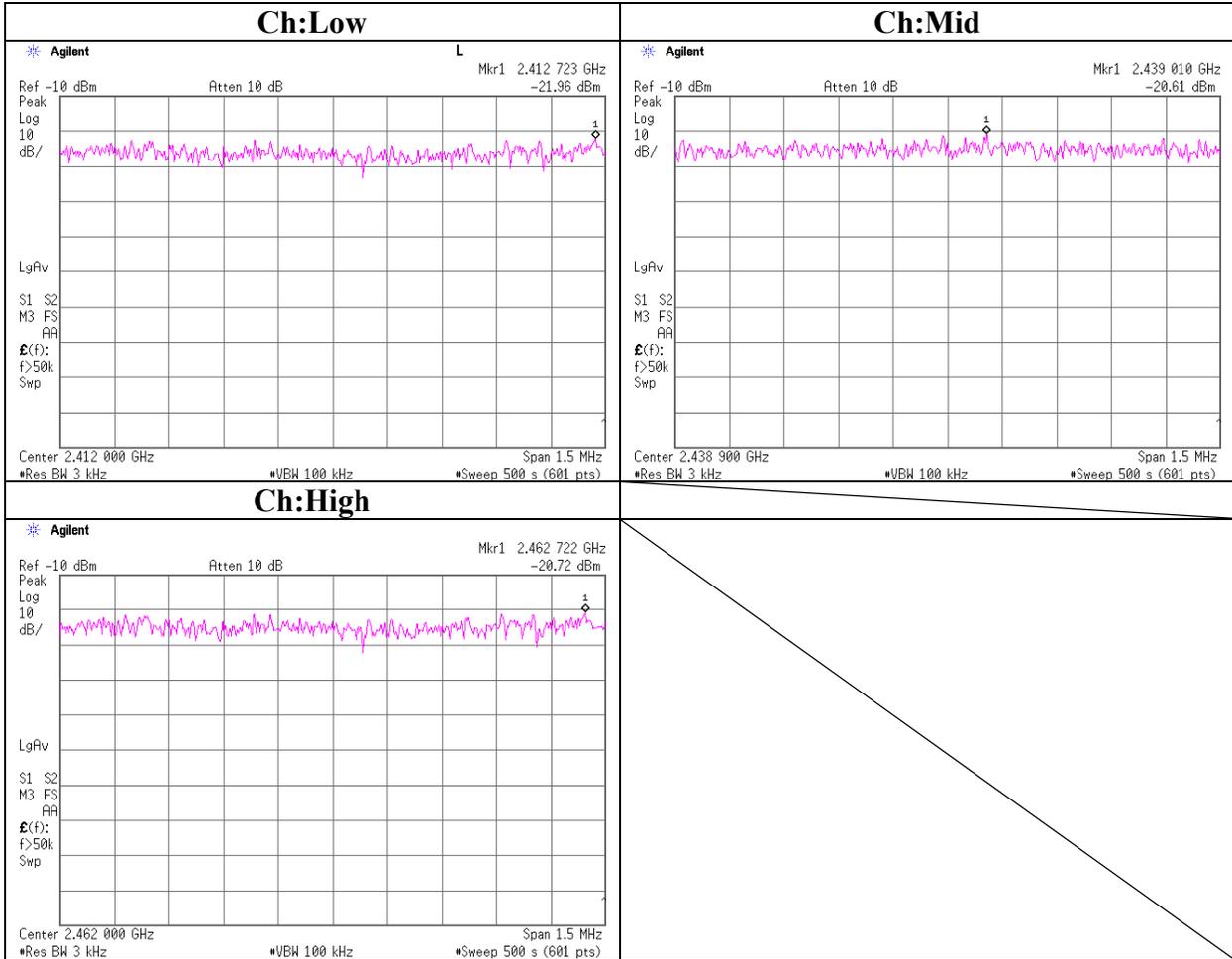
Telephone : +81 596 24 8116

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MF060b(10.04.03)

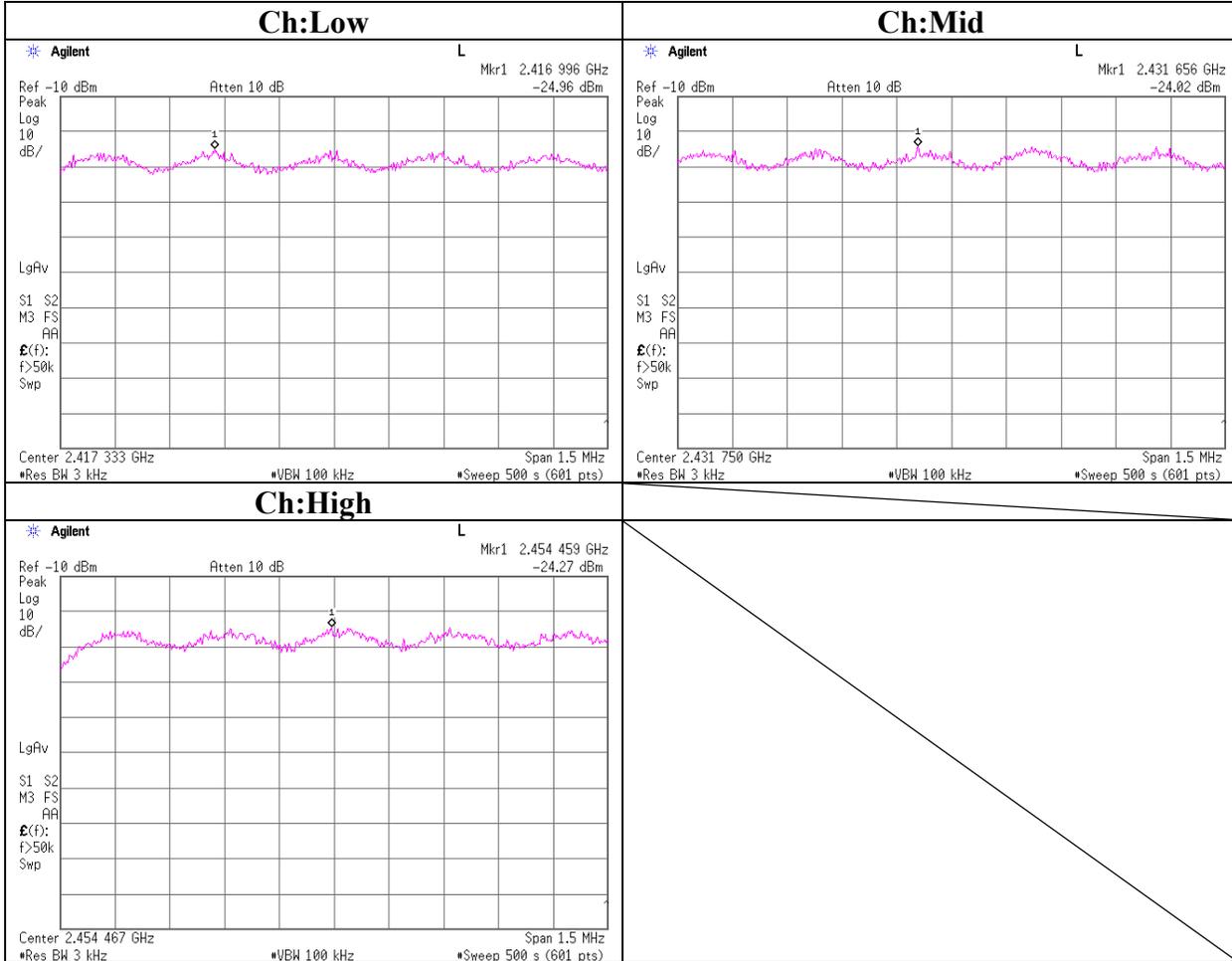
**Power Density(DSSS and other forms of modulation)**

**IEEE802.11b 11Mbps Antenna:1**



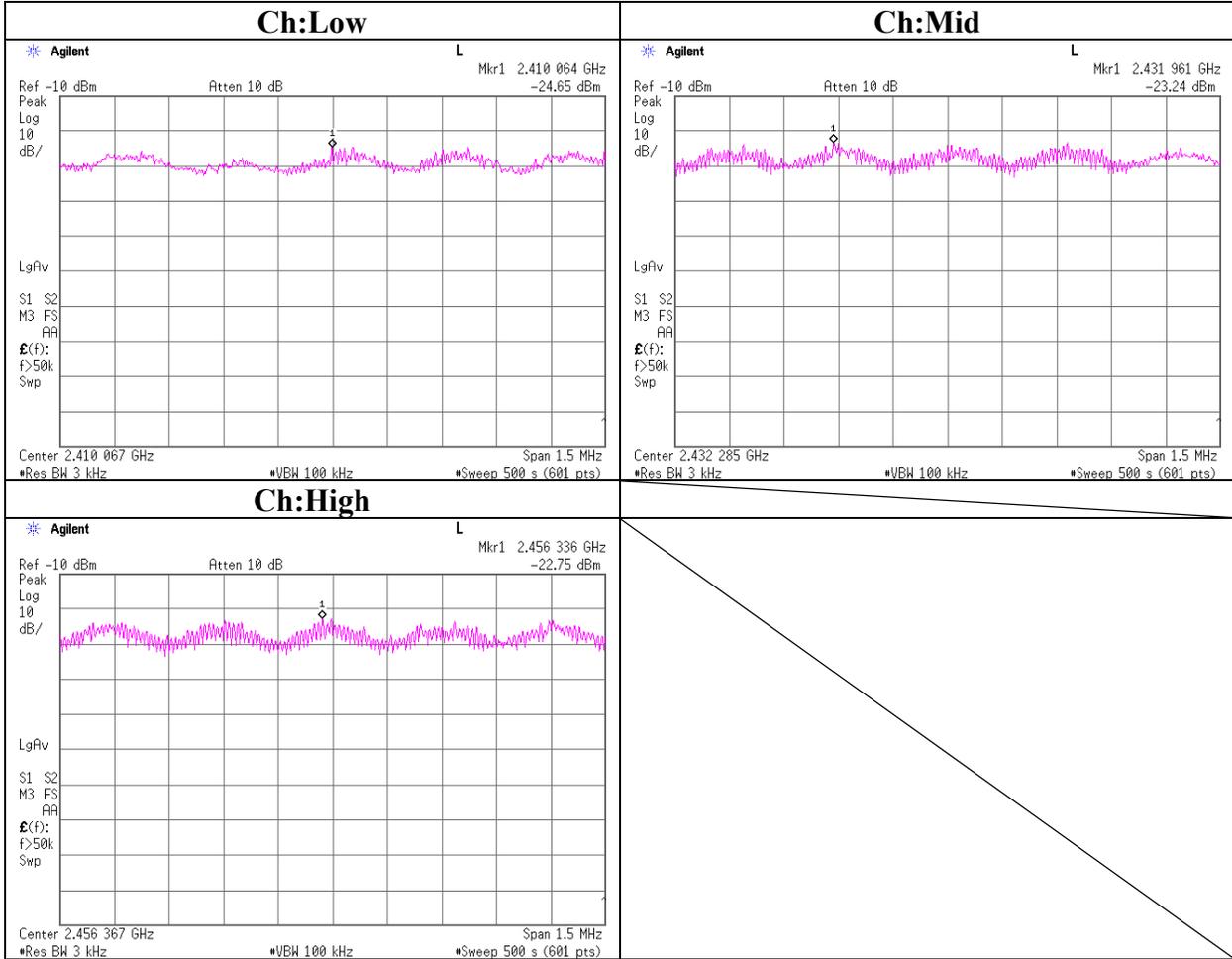
**Power Density(DSSS and other forms of modulation)**

**IEEE802.11g 54Mbps Antenna:1**



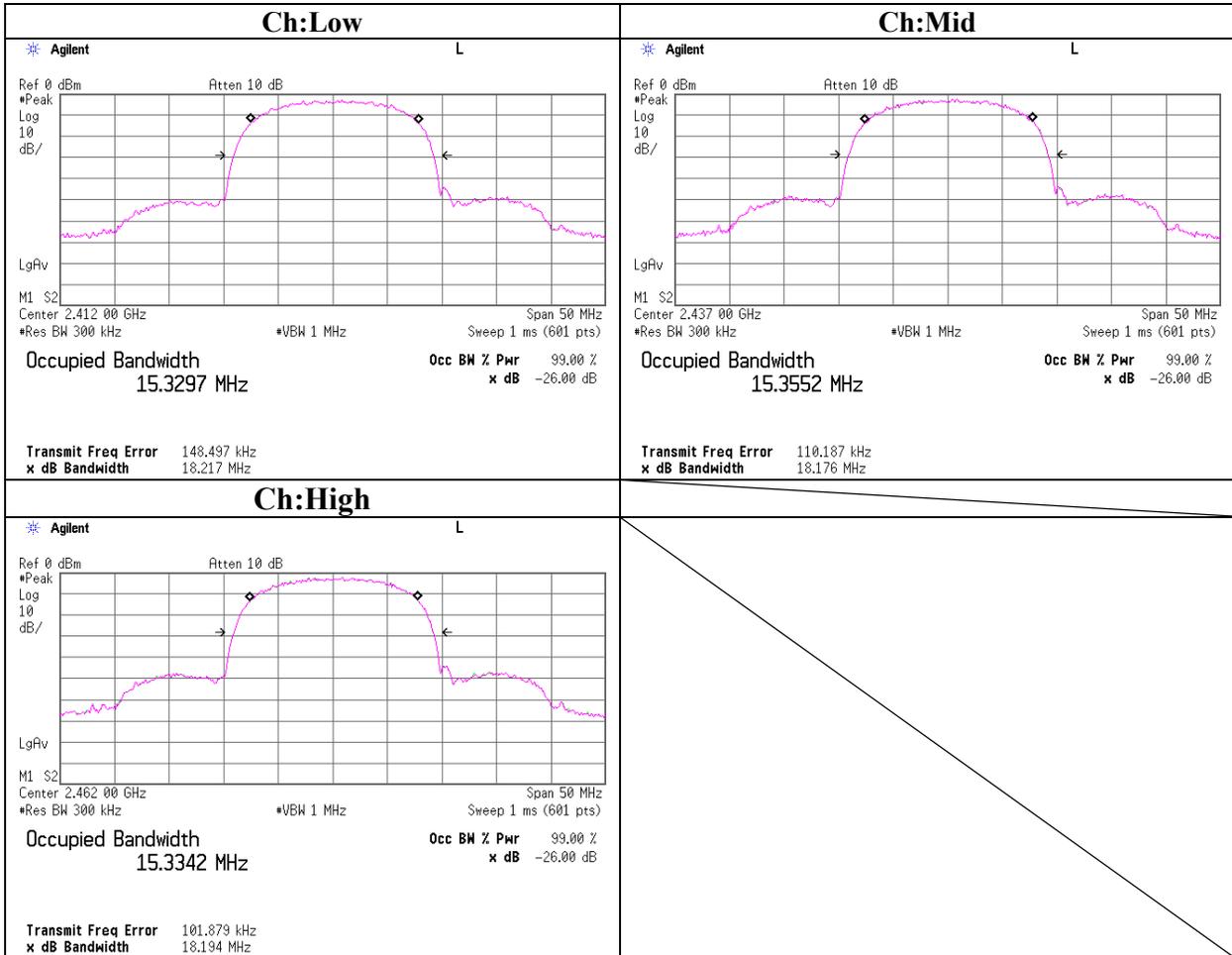
**Power Density(DSSS and other forms of modulation)**

**IEEE802.11g 12Mbps Antenna:1**



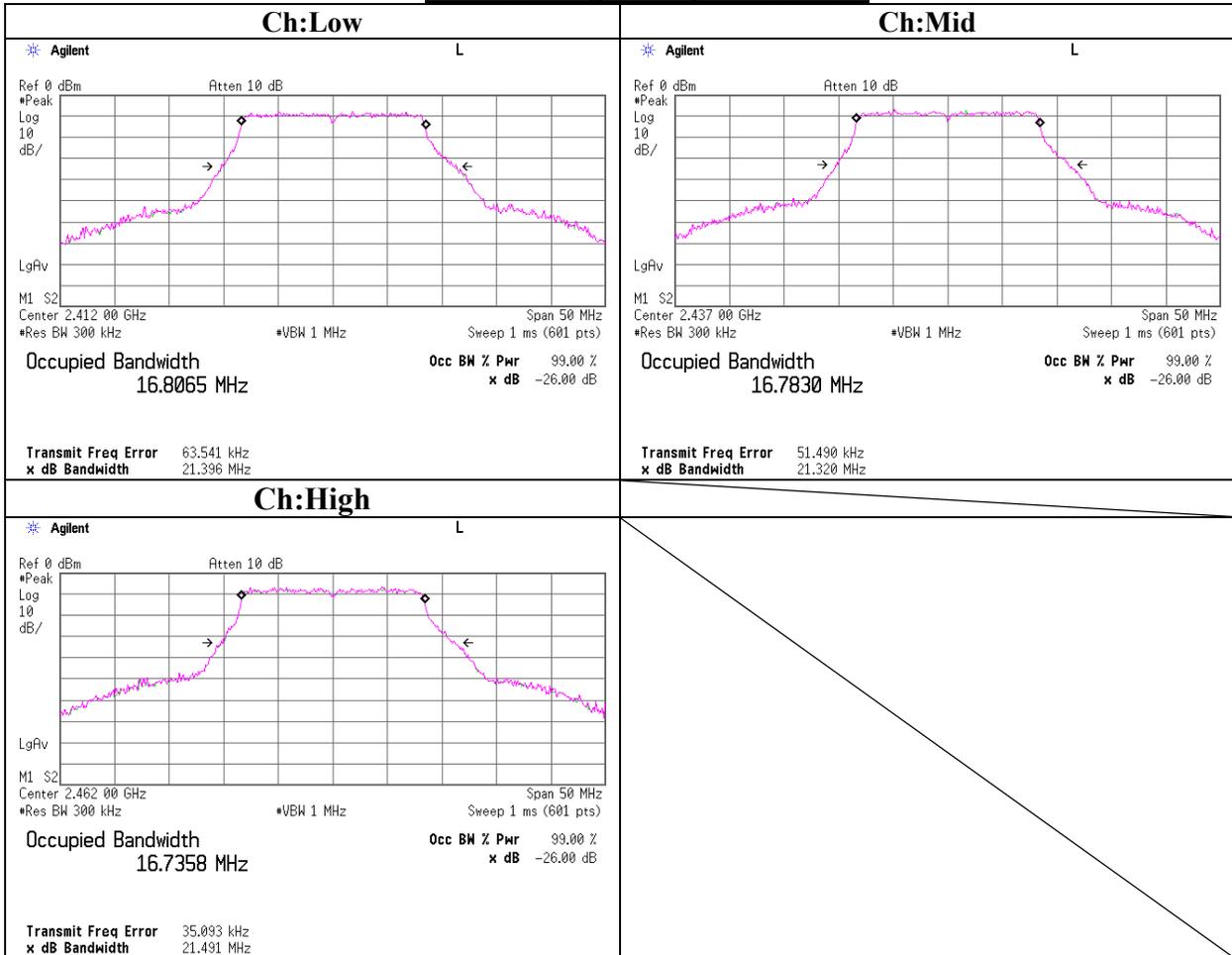
**99%Occupied Bandwidth(DSSS and other forms of modulation)**

**IEEE802.11b 11Mbps Antenna:1**



**99%Occupied Bandwidth(DSSS and other forms of modulation)**

**IEEE802.11g 54Mbps Antenna:1**



**99%Occupied Bandwidth(DSSS and other forms of modulation)**

**IEEE802.11g 12Mbps Antenna:1**

