

EMI TEST REPORT

Test Report No. : 24HE0082-HO-1

Applicant : Sony Corporation
Type of Equipment : Wireless LAN Module
Model No. : IRF302U
Test standard : FCC Part 15 Subpart C
Section 15.207, Section 15.247 : 2004
FCC ID : AK81RF302U
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: June 11, 2004 to June 23, 2004

Tested by:


Hiroka Umeyama
EMC Service

Approved by :


Hironobu Shimoji
Group Leader of
EMC Service

UL Apex Co., Ltd.

Head Office EMC Lab.

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MF060b(10.04.03)

CONTENTS	PAGE
SECTION 1: Client information	3
SECTION 2: Equipment under test (E.U.T.)	3
SECTION 3: Test specification, procedures & results	6
SECTION 4: Operation of E.U.T. during testing	9
SECTION 5: Conducted Emission, Section 15.207	12
SECTION 6: Spurious Emission 15.247(c)	13
SECTION 7: Bandwidth, Section 15.247(a)(1)(2)	14
SECTION 8: Maximum Peak Output Power, Section 15.247(b)(1)(3)	14
SECTION 9: Peak Power Density, Section 15.247 (d)	14
APPENDIX 1: Photographs of test setup	15
Conducted Em ission	15
Spurious Emission (Radiated)	16
Worst Case Position (Z-axis:Horizontal / Z-axis:Vertical).....	17
APPENDIX 2:Test instruments	18
APPENDIX 3: Data of EMI test	19
Conducted Emission	19
6dB Bandwidth(DSSS and other forms of modulation).....	26
Maximum Peak OutPut Power (DSSS and other forms of modulation).....	29
Radiated Spurious Emission(DSSS and other forms of modulation)	32
Conducted emission Band Edge compliance (DSSS and other forms of modulation).....	60
Power Density (DSSS and other forms of modulation)	61

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. : IRF302U
Serial No. : 125 (on Radiated and Conducted Emission Test)
77 (on Peak Output Power Test by Conducted)
11 (on Other Test by Conducted)
Rating : DC3.3V 0.81A
Country of Manufacture : Japan
Receipt Date of Sample : May 31, 2004
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)

2.2 Product Description

The Sony model IRF302U is ISM and UNII transceiver module that is designed to provide a Wireless LAN access using 802.11b/g/a protocols for data rates of up-to 54Mbps.

Normally the EUT is installed to Sony's "Wireless Location free TV".

System clock : 40MHz

[W-LAN:IEEE802.11b, 11g]

Equipment Type	:	Transceiver
Frequency of operation	:	2412-2462MHz
Channel spacing	:	5MHz
Modulation Technique	:	BPSK, QPSK, CCK
Channel number	:	11channels
Power control	:	Non
Mode of operation	:	Duplex
Antenna Type	:	Patch Antenna
Antenna Gain	:	1.0 dBi(MAX)
Antenna Connector Type	:	U.FL
Operating voltage (inner)	:	DC3.3V

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FCC 15.31 (e)

This EUT provides stable voltage(DC3.3V) constantly to RF Module regardless of input voltage. 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.

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
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz

3.2 Procedures and results

[DSSS and other forms of modulation]

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207	-	N/A	*See the worst margins in the data sheet in APPENDIX 3	Complied
2	6dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247(a)(2)	Conducted	N/A		Complied
3	Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247(b)(3)	Conducted	N/A		Complied
4	Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (c)	Conducted/ Radiated	N/A		Complied
5	Restricted Band Edges	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (c)	Conducted	N/A		Complied
6	Power Density	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (d)	Conducted	N/A		Complied

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

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 ± 1.3 dB.

Spurious Emission (Radiated)

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

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

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

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test is ± 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.

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	RSS210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004	Conducted	N/A	N/A	N/A

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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.

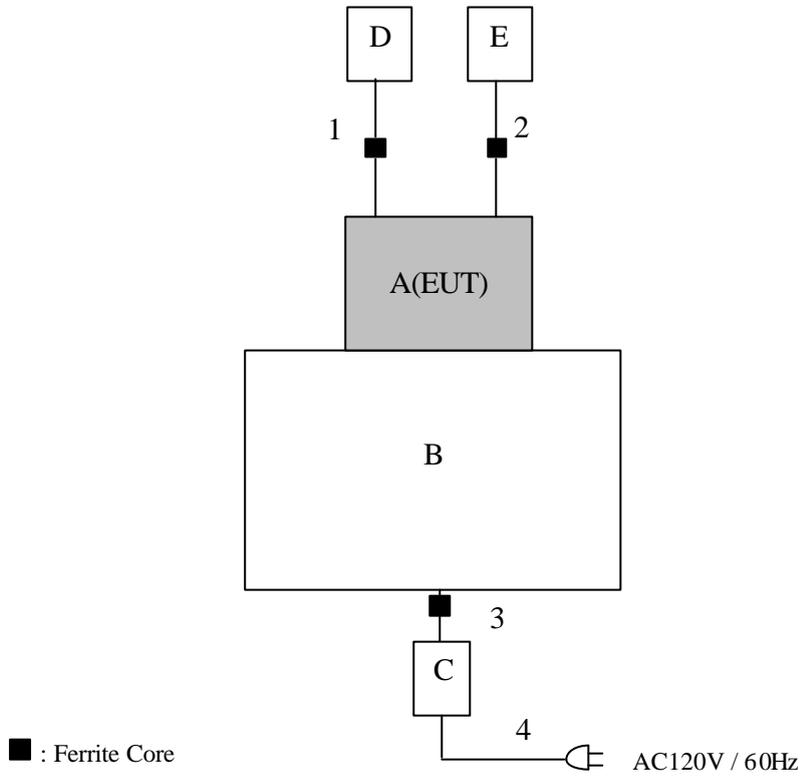
The mode is used : [DSSS and other forms of modulation]
Transmitting mode (CCK 11Mbps / OFDM 54Mbps)
Low Channel :2412MHz(Ch1)
Mid Channel :2437MHz(Ch6)
High channel :2462MHz(Ch11)

*The two antennas are the same one so that the test was made with one antenna of the two .

* The EUT has an ability to provide some different modulation and data rates. Some of these modulation and data rates did not change in the spectrum envelopes of the EUT at conducted Measurement with the antenna terminal. Therefore, the results of the final measurements were 11Mbps and 54Mbps modulation as the highest data rate.

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

4.2 Configuration and peripherals



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

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID
A	Wireless LAN Module	IRF302U	125*1 77*2 11*3	SONY	AK8IRFU302U
B	Notebook Personal Computer	PP01L	CN-04P449- 48643-318-7190	DELL	-
C	AC Adaptor	ADP-70EB	TH-09364U- 17971-181-1SHK	DELL	-
D	Patch Antenna	SDA2452A	-	TOKO	-
E	Patch Antenna	SDA2452A	-	TOKO	-

*1:on Radiated and Conducted Emission Test

*2:on Peak Output Power Test by Conducted

*3:on Other Test by Conducted

List of cables used

No.	Name	Length (m)	Shield	Backshell Material
1	Antenna Cable	0.04	Y	FEP
2	Antenna Cable	0.04	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, Section 15.207

Test Procedure

EUT was placed on a platform of nominal size, 0.5m by 0.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. 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 .

The EUT was set on the center of the table.

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 and average 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 15.247(c)

[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 a platform of nominal 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.

Not satisfying the requirement of Section 15.209, the result was applied to 20dBc in the restricted Band.

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

Test data : APPENDIX 3
Test result : Pass

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SECTION 7: Bandwidth, Section 15.247(a)(1)(2)

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, Section 15.247(b)(1)(3)

Test Procedure

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

Test data : APPENDIX 3
Test result : Pass

SECTION 9: Peak Power Density, Section 15.247 (d)

[Conducted]

Test Procedure

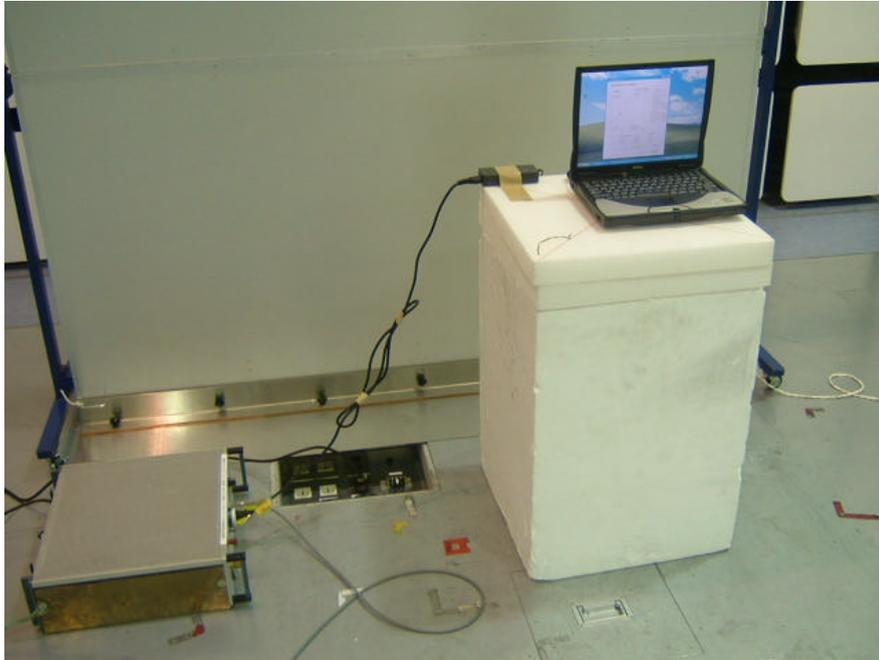
The Peak Power Density was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass

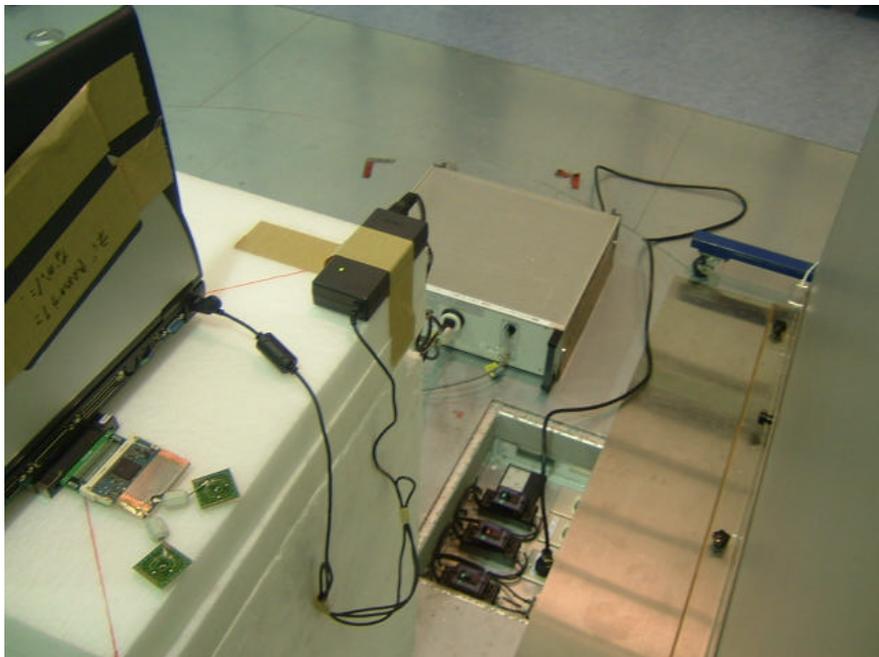
APPENDIX 1: Photographs of test setup

Conducted Emission

Front



Rear

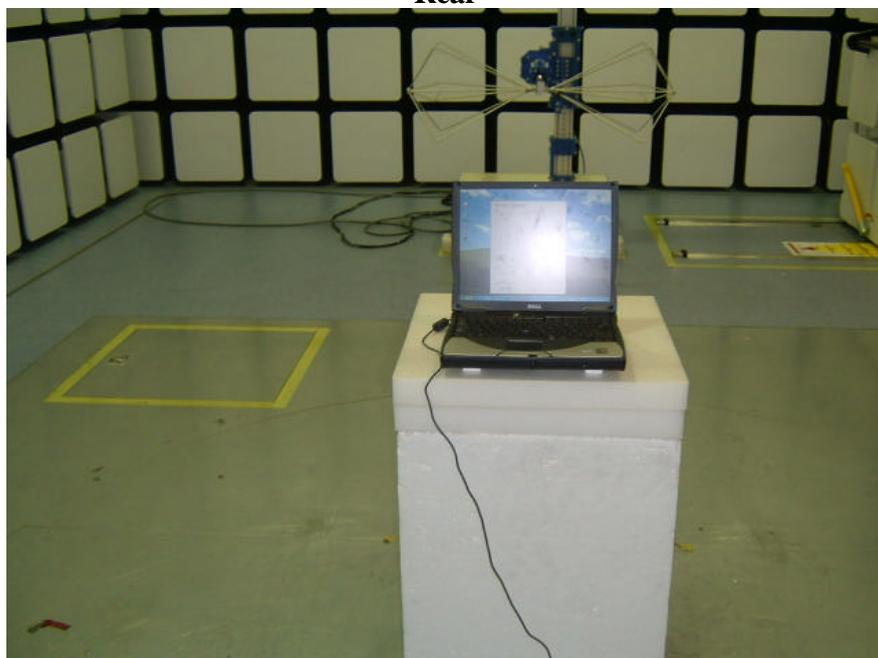


Spurious Emission (Radiated)

Front



Rear

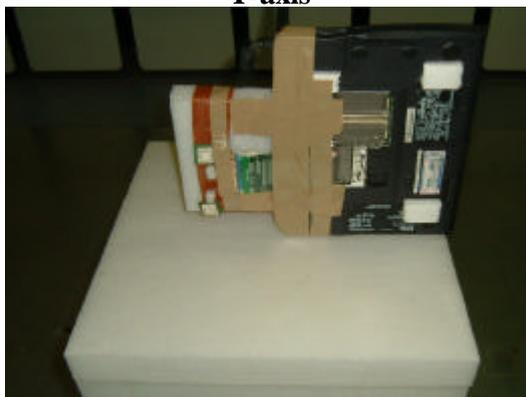


Worst Case Position (Z-axis:Horizontal / Z-axis:Vertical)

X-axis



Y-axis



Z-axis



APPENDIX 2:Test instruments

EMI test equipment (Conducted Emission)

Control No.	Instrument	Manufacturer	Model No	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	2004/04/12 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	2004/02/03 * 12
MRENT-09	Spectrum Analyzer	Advantest	R3273	2004/02/18 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	2004/02/24 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	2004/02/17 * 12

EMI test equipment (Spurious Emission and Band Edge Compliance(Radiated))

Control No.	Instrument	Manufacturer	Model No	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	2004/04/12 * 12
MRENT-09	Spectrum Analyzer	Advantest	R3273	2004/02/18 * 12
MPA-01	Pre Amplifier	Agilent	8449B	2004/02/06 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESI40	2003/11/12 * 12
MCC-12	Coaxial Cable	Suhner/storm/Agilent/TSJ	-	2003/12/19 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	2003/10/15 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	2003/10/15 * 12
MPA-02	Pre Amplifier	Agilent	8447D	2004/05/25 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	2003/12/16 * 12
MHF-02	High Pass Filter	Tokimec	TF323DCA	2003/09/19 * 12
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	2003/12/27 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	2003/11/12 * 12
MCC-05	Microwave Cable	Storm	421-011	2004/01/06 * 12
MCC-23	Microwave Cable	Storm	-	2004/05/01 * 12
MHA-05	Horn Antenna	Schwarzbeck	BBHA9120D	2004/01/10 * 12

EMI test equipment (Other)

Control No.	Instrument	Manufacturer	Model No	Calibration Date * Interval(month)
MSA-03	Spectrum Analyzer	Agilent	E4448A	2004/06/12 * 12
MAT-22	Attenuator (10dB)	Orient Microwave	BX10-0476-00	2004/03/30 * 12
MRENT-09	Spectrum Analyzer	Advantest	R3273	2004/02/18 * 12

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

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 : 2004/06/23 23:06:37

Applicant : Sony Corporation Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module Power : DC 3.3V(PC INPUT: AC120V/60Hz)
Model No. : IRF302U Temp /Humi% : 20deg.C / 61%
Serial No. : 125 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802 11b, 11Mbps ch 1(2412MHz)

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 μV]	AV [dB μV]	QP [dB]	AV [dB]	
1	0.1818	49.0	36.1	0.1	49.1	36.2	64.4	54.4	15.3	18.2	N
2	0.2417	39.9	----	0.1	40.0	----	62.0	----	22.0	----	N
3	0.3016	35.5	----	0.1	35.6	----	60.2	----	24.6	----	N
4	0.5420	26.0	----	0.1	26.1	----	56.0	----	29.9	----	N
5	3.0695	24.7	----	1.0	25.7	----	56.0	----	30.3	----	N
6	5.0530	28.6	----	1.1	29.7	----	60.0	----	30.3	----	N
7	7.1940	39.0	----	1.2	40.2	----	60.0	----	19.8	----	N
8	7.8170	37.7	----	1.3	39.0	----	60.0	----	21.0	----	N
9	14.3890	28.6	----	1.5	30.1	----	60.0	----	29.9	----	N
10	15.5930	23.6	----	1.5	25.1	----	60.0	----	34.9	----	N
11	0.1818	48.7	35.4	0.1	48.8	35.5	64.4	54.4	15.6	18.9	L
12	0.2417	40.0	----	0.1	40.1	----	62.0	----	21.9	----	L
13	0.3010	35.9	----	0.1	36.0	----	60.2	----	24.2	----	L
14	0.5410	28.0	----	0.1	28.1	----	56.0	----	27.9	----	L
15	3.0695	26.0	----	1.0	27.0	----	56.0	----	29.0	----	L
16	5.0530	27.4	----	1.1	28.5	----	60.0	----	31.5	----	L
17	7.2071	39.0	----	1.2	40.2	----	60.0	----	19.8	----	L
18	7.8170	38.1	----	1.3	39.4	----	60.0	----	20.6	----	L
19	14.4109	29.3	----	1.5	30.8	----	60.0	----	29.2	----	L
20	15.5930	22.4	----	1.5	23.9	----	60.0	----	36.1	----	L

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 : 2004/06/23 23:06:37

Applicant : Sony Corporation	Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module	Power : DC 3.3V(PC INPUT: AC120V/60Hz)
Model No. : IRF302U	Temp /Humi% : 20deg.C / 61%
Serial No. : 125	Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802 11b, 11Mbps ch 1(2412MHz)

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

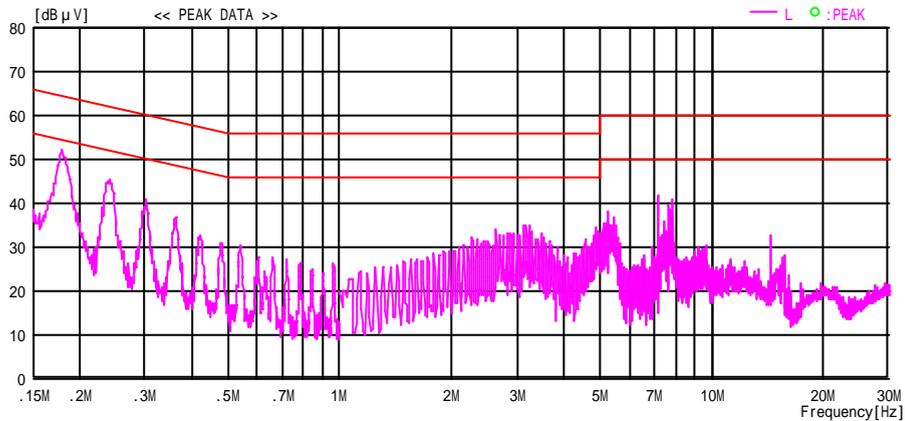
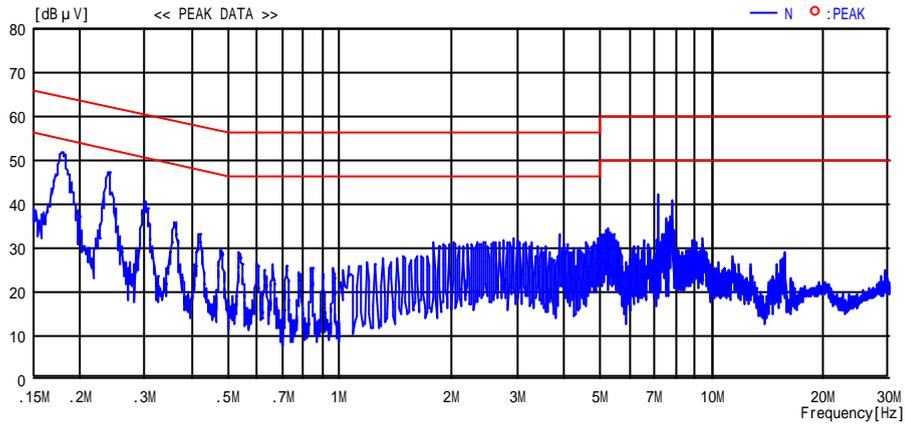


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2004/06/23 23:14:07

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF302U Serial No. : 125	Report No. : 24HE0082-HO Power : DC 3.3V(PC INPUT: AC120V/60Hz) Temp /Humi% : 20deg.C / 61% Operator : Hiroka Umeyama
--	--

Mode / Remarks : Transmitting IEEE802 11b, 11Mbps ch 6(2437MHz)
 LIMIT : FCC15C § 15.207 (QP)
 FCC15C § 15.207 (AV)

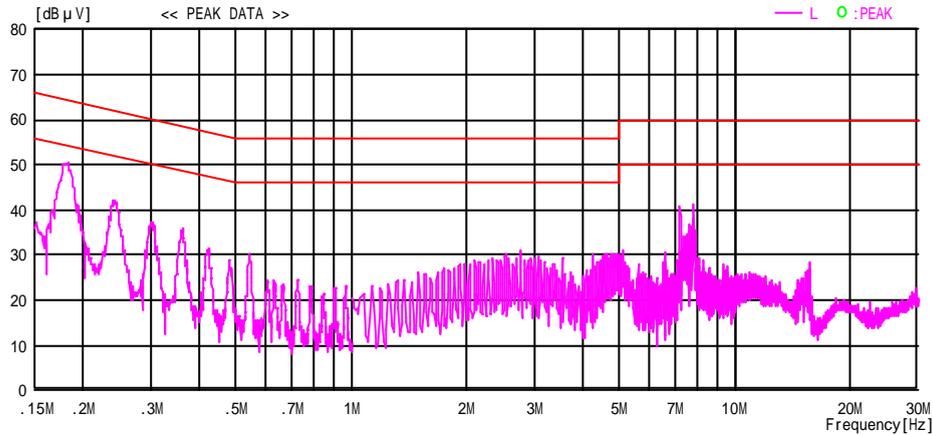
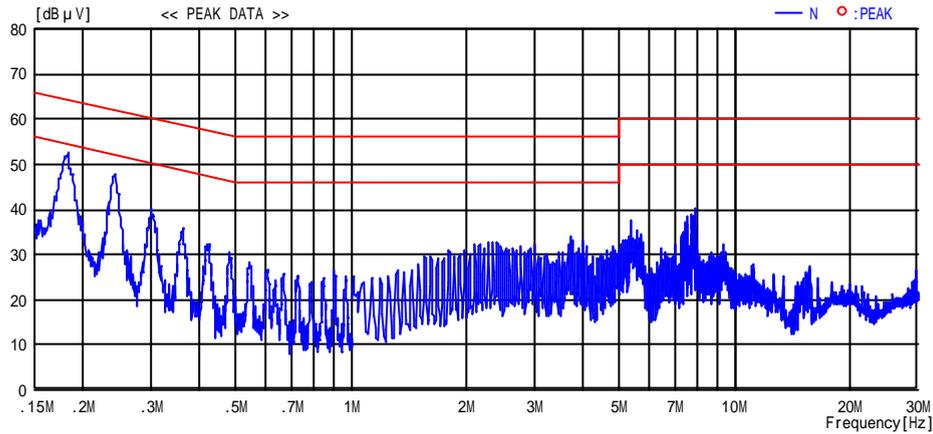


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F(L1SN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2004/06/23 23:25:35

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF302U Serial No. : 125	Report No. : 24HE0082-HO Power : DC 3.3V(PC INPUT: AC120V/60Hz) Temp /Humi% : 20deg.C / 61% Operator : Hiroka Umeyama
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Mode / Remarks : Transmitting IEEE802 11b, 11Mbps ch11(2462MHz)

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

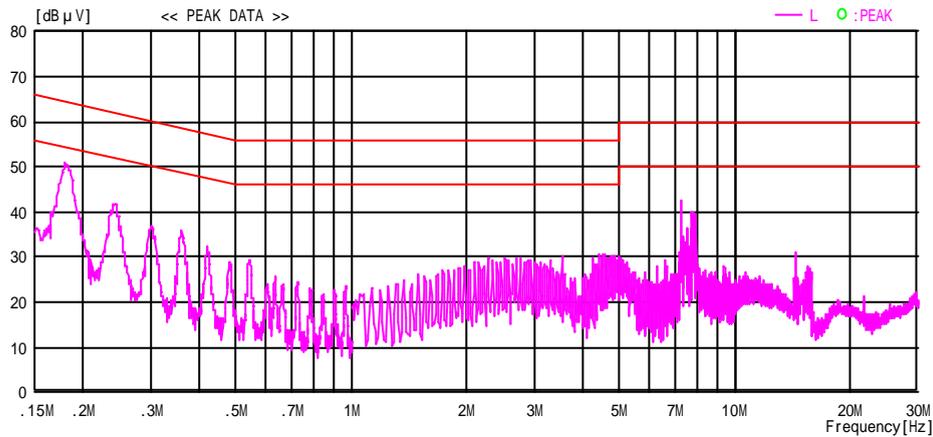
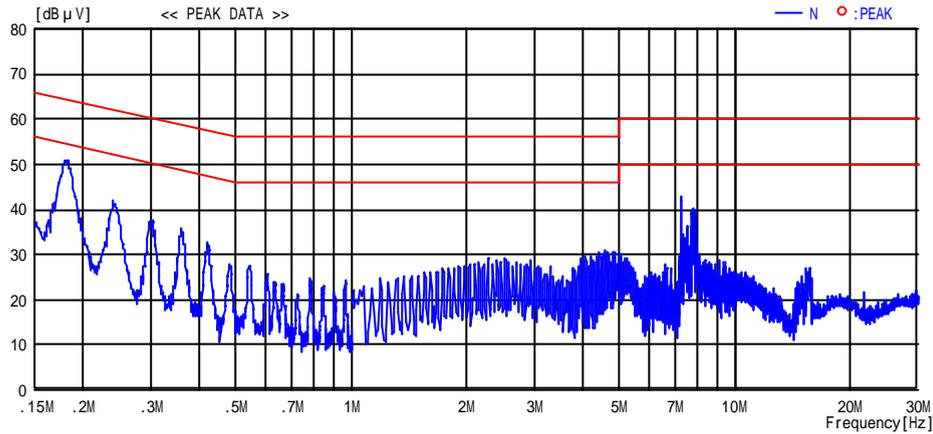


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(L1SN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2004/06/24 00:21:50

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF302U Serial No. : 125	Report No. : 24HE0082-HO Power : DC 3.3V(PC INPUT: AC120V/60Hz) Temp /Humi% : 20deg.C / 61% Operator : Hiroka Umeyama
--	--

Mode / Remarks : Transmitting IEEE802 11g, 54Mbps ch 1(2412MHz)

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

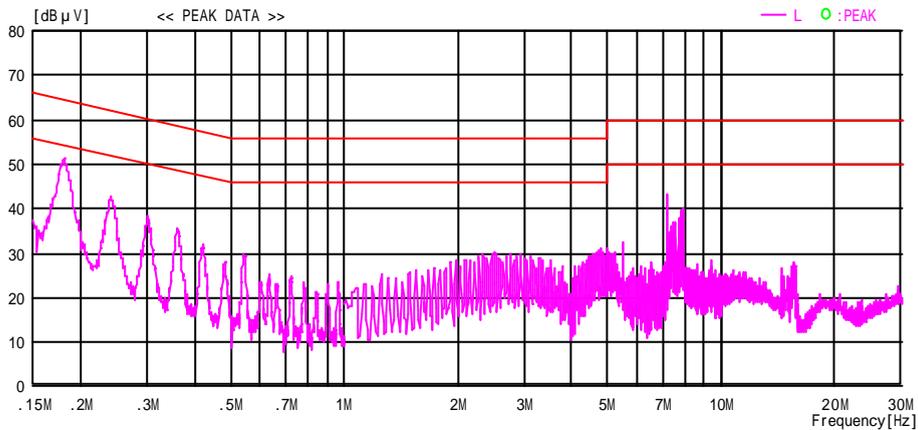
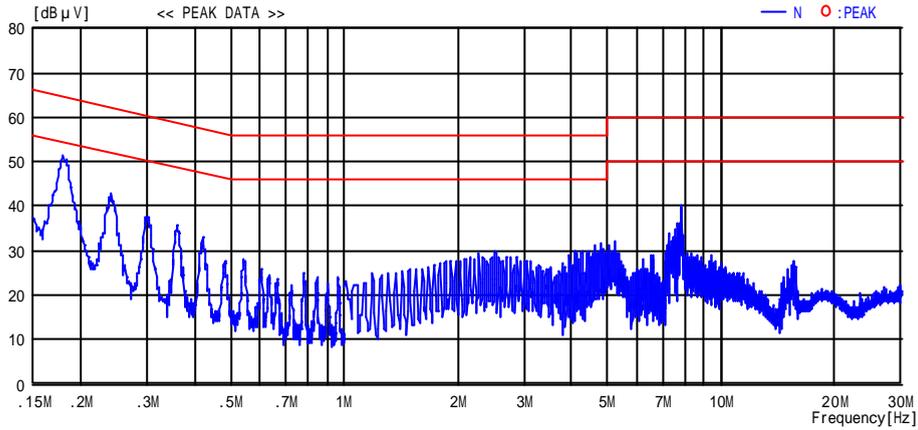


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/06/24 00:28:14

Applicant : Sony Corporation	Report No. : 24HE0082-H0
Kind of EUT : Wireless LAN Module	Power : DC 3.3V(PC INPUT: AC120V/60Hz)
Model No. : IRF302U	Temp /Humi% : 20deg.C / 61%
Serial No. : 125	Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11g, 54Mbps ch 6(2437MHz)

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

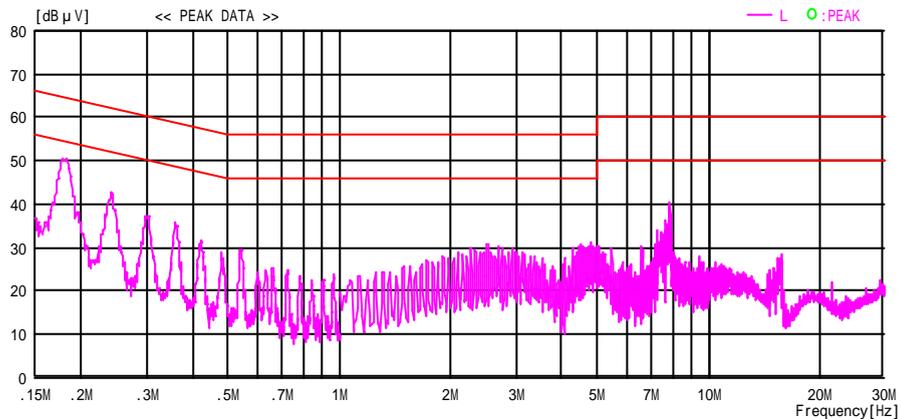
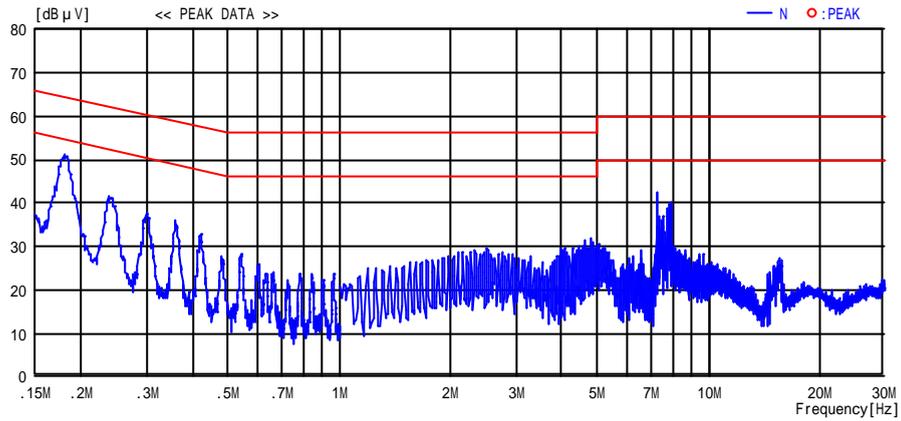


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F.(LISN LOSS+CABLE LOSS)
 Except for the above table: adequate margin data below the limits.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2004/06/24 00:38:36

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF302U Serial No. : 125	Report No. : 24HE0082-HO Power : DC 3.3V(PC INPUT: AC120V/60Hz) Temp /Humi% : 20deg.C / 61% Operator : Hiroka Umeyama
Mode / Remarks : Transmitting IEEE802 11g, 54Mbps ch11(2462MHz)	
LIMIT : FCC15C § 15.207 (QP) FCC15C § 15.207 (AV)	

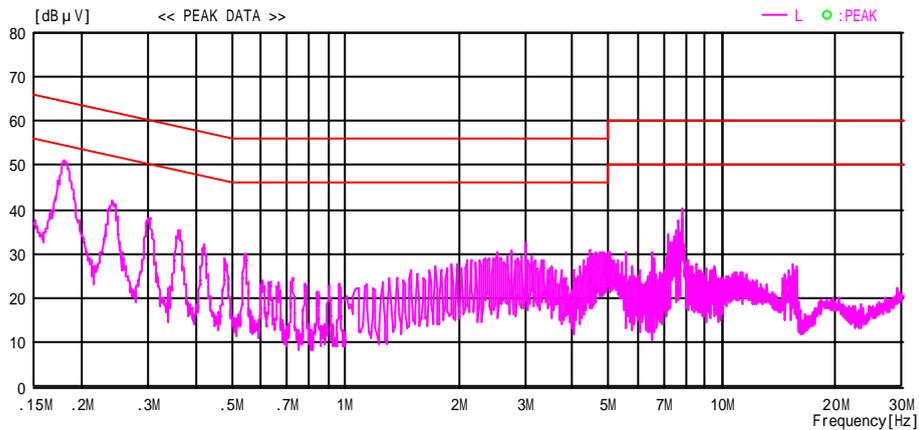
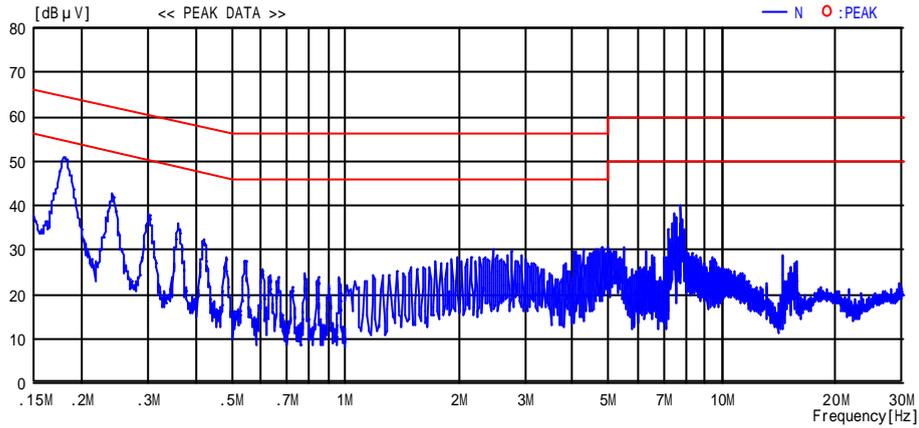


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

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 : IRF302U
Sample No. : 11
Power : DC3.3V
Mode : Tx (ch1,6,11)
FCC ID : -
IC No. : -

REPORT NO : 24HE0082-HO
REGULATION : Fcc Part15 Subpart C 15.247(a)(2)
TEST DISTANCE : -
DATE : 06/11/2004
TEMPERATURE : 22
HUMIDITY : 42%
ENGINEER : Hiroka Umeyama

[IEEE802.11b]

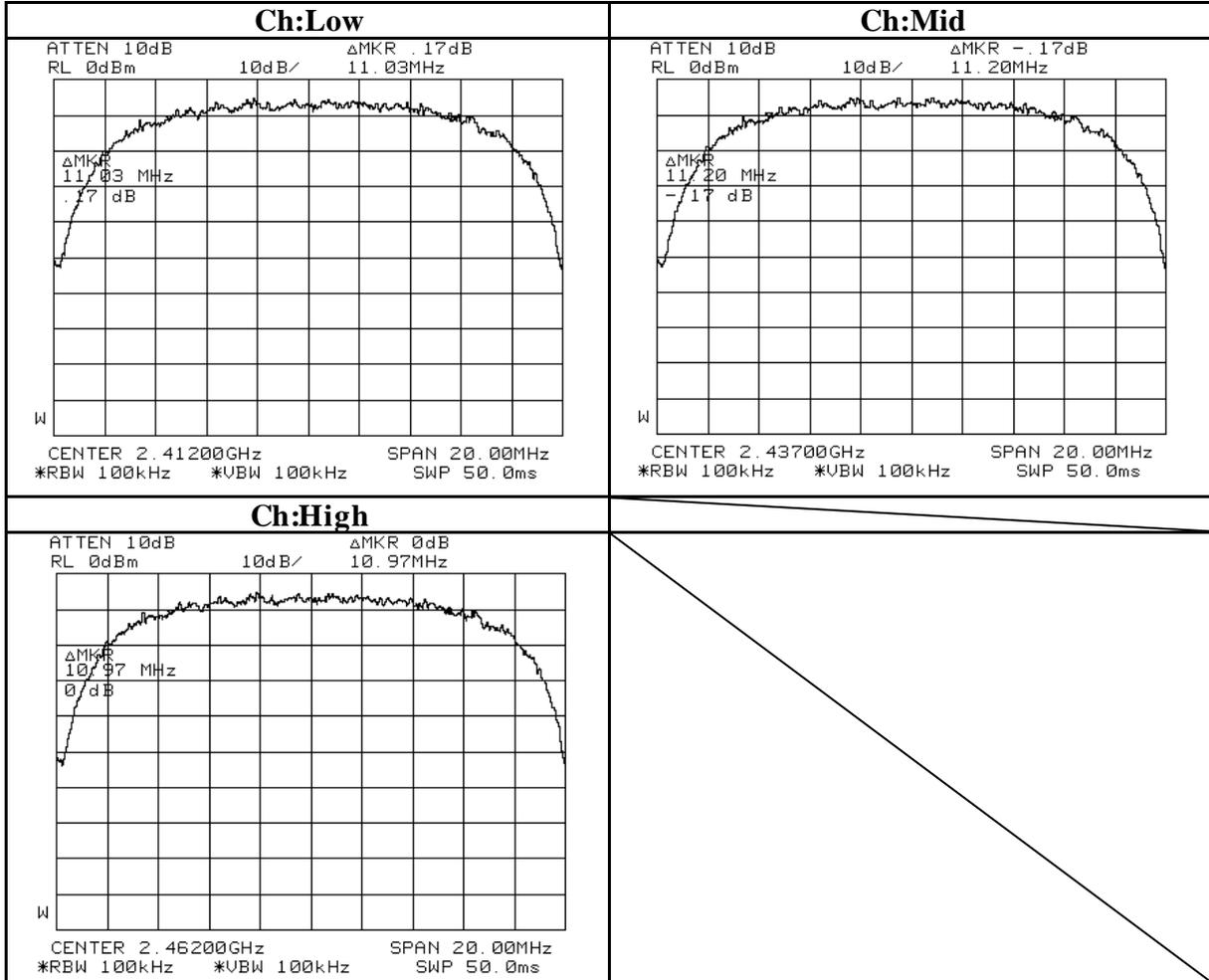
Ch	Freq. [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2412.0	11.030	500.0
Mid	2437.0	11.200	500.0
High	2462.0	10.970	500.0

[IEEE802.11g]

Ch	Freq. [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2412.0	16.558	500.0
Mid	2437.0	16.515	500.0
High	2462.0	16.050	500.0

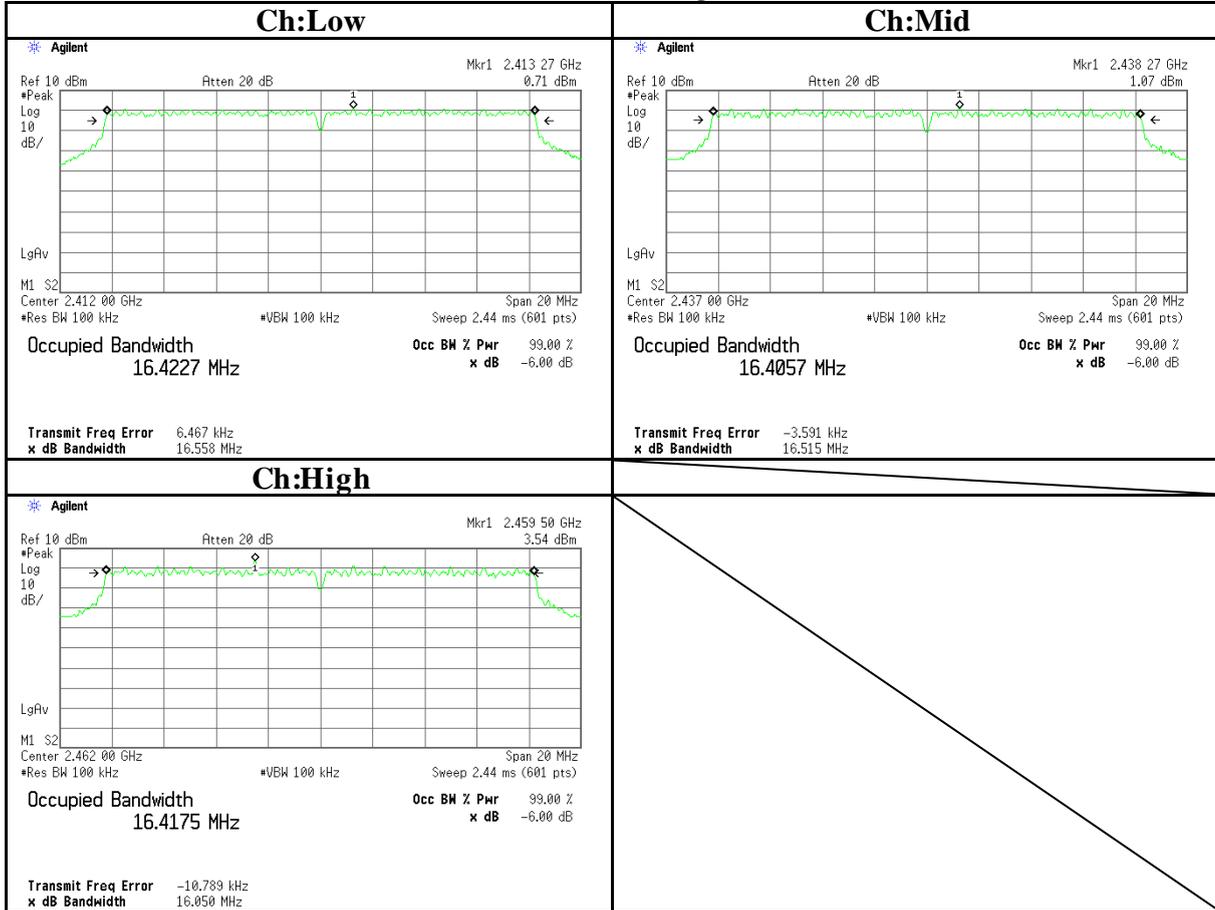
6dB Bandwidth(DSSS and other forms of modulation)

[IEEE802.11b]



6dB Bandwidth(DSSS and other forms of modulation)

[IEEE802.11g]



Maximum Peak OutPut Power (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 : IRF302U
Sample No. : 77
Power : DC3.3V
Mode : Tx(ch1,6,11)
FCC ID : -
IC No. : -

REPORT NO : 24HE0082-HO
REGULATION : Fcc Part15 Subpart C 15.247(b)(3)
TEST DISTANCE: -
DATE : 06/11/2004
TEMPERATURE: 22
HUMIDITY : 42%
ENGINEER : Hiroka Umeyama

[IEEE802.11b]

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	10.20	0.21	10.00	20.41	30.00	9.59
Mid	2437.0	10.80	0.21	10.00	21.01	30.00	8.99
High	2462.0	10.30	0.21	10.00	20.51	30.00	9.49

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

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

[IEEE802.11g]

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	10.90	0.21	10.00	21.11	30.00	8.89
Mid	2437.0	9.20	0.21	10.00	19.41	30.00	10.59
High	2462.0	9.00	0.21	10.00	19.21	30.00	10.79

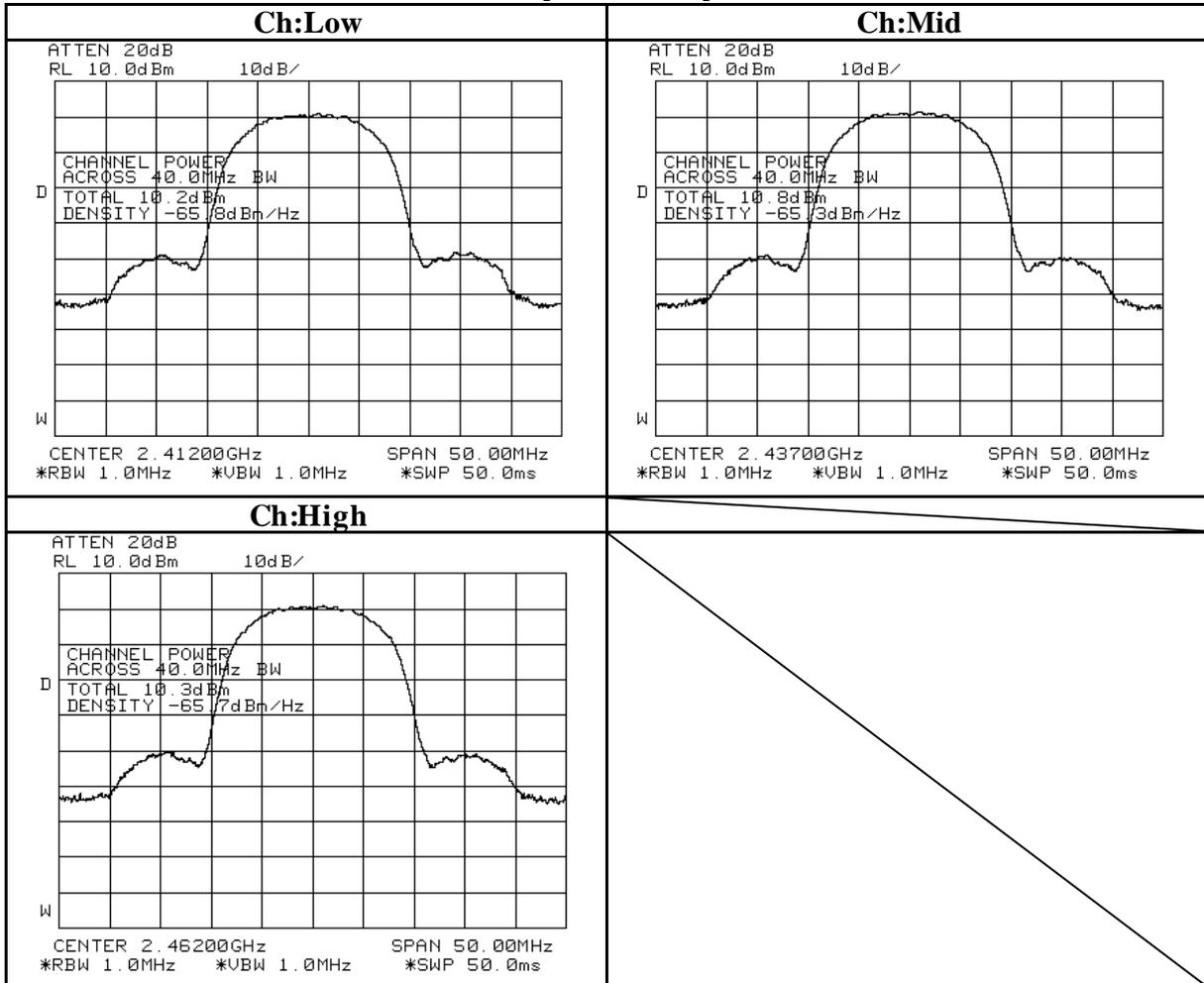
Sample Calculation:

Result = Reading + Cable Loss + Attenuator

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

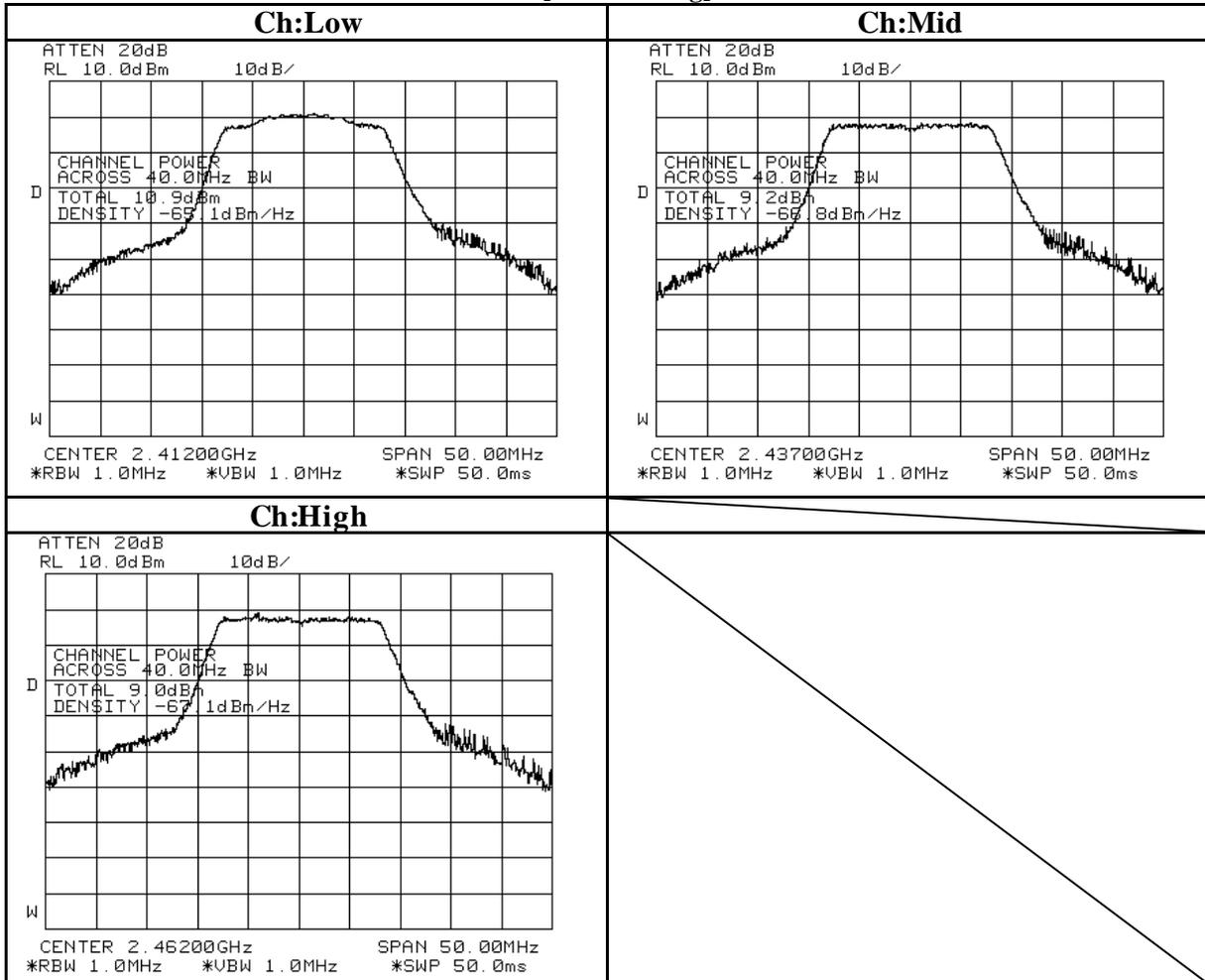
Maximum Peak OutPut Power (DSSS and other forms of modulation)

[IEEE802.11b]



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

[IEEE802.11g]



Radiated Spurious Emission(DSSS and other forms of modulation)
[IEEE802.11b]

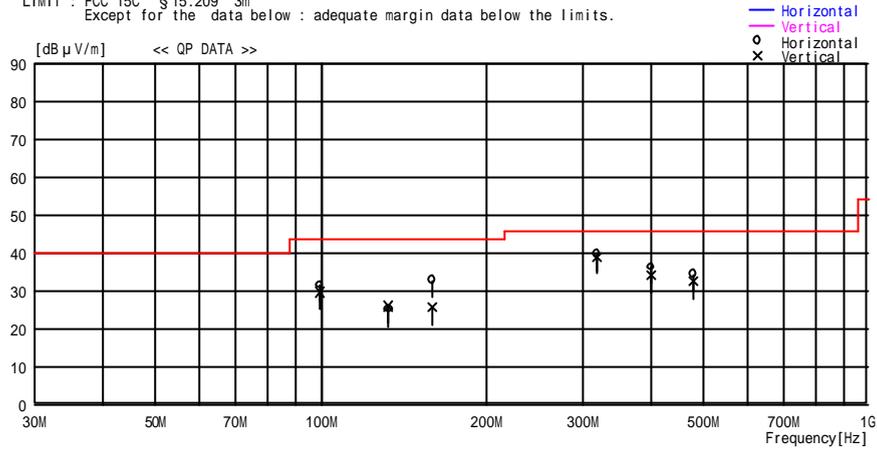
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/06/13 14:04:30

Applicant : Sony Corporation Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module Power : DC 3.3V
Model No. : IRF302U Temp./Humi. : 27 deg.C. / 55 %
Serial No. : 125 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11b, 11Mbps, ch 1(2412MHz) HOR:X-Axis,VER:Z-Axis(MAX)

LIMIT : FCC 15C §15.209 3m
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	99.699	37.4	10.1	7.2	23.0	31.7	43.5	11.8	330	63
2	132.995	27.1	13.7	7.4	23.0	25.2	43.5	18.3	182	80
3	160.001	33.0	15.2	7.6	23.0	32.8	43.5	10.7	239	245
4	320.000	39.3	14.9	8.4	22.9	39.7	46.0	6.3	100	271
5	400.001	32.0	18.3	8.9	22.8	36.4	46.0	9.6	100	254
6	480.000	29.8	18.3	9.2	22.9	34.4	46.0	11.6	215	116
----- Vertical -----										
7	99.697	35.4	10.1	7.2	23.0	29.7	43.5	13.8	100	158
8	132.962	28.0	13.7	7.4	23.0	26.1	43.5	17.4	100	0
9	160.002	25.8	15.2	7.6	23.0	25.6	43.5	17.9	100	102
10	320.000	38.7	14.9	8.4	22.9	39.1	46.0	6.9	164	340
11	400.001	29.7	18.3	8.9	22.8	34.1	46.0	11.9	115	297
12	480.000	28.0	18.3	9.2	22.9	32.6	46.0	13.4	100	153

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

Radiated Spurious Emission(DSSS and other forms of modulation)

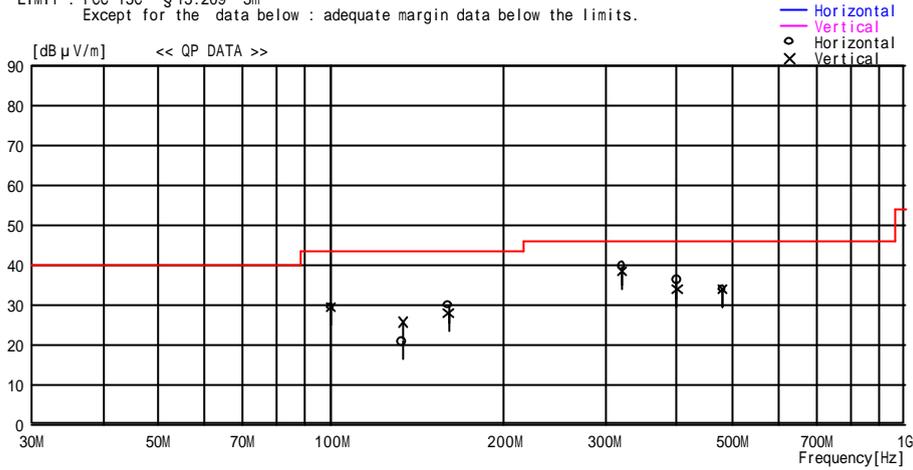
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/06/13 14:04:30

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp./Humi. : 27 deg.C. / 55 %
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11b, 11Mbps, ch 6(2437MHz) HOR:X-Axis,VER:Z-Axis(MAX)

LIMIT : FCC 15C §15.209 3m
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	99.703	35.2	10.1	7.2	23.0	29.5	43.5	14.0	300	70
2	132.772	22.7	13.7	7.4	23.0	20.8	43.5	22.7	167	249
3	160.004	30.2	15.2	7.6	23.0	30.0	43.5	13.5	100	260
4	320.001	39.3	14.9	8.4	22.9	39.7	46.0	6.3	100	253
5	399.999	31.9	18.3	8.9	22.8	36.3	46.0	9.7	100	262
6	480.000	29.5	18.3	9.2	22.9	34.1	46.0	11.9	209	122
----- Vertical -----										
7	99.700	35.3	10.1	7.2	23.0	29.6	43.5	13.9	100	148
8	132.996	27.7	13.7	7.4	23.0	25.8	43.5	17.7	100	360
9	160.006	28.1	15.2	7.6	23.0	27.9	43.5	15.6	100	293
10	320.001	38.1	14.9	8.4	22.9	38.5	46.0	7.5	156	360
11	400.000	29.5	18.3	8.9	22.8	33.9	46.0	12.1	118	307
12	480.001	29.3	18.3	9.2	22.9	33.9	46.0	12.1	100	0

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

Radiated Spurious Emission(DSSS and other forms of modulation)

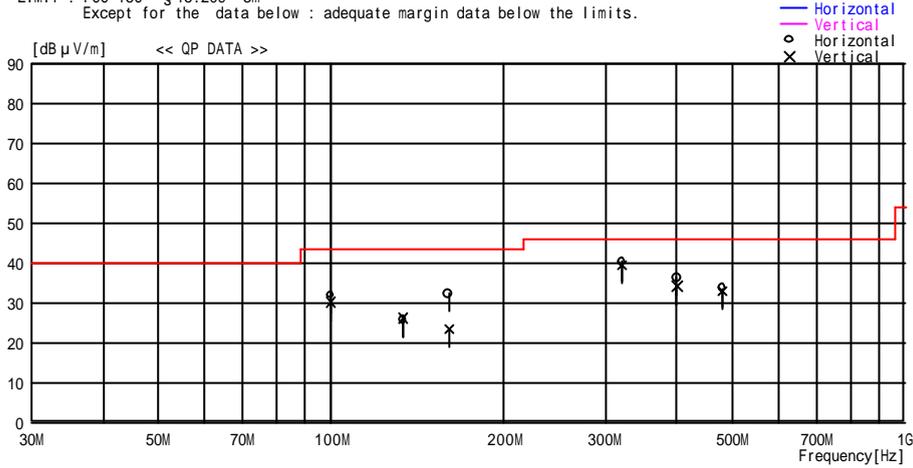
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/06/13 14:04:30

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp./Humi. : 27 deg.C. / 55 %
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11b, 11Mbps, ch 11(2462MHz) HOR:X-Axis,VER:Z-Axis(MAX)

LIMIT : FCC 15C §15.209 3m
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	99.701	37.7	10.1	7.2	23.0	32.0	43.5	11.5	289	70
2	132.968	27.7	13.7	7.4	23.0	25.8	43.5	17.7	162	267
3	160.003	32.6	15.2	7.6	23.0	32.4	43.5	11.1	156	253
4	320.001	39.9	14.9	8.4	22.9	40.3	46.0	5.7	100	92
5	400.001	32.0	18.3	8.9	22.8	36.4	46.0	9.6	100	267
6	480.001	29.1	18.3	9.2	22.9	33.7	46.0	12.3	211	132
----- Vertical -----										
7	99.699	35.9	10.1	7.2	23.0	30.2	43.5	13.3	100	114
8	132.999	28.1	13.7	7.4	23.0	26.2	43.5	17.3	100	1
9	160.047	23.6	15.2	7.6	23.0	23.4	43.5	20.1	100	0
10	320.002	39.1	14.9	8.4	22.9	39.5	46.0	6.5	152	360
11	400.000	29.8	18.3	8.9	22.8	34.2	46.0	11.8	118	287
12	480.000	28.5	18.3	9.2	22.9	33.1	46.0	12.9	100	360

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

Radiated Spurious Emission(DSSS and other forms of modulation)

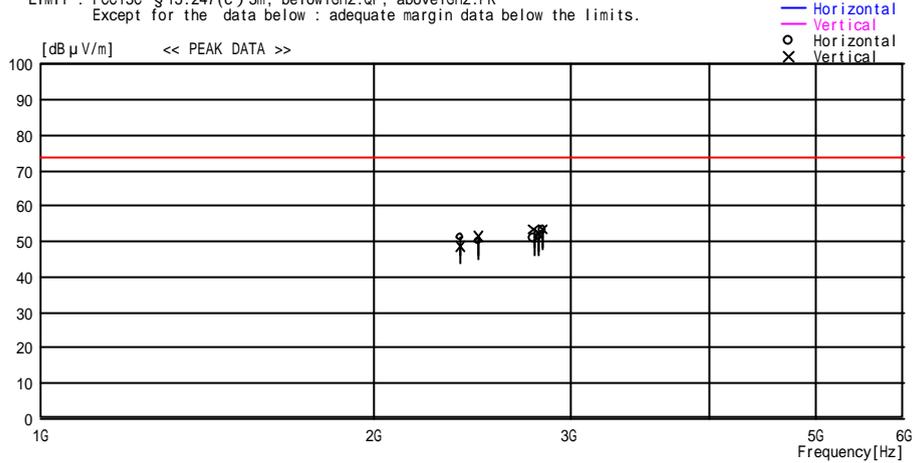
DATA OF RADIATED EMISSION TEST

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

Applicant : Sony Corporation Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module Power : DC3.3V
Model No. : IRF302U Temp /Humi% : 24 / 54
Serial No. : 125 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11b,11Mbps,ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz),Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below1GHz:QP, above1GHz:PK
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING PK [dB μV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB μV/m]	LIMIT [dB μV/m]	MARGIN [dB]	
----- Horizontal -----									
1	2390.000	50.2	30.8	6.4	36.3	51.1	74.0	22.9	Tx:Ch1
2	2483.500	48.8	31.0	6.5	36.2	50.1	74.0	23.9	Tx:Ch11
3	2786.000	48.6	31.8	6.9	36.4	50.9	74.0	23.1	Tx:Ch1
4	2811.000	48.9	31.9	6.9	36.4	51.3	74.0	22.7	Tx:Ch6
5	2836.000	50.6	31.9	7.0	36.4	53.1	74.0	20.9	Tx:Ch11
----- Vertical -----									
6	2390.000	47.8	30.8	6.4	36.3	48.7	74.0	25.3	Tx:Ch1
7	2483.500	50.1	31.0	6.5	36.2	51.4	74.0	22.6	Tx:Ch11
8	2786.000	51.3	31.8	6.9	36.4	53.6	74.0	20.4	Tx:Ch1
9	2811.000	50.0	31.9	6.9	36.4	52.4	74.0	21.6	Tx:Ch6
10	2836.000	51.1	31.9	7.0	36.4	53.6	74.0	20.4	Tx:Ch11

CHART:WITHOUT 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)

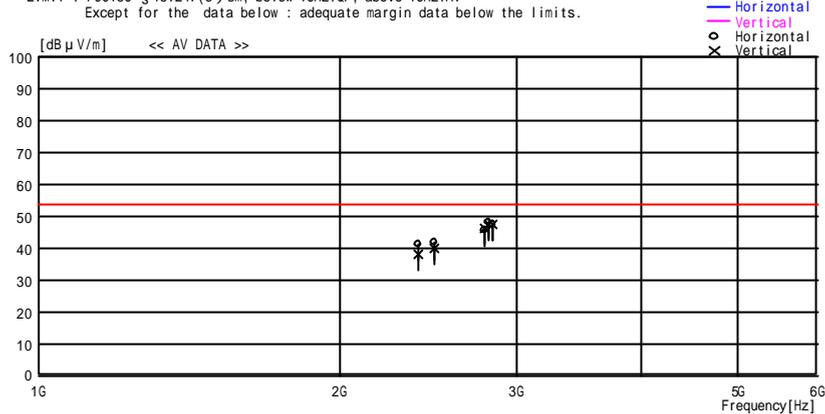
DATA OF RADIATED EMISSION TEST

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

Applicant : Sony Corporation Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module Power : DC3.3V
Model No. : IRF302U Temp /Humi% : 24 / 54
Serial No. : 125 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11b,11Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max-axis(Z)

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 AV [dB μV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB μV/m]	LIMIT [dB μV/m]	MARGIN [dB]	
----- Horizontal -----									
1	2390.000	40.4	30.8	6.4	36.3	41.3	54.0	12.7	Tx:Ch1
2	2483.500	40.4	31.0	6.5	36.2	41.7	54.0	12.3	Tx:Ch11
3	2786.000	43.2	31.8	6.9	36.4	45.5	54.0	8.5	Tx:Ch1
4	2811.000	46.1	31.9	6.9	36.4	48.5	54.0	5.5	Tx:Ch6
5	2836.000	45.0	31.9	7.0	36.4	47.5	54.0	6.5	Tx:Ch11
----- Vertical -----									
6	2390.000	37.2	30.8	6.4	36.3	38.1	54.0	15.9	Tx:Ch1
7	2483.500	39.1	31.0	6.5	36.2	40.4	54.0	13.6	Tx:Ch11
8	2786.000	44.2	31.8	6.9	36.4	46.5	54.0	7.5	Tx:Ch1
9	2811.000	45.0	31.9	6.9	36.4	47.4	54.0	6.6	Tx:Ch6
10	2836.000	45.3	31.9	7.0	36.4	47.8	54.0	6.2	Tx:Ch11

CHART: WITHOUT FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN Page:

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		Limit [dBμV/m]	MARGIN	
		HOR [dBμV/m]	VER [dBμV/m]					HOR [dB]	VER [dB]			
20dBc(Fundamental 2402MHz) (RBW: 100kHz, VBW: 100kHz)												
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator												
1	2412.0	108.5	107.3	30.9	36.3	6.4	10.0	109.5	108.3	-	-	-
2	2400.0	51.3	54.0	30.8	36.3	6.4	10.0	52.2	54.9	Funda-20dB	37.3	33.4
3	5572.0	46.5	46.3	36.4	35.6	9.5	0.0	56.8	56.6	Funda-20dB	32.7	31.7
4	5622.0	48.8	46.4	36.5	35.6	9.6	0.0	59.3	56.9	Funda-20dB	30.2	31.4
5	5672.0	48.9	47.3	36.5	35.7	9.6	0.0	59.3	57.7	Funda-20dB	30.2	30.6

Tx:Ch1
Tx:Ch1
Tx:Ch1
Tx:Ch6
Tx:Ch11

Radiated Spurious Emission(DSSS and other forms of modulation)

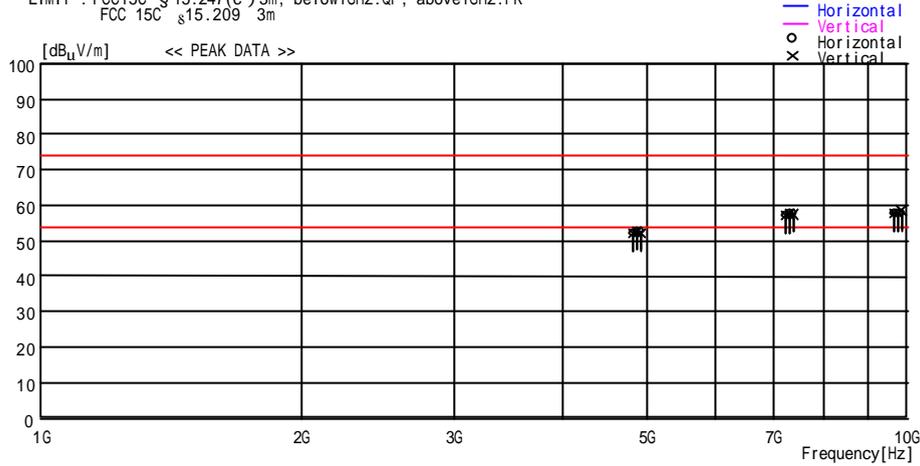
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/18 20:33:28

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp /Humi% : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11b,11Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below1GHz:QP, above1GHz:PK
FCC 15C §15.209 3m



No.	FREQ [MHz]	READING PK [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	
----- Horizontal -----									
1	4824.000	44.1	35.2	9.0	36.1	52.2	74.0	21.9	Tx:Ch1
2	4874.000	44.3	35.4	9.0	36.1	52.6	74.0	21.4	Tx:Ch6
3	4924.000	44.0	35.7	9.2	36.1	52.8	74.0	21.2	Tx:Ch11
4	7236.000	44.5	37.7	10.6	35.6	57.2	74.0	16.8	Tx:Ch1
5	7311.000	44.5	37.9	10.7	35.7	57.4	74.0	16.6	Tx:Ch6
6	7386.000	44.5	38.1	10.8	35.7	57.7	74.0	16.3	Tx:Ch11
7	9648.000	44.5	37.1	12.4	36.3	57.7	74.0	16.3	Tx:Ch1
8	9748.000	44.5	37.1	12.5	36.3	57.8	74.0	16.2	Tx:Ch6
9	9848.000	44.5	37.0	12.5	36.3	57.7	74.0	16.3	Tx:Ch11
----- Vertical -----									
10	4824.000	44.0	35.2	9.0	36.1	52.1	74.0	21.9	Tx:Ch1
11	4874.000	44.2	35.4	9.0	36.1	52.5	74.0	21.5	Tx:Ch6
12	4924.000	43.3	35.7	9.2	36.1	52.1	74.0	21.9	Tx:Ch11
13	7236.000	44.4	37.7	10.6	35.6	57.1	74.0	16.9	Tx:Ch1
14	7311.000	44.5	37.9	10.7	35.7	57.4	74.0	16.6	Tx:Ch6
15	7386.000	44.3	38.1	10.8	35.7	57.5	74.0	16.5	Tx:Ch11
16	9648.000	44.4	37.1	12.4	36.3	57.6	74.0	16.4	Tx:Ch1
17	9748.000	44.3	37.1	12.5	36.3	57.6	74.0	16.4	Tx:Ch6
18	9848.000	45.2	37.0	12.5	36.3	58.4	74.0	15.6	Tx:Ch11

CHART:WITHOUT 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)

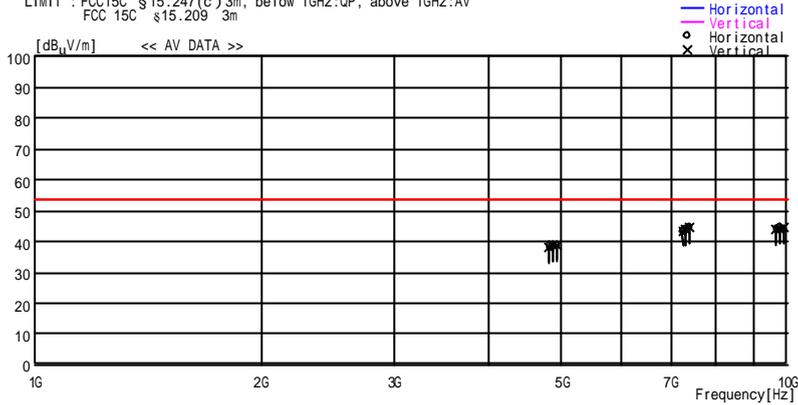
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/18 20:33:28

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HD
Power : DC 3.3V
Temp /Humi% : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks: Transmitting IEEE802.11b,11Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max -axis(Z)

LIMIT : FCC15C §15.247(c)3m, below 1GHz:QP, above 1GHz:AV
FCC 15C §15.209 3m



No.	FREQ [MHz]	READING AV [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	
----- Horizontal -----									
1	4824.000	30.4	35.2	9.0	36.1	38.5	54.0	15.5	Tx:Ch1
2	4874.000	30.3	35.4	9.0	36.1	38.6	54.0	15.4	Tx:Ch6
3	4924.000	30.2	35.7	9.2	36.1	39.0	54.0	15.0	Tx:Ch11
4	7236.000	30.8	37.7	10.6	35.6	43.5	54.0	10.5	Tx:Ch1
5	7311.000	30.8	37.9	10.7	35.7	43.7	54.0	10.3	Tx:Ch6
6	7386.000	31.3	38.1	10.8	35.7	44.5	54.0	9.5	Tx:Ch11
7	9648.000	30.9	37.1	12.4	36.3	44.1	54.0	9.9	Tx:Ch1
8	9748.000	31.0	37.1	12.5	36.3	44.3	54.0	9.7	Tx:Ch6
9	9848.000	31.0	37.0	12.5	36.3	44.2	54.0	9.8	Tx:Ch11
----- Vertical -----									
10	4824.000	30.1	35.2	9.0	36.1	38.2	54.0	15.8	Tx:Ch1
11	4874.000	30.4	35.4	9.0	36.1	38.7	54.0	15.3	Tx:Ch6
12	4924.000	30.0	35.7	9.2	36.1	38.8	54.0	15.2	Tx:Ch11
13	7236.000	30.8	37.7	10.6	35.6	43.5	54.0	10.5	Tx:Ch1
14	7311.000	30.9	37.9	10.7	35.7	43.8	54.0	10.2	Tx:Ch6
15	7386.000	31.1	38.1	10.8	35.7	44.3	54.0	9.7	Tx:Ch11
16	9648.000	30.9	37.1	12.4	36.3	44.1	54.0	9.9	Tx:Ch1
17	9748.000	30.9	37.1	12.5	36.3	44.2	54.0	9.8	Tx:Ch1
18	9848.000	31.1	37.0	12.5	36.3	44.3	54.0	9.7	Tx:Ch6

CHART:WITHOUT 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)

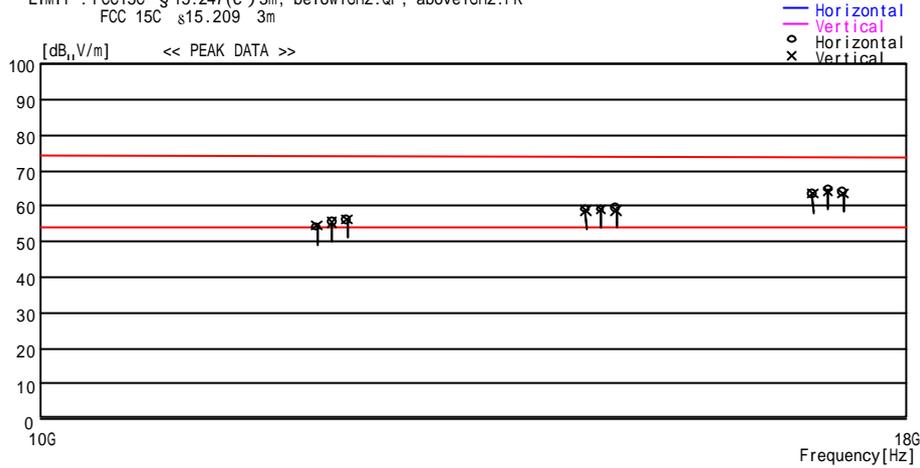
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/19 00:11:16

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp /Humi% : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11b,11Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below1GHz:QP, above1GHz:PK
FCC 15C §15.209 3m



No.	FREQ [MHz]	READING PK [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	
----- Horizontal -----									
1	12060.000	44.6	40.8	4.5	35.7	54.2	74.0	19.9	Tx:Ch1
2	12185.000	45.0	41.4	4.6	35.6	55.4	74.0	18.6	Tx:Ch6
3	12310.000	45.3	41.9	4.6	35.6	56.2	74.0	17.8	Tx:Ch11
4	14472.000	45.5	42.3	5.9	34.6	59.1	74.0	14.9	Tx:Ch1
5	14622.000	45.3	42.6	6.0	34.8	59.1	74.0	14.9	Tx:Ch6
6	14772.000	45.5	42.8	6.1	34.9	59.5	74.0	14.5	Tx:Ch11
7	16884.000	44.8	46.4	7.5	35.5	63.2	74.0	10.8	Tx:Ch1
8	17059.000	46.0	46.6	7.5	35.4	64.7	74.0	9.3	Tx:Ch6
9	17234.000	45.8	45.9	7.4	35.3	63.8	74.0	10.2	Tx:Ch11
----- Vertical -----									
10	12060.000	45.1	40.8	4.5	35.7	54.7	74.0	19.3	Tx:Ch1
11	12185.000	44.9	41.4	4.6	35.6	55.3	74.0	18.7	Tx:Ch6
12	12310.000	45.2	41.9	4.6	35.6	56.1	74.0	17.9	Tx:Ch11
13	14472.000	45.1	42.3	5.9	34.6	58.7	74.0	15.3	Tx:Ch1
14	14622.000	45.2	42.6	6.0	34.8	59.0	74.0	15.0	Tx:Ch6
15	14772.000	44.9	42.8	6.1	34.9	58.9	74.0	15.1	Tx:Ch11
16	16884.000	45.2	46.4	7.5	35.5	63.6	74.0	10.4	Tx:Ch1
17	17059.000	45.5	46.6	7.5	35.4	64.2	74.0	9.8	Tx:Ch6
18	17234.000	45.7	45.9	7.4	35.3	63.7	74.0	10.3	Tx:Ch11

CHART:WITHOUT 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)

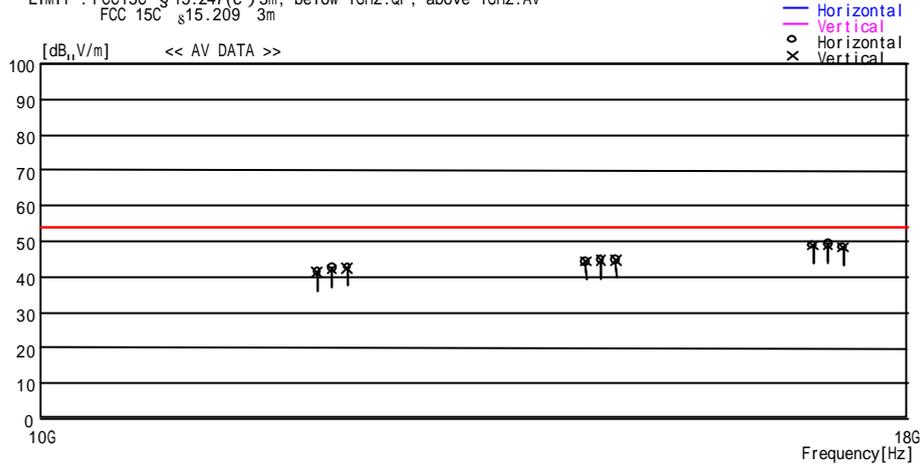
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/19 00:11:16

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp /Humi% : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11b,11Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below 1GHz:QP, above 1GHz:AV
FCC 15C §15.209 3m



No.	FREQ [MHz]	READING AV [dB1, V]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB1, V/m]	LIMIT [dB1, V/m]	MARGIN [dB]	
----- Horizontal -----									
1	12060.000	31.6	40.8	4.5	35.7	41.2	54.0	12.8	Tx:Ch1
2	12185.000	32.0	41.4	4.6	35.6	42.4	54.0	11.6	Tx:Ch6
3	12310.000	31.8	41.9	4.6	35.6	42.7	54.0	11.3	Tx:Ch11
4	14472.000	30.8	42.3	5.9	34.6	44.4	54.0	9.6	Tx:Ch1
5	14622.000	30.9	42.6	6.0	34.8	44.7	54.0	9.3	Tx:Ch6
6	14772.000	30.8	42.8	6.1	34.9	44.8	54.0	9.2	Tx:Ch11
7	16884.000	30.5	46.4	7.5	35.5	48.9	54.0	5.1	Tx:Ch1
8	17059.000	30.5	46.6	7.5	35.4	49.2	54.0	4.8	Tx:Ch6
9	17234.000	30.4	45.9	7.4	35.3	48.4	54.0	5.6	Tx:Ch11
----- Vertical -----									
10	12060.000	31.7	40.8	4.5	35.7	41.3	54.0	12.7	Tx:Ch1
11	12185.000	31.7	41.4	4.6	35.6	42.1	54.0	11.9	Tx:Ch6
12	12310.000	31.6	41.9	4.6	35.6	42.5	54.0	11.5	Tx:Ch11
13	14472.000	30.9	42.3	5.9	34.6	44.5	54.0	9.5	Tx:Ch1
14	14622.000	30.8	42.6	6.0	34.8	44.6	54.0	9.4	Tx:Ch6
15	14772.000	30.7	42.8	6.1	34.9	44.7	54.0	9.3	Tx:Ch11
16	16884.000	30.4	46.4	7.5	35.5	48.8	54.0	5.2	Tx:Ch1
17	17059.000	30.3	46.6	7.5	35.4	49.0	54.0	5.0	Tx:Ch6
18	17234.000	30.4	45.9	7.4	35.3	48.4	54.0	5.6	Tx:Ch11

CHART:WITHOUT 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)

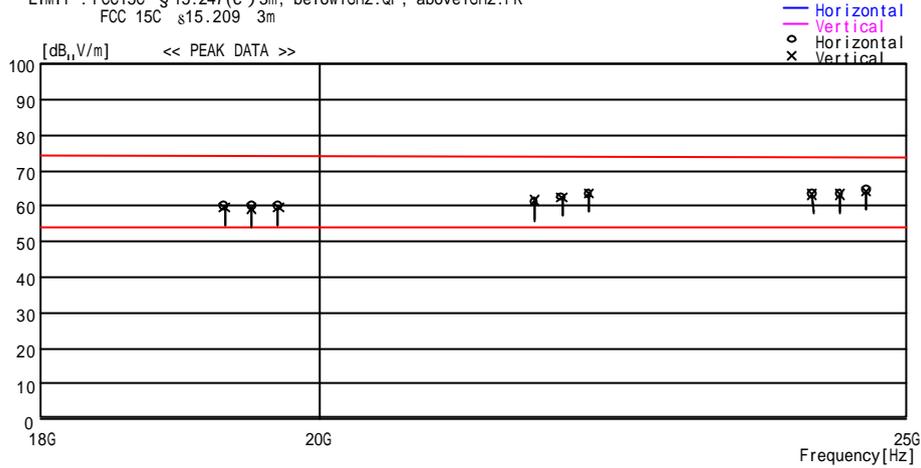
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/19 01:56:12

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp /Humidity : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11b,11Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below1GHz:QP, above1GHz:PK
FCC 15C §15.209 3m



No.	FREQ [MHz]	READING PK [dB, V]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB, V/m]	LIMIT [dB, V/m]	MARGIN [dB]	
----- Horizontal -----									
1	19296.000	43.6	41.8	9.4	34.9	59.9	74.0	14.1	Tx:Ch1
2	19496.000	44.0	41.2	9.5	34.9	59.8	74.0	14.2	Tx:Ch6
3	19696.000	44.3	41.2	9.7	35.4	59.8	74.0	14.2	Tx:Ch11
4	21708.000	44.6	40.9	10.8	35.3	61.0	74.0	13.0	Tx:Ch1
5	21933.000	45.1	41.0	11.3	35.0	62.4	74.0	11.6	Tx:Ch6
6	22158.000	45.2	41.2	11.9	35.0	63.3	74.0	10.7	Tx:Ch11
7	24120.000	45.5	41.1	12.7	36.0	63.3	74.0	10.7	Tx:Ch1
8	24370.000	45.2	41.2	13.4	36.6	63.2	74.0	10.8	Tx:Ch6
9	24620.000	46.0	41.3	13.9	36.8	64.4	74.0	9.6	Tx:Ch11
----- Vertical -----									
10	19296.000	43.3	41.8	9.4	34.9	59.6	74.0	14.4	Tx:Ch1
11	19496.000	43.5	41.2	9.5	34.9	59.3	74.0	14.7	Tx:Ch6
12	19696.000	44.0	41.2	9.7	35.4	59.5	74.0	14.5	Tx:Ch11
13	21708.000	45.1	40.9	10.8	35.3	61.5	74.0	12.5	Tx:Ch1
14	21933.000	45.0	41.0	11.3	35.0	62.3	74.0	11.7	Tx:Ch6
15	22158.000	45.5	41.2	11.9	35.0	63.6	74.0	10.4	Tx:Ch11
16	24120.000	45.3	41.1	12.7	36.0	63.1	74.0	10.9	Tx:Ch1
17	24370.000	45.4	41.2	13.4	36.6	63.4	74.0	10.6	Tx:Ch6
18	24620.000	45.7	41.3	13.9	36.8	64.1	74.0	9.9	Tx:Ch11

CHART:WITHOUT 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)

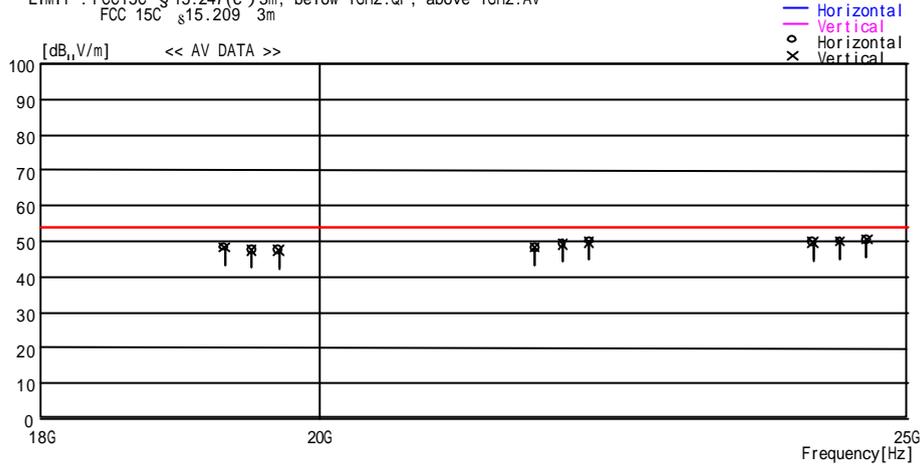
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/19 01:56:12

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp /Humi% : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11b,11Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below 1GHz:QP, above 1GHz:AV
FCC 15C §15.209 3m



No.	FREQ [MHz]	READING AV [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	
----- Horizontal -----									
1	19296.000	32.0	41.8	9.4	34.9	48.3	54.0	5.7	Tx:Ch1
2	19496.000	31.9	41.2	9.5	34.9	47.7	54.0	6.3	Tx:Ch6
3	19696.000	32.0	41.2	9.7	35.4	47.5	54.0	6.5	Tx:Ch11
4	21708.000	31.8	40.9	10.8	35.3	48.2	54.0	5.8	Tx:Ch1
5	21933.000	31.9	41.0	11.3	35.0	49.2	54.0	4.8	Tx:Ch6
6	22158.000	32.0	41.2	11.9	35.0	50.1	54.0	3.9	Tx:Ch11
7	24120.000	32.0	41.1	12.7	36.0	49.8	54.0	4.2	Tx:Ch1
8	24370.000	32.1	41.2	13.4	36.6	50.1	54.0	3.9	Tx:Ch6
9	24620.000	32.0	41.3	13.9	36.8	50.4	54.0	3.6	Tx:Ch11
----- Vertical -----									
10	19296.000	31.9	41.8	9.4	34.9	48.2	54.0	5.8	Tx:Ch1
11	19496.000	31.8	41.2	9.5	34.9	47.6	54.0	6.4	Tx:Ch6
12	19696.000	31.9	41.2	9.7	35.4	47.4	54.0	6.6	Tx:Ch11
13	21708.000	31.8	40.9	10.8	35.3	48.2	54.0	5.8	Tx:Ch1
14	21933.000	31.9	41.0	11.3	35.0	49.2	54.0	4.8	Tx:Ch6
15	22158.000	31.8	41.2	11.9	35.0	49.9	54.0	4.1	Tx:Ch11
16	24120.000	31.9	41.1	12.7	36.0	49.7	54.0	4.3	Tx:Ch1
17	24370.000	32.1	41.2	13.4	36.6	50.1	54.0	3.9	Tx:Ch6
18	24620.000	32.2	41.3	13.9	36.8	50.6	54.0	3.4	Tx:Ch11

CHART:WITHOUT 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)
[IEEE802.11g]

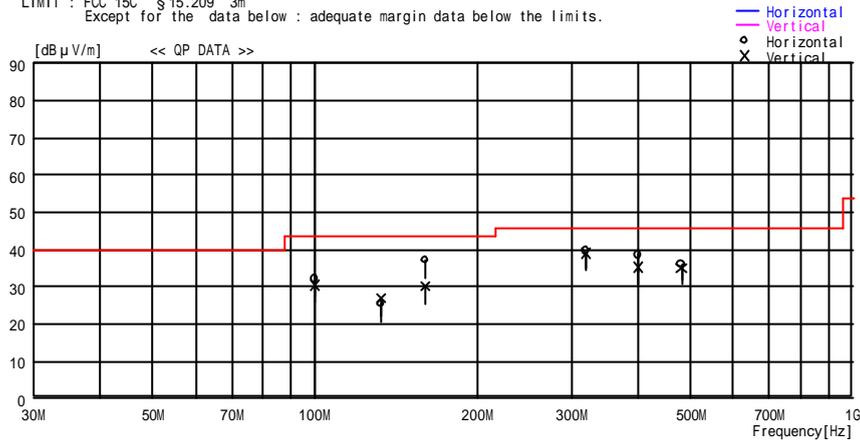
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/06/13 14:04:30

Applicant : Sony Corporation Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module Power : DC 3.3V
Model No. : IRF302U Temp./Humi. : 27 deg.C. / 55 %
Serial No. : 125 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11g, 54Mbps, ch 1(2412MHz) HOR:X-Axis,VER:Z-Axis(MAX)

LIMIT : FCC 15C §15.209 3m
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING OP [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	99.699	37.8	10.1	7.2	23.0	32.1	43.5	11.4	310	66
2	132.964	27.1	13.7	7.4	23.0	25.2	43.5	18.3	187	258
3	160.002	37.2	15.2	7.6	23.0	37.0	43.5	6.5	217	252
4	320.000	39.1	14.9	8.4	22.9	39.5	46.0	6.5	100	109
5	400.001	34.1	18.3	8.9	22.8	38.5	46.0	7.5	100	246
6	480.000	31.5	18.3	9.2	22.9	36.1	46.0	9.9	211	116
----- Vertical -----										
7	99.669	36.2	10.1	7.2	23.0	30.5	43.5	13.0	100	79
8	132.903	28.8	13.7	7.4	23.0	26.9	43.5	16.6	100	360
9	160.004	30.3	15.2	7.6	23.0	30.1	43.5	13.4	100	0
10	320.000	38.6	14.9	8.4	22.9	39.0	46.0	7.0	157	352
11	399.999	30.9	18.3	8.9	22.8	35.3	46.0	10.7	124	0
12	480.000	30.5	18.3	9.2	22.9	35.1	46.0	10.9	100	360

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

Radiated Spurious Emission(DSSS and other forms of modulation)

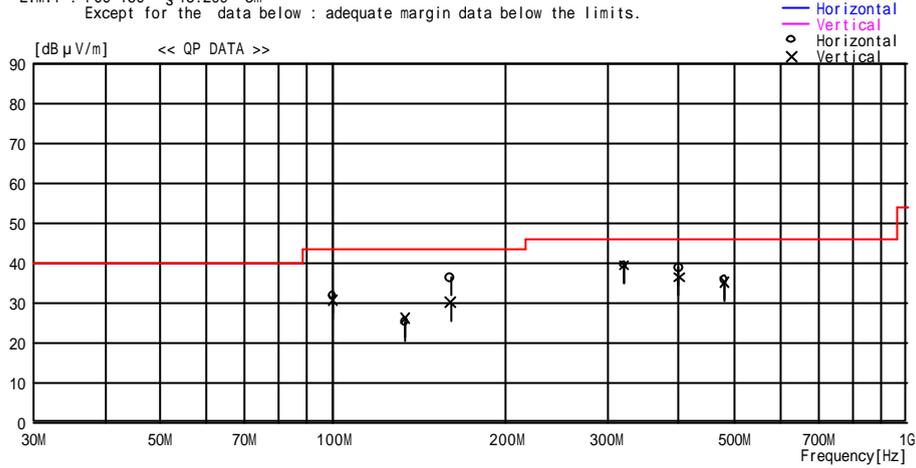
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/06/13 14:04:30

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp./Humi. : 27 deg.C. / 55 %
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11g, 54Mbps, ch 6(2437MHz) HOR:X-Axis,VER:Z-Axis(MAX)

LIMIT : FCC 15C §15.209 3m
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	99.701	37.6	10.1	7.2	23.0	31.9	43.5	11.6	316	57
2	132.965	27.1	13.7	7.4	23.0	25.2	43.5	18.3	199	261
3	160.000	36.6	15.2	7.6	23.0	36.4	43.5	7.1	181	234
4	320.003	39.1	14.9	8.4	22.9	39.5	46.0	6.5	100	257
5	400.004	34.5	18.3	8.9	22.8	38.9	46.0	7.1	100	256
6	480.000	31.1	18.3	9.2	22.9	35.7	46.0	10.3	208	128
----- Vertical -----										
7	99.699	36.5	10.1	7.2	23.0	30.8	43.5	12.7	100	68
8	132.968	28.1	13.7	7.4	23.0	26.2	43.5	17.3	100	360
9	160.001	30.4	15.2	7.6	23.0	30.2	43.5	13.3	100	70
10	320.001	39.0	14.9	8.4	22.9	39.4	46.0	6.6	140	346
11	400.001	32.1	18.3	8.9	22.8	36.5	46.0	9.5	119	279
12	480.001	30.6	18.3	9.2	22.9	35.2	46.0	10.8	100	0

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

Radiated Spurious Emission(DSSS and other forms of modulation)

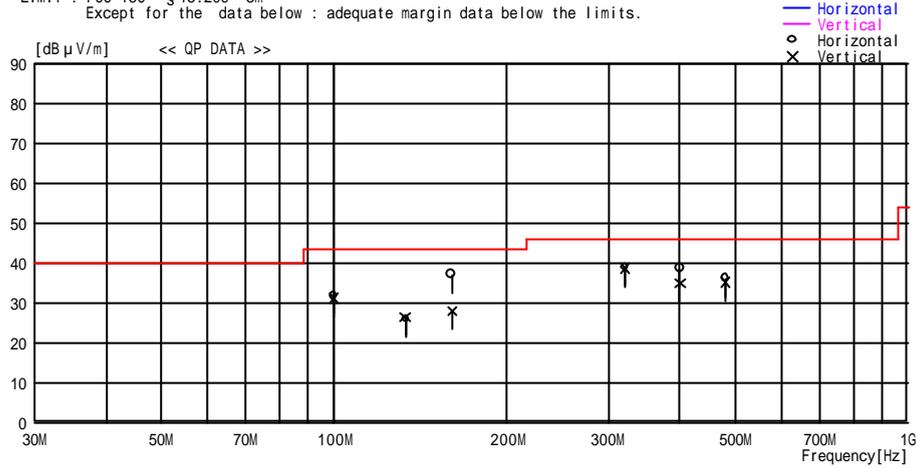
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/06/13 14:04:30

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp./Humi. : 27 deg.C. / 55 %
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11g, 54Mbps, ch 11(2462MHz) HOR:X-Axis,VER:Z-Axis(MAX)

LIMIT : FCC 15C §15.209 3m
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	99.701	37.6	10.1	7.2	23.0	31.9	43.5	11.6	307	68
2	132.966	27.8	13.7	7.4	23.0	25.9	43.5	17.6	171	253
3	160.002	37.4	15.2	7.6	23.0	37.2	43.5	6.3	229	255
4	320.005	38.6	14.9	8.4	22.9	39.0	46.0	7.0	100	258
5	400.003	34.4	18.3	8.9	22.8	38.8	46.0	7.2	100	261
6	480.003	31.6	18.3	9.2	22.9	36.2	46.0	9.8	209	117
----- Vertical -----										
7	99.702	36.9	10.1	7.2	23.0	31.2	43.5	12.3	100	59
8	132.923	28.4	13.7	7.4	23.0	26.5	43.5	17.0	100	360
9	160.046	28.3	15.2	7.6	23.0	28.1	43.5	15.4	100	82
10	320.001	38.3	14.9	8.4	22.9	38.7	46.0	7.3	166	360
11	400.002	30.7	18.3	8.9	22.8	35.1	46.0	10.9	100	0
12	480.002	30.7	18.3	9.2	22.9	35.3	46.0	10.7	100	360

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

Radiated Spurious Emission(DSSS and other forms of modulation)

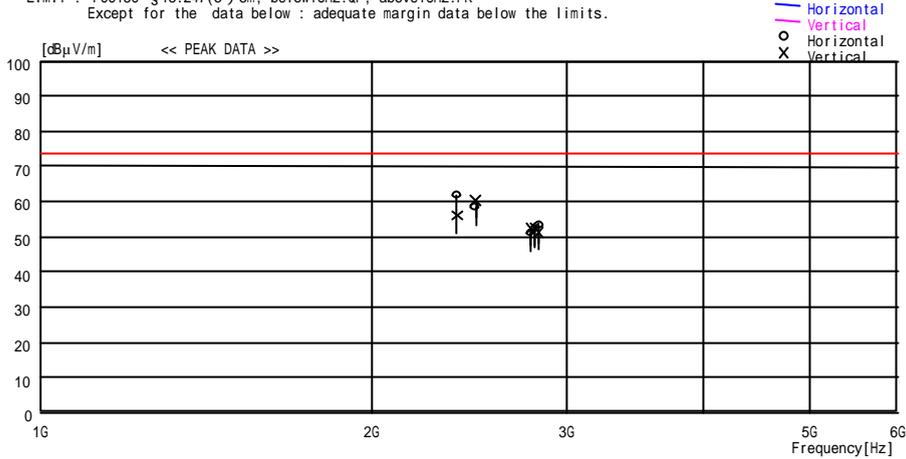
DATA OF RADIATED EMISSION TEST

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

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC3.3V
Temp /Humi% : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11g,54Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz),Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below1GHz:QP, above1GHz:PK
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING PK [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	
----- Horizontal -----									
1	2390.000	60.9	30.8	6.4	36.3	61.8	74.0	12.2	Tx:Ch1
2	2483.500	57.1	31.0	6.5	36.2	58.4	74.0	15.6	Tx:Ch11
3	2786.000	48.7	31.8	6.9	36.4	51.0	74.0	23.0	Tx:Ch1
4	2811.000	49.8	31.9	6.9	36.4	52.2	74.0	21.8	Tx:Ch6
5	2836.000	50.9	31.9	7.0	36.4	53.4	74.0	20.6	Tx:Ch11
----- Vertical -----									
6	2390.000	55.3	30.8	6.4	36.3	56.2	74.0	17.8	Tx:Ch1
7	2483.500	59.2	31.0	6.5	36.2	60.5	74.0	13.5	Tx:Ch11
8	2786.000	50.2	31.8	6.9	36.4	52.5	74.0	21.5	Tx:Ch1
9	2811.000	50.5	31.9	6.9	36.4	52.9	74.0	21.1	Tx:Ch6
10	2836.000	48.9	31.9	7.0	36.4	51.4	74.0	22.6	Tx:Ch11

CHART:WITHOUT 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)

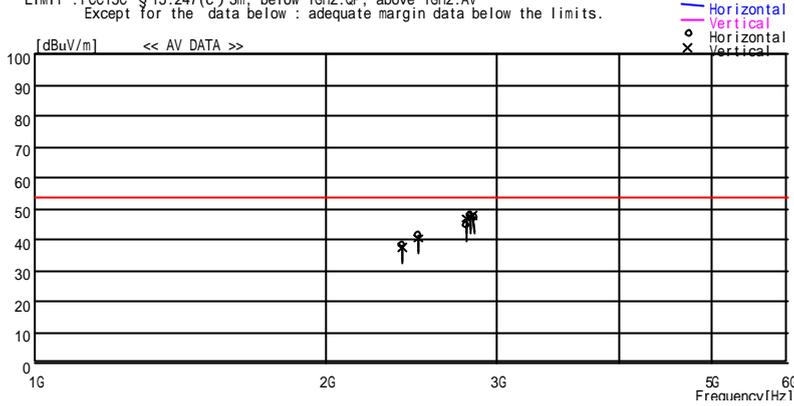
DATA OF RADIATED EMISSION TEST

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

Applicant : Sony Corporation Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module Power : DC3.3V
Model No. : IRF302U Temp./Humi% : 24 / 54
Serial No. : 125 Operator : Hiroka Umeyama

Mode / Remarks: Transmitting IEEE802.11g,54Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz),Max-axis(Z)

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 AV [dBuV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	
----- Horizontal -----									
1	2390.000	37.2	30.8	6.4	36.3	38.1	54.0	15.9	Tx:Ch1
2	2483.500	40.3	31.0	6.5	36.2	41.6	54.0	12.4	Tx:Ch11
3	2786.000	42.4	31.8	6.9	36.4	44.7	54.0	9.3	Tx:Ch1
4	2811.000	45.8	31.9	6.9	36.4	48.2	54.0	5.8	Tx:Ch6
5	2836.000	44.6	31.9	7.0	36.4	47.1	54.0	6.9	Tx:Ch11
----- Vertical -----									
6	2390.000	36.6	30.8	6.4	36.3	37.5	54.0	16.5	Tx:Ch1
7	2483.500	39.1	31.0	6.5	36.2	40.4	54.0	13.6	Tx:Ch11
8	2786.000	44.6	31.8	6.9	36.4	46.9	54.0	7.1	Tx:Ch1
9	2811.000	45.1	31.9	6.9	36.4	47.5	54.0	6.5	Tx:Ch6
10	2836.000	45.2	31.9	7.0	36.4	47.7	54.0	6.3	Tx:Ch11

CHART:WITHOUT FACTOR ANT TYPE: -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN Page:

20dBc(Fundamental 2402MHz) (RBW: 100kHz, VBW:100kHz)

No.	FREQ [MHz]	S/A READING [dBuV/m]		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT [dBuV/m]		Limit 20dBc [dBuV/m]	MARGIN [dB]	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator												
1	2412.0	91.0	90.2	30.9	36.3	6.4	10.0	92.0	91.2	-	-	-
2	2400.0	62.0	61.5	30.8	36.3	6.4	10.0	62.9	62.4	Funda-20dB	9.1	8.8
3	5572.0	49.0	48.4	36.4	35.6	9.5	0.0	59.3	58.7	Funda-20dB	12.7	12.5
4	5622.0	50.1	50.1	36.5	35.6	9.6	0.0	60.6	60.6	Funda-20dB	11.4	10.6
5	5672.0	49.4	49.3	36.5	35.7	9.6	0.0	59.8	59.7	Funda-20dB	12.2	11.5

Tx:Ch1
Tx:Ch11
Tx:Ch1
Tx:Ch6
Tx:Ch11

Radiated Spurious Emission(DSSS and other forms of modulation)

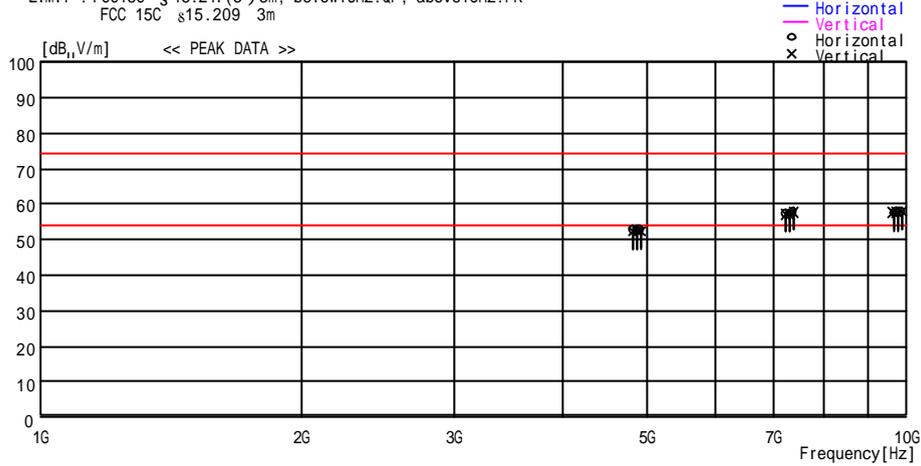
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/18 22:43:16

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp /Humi% : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11g,54Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below1GHz:QP, above1GHz:PK
FCC 15C §15.209 3m



No.	FREQ [MHz]	READING PK [dB, V]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB, V/m]	LIMIT [dB, V/m]	MARGIN [dB]	
----- Horizontal -----									
1	4824.000	44.4	35.2	9.0	36.1	52.5	74.0	21.5	Tx:Ch1
2	4874.000	44.2	35.4	9.0	36.1	52.5	74.0	21.5	Tx:Ch6
3	4924.000	44.0	35.7	9.2	36.1	52.8	74.0	21.2	Tx:Ch11
4	7236.000	44.6	37.7	10.6	35.6	57.3	74.0	16.7	Tx:Ch1
5	7311.000	44.5	37.9	10.7	35.7	57.4	74.0	16.6	Tx:Ch6
6	7386.000	44.5	38.1	10.8	35.7	57.7	74.0	16.3	Tx:Ch11
7	9648.000	44.3	37.1	12.4	36.3	57.5	74.0	16.5	Tx:Ch1
8	9748.000	44.4	37.1	12.5	36.3	57.7	74.0	16.3	Tx:Ch6
9	9848.000	44.6	37.0	12.5	36.3	57.8	74.0	16.2	Tx:Ch11
----- Vertical -----									
10	4824.000	44.2	35.2	9.0	36.1	52.3	74.0	21.7	Tx:Ch1
11	4874.000	44.1	35.4	9.0	36.1	52.4	74.0	21.6	Tx:Ch6
12	4924.000	43.5	35.7	9.2	36.1	52.3	74.0	21.7	Tx:Ch11
13	7236.000	44.5	37.7	10.6	35.6	57.2	74.0	16.8	Tx:Ch1
14	7311.000	44.3	37.9	10.7	35.7	57.2	74.0	16.8	Tx:Ch6
15	7386.000	44.5	38.1	10.8	35.7	57.7	74.0	16.3	Tx:Ch11
16	9648.000	44.5	37.1	12.4	36.3	57.7	74.0	16.3	Tx:Ch1
17	9748.000	44.2	37.1	12.5	36.3	57.5	74.0	16.5	Tx:Ch6
18	9848.000	44.7	37.0	12.5	36.3	57.9	74.0	16.1	Tx:Ch11

CHART:WITHOUT 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)

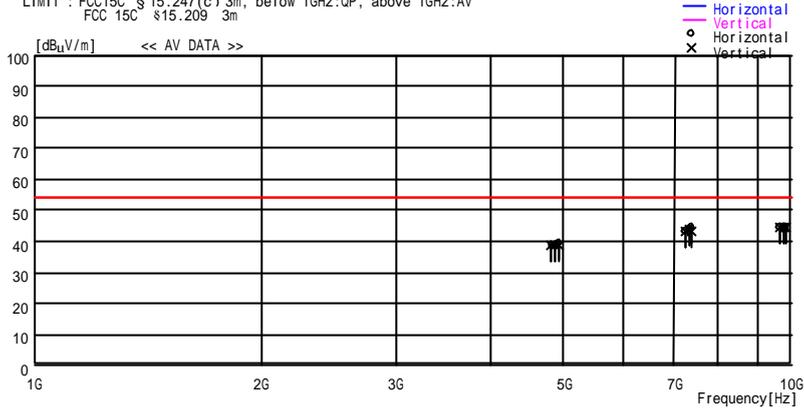
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/18 22:43:16

Applicant : Sony Corporation Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module Power : DC 3.3V
Model No. : IRF302U Temp /Humi% : 24 / 54
Serial No. : 125 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11g,54Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below 1GHz:QP, above 1GHz:AV
FCC 15C §15.209 3m



No.	FREQ [MHz]	READING AV [dBuV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	
----- Horizontal -----									
1	4824.000	30.6	35.2	9.0	36.1	38.7	54.0	15.3	Tx:Ch1
2	4874.000	30.4	35.4	9.0	36.1	38.7	54.0	15.3	Tx:Ch6
3	4924.000	30.4	35.7	9.2	36.1	39.2	54.0	14.8	Tx:Ch11
4	7236.000	30.7	37.7	10.6	35.6	43.4	54.0	10.6	Tx:Ch1
5	7311.000	31.0	37.9	10.7	35.7	43.9	54.0	10.1	Tx:Ch6
6	7386.000	31.2	38.1	10.8	35.7	44.4	54.0	9.6	Tx:Ch11
7	9648.000	31.1	37.1	12.4	36.3	44.3	54.0	9.7	Tx:Ch1
8	9748.000	30.9	37.1	12.5	36.3	44.2	54.0	9.8	Tx:Ch6
9	9848.000	31.2	37.0	12.5	36.3	44.4	54.0	9.6	Tx:Ch11
----- Vertical -----									
10	4824.000	30.4	35.2	9.0	36.1	38.5	54.0	15.5	Tx:Ch1
11	4874.000	30.2	35.4	9.0	36.1	38.5	54.0	15.5	Tx:Ch6
12	4924.000	30.1	35.7	9.2	36.1	38.9	54.0	15.1	Tx:Ch11
13	7236.000	30.7	37.7	10.6	35.6	43.4	54.0	10.6	Tx:Ch1
14	7311.000	30.9	37.9	10.7	35.7	43.8	54.0	10.2	Tx:Ch6
15	7386.000	30.0	38.1	10.8	35.7	43.2	54.0	10.8	Tx:Ch11
16	9648.000	31.0	37.1	12.4	36.3	44.2	54.0	9.8	Tx:Ch1
17	9748.000	31.0	37.1	12.5	36.3	44.3	54.0	9.7	Tx:Ch6
18	9848.000	31.0	37.0	12.5	36.3	44.2	54.0	9.8	Tx:Ch11

CHART:WITHOUT 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)

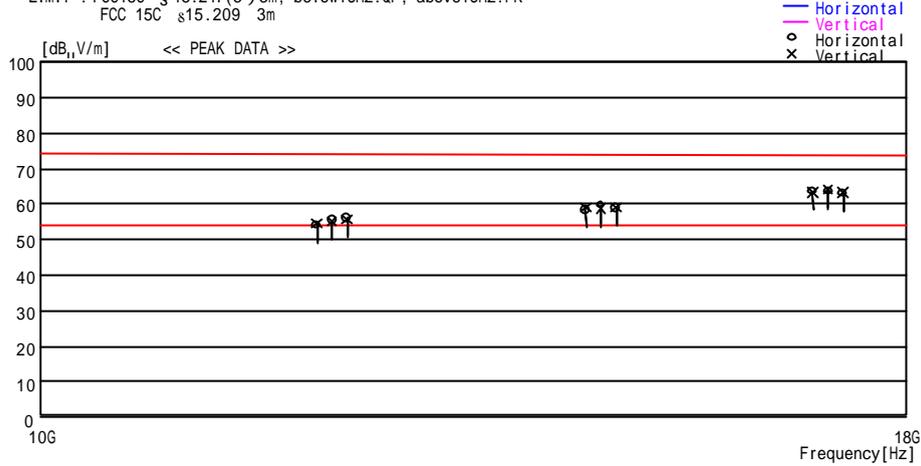
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/19 01:22:45

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp /Humi% : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11g,54Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below1GHz:QP, above1GHz:PK
FCC 15C §15.209 3m



No.	FREQ [MHz]	READING PK [dB, V]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB, V/m]	LIMIT [dB, V/m]	MARGIN [dB]	
----- Horizontal -----									
1	12060.000	44.5	40.8	4.5	35.7	54.1	74.0	19.9	Tx:Ch1
2	12185.000	45.0	41.4	4.6	35.6	55.4	74.0	18.6	Tx:Ch6
3	12310.000	45.1	41.9	4.6	35.6	56.0	74.0	18.0	Tx:Ch11
4	14472.000	44.7	42.3	5.9	34.6	58.3	74.0	15.7	Tx:Ch1
5	14622.000	45.8	42.6	6.0	34.8	59.6	74.0	14.4	Tx:Ch6
6	14772.000	44.9	42.8	6.1	34.9	58.9	74.0	15.1	Tx:Ch11
7	16884.000	45.2	46.4	7.5	35.5	63.6	74.0	10.4	Tx:Ch1
8	17059.000	45.0	46.6	7.5	35.4	63.7	74.0	10.3	Tx:Ch6
9	17234.000	45.1	45.9	7.4	35.3	63.1	74.0	10.9	Tx:Ch11
----- Vertical -----									
10	12060.000	44.9	40.8	4.5	35.7	54.5	74.0	19.5	Tx:Ch1
11	12185.000	44.8	41.4	4.6	35.6	55.2	74.0	18.8	Tx:Ch6
12	12310.000	44.8	41.9	4.6	35.6	55.7	74.0	18.3	Tx:Ch11
13	14472.000	45.5	42.3	5.9	34.6	59.1	74.0	14.9	Tx:Ch1
14	14622.000	44.9	42.6	6.0	34.8	58.7	74.0	15.3	Tx:Ch6
15	14772.000	45.0	42.8	6.1	34.9	59.0	74.0	15.0	Tx:Ch11
16	16884.000	45.0	46.4	7.5	35.5	63.4	74.0	10.6	Tx:Ch1
17	17059.000	45.3	46.6	7.5	35.4	64.0	74.0	10.0	Tx:Ch6
18	17234.000	45.1	45.9	7.4	35.3	63.1	74.0	10.9	Tx:Ch11

CHART:WITHOUT 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)

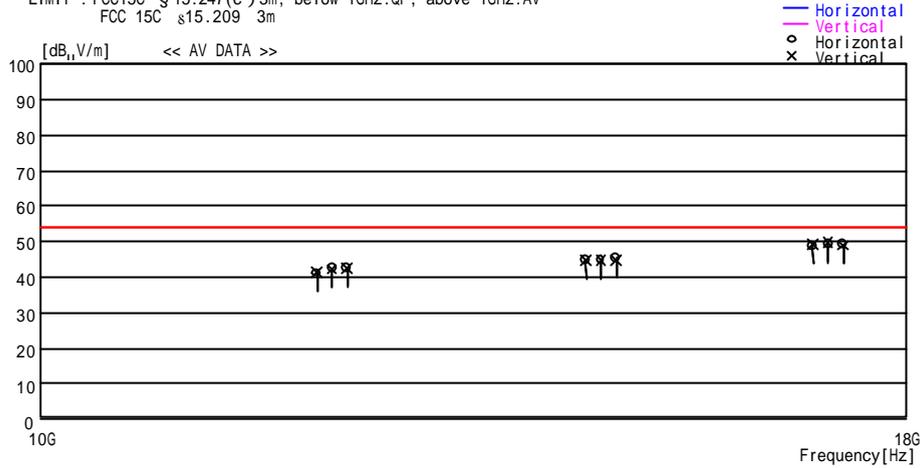
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/19 01:22:45

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp /Humi% : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11g,54Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below 1GHz:QP, above 1GHz:AV
FCC 15C §15.209 3m



No.	FREQ [MHz]	READING AV [dB, V]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB, V/m]	LIMIT [dB, V/m]	MARGIN [dB]	
----- Horizontal -----									
1	12060.000	31.6	40.8	4.5	35.7	41.2	54.0	12.8	Tx:Ch1
2	12185.000	32.0	41.4	4.6	35.6	42.4	54.0	11.6	Tx:Ch6
3	12310.000	31.8	41.9	4.6	35.6	42.7	54.0	11.3	Tx:Ch11
4	14472.000	31.2	42.3	5.9	34.6	44.8	54.0	9.2	Tx:Ch1
5	14622.000	31.0	42.6	6.0	34.8	44.8	54.0	9.2	Tx:Ch6
6	14772.000	31.4	42.8	6.1	34.9	45.4	54.0	8.6	Tx:Ch11
7	16884.000	30.4	46.4	7.5	35.5	48.8	54.0	5.2	Tx:Ch1
8	17059.000	30.5	46.6	7.5	35.4	49.2	54.0	4.8	Tx:Ch6
9	17234.000	31.2	45.9	7.4	35.3	49.2	54.0	4.8	Tx:Ch11
----- Vertical -----									
10	12060.000	31.6	40.8	4.5	35.7	41.2	54.0	12.8	Tx:Ch1
11	12185.000	31.8	41.4	4.6	35.6	42.2	54.0	11.8	Tx:Ch6
12	12310.000	31.5	41.9	4.6	35.6	42.4	54.0	11.6	Tx:Ch11
13	14472.000	31.0	42.3	5.9	34.6	44.6	54.0	9.4	Tx:Ch1
14	14622.000	30.8	42.6	6.0	34.8	44.6	54.0	9.4	Tx:Ch6
15	14772.000	30.8	42.8	6.1	34.9	44.8	54.0	9.2	Tx:Ch11
16	16884.000	30.8	46.4	7.5	35.5	49.2	54.0	4.8	Tx:Ch1
17	17059.000	31.1	46.6	7.5	35.4	49.8	54.0	4.2	Tx:Ch6
18	17234.000	30.9	45.9	7.4	35.3	48.9	54.0	5.1	Tx:Ch11

CHART:WITHOUT 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)

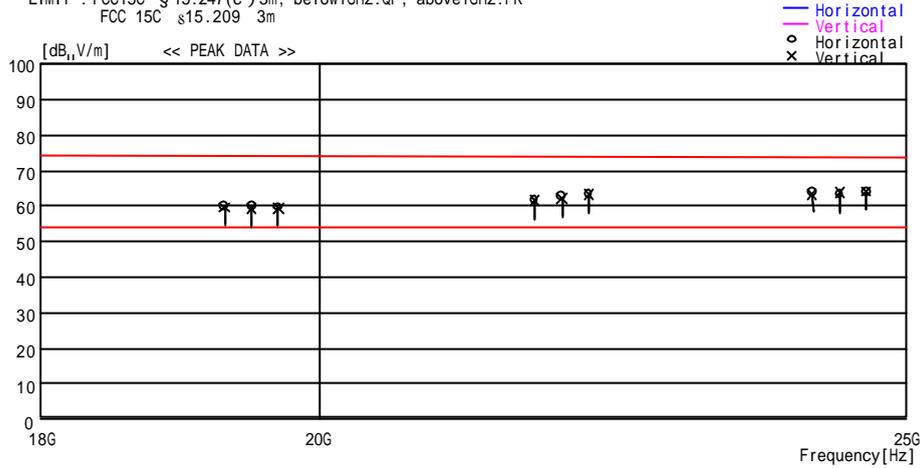
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/19 01:56:12

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp /Humi% : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11g,54Mbps, ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz), Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below1GHz:QP, above1GHz:PK
FCC 15C §15.209 3m



No.	FREQ [MHz]	READING PK [dB _v ,V]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB _v ,V/m]	LIMIT [dB _v ,V/m]	MARGIN [dB]	
----- Horizontal -----									
1	19296.000	43.7	41.8	9.4	34.9	60.0	74.0	14.0	Tx:Ch1
2	19496.000	44.1	41.2	9.5	34.9	59.9	74.0	14.1	Tx:Ch6
3	19696.000	44.2	41.2	9.7	35.4	59.7	74.0	14.3	Tx:Ch11
4	21708.000	45.2	40.9	10.8	35.3	61.6	74.0	12.4	Tx:Ch1
5	21933.000	45.3	41.0	11.3	35.0	62.6	74.0	11.4	Tx:Ch6
6	22158.000	45.3	41.2	11.9	35.0	63.4	74.0	10.6	Tx:Ch11
7	24120.000	46.0	41.1	12.7	36.0	63.8	74.0	10.2	Tx:Ch1
8	24370.000	45.2	41.2	13.4	36.6	63.2	74.0	10.8	Tx:Ch6
9	24620.000	45.7	41.3	13.9	36.8	64.1	74.0	9.9	Tx:Ch11
----- Vertical -----									
10	19296.000	43.2	41.8	9.4	34.9	59.5	74.0	14.5	Tx:Ch1
11	19496.000	43.5	41.2	9.5	34.9	59.3	74.0	14.7	Tx:Ch6
12	19696.000	43.9	41.2	9.7	35.4	59.4	74.0	14.6	Tx:Ch11
13	21708.000	45.0	40.9	10.8	35.3	61.4	74.0	12.6	Tx:Ch1
14	21933.000	44.8	41.0	11.3	35.0	62.1	74.0	11.9	Tx:Ch6
15	22158.000	45.0	41.2	11.9	35.0	63.1	74.0	10.9	Tx:Ch11
16	24120.000	45.6	41.1	12.7	36.0	63.4	74.0	10.6	Tx:Ch1
17	24370.000	45.8	41.2	13.4	36.6	63.8	74.0	10.2	Tx:Ch6
18	24620.000	45.7	41.3	13.9	36.8	64.1	74.0	9.9	Tx:Ch11

CHART:WITHOUT 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)

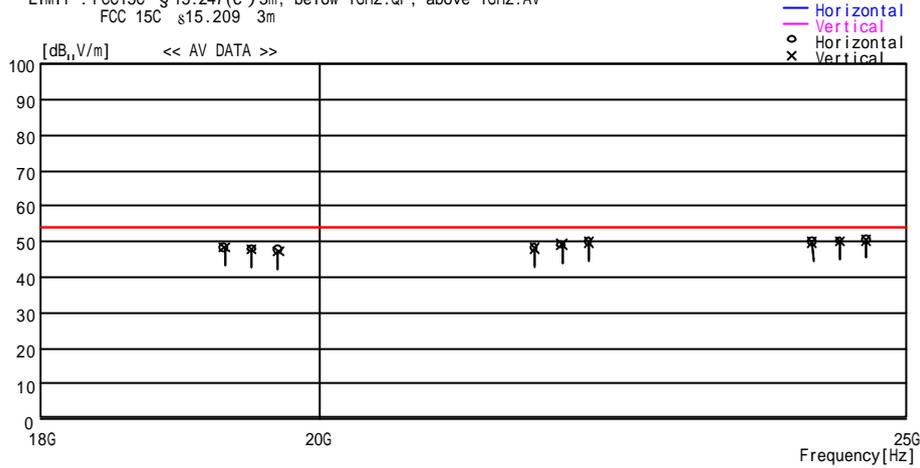
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/06/19 01:56:12

Applicant : Sony Corporation
Kind of EUT : Wireless LAN Module
Model No. : IRF302U
Serial No. : 125
Report No. : 24HE0082-HO
Power : DC 3.3V
Temp /Humi% : 24 / 54
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11g,54Mbps,ch1(2412MHz)/ch6(2437MHz)/ch11(2462MHz),Max-axis(Z)

LIMIT : FCC15C §15.247(c) 3m, below 1GHz:QP, above 1GHz:AV
FCC 15C §15.209 3m



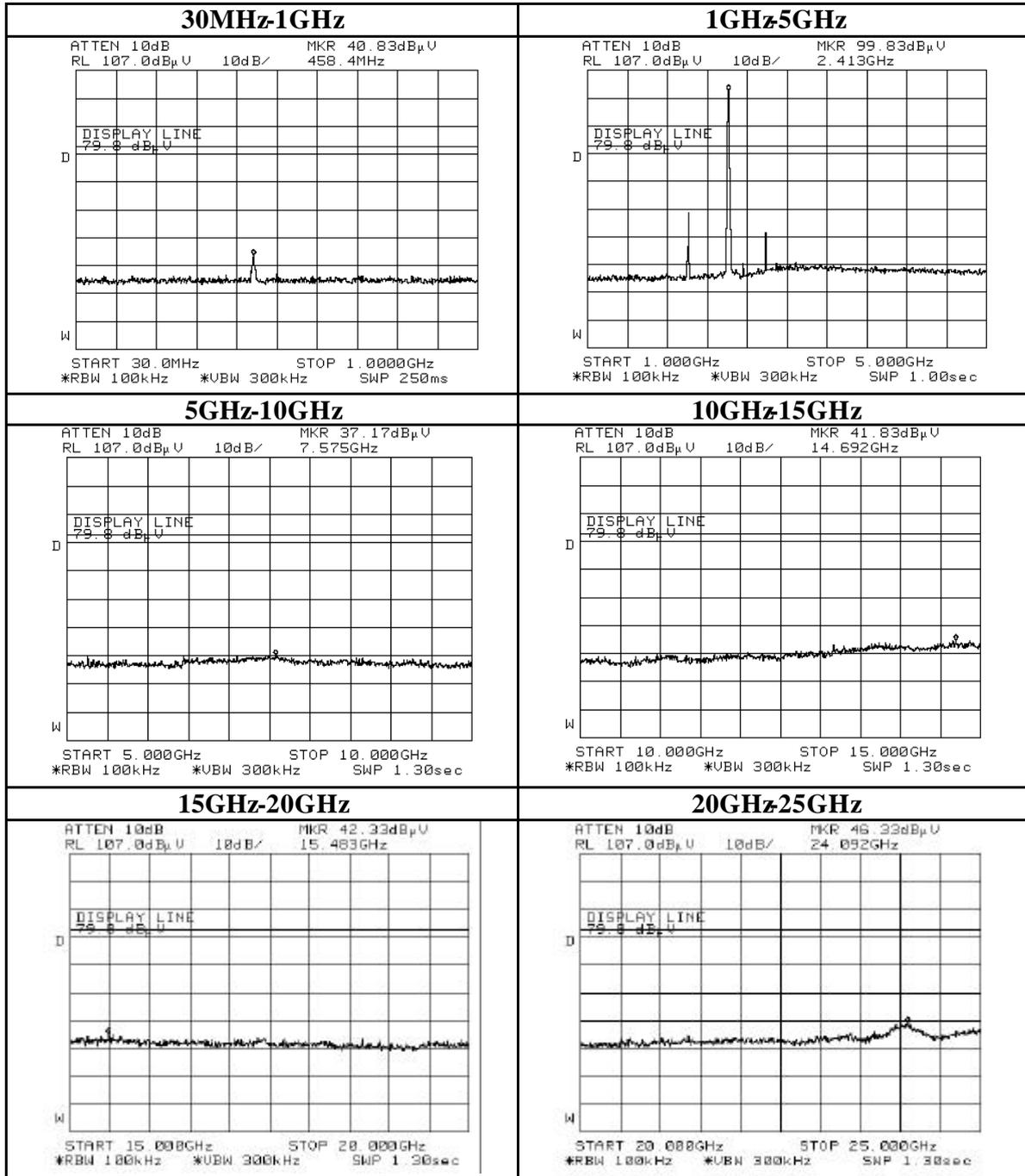
No.	FREQ [MHz]	READING AV [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	
----- Horizontal -----									
1	19296.000	31.9	41.8	9.4	34.9	48.2	54.0	5.8	Tx:Ch1
2	19496.000	32.0	41.2	9.5	34.9	47.8	54.0	6.2	Tx:Ch6
3	19696.000	32.0	41.2	9.7	35.4	47.5	54.0	6.5	Tx:Ch11
4	21708.000	31.8	40.9	10.8	35.3	48.2	54.0	5.8	Tx:Ch1
5	21933.000	31.8	41.0	11.3	35.0	49.1	54.0	4.9	Tx:Ch6
6	22158.000	31.8	41.2	11.9	35.0	49.9	54.0	4.1	Tx:Ch11
7	24120.000	32.0	41.1	12.7	36.0	49.8	54.0	4.2	Tx:Ch1
8	24370.000	32.2	41.2	13.4	36.6	50.2	54.0	3.8	Tx:Ch6
9	24620.000	32.0	41.3	13.9	36.8	50.4	54.0	3.6	Tx:Ch11
----- Vertical -----									
10	19296.000	31.9	41.8	9.4	34.9	48.2	54.0	5.8	Tx:Ch1
11	19496.000	31.9	41.2	9.5	34.9	47.7	54.0	6.3	Tx:Ch6
12	19696.000	31.8	41.2	9.7	35.4	47.3	54.0	6.7	Tx:Ch11
13	21708.000	31.7	40.9	10.8	35.3	48.1	54.0	5.9	Tx:Ch1
14	21933.000	31.9	41.0	11.3	35.0	49.2	54.0	4.8	Tx:Ch6
15	22158.000	31.7	41.2	11.9	35.0	49.8	54.0	4.2	Tx:Ch11
16	24120.000	32.1	41.1	12.7	36.0	49.9	54.0	4.1	Tx:Ch1
17	24370.000	32.1	41.2	13.4	36.6	50.1	54.0	3.9	Tx:Ch6
18	24620.000	32.1	41.3	13.9	36.8	50.5	54.0	3.5	Tx:Ch11

CHART:WITHOUT FACTOR ANT TYPE: -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN Page:

Conducted Spurious Emission(DSSS and other forms of modulation)

[IEEE802.11b]

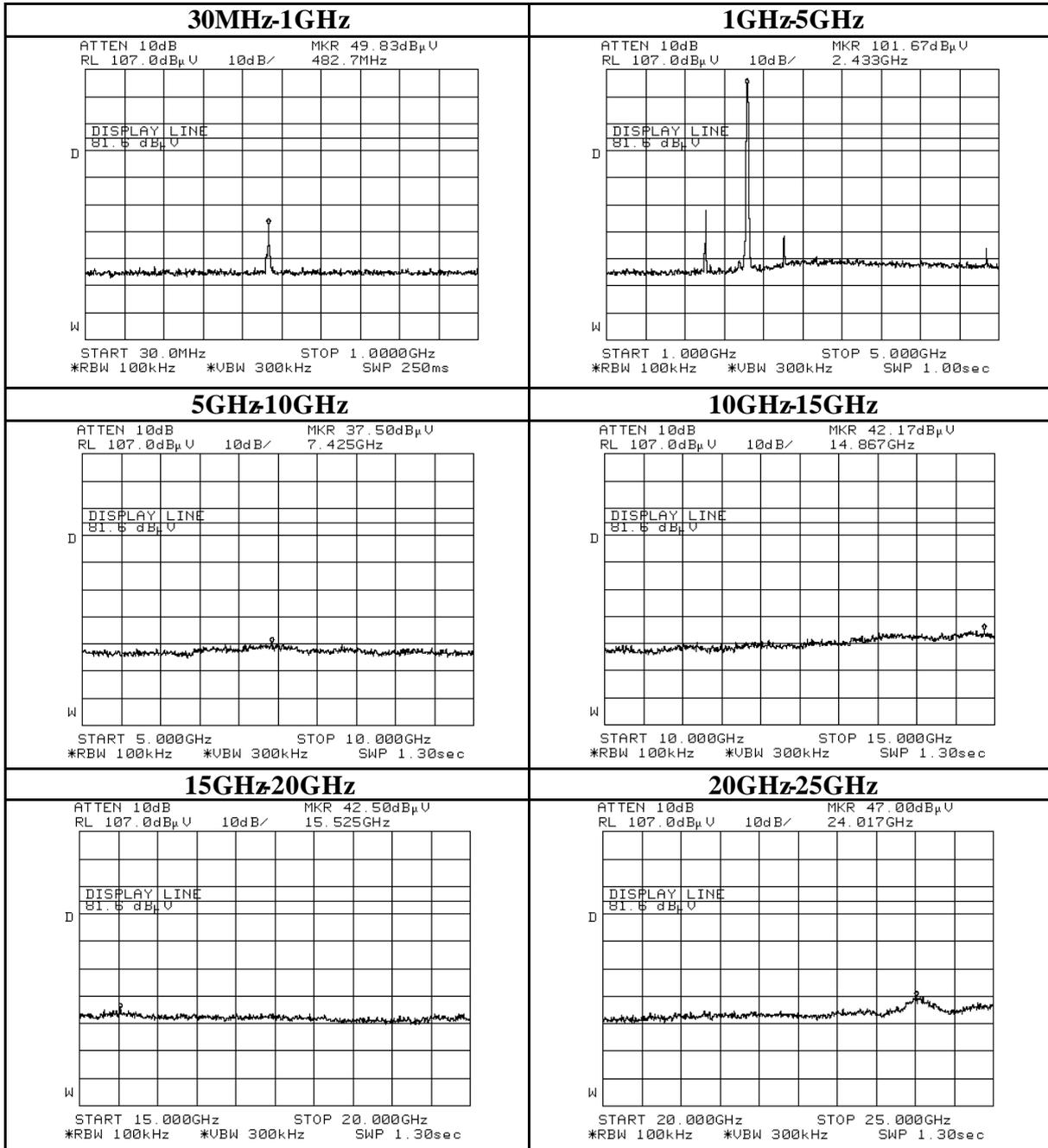
Ch : Low



Conducted Spurious Emission(DSSS and other forms of modulation)

[IEEE802.11b]

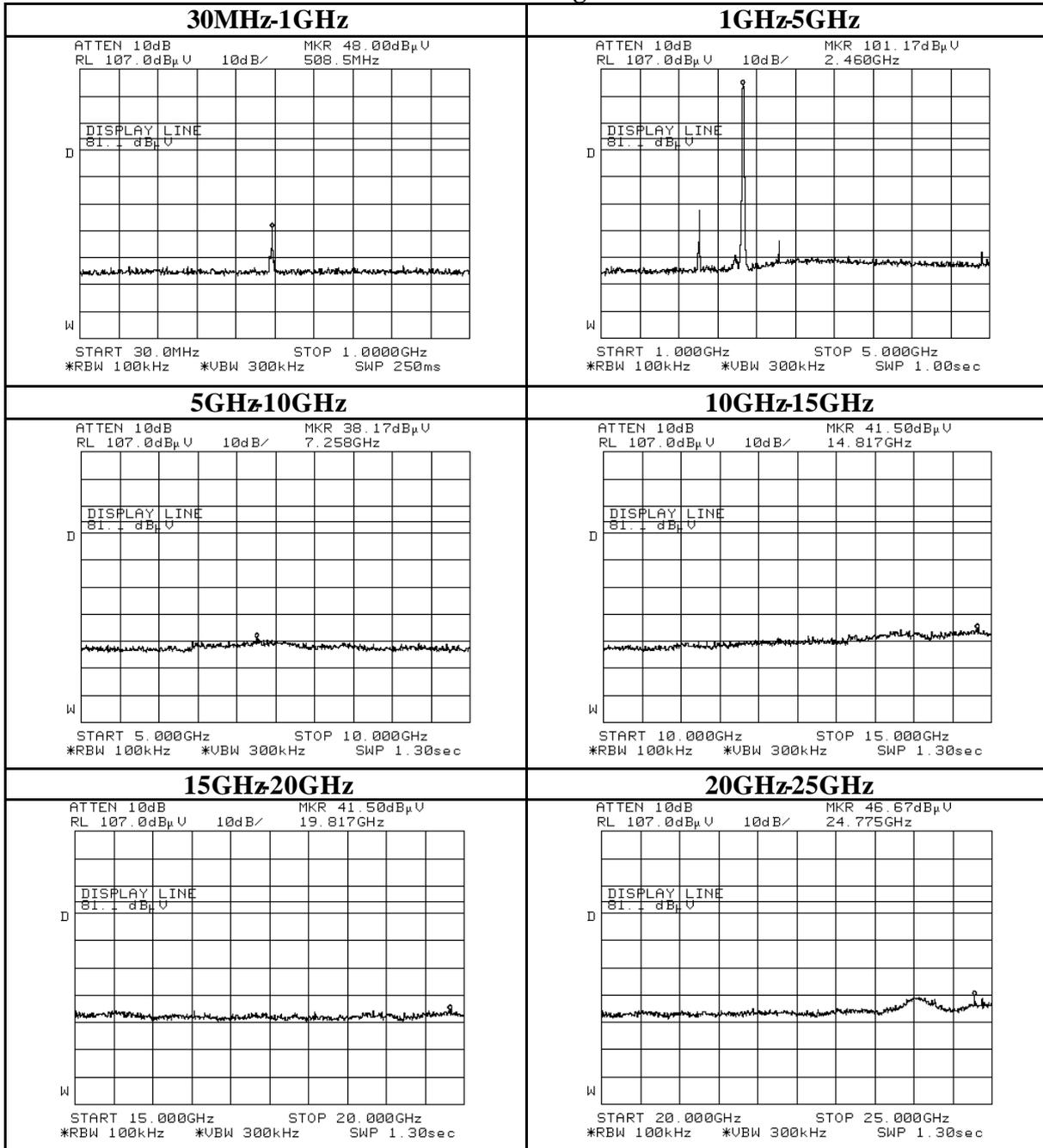
Ch : Mid



Conducted Spurious Emission(DSSS and other forms of modulation)

[IEEE802.11b]

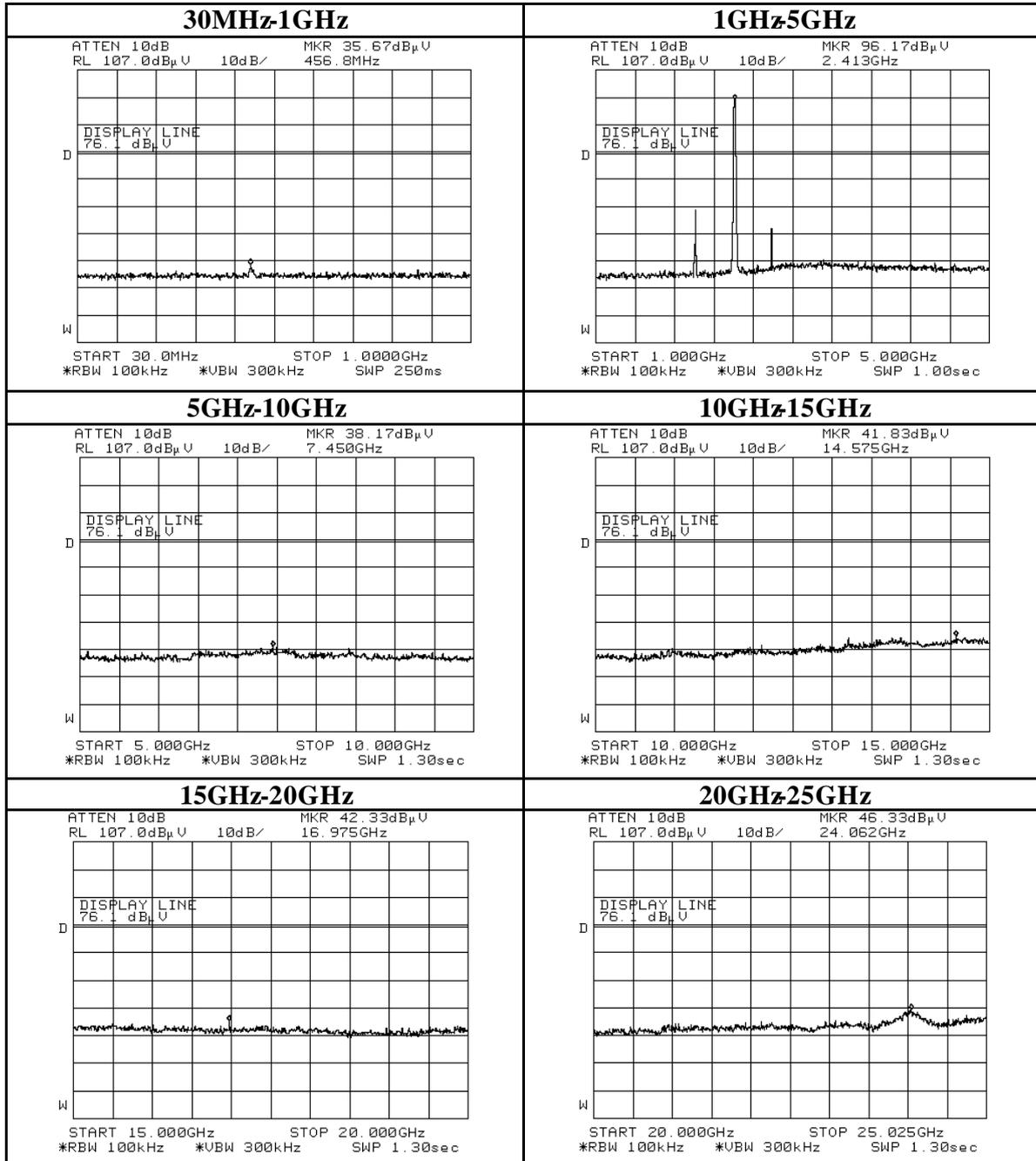
Ch : High



Conducted Spurious Emission(DSSS and other forms of modulation)

[IEEE802.11g]

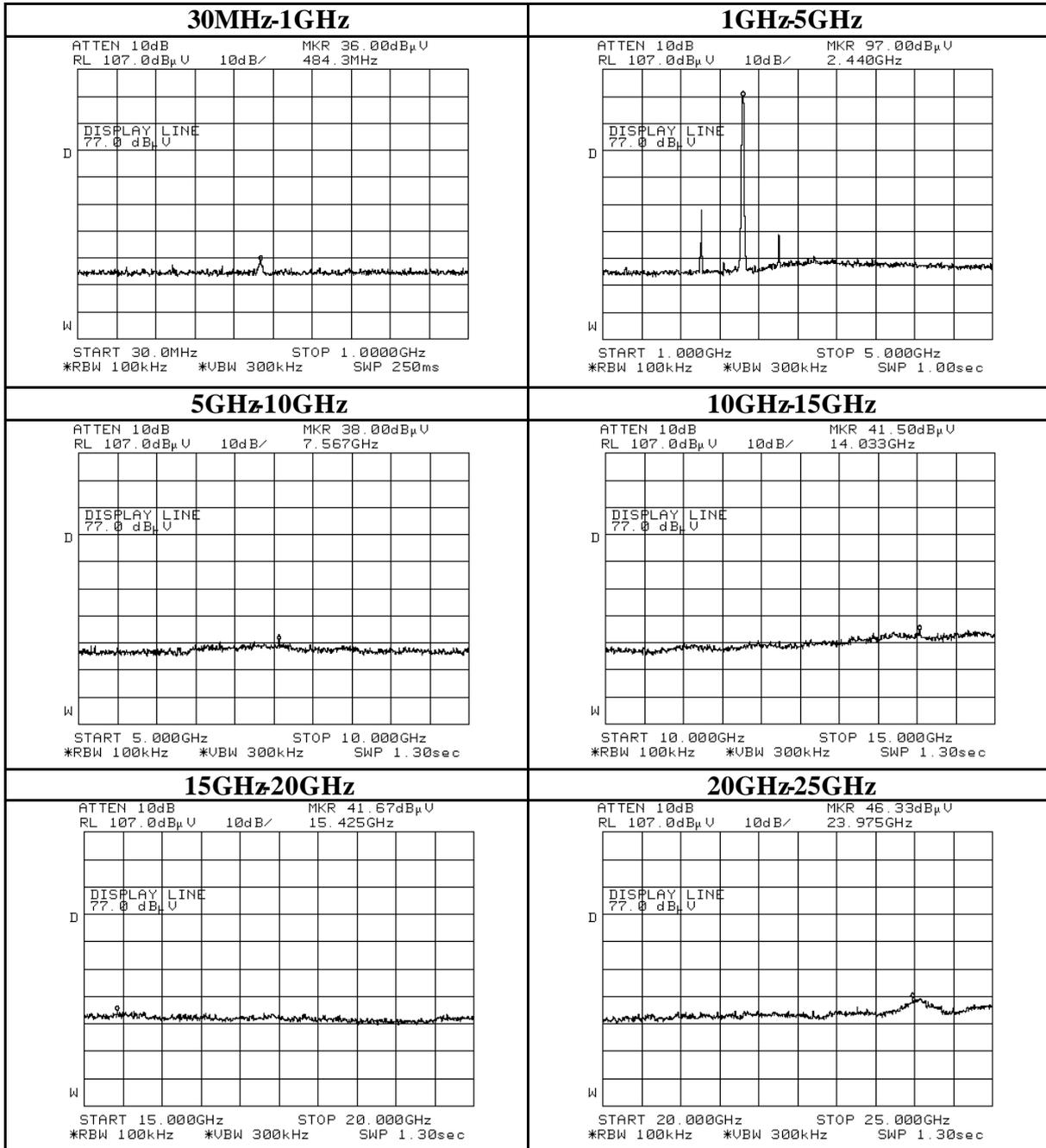
Ch : Low



Conducted Spurious Emission(DSSS and other forms of modulation)

[IEEE802.11g]

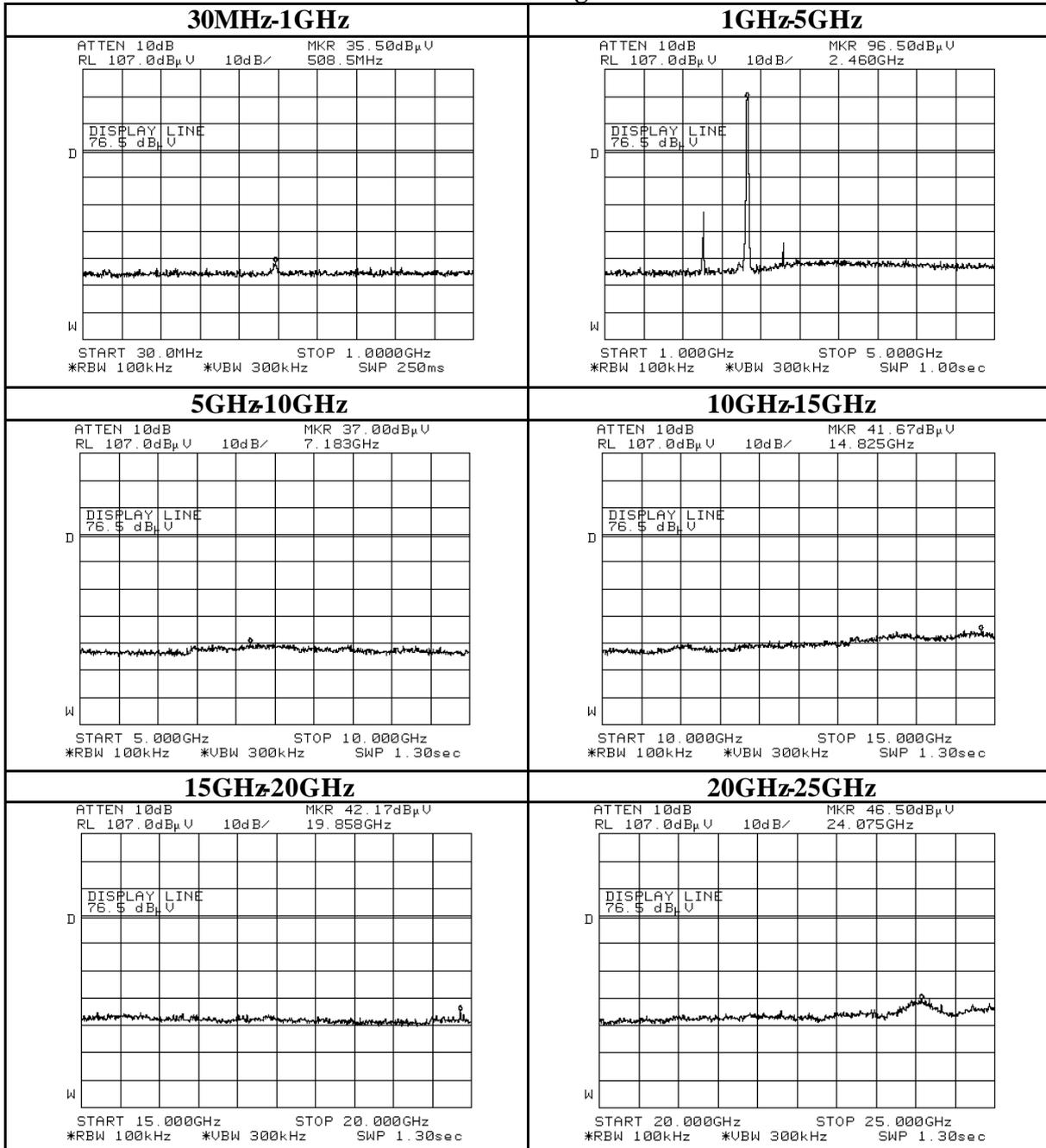
Ch : Mid



Conducted Spurious Emission(DSSS and other forms of modulation)

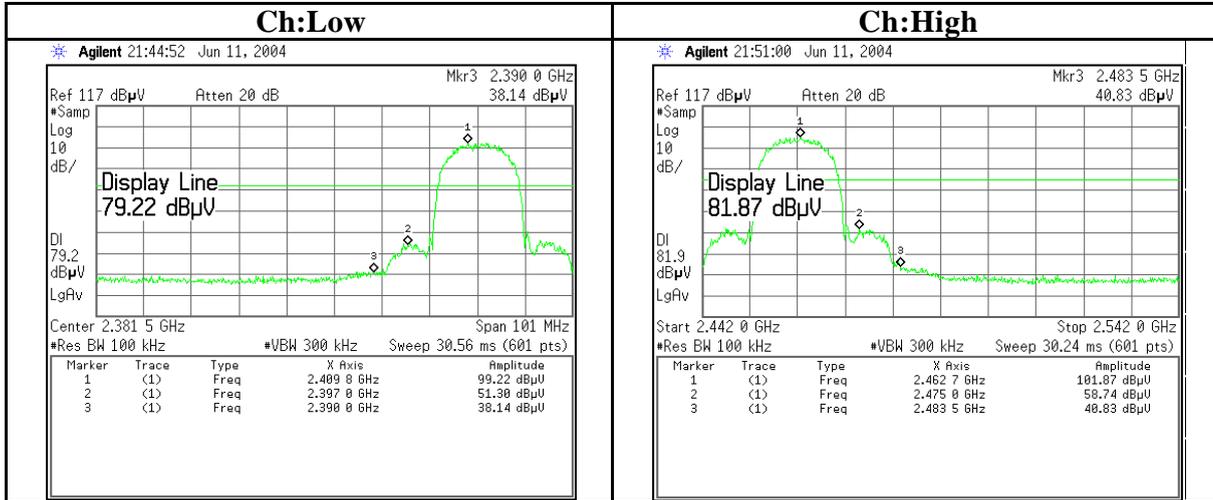
[IEEE802.11g]

Ch : High

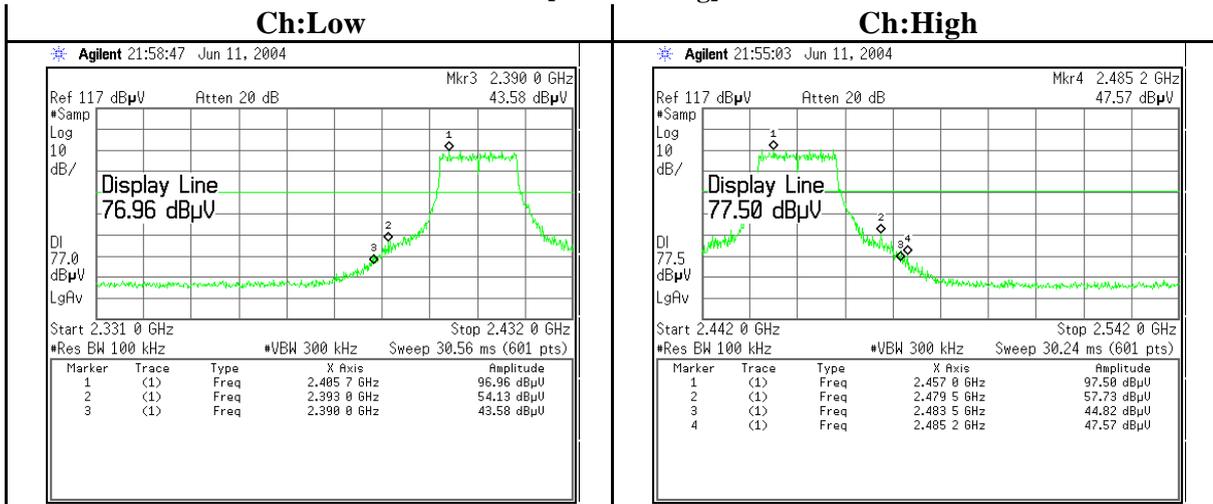


Conducted emission Band Edge compliance (DSSS and other forms of modulation)

[IEEE802.11b]



[IEEE802.11g]



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 : IRF302U
SAMPLE NO. : 11
POWER : DC3.3V
MODE : Tx (ch1,6,11)

REGULATION : Fcc Part15 Subpart C 15.247(d)
TEST DISTANCE : -
DATE : 06/11/2004
TEMPERATURE : 22
HUMIDITY : 42%
ENGINEER : Hiroka Umeyama

[IEEE802.11b]

Ch	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2412.7	-24.83	0.2	10.0	-14.6	8.0	22.6
Mid	2437.7	-22.33	0.2	10.0	-12.1	8.0	20.1
High	2462.4	-22.00	0.2	10.0	-11.8	8.0	19.8

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

[IEEE802.11g]

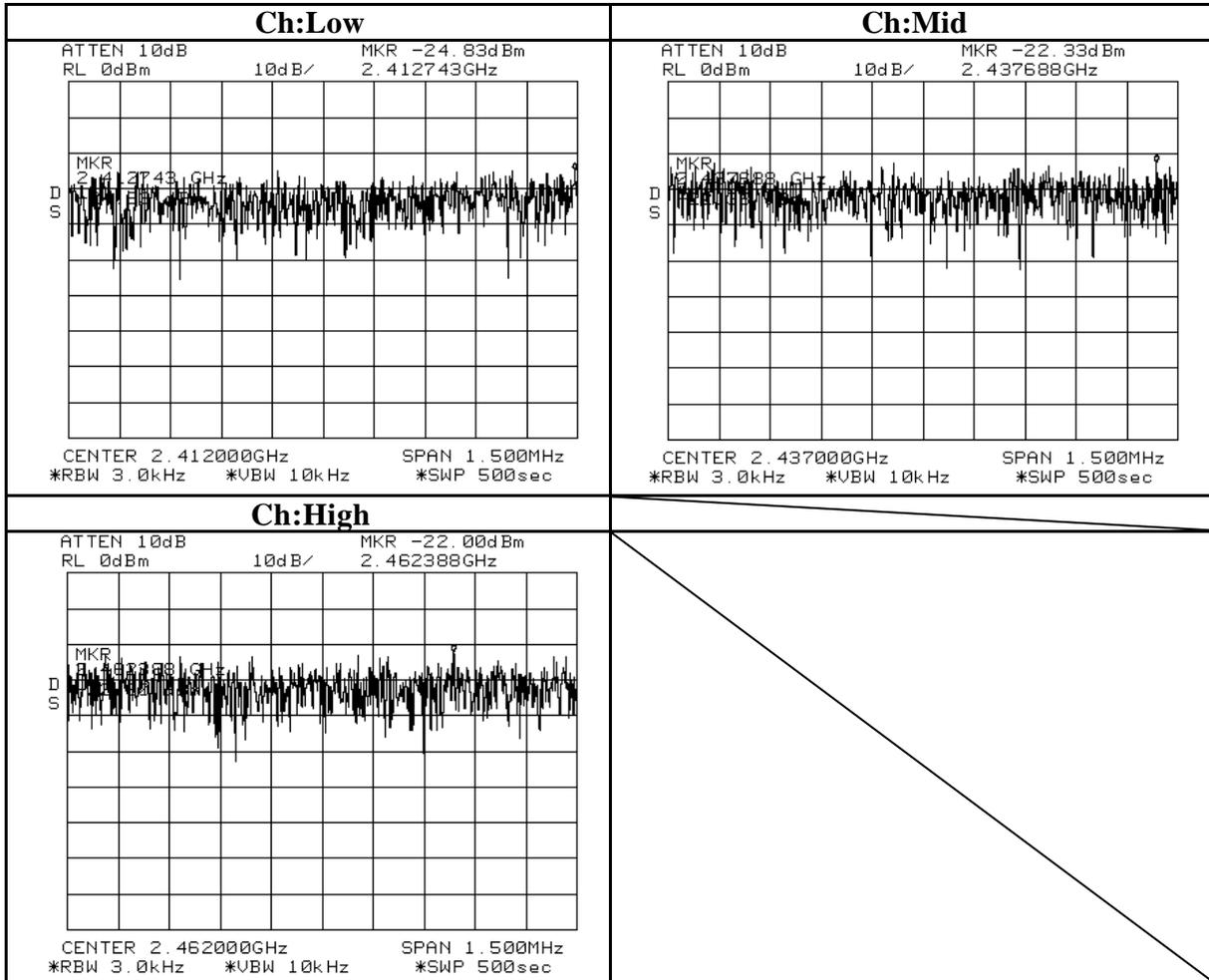
Ch	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2412.4	-28.33	0.2	10.0	-18.1	8.0	26.1
Mid	2437.6	-27.00	0.2	10.0	-16.8	8.0	24.8
High	2461.4	-28.17	0.2	10.0	-18.0	8.0	26.0

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

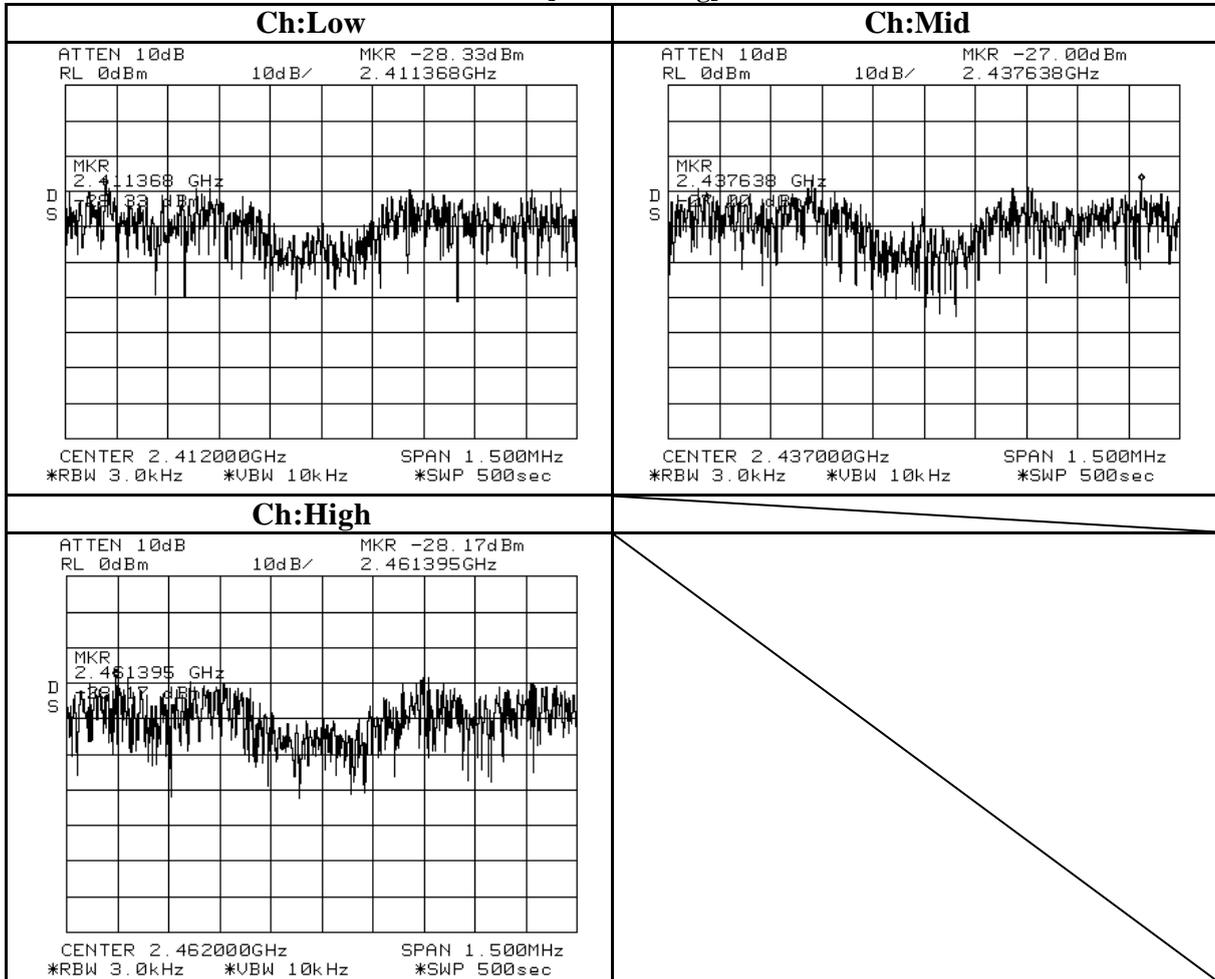
Power Density(DSSS and other forms of modulation)

[IEEE802.11b]



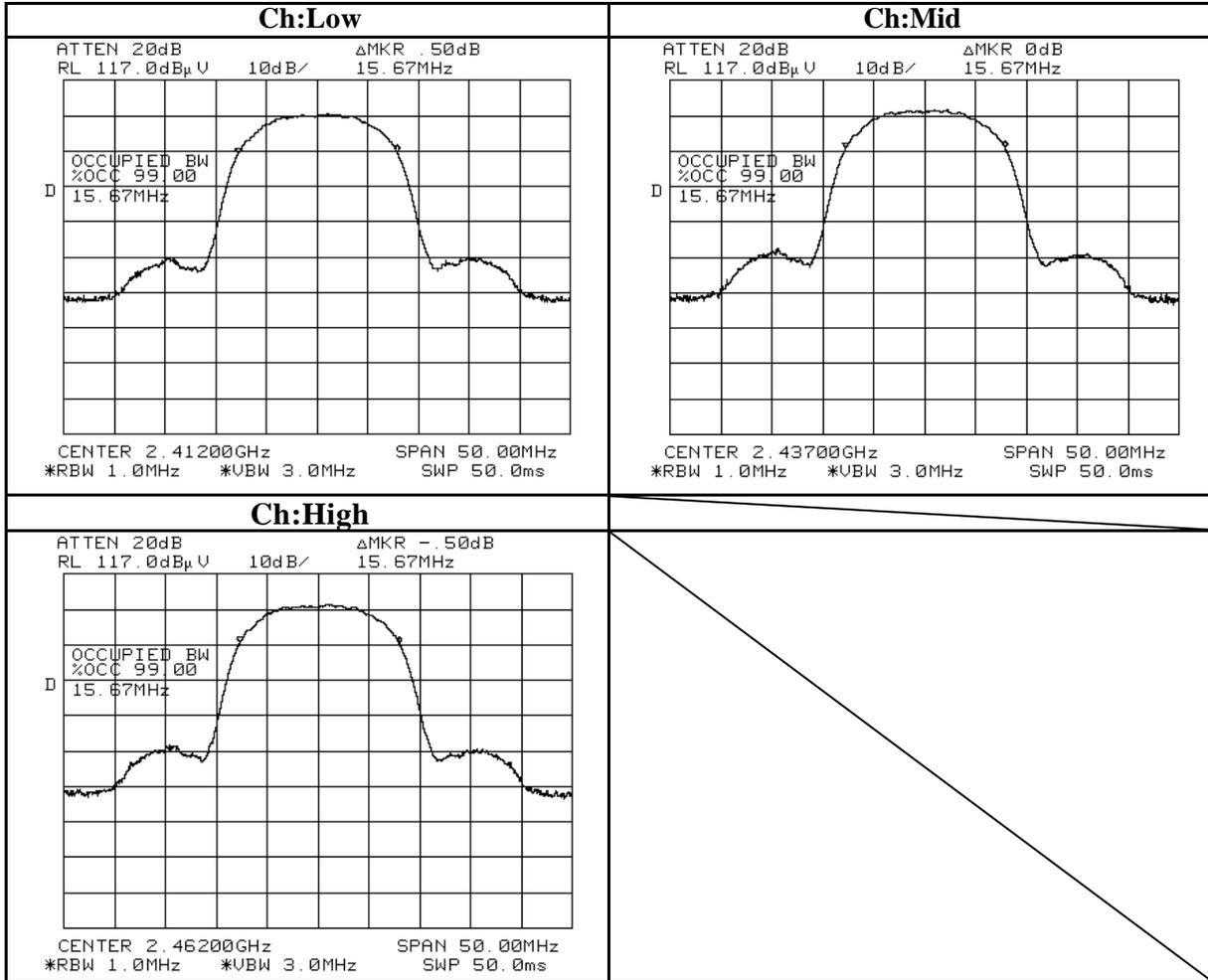
Power Density (DSSS and other forms of modulation)

[IEEE802.11g]



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

[IEEE802.11b]



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

[IEEE802.11g]

