



# EMI TEST REPORT

Test Report No. : 24HE0082-HO-8

Applicant : Sony Corporation  
Type of Equipment : Wireless LAN Module  
Model No. : IRF303U  
Test standard : FCC Part 15 Subpart E  
Section 15.407 : 2004  
FCC ID : AK8IRF303U  
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 14, 2004 to June 25, 2004

**Tested by:**

Mitsuru Fujimura  
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 : +81-3-5436-3963  
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. : IRF303U  
Serial No. : 85 (on Radiated and Conducted Emission Test)  
13 (on Peak Transmit Power Test by Conducted)  
53 (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 IRF303U 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:IEEE802.11a]

Equipment Type : Transceiver  
Frequency of operation : 5180-5320MHz / 5745-5805MHz  
Channel Support : 5180,5200,5220,5240,5260,5280,5300,5320MHz / 5745,5765,5785,5805MHz  
Modulation Techniques : OFDM  
Channel number : 12channels  
Power control : Non  
Mode of operation : Duplex  
Antenna Type : Chip Antenna (M/N:EA5800), Film Antenna (M/N:HFT18)  
Antenna Gain : 3.5dBi(MAX) (M/N:EA5800), 1.9dBi(MAX) (M/N:HFT18)  
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 15.407(d) 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 E : 2004  
Title : FCC 47CFR Part15 Radio Frequency Device  
Subpart E Unlicensed National Information Infrastructure Devices  
Section 15.407 General technical requirements

**3.2 Procedures and results**

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	26dB Emission Bandwidth	ANSI C63.4:2003	Section 15.407(a)(1)(2)(3)	-	N/A	*See the worst margins in the data sheet in APPENDIX 3	Complied
2	Peak Transmit Power	ANSI C63.4:2003	Section 15.407(a)(1)(2)(3)	Conducted	N/A		Complied
3	Peak Power Spectral Density	ANSI C63.4:2003	Section 15.407(a)(1)(2)(3)	Conducted	N/A		Complied
4	Peak Excursion Ratio	ANSI C63.4:2003	Section 15.407(a)(6)	Conducted	N/A		Complied
5	Spurious Emission	ANSI C63.4:2003	Section 15.407(b)(1)(2)(3)(4)(5)	Conducted	N/A		Complied
6	Spurious Emission	ANSI C63.4:2003	(6)(7) 15.205/15.209	Radiated	N/A		Complied
7	AC Conducted Emission	ANSI C63.4:2003	Section 15.407(b)(6)/15.207	-	N/A		Complied
8	Band Edge Compliance	ANSI C63.4:2003	Section 15.407(b)(7)/15.205	Conducted Radiated	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 ±1.3dB.

**Spurious Emission (Radiated)**

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

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

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

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

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

\*These tests were also referred to FCC Public Notice DA 02-2138 "Measurement Procedure Updated for Peak Transmit Power in the Unlicensed National Information Infrastructure (U-NII) Bands".

\*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	RSS210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004	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 shielded 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 (OFDM 54Mbps)  
 Channel 36: 5180MHz  
 Channel 52: 5260MHz  
 Channel 64: 5320MHz  
 Channel 149: 5745MHz  
 Channel 153: 5765MHz  
 Channel 161: 5805MHz

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

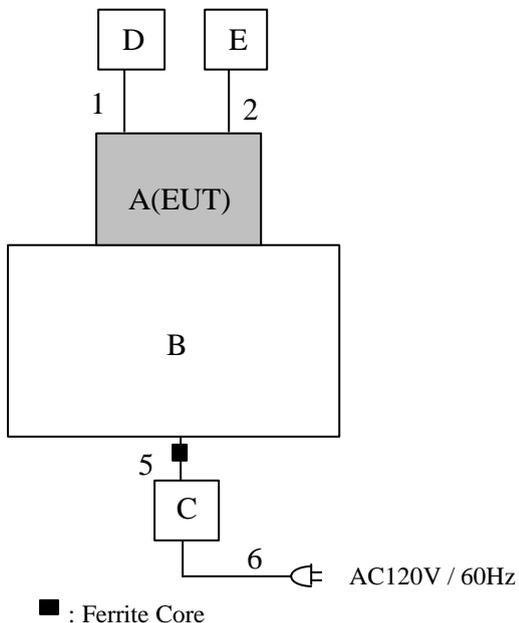
\* The EUT has an ability to provide some different modulation and data rates. Some of these modulation and data rates did not change in the spectrum envelopes of the EUT at conducted Measurement with the antenna terminal. Therefore, the results of the final measurements were 54Mbps modulation as the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

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

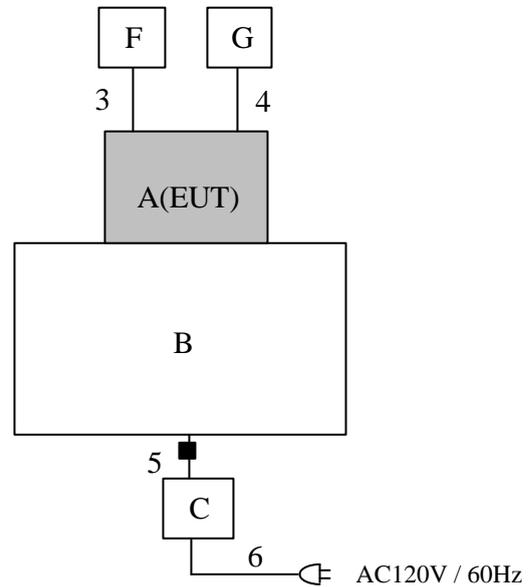
### 4.2 Configuration and peripherals

\* The test was confirmed in the position of the maximum radiated emission level.

Configuration 1



Configuration 2



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**Description of EUT and Support equipment**

No.	Item	Model number	Serial number	Manufacturer	FCC ID
A	Wireless LAN Module	IRF303U	85*1 13*2 53*3	SONY	AK8IRF303U
B	Notebook Personal Computer	PP01L	CN-04P449- 48155-28N-1004	DELL	-
C	AC Adaptor	AA20031	CN-09364U- 16291-289-00YA	DELL	-
D	Chip Antenna	EA5800	-	SONY	-
E	Chip Antenna	EA5800	-	SONY	-
F	Film Antenna	HFT18	-	HITACHI	-
G	Film Antenna	HFT18	-	HITACHI	-

D and E are used with configuration 1.

F and G are used with configuration 2.

\*1 : on Radiated and Conducted Emission Test

\*2 : on Peak Transmit 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	Antenna Cable	0.04	Y	FEP
4	Antenna Cable	0.04	Y	FEP
5	DC Cable	1.8	N	Polyvinyl chloride
6	AC Cable	1.8	N	Polyvinyl chloride

No.1 and No.2 are used with configuration 1.

No.3 and No.4 are used with configuration 2.

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## SECTION 5: Conducted Emission, Section 15.407(b)(6) / 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

We confirmed that there was no difference in the Peak and Average data (result) if the channels and the modes were changed. As the evidence, the plot data is attached in the test report.

Test data : APPENDIX 3  
Test result : Pass

**SECTION 6: Spurious Emission , Band Edge Compliance 15.407(b)(1)(2)(3)(4)(6)(7)**

[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) , 1m(10-26.5GHz, Distance Factor :  $20\log(3[m]/1[m])$ ) and 0.5m( Upper 26.5GHz, Distance Factor :  $20\log(3[m]/0.5[m])$  ).

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.

Below 1GHz

The result also satisfied with the general limits specified in section 15.209(a).

Above 1GHz

Inside of the restricted bands (Section 15.205) : Apply to limit in the Section 15.209(a)

Outside of the restricted bands (Section 15.205) : Limit -27dBm EIRP  
-17dBm EIRP (5.725-5.825GHz Band Edge)

Frequency	Below 1GHz	Above 1GHz (Inside of the restricted bands)	Above 1GHz (Outside of the restricted bands)
Instrument use	Test Receiver	Spectrum Analyzer	Spectrum Analyzer
Detector	QP: BW 120kHz	PK: RBW:1MHz/VBW: 1MHz	RBW:1MHz/VBW: 1MHz
IF Bandwidth		AV: RBW:1MHz/VBW:10Hz	

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

\*The noise from the EUT was not seen in the above 18GHz. The measurement was made in the residual noise levels.

### **SECTION 7: 26dB Emission Bandwidth, Section 15.407(a)(1)(2)(3)**

#### **Test Procedure**

The 26dB Emission Bandwidth was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3  
Test result : Pass

### **SECTION 8: Peak Transmit Power Section 15.407(a)(1)(2)(3)**

#### **Test Procedure**

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

Test data : APPENDIX 3  
Test result : Pass

### **SECTION 9: Peak Power Spectral Density, Section 15.407 (a)(1)(2)(3)**

#### **Test Procedure**

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

We followed the method 3 specified in DA -02-2138A1.

The test was made with the spectrum analyzer that has a function of channel-power measurement.

It covers the EBW range, that is, 40MHz mask. Therefore, the correct peak conducted power is measured.

The test was made with VBW, 1MHz (more than  $1/T$  : T is a period of EUT transmitting ON = 370usec. ).

Test data : APPENDIX 3  
Test result : Pass

### **SECTION 10: Peak Excursion Ratio, Section 15.407 (a)(6)**

#### **Test Procedure**

The Peak Excursion Ratio was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3  
Test result : Pass

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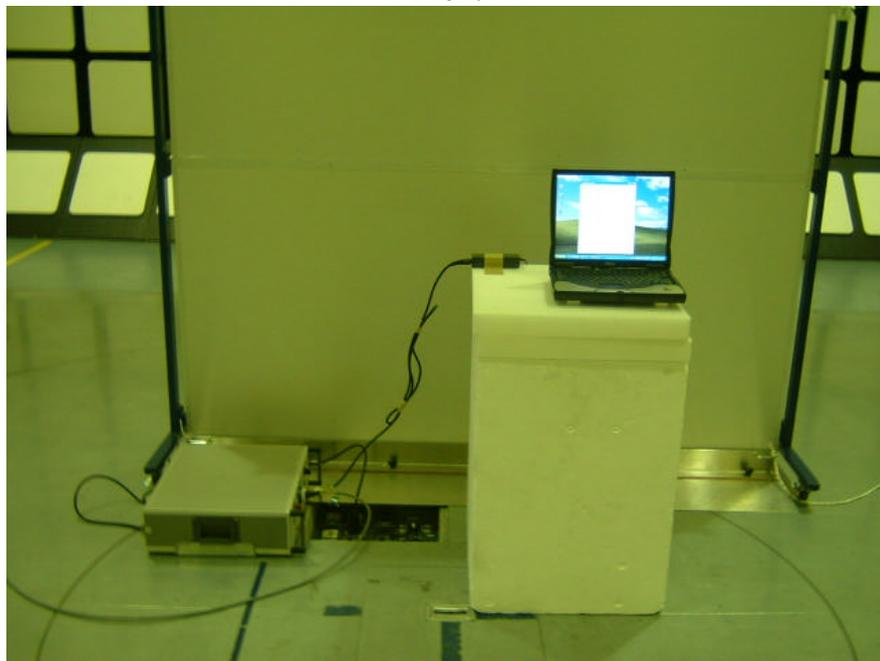
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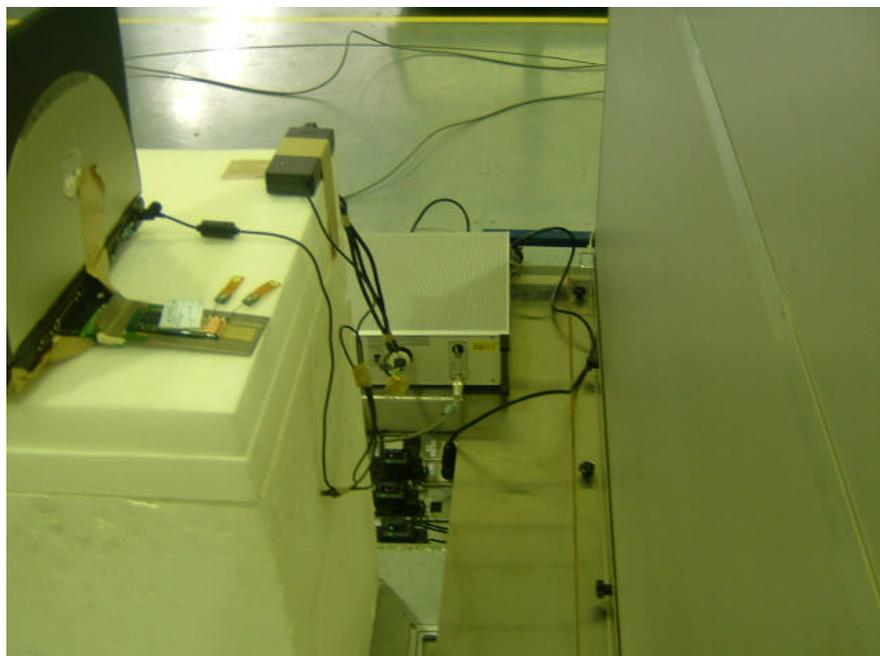
**APPENDIX 1: Photographs of test setup**

**Conducted Emission(Antenna:EA5800)**

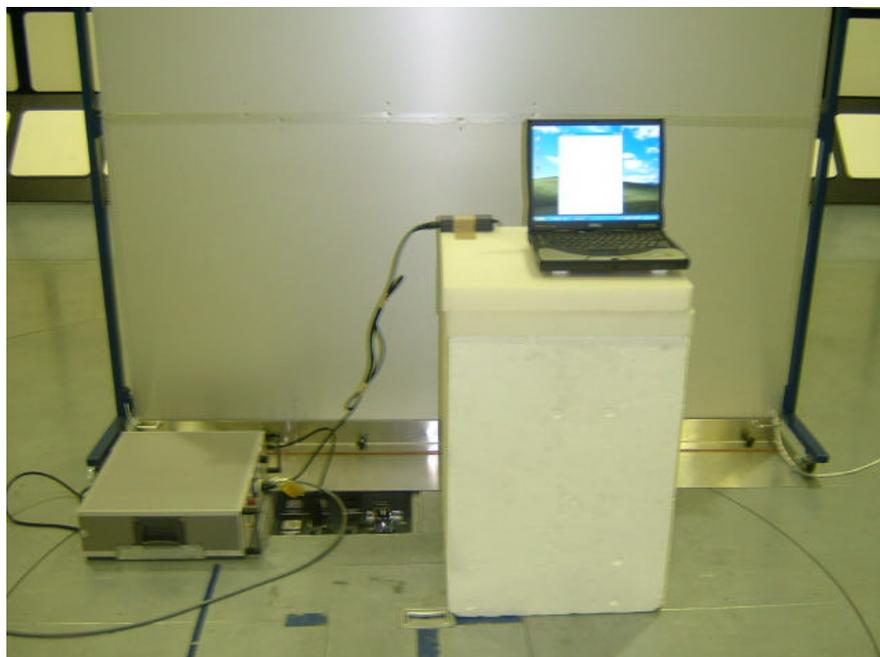
**Front**



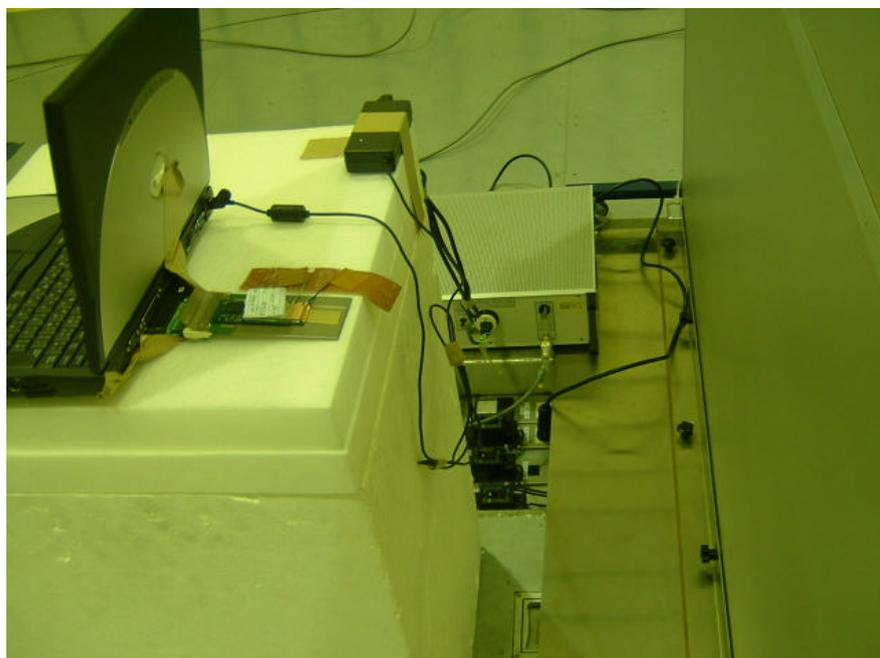
**Rear**



**Conducted Emission(Antenna:HFT18)**  
**Front**



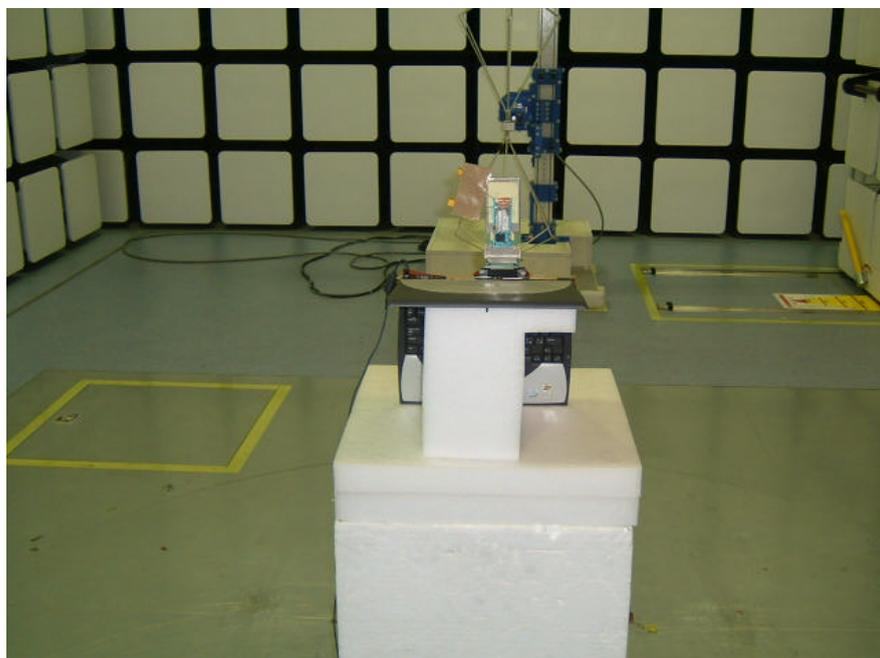
**Rear**



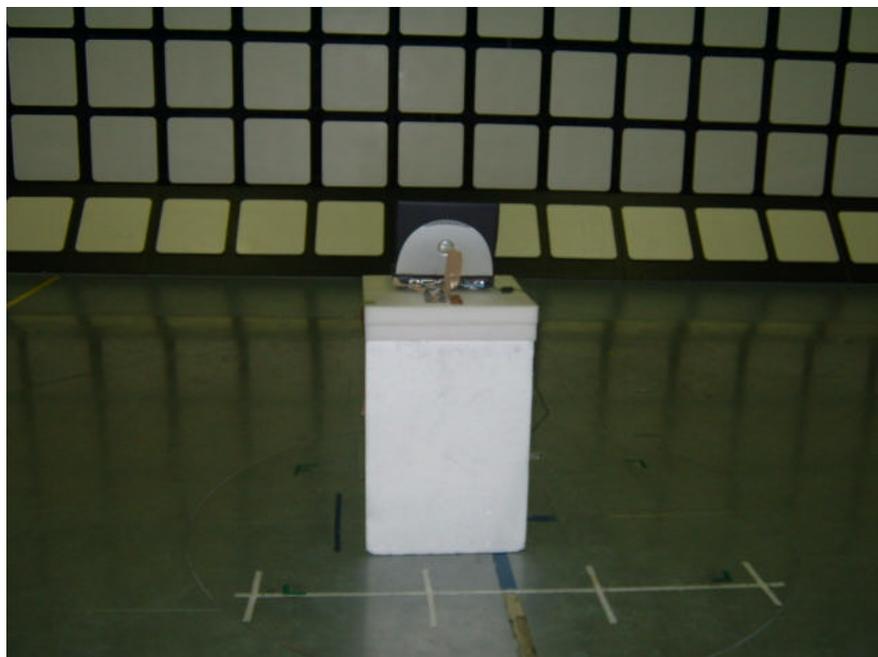
**Spurious Emission (Radiated) (Antenna:EA5800)**  
**Front**



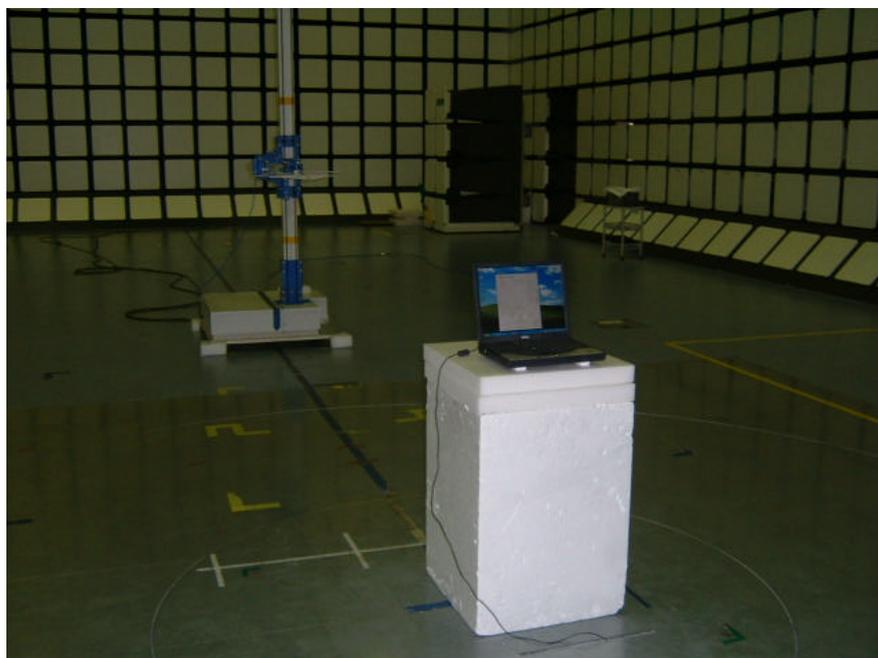
**Rear**



**Spurious Emission (Radiated) (Antenna:HFT18)**  
**Front**



**Rear**



**Worst Case Position (Y-axis:Horizontal / Y-axis:Vertical) (Antenna:EA5800)**

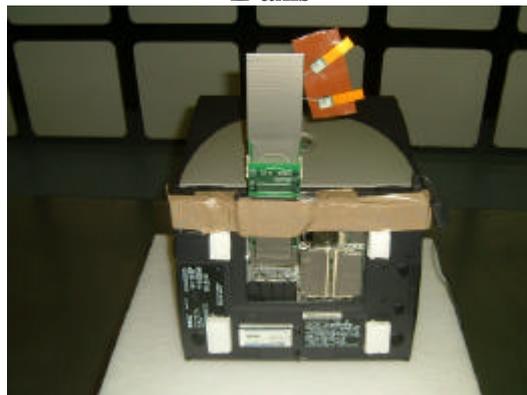
**X-axis**



**Y-axis**

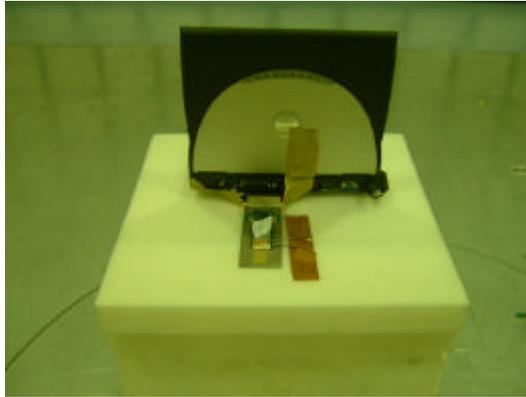


**Z-axis**

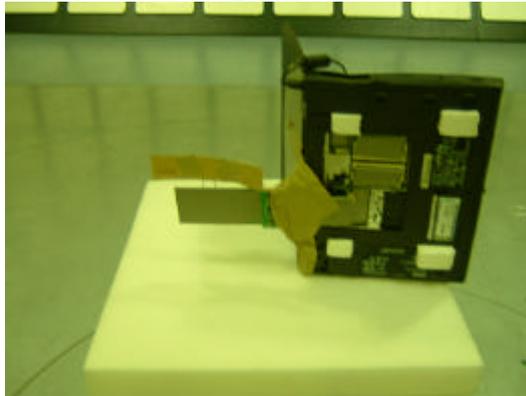


**Worst Case Position (Y-axis:Horizontal / Y-axis:Vertical) (Antenna:HFT18)**

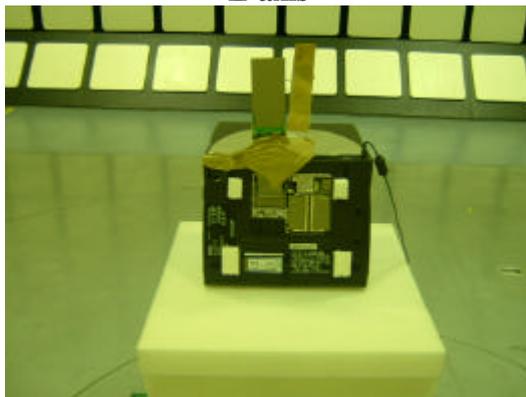
**X-axis**



**Y-axis**



**Z-axis**



## APPENDIX 2: Test instruments

### EMI test equipment ( Conducted Emission)

Control No.	Instrument	Manufacturer	Model No	Calibration Date * Interval(month)
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	2003/12/27 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	2004/02/24 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	2003/11/12 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	2003/11/10 * 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
MCC-04	Microwave Cable	Storm	421-011	2004/01/06 * 12
MCC-24	Microwave Cable	Storm	-	2004/05/01 * 12
MCC-25	Microwave Cable	Suhner	SUCOFLEX104	2003/06/30 * 12
MPA-01	Pre Amplifier	Agilent	8449B	2004/02/06 * 12
MPA-03	Microwave System Power Amplifier	Agilent	83050A	2004/06/12 * 12
MBF-03	SHF Bandpass Filter	M-City	13GHz BPF	2004/05/21 * 12
MHA-02	Horn Antenna	EMCO	3160-09	2004/01/10 * 12
MHA-04	Horn Antenna	EMCO	3160-10	2004/01/10 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	2004/01/10 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	2004/06/12 * 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
MHA-01	Horn Antenna	EMCO	3160-09	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.

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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.1 Semi Anechoic Chamber  
Date : 2004/06/24 20:38:45

Applicant : Sony Corporation Report No. : 24HE0082-HO  
Kind of EUT : Wireless LAN Module Power : DC 3.3V(PC INPUT: AC120V/60Hz)  
Model No. : IRF303U, EA5800 Temp /Humi% : 22deg.C / 56%  
Serial No. : 85 Operator : Hiroka Umeyama

Mode / Remarks: Transmitting IEEE802 11a, 54Mbps ch 36(5180MHz)

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

NO	FREQ [MHz]	READING		C.F [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBμV]	AV [dBμV]		QP [dBμV]	AV [dBμV]	QP [dBμV]	AV [dBμV]	QP [dB]	AV [dB]	
1	0.1519	52.1	21.2	0.1	52.2	21.3	65.9	55.9	13.7	34.6	N
2	0.2494	41.6	12.3	0.2	41.8	12.5	61.8	51.8	20.0	39.3	N
3	6.2879	25.8	11.1	1.0	26.8	12.1	60.0	50.0	33.2	37.9	N
4	6.9930	43.5	21.4	1.0	44.5	22.4	60.0	50.0	15.5	27.6	N
5	7.8396	37.4	23.2	1.0	38.4	24.2	60.0	50.0	21.6	25.8	N
6	13.9724	29.7	22.7	1.4	31.1	24.1	60.0	50.0	28.9	25.9	N
7	15.6551	38.3	27.8	1.5	39.8	29.3	60.0	50.0	20.2	20.7	N
8	0.1522	52.0	21.2	0.1	52.1	21.3	65.9	55.9	13.8	34.6	L
9	0.2492	41.6	12.3	0.2	41.8	12.5	61.8	51.8	20.0	39.3	L
10	6.2435	28.4	16.0	1.0	29.4	17.0	60.0	50.0	30.6	33.0	L
11	7.0019	36.1	14.2	1.0	37.1	15.2	60.0	50.0	22.9	34.8	L
12	7.8389	36.6	22.6	1.0	37.6	23.6	60.0	50.0	22.4	26.4	L
13	13.9729	42.5	24.5	1.4	43.9	25.9	60.0	50.0	16.1	24.1	L
14	15.6559	37.9	27.2	1.5	39.4	28.7	60.0	50.0	20.6	21.3	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.1 Semi Anechoic Chamber  
Date : 2004/06/24 19:31:06

Applicant	: Sony Corporation	Report No.	: 24HE0082-HO
Kind of EUT	: Wireless LAN Module	Power	: DC 3.3V(PC INPUT: AC120V/60Hz)
Model No.	: IRF303U, EA5800	Temp./Humi%	: 22deg.C / 56%
Serial No.	: 85	Operator	: Hiroka Umeyama

Mode / Remarks: Transmitting IEEE802.11a, 54Mbps ch 36(5180MHz)

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

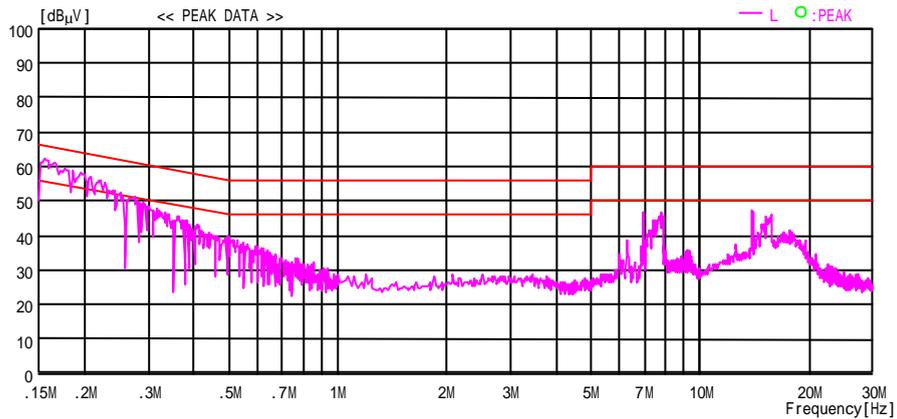
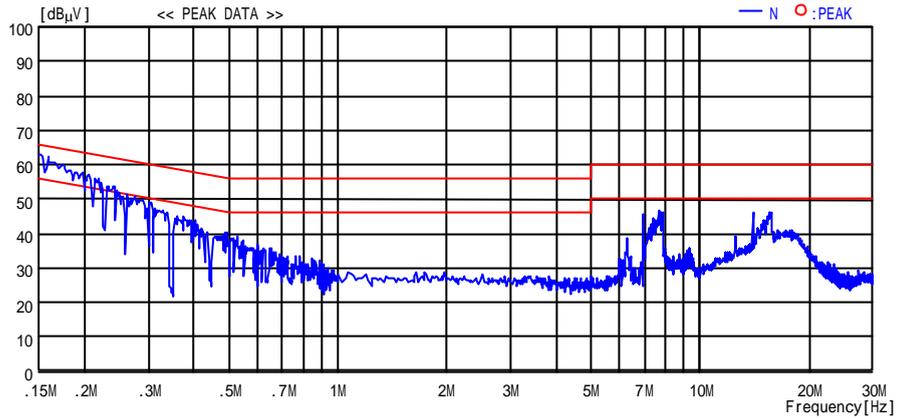


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F(L1SN LOSS+CABLE LOSS)  
Except for the above table : adequate margin data below the limits.

## DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
 Date : 2004/06/24 19:35:57

Applicant : Sony Corporation  
 Kind of EUT : Wireless LAN Module  
 Model No. : IRF303U, EA5800  
 Serial No. : 85

Report No. : 24HE0082-HO  
 Power : DC 3.3V(PC INPUT: AC120V/60Hz)  
 Temp./Humi% : 22deg.C / 56%  
 Operator : Hiroka Umeyama

Mode / Remarks: Transmitting IEEE802.11a, 54Mbps ch 52(5260MHz)

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

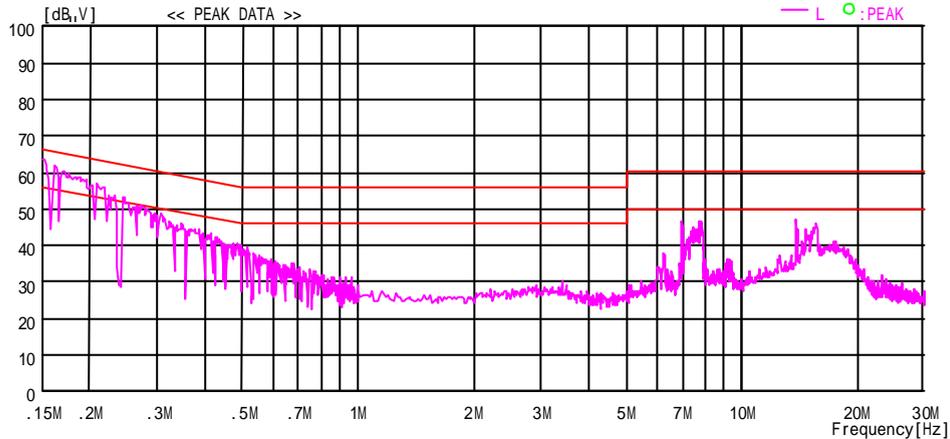
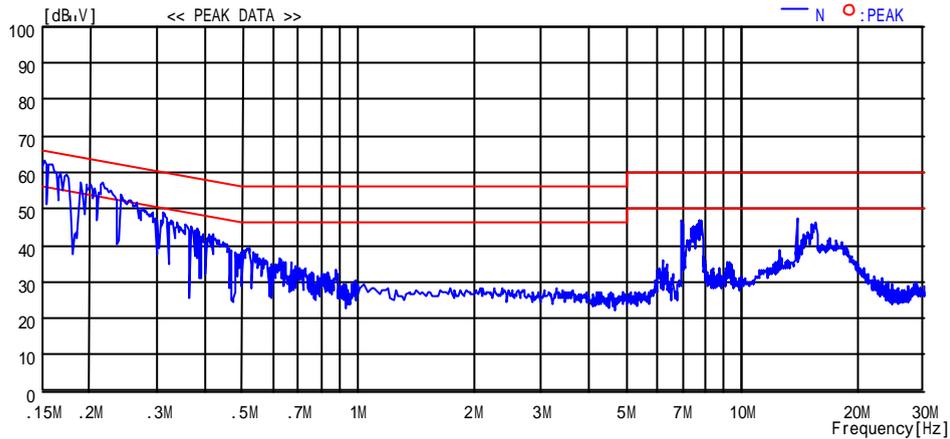


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F.(LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
 Date : 2004/06/24 19:41:04

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF303U, EA5800 Serial No. : 85	Report No. : 24HE0082-HO Power : DC 3.3V(PC INPUT: AC120V/60Hz) Temp /Humi% : 22deg.C / 56% Operator : Hiroka Umeyama
---	--

Mode / Remarks: Transmitting IEEE802 11a, 54Mbps ch 64(5320MHz)

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

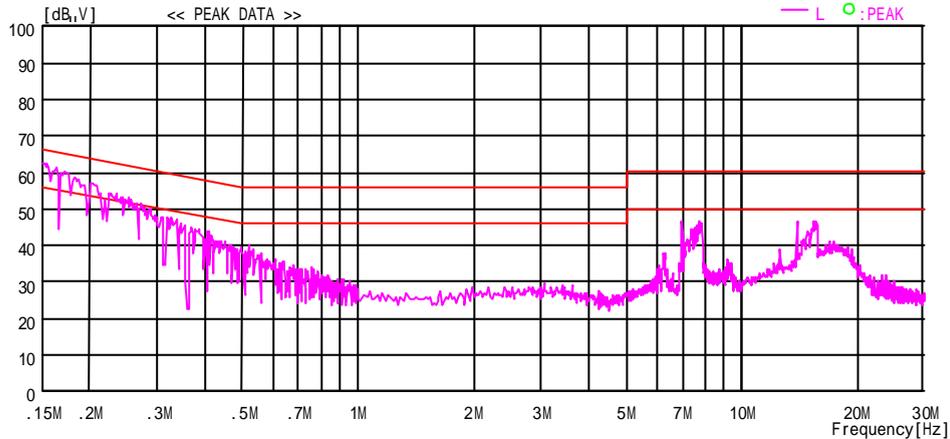
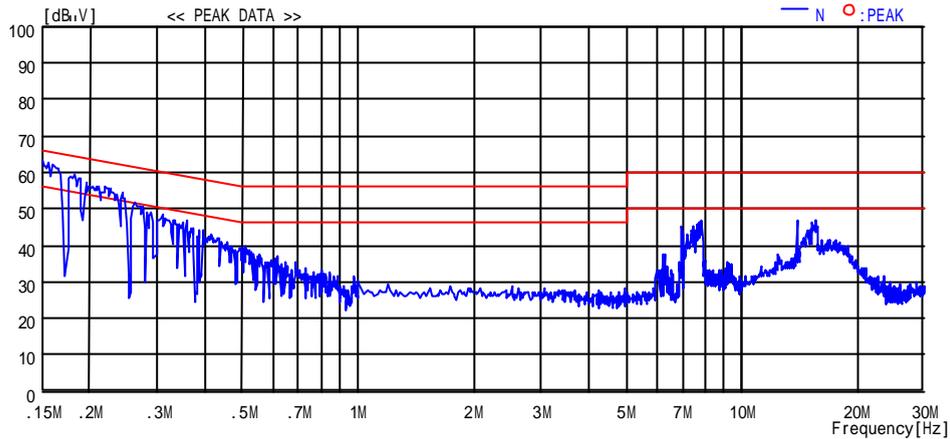


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F(LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
 Date : 2004/06/24 19:46:18

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF303U, EA5800 Serial No. : 85	Report No. : 24HE0082-HO Power : DC 3.3V(PC INPUT: AC120V/60Hz) Temp /Humi% : 22deg.C / 56% Operator : Hiroka Umeyama
---	--

Mode / Remarks: Transmitting IEEE802 11a, 54Mbps ch 149(5745MHz)

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

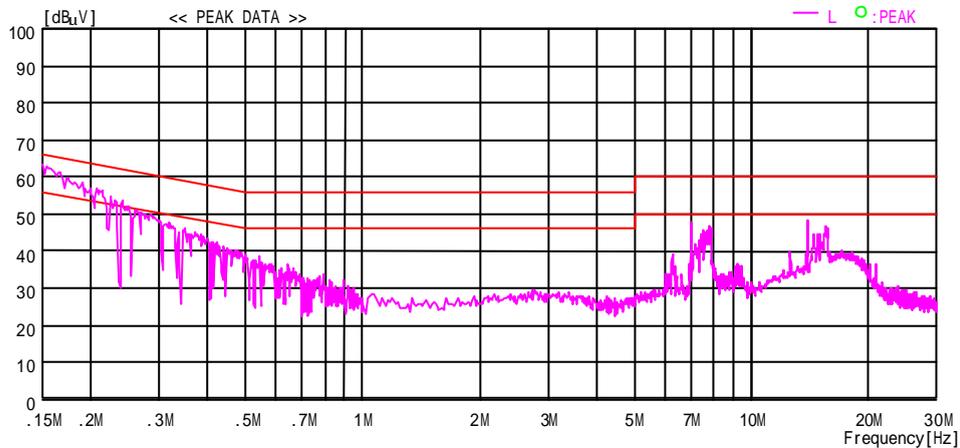
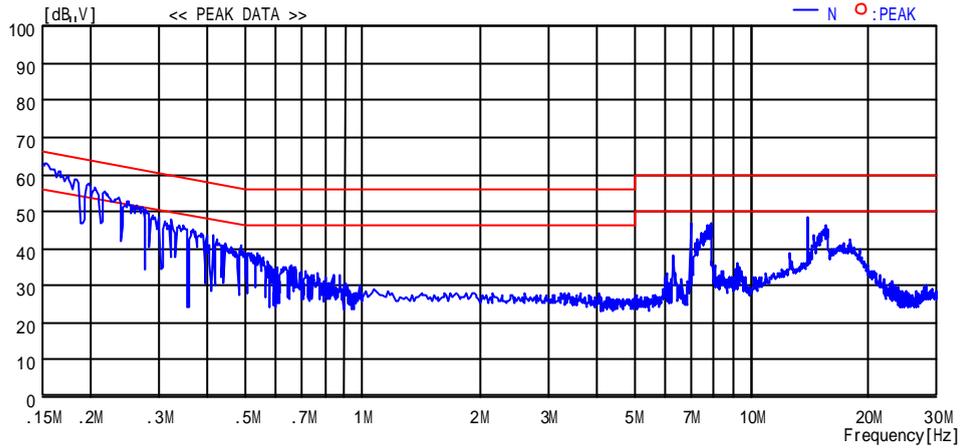


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F(LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
 Date : 2004/06/24 19:53:01

Applicant : Sony Corporation	Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module	Power : DC 3.3V(PC INPUT: AC120V/60Hz)
Model No. : IRF303U, EA5800	Temp /Humi% : 22deg.C / 56%
Serial No. : 85	Operator : Hiroka Umeyama

Mode / Remarks: Transmitting IEEE802 11a, 54Mbps ch 153(5765MHz)

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

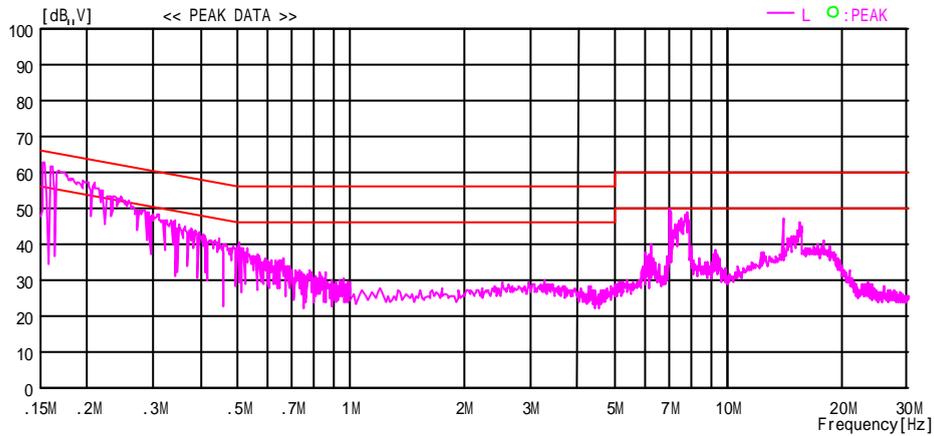
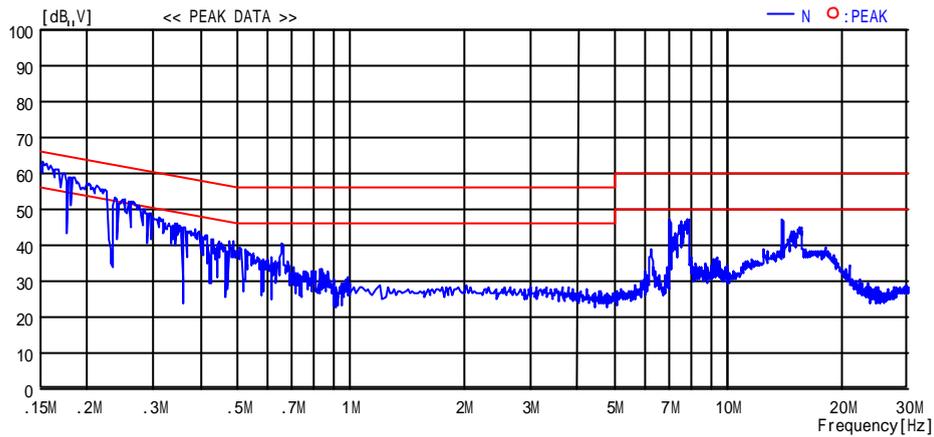


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
 Date : 2004/06/24 19:57:59

Applicant : Sony Corporation  
 Kind of EUT : Wireless LAN Module  
 Model No. : IRF303U, EA5800  
 Serial No. : 85

Report No. : 24HE0082-HO  
 Power : DC 3.3V(PC INPUT: AC120V/60Hz)  
 Temp /Humi% : 22deg.C / 56%  
 Operator : Hiroka Umeyama

Mode / Remarks: Transmitting IEEE802 11a, 54Mbps ch 161(5805MHz)

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

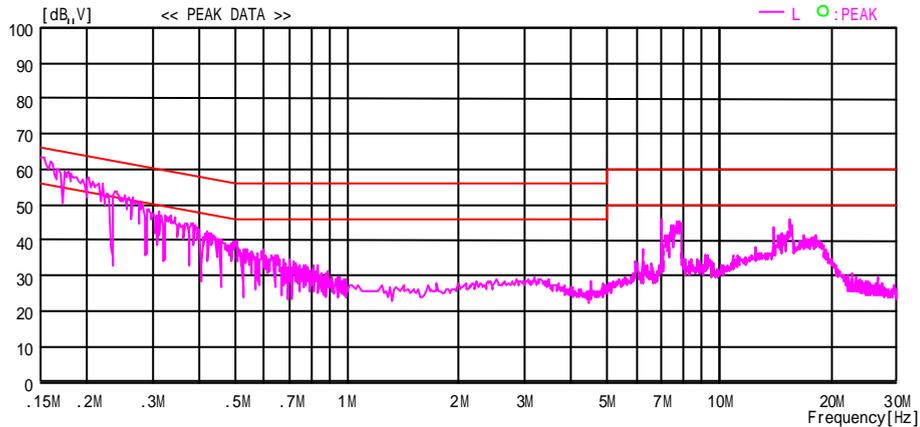
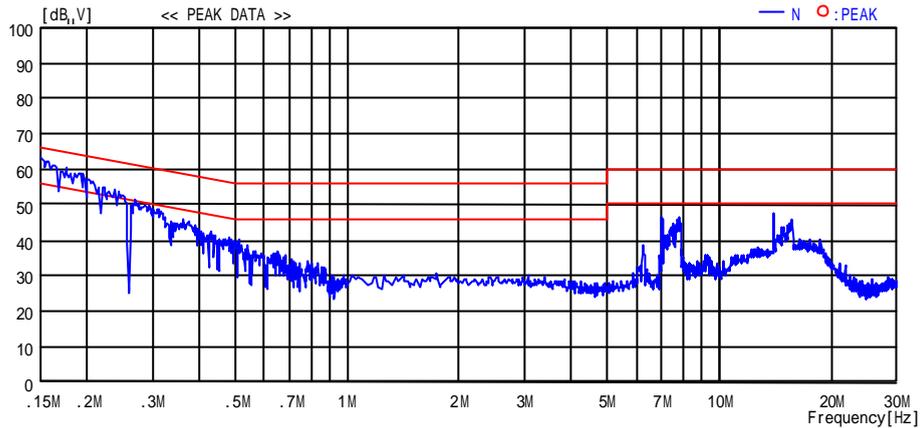


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2004/06/24 20:15:25

Applicant	: Sony Corporation	Report No.	: 24HE0082-HO
Kind of EUT	: Wireless LAN Module	Power	: DC 3.3V(PC INPUT: AC120V/60Hz)
Model No.	: IRF303U, HFT18	Temp /Humi%	: 22deg.C / 56%
Serial No.	: 85	Operator	: Hiroka Umeyama

Mode / Remarks: Transmitting IEEE802 11a, 54Mbps ch 36(5180MHz)

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

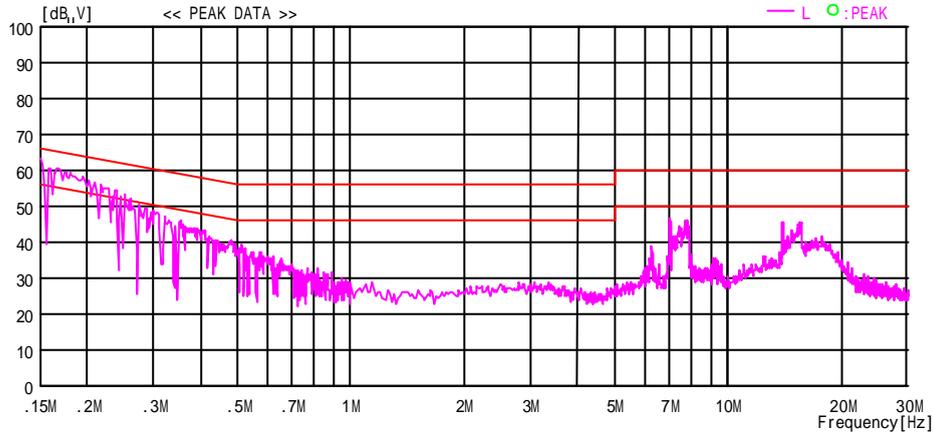
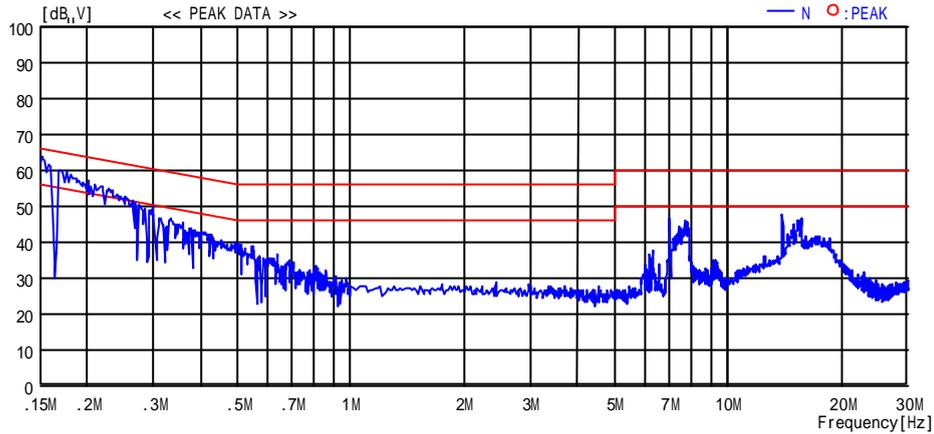


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F(LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

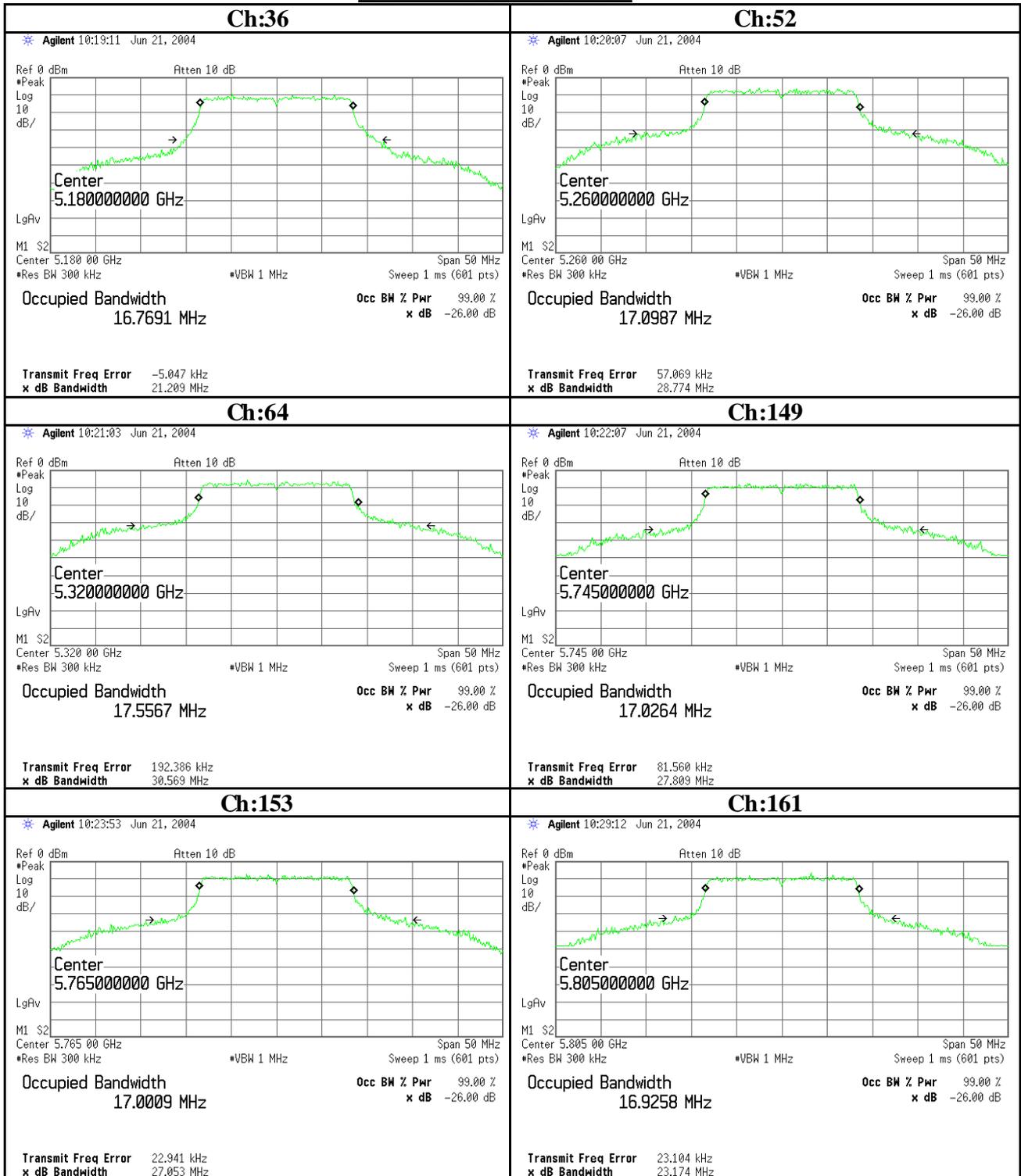
### 26dB Emission Bandwidth

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

Company	: Sony Corporation	REPORT NO	: 24HE0082-HO
Equipment	: Wireless LAN Module	REGULATION	: FCC 15.407(a)(1)(2)(3)
Model	: IRF303U	TEST DISTANCE	: -
Sample No.	: 85	DATE	: 06/21/2004
Power	: DC3.3V	TEMPERATURE	: 26deg.C
Mode	: Tx IEEE 802.11a 54Mbps	HUMIDITY	: 48%
		ENGINEER	: Hiroka Umeyama

Ch	Freq. [MHz]	26dB Bandwidth [MHz]	Limit [MHz]
36	5180.0	21.209	-
52	5260.0	28.774	-
64	5320.0	30.569	-
149	5745.0	27.809	-
153	5765.0	27.053	-
161	5805.0	23.174	-

### 26dB Emission Bandwidth



### Peak Transmit Power

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

Company : Sony Corporation  
Equipment : Wireless LAN Module  
Model : IRF303U  
Sample No.: 13  
Power : DC3.3V  
Mode : Tx IEEE 802.11a 54Mbps

REPORT NO : 24HE0082-HO  
REGULATION : FCC 15.407(a)(1)(2)(3)  
TEST DISTANCE : -  
DATE : 06/25/2004  
TEMPERATURE : 25deg.C  
HUMIDITY : 60%  
ENGINEER : Hiroka Umeyama

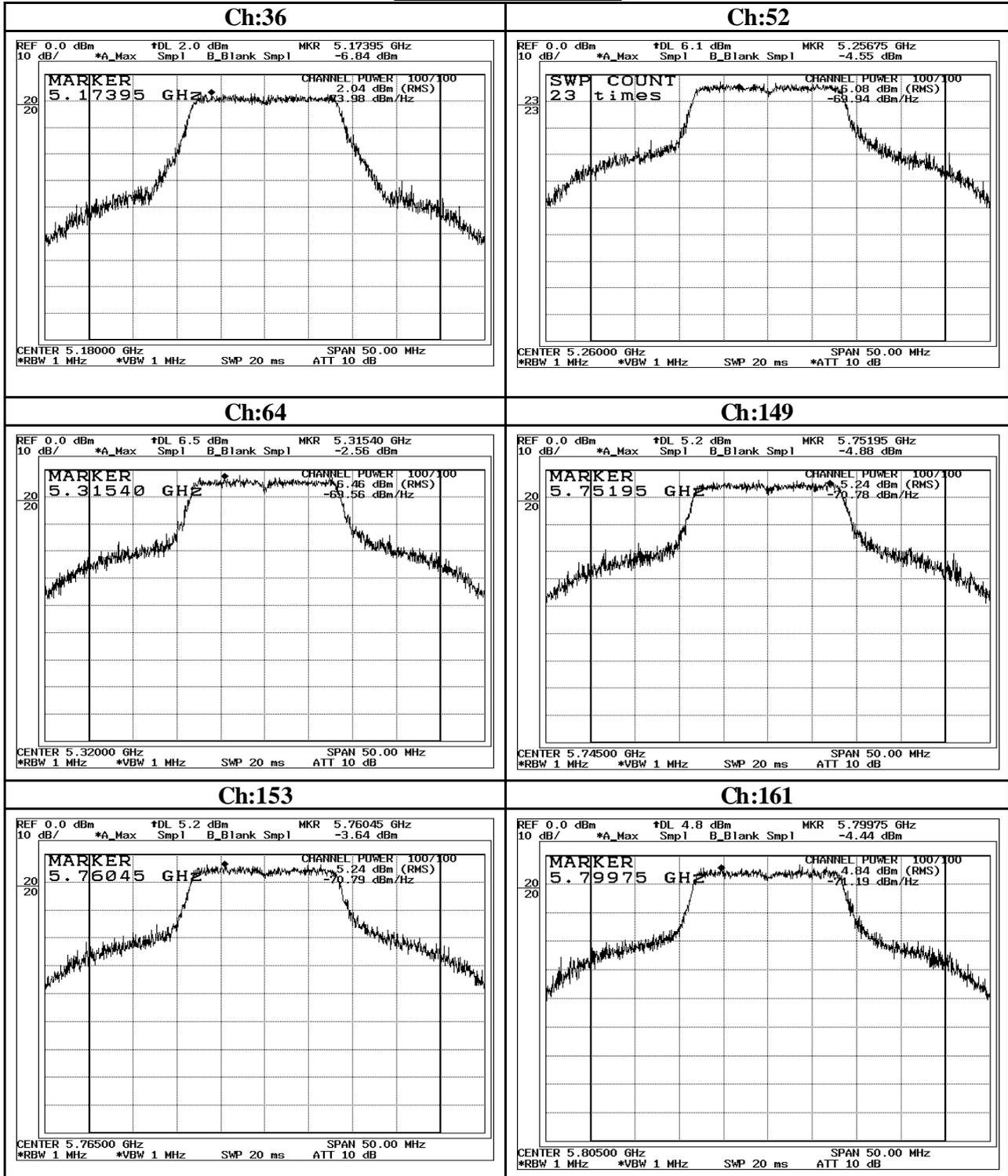
Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
36	5180.0	2.04	0.21	10.0	12.25	17.0	4.8
52	5260.0	6.08	0.21	10.0	16.29	24.0	7.7
64	5320.0	6.46	0.21	10.0	16.67	24.0	7.3
149	5745.0	5.24	0.22	10.0	15.46	30.0	14.5
153	5765.0	5.24	0.22	10.0	15.46	30.0	14.5
161	5805.0	4.84	0.22	10.0	15.06	30.0	14.9

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

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

**Peak Transmit Power**



**Radiated Spurious Emission (below 1GHz)**  
**\*Antenna:EA5800**

**DATA OF RADIATED EMISSION TEST**

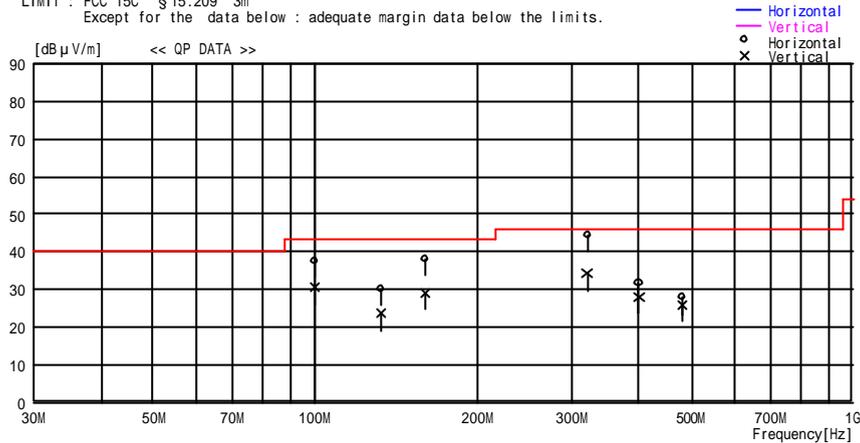
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber

Applicant : Sony Corporation Report No. : 24HE0082-HO  
Kind of EUT : Wireless LAN Module Power : DC 3.3V  
Model No. : IRF303U, EA5800 Temp./Humi. : 22 deg.C. / 55 %  
Serial No. : 85 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 36(5180MHz) 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	47.4	10.1	8.0	28.0	37.5	43.5	6.0	185	167
2	132.900	35.7	13.7	8.4	27.5	30.3	43.5	13.2	201	110
3	160.000	41.8	15.3	8.8	27.9	38.0	43.5	5.5	100	247
4	320.006	46.9	15.0	10.0	27.4	44.5	46.0	1.5	100	273
5	400.004	30.7	18.3	10.7	27.9	31.8	46.0	14.2	196	236
6	480.012	27.4	18.0	11.0	28.6	27.8	46.0	18.2	202	245
----- Vertical -----										
7	99.699	40.3	10.1	8.0	28.0	30.4	43.5	13.1	254	27
8	132.900	28.9	13.7	8.4	27.5	23.5	43.5	20.0	100	359
9	160.000	32.9	15.3	8.8	27.9	29.1	43.5	14.4	100	227
10	320.006	36.5	15.0	10.0	27.4	34.1	46.0	12.0	307	165
11	400.004	26.8	18.3	10.7	27.9	27.9	46.0	18.1	115	155
12	480.012	25.4	18.0	11.0	28.6	25.8	46.0	20.2	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)

### DATA OF RADIATED EMISSION TEST

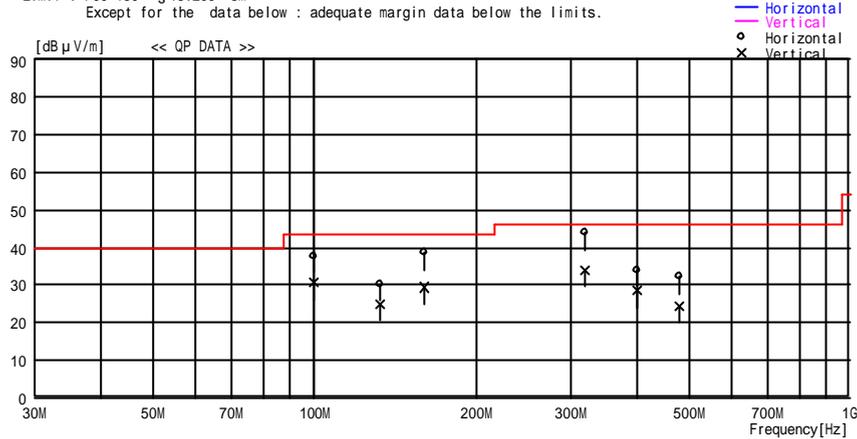
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber

Applicant : Sony Corporation  
 Kind of EUT : Wireless LAN Module  
 Model No. : IRF303U, EA5800  
 Serial No. : 85  
 Report No. : 24HE0082-HO  
 Power : DC 3.3V  
 Temp./Humi. : 22 deg.C. / 55 %  
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 52(5260MHz) 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	47.6	10.1	8.0	28.0	37.7	43.5	5.8	167	79
2	132.900	35.8	13.7	8.4	27.5	30.4	43.5	13.1	188	86
3	160.000	42.2	15.3	8.8	27.9	38.4	43.5	5.1	100	274
4	320.006	46.3	15.0	10.0	27.4	43.9	46.0	2.1	100	245
5	400.004	32.9	18.3	10.7	27.9	34.0	46.0	12.0	248	278
6	480.012	31.7	18.0	11.0	28.6	32.1	46.0	13.9	191	327
----- Vertical -----										
7	99.699	40.4	10.1	8.0	28.0	30.5	43.5	13.0	209	0
8	132.900	30.2	13.7	8.4	27.5	24.8	43.5	18.7	100	31
9	160.000	33.1	15.3	8.8	27.9	29.3	43.5	14.2	100	225
10	320.006	36.3	15.0	10.0	27.4	33.9	46.0	12.1	314	159
11	400.004	27.2	18.3	10.7	27.9	28.3	46.0	17.7	127	159
12	480.012	23.9	18.0	11.0	28.6	24.3	46.0	21.7	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)

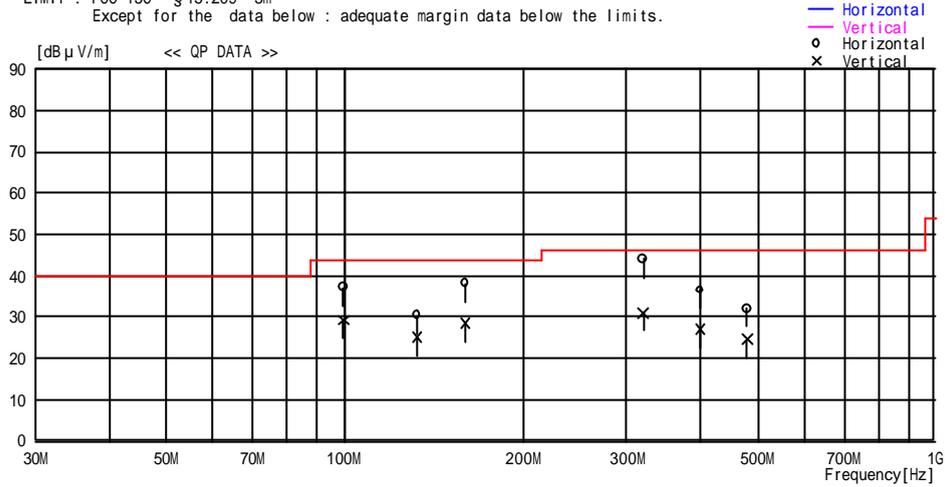
### DATA OF RADIATED EMISSION TEST

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

Applicant : Sony Corporation  
Kind of EUT : Wireless LAN Module  
Model No. : IRF303U, EA5800  
Serial No. : 85  
Report No. : 24HE0082-HO  
Power : DC 3.3V  
Temp./Humi. : 22 deg.C. / 55 %  
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 64(5320MHz) 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	47.1	10.1	8.0	28.0	37.2	43.5	6.3	166	65
2	132.900	35.8	13.7	8.4	27.5	30.4	43.5	13.1	188	86
3	160.000	41.9	15.3	8.8	27.9	38.1	43.5	5.4	100	284
4	320.006	46.4	15.0	10.0	27.4	44.0	46.0	2.0	100	251
5	400.004	35.4	18.3	10.7	27.9	36.5	46.0	9.5	100	287
6	480.012	31.6	18.0	11.0	28.6	32.0	46.0	14.0	191	334
----- Vertical -----										
7	99.699	39.1	10.1	8.0	28.0	29.2	43.5	14.3	111	56
8	132.900	30.4	13.7	8.4	27.5	25.0	43.5	18.5	100	34
9	160.000	32.3	15.3	8.8	27.9	28.5	43.5	15.0	100	157
10	320.006	33.5	15.0	10.0	27.4	31.1	46.0	14.9	143	149
11	400.004	26.1	18.3	10.7	27.9	27.2	46.0	18.8	170	134
12	480.012	24.1	18.0	11.0	28.6	24.5	46.0	21.5	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)

### DATA OF RADIATED EMISSION TEST

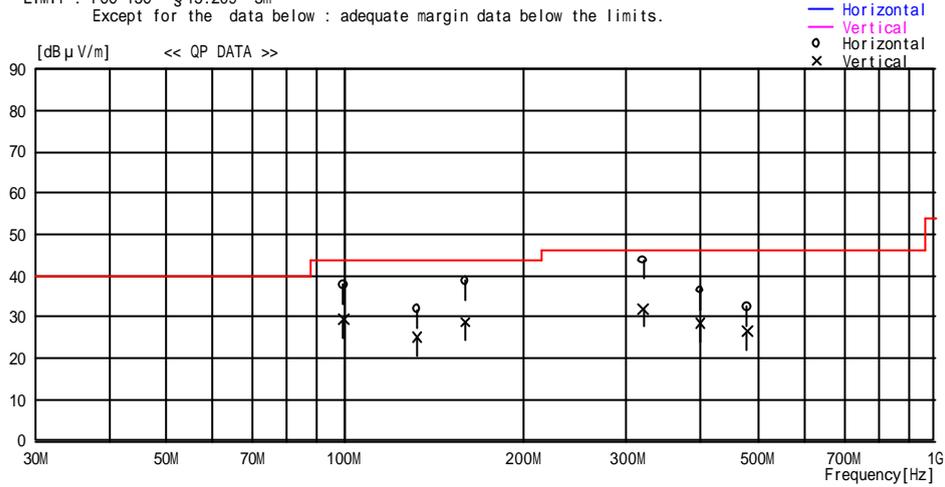
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber

Applicant : Sony Corporation  
Kind of EUT : Wireless LAN Module  
Model No. : IRF303U, EA5800  
Serial No. : 85  
Report No. : 24HE0082-HO  
Power : DC 3.3V  
Temp./Humi. : 22 deg.C. / 55 %  
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 149(5745MHz) 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	47.7	10.1	8.0	28.0	37.8	43.5	5.7	175	71
2	132.900	37.3	13.7	8.4	27.5	31.9	43.5	11.6	232	110
3	160.000	42.5	15.3	8.8	27.9	38.7	43.5	4.8	116	257
4	320.006	46.1	15.0	10.0	27.4	43.7	46.0	2.3	100	269
5	400.004	35.3	18.3	10.7	27.9	36.4	46.0	9.6	100	285
6	480.012	32.0	18.0	11.0	28.6	32.4	46.0	13.6	195	325
----- Vertical -----										
7	99.699	39.3	10.1	8.0	28.0	29.4	43.5	14.1	119	12
8	132.900	30.5	13.7	8.4	27.5	25.1	43.5	18.4	150	5
9	160.000	32.5	15.3	8.8	27.9	28.7	43.5	14.8	100	158
10	320.006	34.4	15.0	10.0	27.4	32.0	46.0	14.0	140	142
11	400.004	27.5	18.3	10.7	27.9	28.6	46.0	17.4	122	188
12	480.012	26.0	18.0	11.0	28.6	26.4	46.0	19.6	100	141

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)

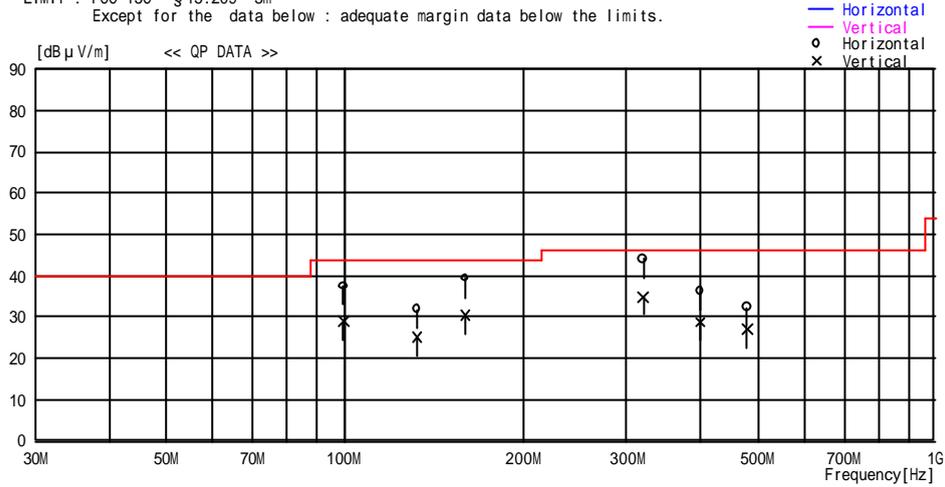
### DATA OF RADIATED EMISSION TEST

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

Applicant : Sony Corporation  
Kind of EUT : Wireless LAN Module  
Model No. : IRF303U, EA5800  
Serial No. : 85  
Report No. : 24HE0082-HO  
Power : DC 3.3V  
Temp./Humi. : 22 deg.C. / 55 %  
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 153(5765MHz) 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	47.4	10.1	8.0	28.0	37.5	43.5	6.0	210	73
2	132.900	37.3	13.7	8.4	27.5	31.9	43.5	11.6	246	95
3	160.000	43.1	15.3	8.8	27.9	39.3	43.5	4.2	205	277
4	320.006	46.4	15.0	10.0	27.4	44.0	46.0	2.0	100	262
5	400.004	35.1	18.3	10.7	27.9	36.2	46.0	9.8	100	263
6	480.012	31.9	18.0	11.0	28.6	32.3	46.0	13.7	188	323
----- Vertical -----										
7	99.699	38.9	10.1	8.0	28.0	29.0	43.5	14.5	100	65
8	132.900	30.5	13.7	8.4	27.5	25.1	43.5	18.4	104	0
9	160.000	34.1	15.3	8.8	27.9	30.3	43.5	13.2	100	199
10	320.006	37.3	15.0	10.0	27.4	34.9	46.0	11.1	323	187
11	400.004	27.6	18.3	10.7	27.9	28.7	46.0	17.3	124	181
12	480.012	26.8	18.0	11.0	28.6	27.2	46.0	18.8	140	145

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)

### DATA OF RADIATED EMISSION TEST

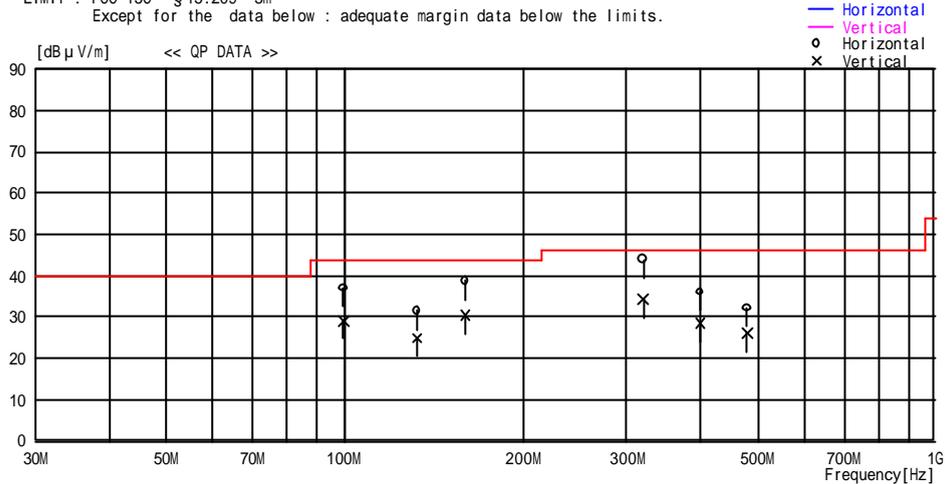
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber

Applicant : Sony Corporation  
Kind of EUT : Wireless LAN Module  
Model No. : IRF303U, EA5800  
Serial No. : 85  
Report No. : 24HE0082-HO  
Power : DC 3.3V  
Temp./Humi. : 22 deg.C. / 55 %  
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 161(5805MHz) 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	46.9	10.1	8.0	28.0	37.0	43.5	6.5	241	69
2	132.900	36.8	13.7	8.4	27.5	31.4	43.5	12.1	238	76
3	160.000	42.5	15.3	8.8	27.9	38.7	43.5	4.8	123	264
4	320.006	46.3	15.0	10.0	27.4	43.9	46.0	2.1	100	253
5	400.004	35.0	18.3	10.7	27.9	36.1	46.0	9.9	100	295
6	480.012	31.8	18.0	11.0	28.6	32.2	46.0	13.8	194	307
----- Vertical -----										
7	99.699	39.0	10.1	8.0	28.0	29.1	43.5	14.4	100	45
8	132.900	30.3	13.7	8.4	27.5	24.9	43.5	18.6	104	4
9	160.000	34.2	15.3	8.8	27.9	30.4	43.5	13.1	100	205
10	320.006	36.7	15.0	10.0	27.4	34.3	46.0	11.7	303	170
11	400.004	27.3	18.3	10.7	27.9	28.4	46.0	17.6	116	170
12	480.012	25.7	18.0	11.0	28.6	26.1	46.0	19.9	100	159

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 (below 1GHz)**  
**\*Antenna:HFT18**

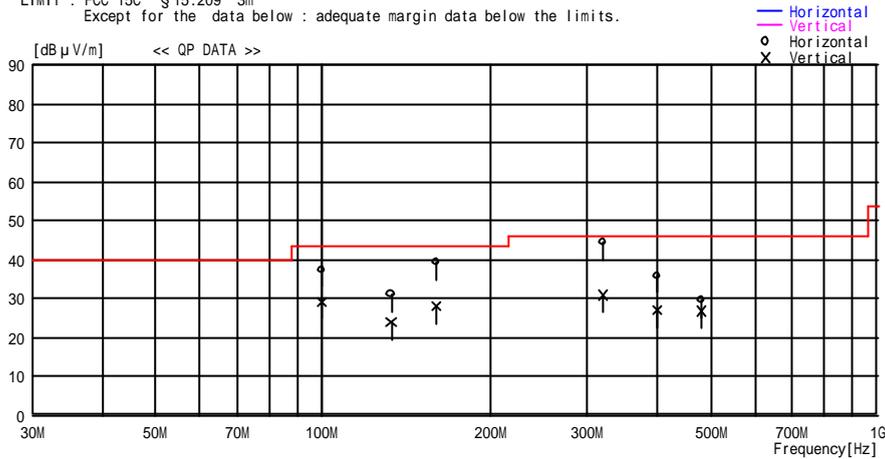
**DATA OF RADIATED EMISSION TEST**

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

Applicant : Sony Corporation  
Kind of EUT : Wireless LAN Module  
Model No. : IRF303U, HFT18  
Serial No. : 85  
Report No. : 24HE0082-HO  
Power : DC 3.3V  
Temp./Humi. : 22 deg.C. / 55 %  
Operator : Hiroka Uneyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 36(5180MHz) 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 μ V]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB μ V/m]	LIMIT [dB μ V/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	99.699	47.4	10.1	8.0	28.0	37.5	43.5	6.0	218	82
2	132.900	36.7	13.7	8.4	27.5	31.3	43.5	12.2	256	97
3	160.000	43.1	15.3	8.8	27.9	39.3	43.5	4.2	197	285
4	320.006	46.8	15.0	10.0	27.4	44.4	46.0	1.6	100	243
5	400.004	34.9	18.3	10.7	27.9	36.0	46.0	10.0	100	275
6	480.012	29.3	18.0	11.0	28.6	29.7	46.0	16.3	240	0
----- Vertical -----										
7	99.699	39.1	10.1	8.0	28.0	29.2	43.5	14.3	114	34
8	132.900	29.5	13.7	8.4	27.5	24.1	43.5	19.4	100	0
9	160.000	31.9	15.3	8.8	27.9	28.1	43.5	15.4	209	165
10	320.006	33.3	15.0	10.0	27.4	30.9	46.0	15.1	137	301
11	400.004	26.0	18.3	10.7	27.9	27.1	46.0	18.9	211	43
12	480.012	26.4	18.0	11.0	28.6	26.8	46.0	19.2	155	171

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)

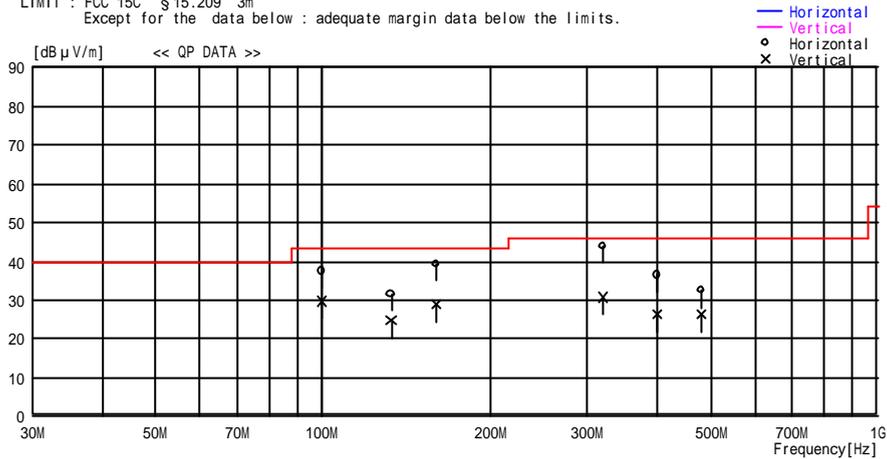
## DATA OF RADIATED EMISSION TEST

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

Applicant : Sony Corporation  
 Kind of EUT : Wireless LAN Module  
 Model No. : IRF303U, HFT18  
 Serial No. : 85  
 Report No. : 24HE0082-HO  
 Power : DC 3.3V  
 Temp./Humi. : 22 deg.C. / 55 %  
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 52(5260MHz) 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	47.3	10.1	8.0	28.0	37.4	43.5	6.1	315	95
2	132.900	37.0	13.7	8.4	27.5	31.6	43.5	11.9	230	89
3	160.000	43.2	15.3	8.8	27.9	39.4	43.5	4.1	189	275
4	320.006	46.4	15.0	10.0	27.4	44.0	46.0	2.0	100	264
5	400.004	35.3	18.3	10.7	27.9	36.4	46.0	9.6	100	284
6	480.012	32.2	18.0	11.0	28.6	32.6	46.0	13.4	198	309
----- Vertical -----										
7	99.699	39.7	10.1	8.0	28.0	29.8	43.5	13.7	141	14
8	132.900	30.1	13.7	8.4	27.5	24.7	43.5	18.8	100	0
9	160.000	32.8	15.3	8.8	27.9	29.0	43.5	14.5	226	192
10	320.006	33.1	15.0	10.0	27.4	30.7	46.0	15.3	151	329
11	400.004	25.3	18.3	10.7	27.9	26.4	46.0	19.6	285	26
12	480.012	26.0	18.0	11.0	28.6	26.4	46.0	19.6	113	174

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)

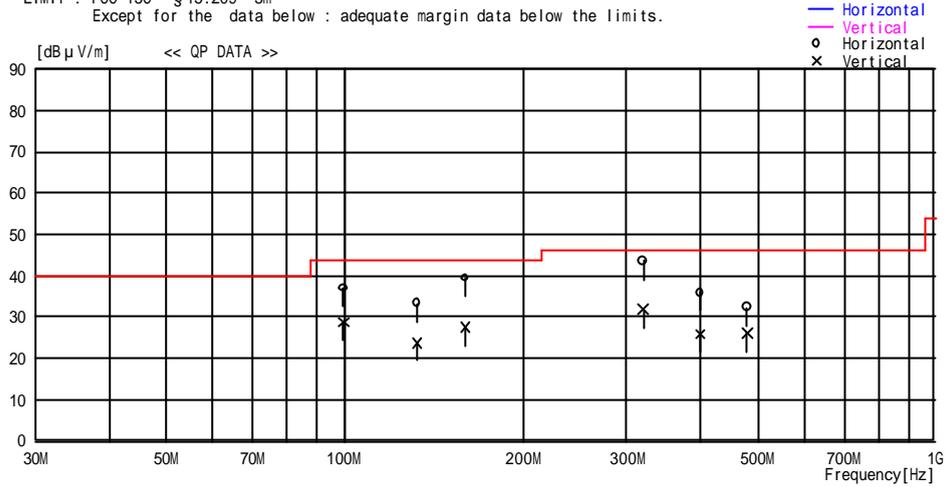
**DATA OF RADIATED EMISSION TEST**

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

Applicant : Sony Corporation  
Kind of EUT : Wireless LAN Module  
Model No. : IRF303U, HFT18  
Serial No. : 85  
Report No. : 24HE0082-HO  
Power : DC 3.3V  
Temp./Humi. : 22 deg.C. / 55 %  
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 64(5320MHz) 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	46.9	10.1	8.0	28.0	37.0	43.5	6.5	289	67
2	132.900	38.7	13.7	8.4	27.5	33.3	43.5	10.2	245	97
3	160.000	43.2	15.3	8.8	27.9	39.4	43.5	4.1	178	256
4	320.006	45.9	15.0	10.0	27.4	43.5	46.0	2.5	100	245
5	400.004	34.8	18.3	10.7	27.9	35.9	46.0	10.1	100	276
6	480.012	31.9	18.0	11.0	28.6	32.3	46.0	13.7	177	275
----- Vertical -----										
7	99.699	38.7	10.1	8.0	28.0	28.8	43.5	14.7	121	54
8	132.900	29.3	13.7	8.4	27.5	23.9	43.5	19.6	100	0
9	160.000	31.3	15.3	8.8	27.9	27.5	43.5	16.0	216	188
10	320.006	34.2	15.0	10.0	27.4	31.8	46.0	14.2	176	338
11	400.004	24.8	18.3	10.7	27.9	25.9	46.0	20.1	289	12
12	480.012	25.8	18.0	11.0	28.6	26.2	46.0	19.8	100	176

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)

## DATA OF RADIATED EMISSION TEST

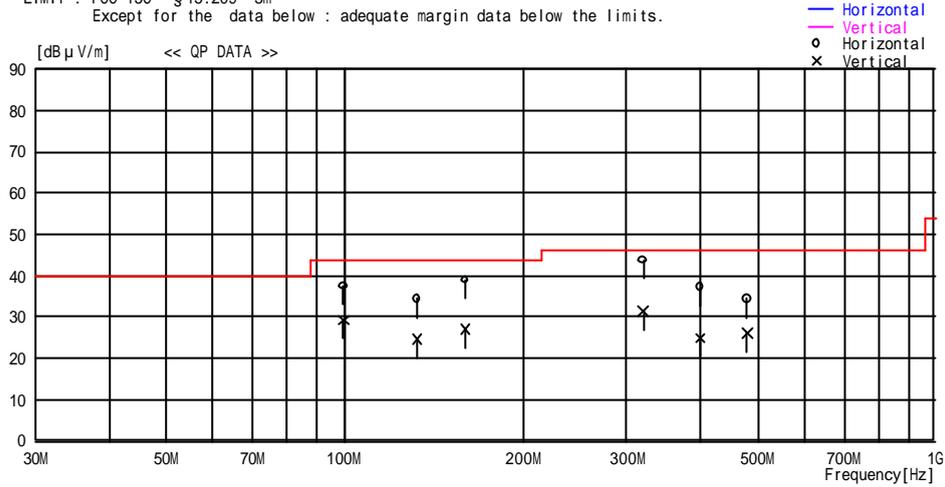
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber

Applicant : Sony Corporation  
Kind of EUT : Wireless LAN Module  
Model No. : IRF303U, HFT18  
Serial No. : 85

Report No. : 24HE0082-HO  
Power : DC 3.3V  
Temp./Humi. : 22 deg.C. / 55 %  
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 149(5745MHz) 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	47.3	10.1	8.0	28.0	37.4	43.5	6.1	198	51
2	132.900	39.7	13.7	8.4	27.5	34.3	43.5	9.2	199	87
3	160.000	42.8	15.3	8.8	27.9	39.0	43.5	4.5	254	176
4	320.006	46.2	15.0	10.0	27.4	43.8	46.0	2.2	100	233
5	400.004	36.0	18.3	10.7	27.9	37.1	46.0	8.9	100	245
6	480.012	33.9	18.0	11.0	28.6	34.3	46.0	11.7	132	234
----- Vertical -----										
7	99.699	39.1	10.1	8.0	28.0	29.2	43.5	14.3	100	78
8	132.900	30.0	13.7	8.4	27.5	24.6	43.5	18.9	100	0
9	160.000	30.9	15.3	8.8	27.9	27.1	43.5	16.4	178	168
10	320.006	33.8	15.0	10.0	27.4	31.4	46.0	14.6	208	309
11	400.004	23.8	18.3	10.7	27.9	24.9	46.0	21.1	212	55
12	480.012	25.8	18.0	11.0	28.6	26.2	46.0	19.8	100	167

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)

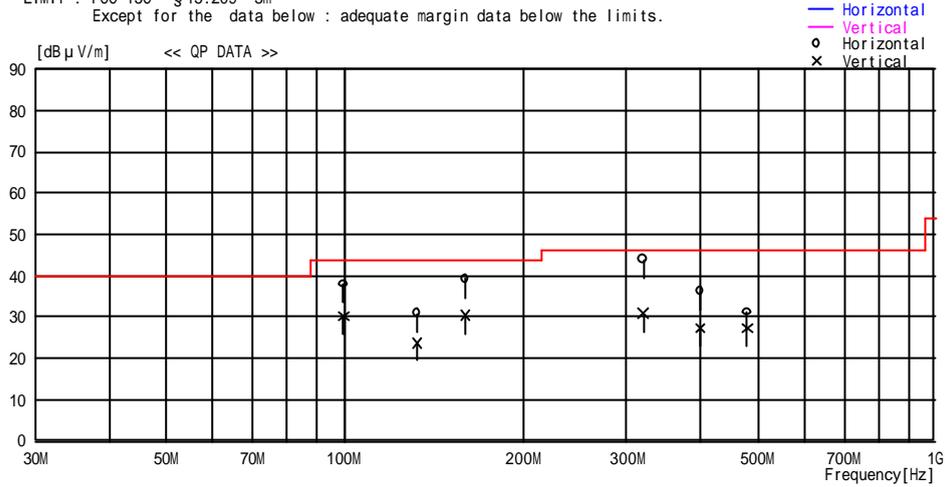
**DATA OF RADIATED EMISSION TEST**

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

Applicant : Sony Corporation  
Kind of EUT : Wireless LAN Module  
Model No. : IRF303U, HFT18  
Serial No. : 85  
Report No. : 24HE0082-HO  
Power : DC 3.3V  
Temp./Humi. : 22 deg.C. / 55 %  
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 153(5765MHz) 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	47.8	10.1	8.0	28.0	37.9	43.5	5.6	189	73
2	132.900	36.3	13.7	8.4	27.5	30.9	43.5	12.6	268	89
3	160.000	43.0	15.3	8.8	27.9	39.2	43.5	4.3	182	281
4	320.006	46.3	15.0	10.0	27.4	43.9	46.0	2.1	100	245
5	400.004	35.1	18.3	10.7	27.9	36.2	46.0	9.8	100	267
6	480.012	30.8	18.0	11.0	28.6	31.2	46.0	14.8	100	307
----- Vertical -----										
7	99.699	40.1	10.1	8.0	28.0	30.2	43.5	13.3	100	224
8	132.900	29.3	13.7	8.4	27.5	23.9	43.5	19.6	100	0
9	160.000	34.2	15.3	8.8	27.9	30.4	43.5	13.1	100	187
10	320.006	33.3	15.0	10.0	27.4	30.9	46.0	15.1	145	305
11	400.004	26.2	18.3	10.7	27.9	27.3	46.0	18.7	216	37
12	480.012	26.9	18.0	11.0	28.6	27.3	46.0	18.7	151	154

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)

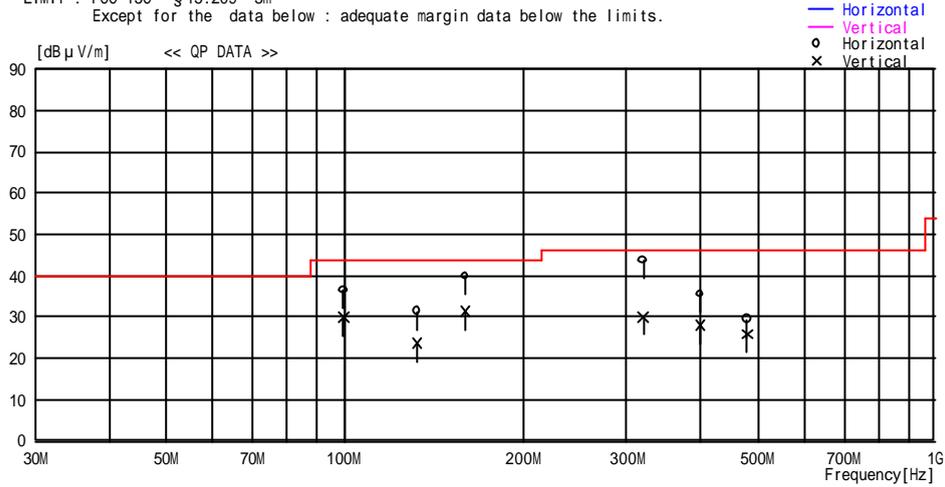
**DATA OF RADIATED EMISSION TEST**

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

Applicant : Sony Corporation  
Kind of EUT : Wireless LAN Module  
Model No. : IRF303U, HFT18  
Serial No. : 85  
Report No. : 24HE0082-HO  
Power : DC 3.3V  
Temp./Humi. : 22 deg.C. / 55 %  
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a, 54Mbps, ch 161(5805MHz) 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	46.4	10.1	8.0	28.0	36.5	43.5	7.0	178	54
2	132.900	36.7	13.7	8.4	27.5	31.3	43.5	12.2	248	58
3	160.000	43.6	15.3	8.8	27.9	39.8	43.5	3.7	167	298
4	320.006	46.1	15.0	10.0	27.4	43.7	46.0	2.3	100	235
5	400.004	34.4	18.3	10.7	27.9	35.5	46.0	10.5	100	264
6	480.012	29.0	18.0	11.0	28.6	29.4	46.0	16.6	100	271
----- Vertical -----										
7	99.699	39.8	10.1	8.0	28.0	29.9	43.5	13.6	100	213
8	132.900	28.9	13.7	8.4	27.5	23.5	43.5	20.0	100	0
9	160.000	35.1	15.3	8.8	27.9	31.3	43.5	12.2	100	199
10	320.006	32.5	15.0	10.0	27.4	30.1	46.0	15.9	132	289
11	400.004	27.0	18.3	10.7	27.9	28.1	46.0	17.9	189	43
12	480.012	25.5	18.0	11.0	28.6	25.9	46.0	20.1	127	167

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 (above 1GHz:Inside of the restricted band)**  
**\*Antenna:EA5800 \*Detector:PK**

**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant	: Sony Corporation	Report No.	: 24HE0082-HO
Kind of EUT	: Wireless LAN Module	Power	: DC 3.3V
Model No.	: IRF303U EA5800	Temp./Humi.	: 25 deg.C. / 60 %
Serial No.	: 85	Operator	: Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a  
 54Mbps, HOR/VER:Y-Axis(MAX)  
 Limit : FCC15C §15.407 3m  
 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	2777.000	52.2	31.8	6.9	36.4	54.5	74.0	19.5	Tx:Ch36
2	2817.000	53.8	31.9	6.9	36.4	56.2	74.0	17.8	Tx:Ch52
3	2847.000	54.9	32.0	7.0	36.4	57.5	74.0	16.5	Tx:Ch64
----- Vertical -----									
4	2777.000	50.2	31.8	6.9	36.4	52.5	74.0	21.5	Tx:Ch36
5	2817.000	51.2	31.9	6.9	36.4	53.6	74.0	20.4	Tx:Ch52
6	2847.000	51.9	32.0	7.0	36.4	54.5	74.0	19.5	Tx:Ch64

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)

**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation Report No. : 24HE0082-HO  
Kind of EUT : Wireless LAN Module Power : DC 3.3V / Distance 1m  
Model No. : IRF303U EA5800 Temp./Humi. : 21 deg.C. / 61 %  
Serial No. : 85 Operator : Mitsuru Fujimura

Mode / Remarks: Transmitting IEEE802.11a  
54Mbps, HOR/VER:Y-Axis(MAX)  
Limit : FCC15C §15.407 3m (used Distance Factor: 1m)  
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	10640.000	34.1	37.2	13.0	35.7	48.6	74.0	25.4	Tx:Ch64
2	11107.990	39.0	38.7	14.9	35.4	57.2	74.0	16.8	Tx:Ch36
3	11268.000	36.7	39.1	15.0	35.5	55.3	74.0	18.7	Tx:Ch52
4	11388.000	37.4	39.4	15.1	35.5	56.4	74.0	17.6	Tx:Ch64
5	11490.040	34.9	38.8	13.7	35.5	51.9	74.0	22.1	Tx:Ch149
6	11530.940	35.7	38.9	13.7	35.5	52.8	74.0	21.2	Tx:Ch153
7	11609.720	38.1	39.2	13.7	35.5	55.5	74.0	18.5	Tx:Ch161
8	12238.000	37.2	41.5	15.6	35.6	58.7	74.0	15.3	Tx:Ch149
9	12278.000	34.6	41.6	15.6	35.6	56.2	74.0	17.8	Tx:Ch153
10	12358.000	34.5	41.8	15.6	35.5	56.4	74.0	17.6	Tx:Ch161
11	15540.000	33.5	41.9	16.7	35.9	56.2	74.0	17.8	Tx:Ch36
12	15780.000	34.4	42.1	16.8	36.2	57.1	74.0	16.9	Tx:Ch52
13	15960.000	34.0	42.2	16.9	36.4	56.7	74.0	17.3	Tx:Ch64
----- Vertical -----									
14	10640.000	34.3	37.2	13.0	35.7	48.8	74.0	25.2	Tx:Ch64
15	11108.000	39.5	38.7	14.9	35.4	57.7	74.0	16.3	Tx:Ch36
16	11268.000	34.6	39.1	15.0	35.5	53.2	74.0	20.8	Tx:Ch52
17	11388.000	36.0	39.4	15.1	35.5	55.0	74.0	19.0	Tx:Ch64
18	11490.040	36.8	38.8	13.7	35.5	53.8	74.0	20.2	Tx:Ch149
19	11530.940	39.7	38.9	13.7	35.5	56.8	74.0	17.2	Tx:Ch153
20	11610.000	41.6	39.2	13.7	35.5	59.0	74.0	15.0	Tx:Ch161
21	12238.000	36.9	41.5	15.6	35.6	58.4	74.0	15.6	Tx:Ch149
22	12278.000	38.7	41.6	15.6	35.6	60.3	74.0	13.7	Tx:Ch153
23	12358.000	37.3	41.8	15.6	35.5	59.2	74.0	14.8	Tx:Ch161
24	15540.000	33.2	41.9	16.7	35.9	55.9	74.0	18.1	Tx:Ch36
25	15780.000	33.8	42.1	16.8	36.2	56.5	74.0	17.5	Tx:Ch52
26	15960.000	33.9	42.2	16.9	36.4	56.6	74.0	17.4	Tx:Ch64

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

## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation	Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module	Power : DC 3.3V / Distance 1m
Model No. : IRF303U EA5800	Temp./Humi. : 21 deg.C. / 61 %
Serial No. : 85	Operator : Mitsuru Fujimura

Mode / Remarks : Transmitting IEEE802.11a  
54Mbps, HOR/VER:Y-Axis(MAX)  
Limit : FCC15C §15.407 3m (used Distance Factor: 1m)  
Except for the data below : adequate margin data below the limits.

No.	FREQ [MHz]	READING PK [dB <sub>v</sub> /m]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB <sub>v</sub> /m]	LIMIT [dB <sub>v</sub> /m]	MARGIN [dB]	
----- Horizontal -----									
1	20720.000	37.7	40.2	8.1	35.9	50.1	74.0	23.9	Tx:Ch36
2	21040.000	38.0	40.3	8.3	35.8	50.8	74.0	23.2	Tx:Ch52
3	21280.000	38.0	40.6	8.5	35.7	51.4	74.0	22.6	Tx:Ch64
4	22980.000	39.1	40.8	9.1	35.9	53.1	74.0	20.9	Tx:Ch149
5	23060.000	38.3	40.7	9.1	35.8	52.3	74.0	21.7	Tx:Ch153
----- Vertical -----									
6	20720.000	37.4	40.2	8.1	35.9	49.8	74.0	24.2	Tx:Ch36
7	21040.000	38.0	40.3	8.3	35.8	50.8	74.0	23.2	Tx:Ch52
8	21280.000	38.5	40.6	8.5	35.7	51.9	74.0	22.1	Tx:Ch64
9	22980.000	39.0	40.8	9.1	35.9	53.0	74.0	21.0	Tx:Ch149
10	23060.000	38.2	40.7	9.1	35.8	52.2	74.0	21.8	Tx:Ch153

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

## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF303U EA5800 Serial No. : 85	Report No. : 24HE0082-HO Power : DC 3.3V / Distance 0.5m Temp./Humi. : 21 deg.C. / 61 % Operator : Mitsuru Fujimura
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Mode / Remarks : Transmitting IEEE802.11a  
 54Mbps, HOR/VER:Y-Axis(MAX)  
 Limit : FCC15C §15.407 3m (used Distance Factor: 0.5m)  
 Except for the data below : adequate margin data below the limits.

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	31560.000	35.2	43.3	11.4	26.0	63.9	74.0	10.1	Tx:Ch52
----- Vertical -----									
2	31560.000	34.9	43.3	11.4	26.0	63.6	74.0	10.4	Tx:Ch52

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

**Radiated Spurious Emission (above 1GHz:Inside of the restricted band)**  
**\*Antenna:EA5800 \*Detector:AV**

**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant	: Sony Corporation	Report No.	: 24HE0082-HO
Kind of EUT	: Wireless LAN Module	Power	: DC 3.3V
Model No.	: IRF303U EA5800	Temp./Humi.	: 25 deg.C. / 60 %
Serial No.	: 85	Operator	: Hiroka Umeyama

Mode / Remarks : Transmitting IEEE802.11a  
54Mbps, HOR/VER:Y-Axis(MAX)  
Limit : FCC15C §15.407 3m  
Except for the data below : adequate margin data below the limits.

No.	FREQ [MHz]	READING AV [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	
----- Horizontal -----									
1	2777.000	40.2	31.8	6.9	36.4	42.5	54.0	11.5	Tx:Ch36
2	2817.000	46.9	31.9	6.9	36.4	49.3	54.0	4.7	Tx:Ch52
3	2847.000	47.8	32.0	7.0	36.4	50.4	54.0	3.6	Tx:Ch64
----- Vertical -----									
4	2777.000	43.8	31.8	6.9	36.4	46.1	54.0	7.9	Tx:Ch36
5	2817.000	41.2	31.9	6.9	36.4	43.6	54.0	10.4	Tx:Ch52
6	2847.000	43.7	32.0	7.0	36.4	46.3	54.0	7.7	Tx:Ch64

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

## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation	Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module	Power : DC 3.3V / Distance 1m
Model No. : IRF303U EA5800	Temp./Humi. : 21 deg.C. / 61 %
Serial No. : 85	Operator : Mitsuru Fujimura

Mode / Remarks : Transmitting IEEE802.11a  
54Mbps, HOR/VER:Y-Axis(MAX)  
Limit : FCC15C §15.407 3m (used Distance Factor: 1m)  
Except for the data below : adequate margin data below the limits.

No.	FREQ [MHz]	READING AV [dB <sub>v</sub> /m]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB <sub>v</sub> /m]	LIMIT [dB <sub>v</sub> /m]	MARGIN [dB]	
----- Horizontal -----									
1	10640.000	20.5	37.2	13.0	35.7	35.0	54.0	19.0	Tx:Ch64
2	11108.000	26.4	38.7	14.9	35.4	44.6	54.0	9.4	Tx:Ch36
3	11268.000	30.8	39.1	15.0	35.5	49.4	54.0	4.6	Tx:Ch52
4	11388.000	32.7	39.4	15.1	35.5	51.7	54.0	2.3	Tx:Ch64
5	11490.040	21.2	38.8	13.7	35.5	38.2	54.0	15.8	Tx:Ch149
6	11530.940	22.7	38.9	13.7	35.5	39.8	54.0	14.2	Tx:Ch153
7	11609.720	24.2	39.2	13.7	35.5	41.6	54.0	12.4	Tx:Ch161
8	12238.000	28.5	41.5	15.6	35.6	50.0	54.0	4.0	Tx:Ch149
9	12278.000	26.9	41.6	15.6	35.6	48.5	54.0	5.5	Tx:Ch153
10	12358.000	26.5	41.8	15.6	35.5	48.4	54.0	5.6	Tx:Ch161
11	15540.000	20.4	41.9	16.7	35.9	43.1	54.0	10.9	Tx:Ch36
12	15780.000	20.8	42.1	16.8	36.2	43.5	54.0	10.5	Tx:Ch52
13	15960.000	20.9	42.2	16.9	36.4	43.6	54.0	10.4	Tx:Ch64
----- Vertical -----									
14	10640.000	20.8	37.2	13.0	35.7	35.3	54.0	18.7	Tx:Ch64
15	11108.000	33.4	38.7	14.9	35.4	51.6	54.0	2.4	Tx:Ch36
16	11268.000	27.4	39.1	15.0	35.5	46.0	54.0	8.0	Tx:Ch52
17	11388.000	29.9	39.4	15.1	35.5	48.9	54.0	5.1	Tx:Ch64
18	11490.040	23.5	38.8	13.7	35.5	40.5	54.0	13.5	Tx:Ch149
19	11530.940	26.1	38.9	13.7	35.5	43.2	54.0	10.8	Tx:Ch153
20	11610.000	28.4	39.2	13.7	35.5	45.8	54.0	8.2	Tx:Ch161
21	12238.000	27.9	41.5	15.6	35.6	49.4	54.0	4.6	Tx:Ch149
22	12278.000	30.9	41.6	15.6	35.6	52.5	54.0	1.5	Tx:Ch153
23	12358.000	26.1	41.8	15.6	35.5	48.0	54.0	6.0	Tx:Ch161
24	15540.000	20.4	41.9	16.7	35.9	43.1	54.0	10.9	Tx:Ch36
25	15780.000	20.8	42.1	16.8	36.2	43.5	54.0	10.5	Tx:Ch52
26	15960.000	20.9	42.2	16.9	36.4	43.6	54.0	10.4	Tx:Ch64

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

## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF303U EA5800 Serial No. : 85	Report No. : 24HE0082-HO Power : DC 3.3V / Distance 1m Temp./Humi. : 21 deg.C. / 61 % Operator : Mitsuru Fujimura
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Mode / Remarks : Transmitting IEEE802.11a  
 54Mbps, HOR/VER:Y-Axis(MAX)  
 Limit : FCC15C §15.407 3m (used Distance Factor: 1m)  
 Except for the data below : adequate margin data below the limits.

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	20720.000	24.0	40.2	8.1	35.9	36.4	54.0	17.6	Tx:Ch36
2	21040.000	25.2	40.3	8.3	35.8	38.0	54.0	16.0	Tx:Ch52
3	21280.000	25.0	40.6	8.5	35.7	38.4	54.0	15.6	Tx:Ch64
4	22980.000	25.5	40.8	9.1	35.9	39.5	54.0	14.5	Tx:Ch149
5	23060.000	25.1	40.7	9.1	35.8	39.1	54.0	14.9	Tx:Ch153
----- Vertical -----									
6	20720.000	24.0	40.2	8.1	35.9	36.4	54.0	17.6	Tx:Ch36
7	21040.000	25.1	40.3	8.3	35.8	37.9	54.0	16.1	Tx:Ch52
8	21280.000	25.0	40.6	8.5	35.7	38.4	54.0	15.6	Tx:Ch64
9	22980.000	25.5	40.8	9.1	35.9	39.5	54.0	14.5	Tx:Ch149
10	23060.000	25.1	40.7	9.1	35.8	39.1	54.0	14.9	Tx:Ch153

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

## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF303U EA5800 Serial No. : 85	Report No. : 24HE0082-HO Power : DC 3.3V / Distance 0.5m Temp./Humi. : 21 deg.C. / 61 % Operator : Mitsuru Fujimura
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Mode / Remarks: Transmitting IEEE802.11a  
 54Mbps, HOR/VER:Y-Axis(MAX)  
 Limit : FCC15C § 15.407 3m (used Distance Factor: 0.5m)  
 Except for the data below : adequate margin data below the limits.

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	31560.000	21.8	43.3	11.4	26.0	50.5	54.0	3.5	Tx:Ch52
----- Vertical -----									
2	31560.000	21.8	43.3	11.4	26.0	50.5	54.0	3.5	Tx:Ch52

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

**Radiated Spurious Emission (above 1GHz:Inside of the restricted band)**  
**\*Antenna:HFT18 \*Detector: PK**

**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation Report No. : 24HE0082-HO  
Kind of EUT : Wireless LAN Module Power : DC 3.3V / Distance 1m  
Model No. : IRF303U HFT18 Temp./Humi. : 21 deg.C. / 63 %  
Serial No. : 85 Operator : Mitsuru Fujimura

Mode / Remarks : Transmitting IEEE802.11a  
54Mbps, HOR/VER:Y-Axis(MAX)  
Limit : FCC15C §15.407 3m (used Distance Factor: 1m)  
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	10640.000	33.7	37.2	13.0	35.7	48.2	74.0	25.8	Tx:Ch64
2	11108.000	35.0	38.7	14.9	35.4	53.2	74.0	20.8	Tx:Ch36
3	11268.000	34.9	39.1	15.0	35.5	53.5	74.0	20.5	Tx:Ch52
4	11388.000	34.8	39.4	15.1	35.5	53.8	74.0	20.2	Tx:Ch64
5	11490.000	34.0	38.8	13.7	35.5	51.0	74.0	23.0	Tx:Ch149
6	11530.000	38.2	38.9	13.7	35.5	55.3	74.0	18.7	Tx:Ch153
7	11610.000	34.6	39.2	13.7	35.5	52.0	74.0	22.0	Tx:Ch161
8	12238.000	36.2	41.5	15.6	35.6	57.7	74.0	16.3	Tx:Ch149
9	12278.000	34.1	41.6	15.6	35.6	55.7	74.0	18.3	Tx:Ch153
10	12358.000	35.2	41.8	15.6	35.5	57.1	74.0	16.9	Tx:Ch161
11	15540.000	33.8	41.9	16.7	35.9	56.5	74.0	17.5	Tx:Ch36
12	15780.000	34.1	42.1	16.8	36.2	56.8	74.0	17.2	Tx:Ch52
13	15960.000	34.2	42.2	16.9	36.4	56.9	74.0	17.1	Tx:Ch64
----- Vertical -----									
14	10640.000	33.7	37.2	13.0	35.7	48.2	74.0	25.8	Tx:Ch64
15	11108.000	36.6	38.7	14.9	35.4	54.8	74.0	19.2	Tx:Ch36
16	11268.000	37.1	39.1	15.0	35.5	55.7	74.0	18.3	Tx:Ch52
17	11388.000	37.8	39.4	15.1	35.5	56.8	74.0	17.2	Tx:Ch64
18	11490.000	36.3	38.8	13.7	35.5	53.3	74.0	20.7	Tx:Ch149
19	11530.000	34.6	38.9	13.7	35.5	51.7	74.0	22.3	Tx:Ch153
20	11610.000	39.3	39.2	13.7	35.5	56.7	74.0	17.3	Tx:Ch161
21	12238.000	35.7	41.5	15.6	35.6	57.2	74.0	16.8	Tx:Ch149
22	12278.000	36.2	41.6	15.6	35.6	57.8	74.0	16.2	Tx:Ch153
23	12358.000	34.6	41.8	15.6	35.5	56.5	74.0	17.5	Tx:Ch161
24	15540.000	33.7	41.9	16.7	35.9	56.4	74.0	17.6	Tx:Ch36
25	15780.000	34.1	42.1	16.8	36.2	56.8	74.0	17.2	Tx:Ch52
26	15960.000	34.5	42.2	16.9	36.4	57.2	74.0	16.8	Tx:Ch64

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

## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation	Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module	Power : DC 3.3V / Distance 1m
Model No. : IRF303U HFT18	Temp./Humi. : 21 deg.C. / 61 %
Serial No. : 85	Operator : Mitsuru Fujimura

Mode / Remarks: Transmitting IEEE802.11a  
54Mbps, HOR/VER:Y-Axis(MAX)  
Limit : FCC15C §15.407 3m (used Distance Factor: 1m)  
Except for the data below : adequate margin data below the limits.

No.	FREQ [MHz]	READING PK [dB <sub>v</sub> /m]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB <sub>v</sub> /m]	LIMIT [dB <sub>v</sub> /m]	MARGIN [dB]	
----- Horizontal -----									
1	18537.000	37.7	39.4	7.4	34.8	49.7	74.0	24.3	Tx:Ch161
2	19439.000	37.7	39.3	7.5	34.9	49.6	74.0	24.4	Tx:Ch36
3	20720.000	35.7	40.2	8.1	35.9	48.1	74.0	25.9	Tx:Ch36
4	21040.000	37.9	40.3	8.3	35.8	50.7	74.0	23.3	Tx:Ch52
5	21280.000	38.9	40.6	8.5	35.7	52.3	74.0	21.7	Tx:Ch64
6	22216.000	36.6	40.6	8.9	35.0	51.1	74.0	22.9	Tx:Ch36
7	22980.000	39.0	40.8	9.1	35.9	53.0	74.0	21.0	Tx:Ch149
8	23060.000	39.0	40.7	9.1	35.8	53.0	74.0	21.0	Tx:Ch153
----- Vertical -----									
9	18537.000	37.4	39.4	7.4	34.8	49.4	74.0	24.6	Tx:Ch161
10	19439.000	37.3	39.3	7.5	34.9	49.2	74.0	24.8	Tx:Ch36
11	20720.000	35.7	40.2	8.1	35.9	48.1	74.0	25.9	Tx:Ch36
12	21040.000	38.1	40.3	8.3	35.8	50.9	74.0	23.1	Tx:Ch52
13	21280.000	38.9	40.6	8.5	35.7	52.3	74.0	21.7	Tx:Ch64
14	22216.000	36.3	40.6	8.9	35.0	50.8	74.0	23.2	Tx:Ch36
15	22980.000	38.9	40.8	9.1	35.9	52.9	74.0	21.1	Tx:Ch149
16	23060.000	38.4	40.7	9.1	35.8	52.4	74.0	21.6	Tx:Ch153

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

## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF303U HFT18 Serial No. : 85	Report No. : 24HE0082-HO Power : DC 3.3V / Distance 0.5m Temp./Humi. : 21 deg.C. / 61 % Operator : Mitsuru Fujimura
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Mode / Remarks : Transmitting IEEE802.11a  
 54Mbps, HOR/VER:Y-Axis(MAX)  
 Limit : FCC15C §15.407 3m (used Distance Factor: 0.5m)  
 Except for the data below : adequate margin data below the limits.

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	31560.000	35.0	43.3	11.4	26.0	63.7	74.0	10.3	Tx:Ch52
----- Vertical -----									
2	31560.000	35.5	43.3	11.4	26.0	64.2	74.0	9.8	Tx:Ch52

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

**Radiated Spurious Emission (above 1GHz:Inside of the restricted band)**

**\*Antenna:HFT18 \*Detector: AV**

**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation  
Kind of EUT : Wireless LAN Module  
Model No. : IRF303U HFT18  
Serial No. : 85  
Report No. : 24HE0082-HO  
Power : DC 3.3V / Distance 1m  
Temp./Humi. : 21 deg.C. / 63 %  
Operator : Mitsuru Fujimura

Mode / Remarks : Transmitting IEEE802.11a  
54Mbps, HOR/VER:Y-Axis(MAX)  
Limit : FCC15C §15.407 3m (used Distance Factor: 1m)  
Except for the data below : adequate margin data below the limits.

No.	FREQ [MHz]	READING AV [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	
----- Horizontal -----									
1	10640.000	20.5	37.2	13.0	35.7	35.0	54.0	19.0	Tx:Ch64
2	11108.000	28.0	38.7	14.9	35.4	46.2	54.0	7.8	Tx:Ch36
3	11268.000	24.2	39.1	15.0	35.5	42.8	54.0	11.2	Tx:Ch52
4	11388.000	26.3	39.4	15.1	35.5	45.3	54.0	8.7	Tx:Ch64
5	11490.000	20.9	38.8	13.7	35.5	37.9	54.0	16.1	Tx:Ch149
6	11530.000	24.6	38.9	13.7	35.5	41.7	54.0	12.3	Tx:Ch153
7	11610.000	21.5	39.2	13.7	35.5	38.9	54.0	15.1	Tx:Ch161
8	12238.000	29.2	41.5	15.6	35.6	50.7	54.0	3.3	Tx:Ch149
9	12278.000	28.6	41.6	15.6	35.6	50.2	54.0	3.8	Tx:Ch153
10	12358.000	24.5	41.8	15.6	35.5	46.4	54.0	7.6	Tx:Ch161
11	15540.000	20.5	41.9	16.7	35.9	43.2	54.0	10.8	Tx:Ch36
12	15780.000	20.9	42.1	16.8	36.2	43.6	54.0	10.4	Tx:Ch52
13	15960.000	20.9	42.2	16.9	36.4	43.6	54.0	10.4	Tx:Ch64
----- Vertical -----									
14	10640.000	20.4	37.2	13.0	35.7	34.9	54.0	19.1	Tx:Ch64
15	11108.000	28.4	38.7	14.9	35.4	46.6	54.0	7.4	Tx:Ch36
16	11268.000	30.8	39.1	15.0	35.5	49.4	54.0	4.6	Tx:Ch52
17	11388.000	29.3	39.4	15.1	35.5	48.3	54.0	5.7	Tx:Ch64
18	11490.000	22.8	38.8	13.7	35.5	39.8	54.0	14.2	Tx:Ch64
19	11530.000	21.1	38.9	13.7	35.5	38.2	54.0	15.8	Tx:Ch149
20	11610.000	25.7	39.2	13.7	35.5	43.1	54.0	10.9	Tx:Ch153
21	12238.000	31.2	41.5	15.6	35.6	52.7	54.0	1.3	Tx:Ch161
22	12278.000	26.9	41.6	15.6	35.6	49.5	54.0	5.5	Tx:Ch149
23	12358.000	23.2	41.8	15.6	35.5	45.1	54.0	8.9	Tx:Ch153
24	15540.000	20.2	41.9	16.7	35.9	42.9	54.0	11.1	Tx:Ch161
25	15780.000	20.9	42.1	16.8	36.2	43.6	54.0	10.4	Tx:Ch36
26	15960.000	20.9	42.2	16.9	36.4	43.6	54.0	10.4	Tx:Ch52
									Tx:Ch64

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

## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation	Report No. : 24HE0082-HO
Kind of EUT : Wireless LAN Module	Power : DC 3.3V / Distance 1m
Model No. : IRF303U HFT18	Temp./Humi. : 21 deg.C. / 61 %
Serial No. : 85	Operator : Mitsuru Fujimura

Mode / Remarks: Transmitting IEEE802.11a  
54Mbps, HOR/VER:Y-Axis(MAX)  
Limit : FCC15C §15.407 3m (used Distance Factor: 1m)  
Except for the data below : adequate margin data below the limits.

No.	FREQ [MHz]	READING AV [dB <sub>v</sub> /m]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB <sub>v</sub> /m]	LIMIT [dB <sub>v</sub> /m]	MARGIN [dB]	
----- Horizontal -----									
1	18537.000	23.6	39.4	7.4	34.8	35.6	54.0	18.4	Tx:Ch161
2	19439.000	23.9	39.3	7.5	34.9	35.8	54.0	18.2	Tx:Ch36
3	20720.000	22.6	40.2	8.1	35.9	35.0	54.0	19.0	Tx:Ch36
4	21040.000	25.1	40.3	8.3	35.8	37.9	54.0	16.1	Tx:Ch52
5	21280.000	25.3	40.6	8.5	35.7	38.7	54.0	15.3	Tx:Ch64
6	22216.000	32.2	40.6	8.9	35.0	46.7	54.0	7.3	Tx:Ch36
7	22980.000	25.3	40.8	9.1	35.9	39.3	54.0	14.7	Tx:Ch149
8	23060.000	25.3	40.7	9.1	35.8	39.3	54.0	14.7	Tx:Ch153
----- Vertical -----									
9	18537.000	23.7	39.4	7.4	34.8	35.7	54.0	18.3	Tx:Ch161
10	19439.000	24.0	39.3	7.5	34.9	35.9	54.0	18.1	Tx:Ch36
11	20720.000	22.6	40.2	8.1	35.9	35.0	54.0	19.0	Tx:Ch36
12	21040.000	25.2	40.3	8.3	35.8	38.0	54.0	16.0	Tx:Ch52
13	21280.000	25.3	40.6	8.5	35.7	38.7	54.0	15.3	Tx:Ch64
14	22216.000	32.7	40.6	8.9	35.0	47.2	54.0	6.8	Tx:Ch36
15	22980.000	25.3	40.8	9.1	35.9	39.3	54.0	14.7	Tx:Ch149
16	23060.000	25.3	40.7	9.1	35.8	39.3	54.0	14.7	Tx:Ch153

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

## DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation Kind of EUT : Wireless LAN Module Model No. : IRF303U HFT18 Serial No. : 85	Report No. : 24HE0082-HO Power : DC 3.3V / Distance 0.5m Temp./Humi. : 21 deg.C. / 61 % Operator : Mitsuru Fujimura
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Mode / Remarks: Transmitting IEEE802.11a  
 54Mbps, HOR/VER:Y-Axis(MAX)  
 Limit : FCC15C §15.407 3m (used Distance Factor: 0.5m)  
 Except for the data below : adequate margin data below the limits.

No.	FREQ [MHz]	READING AV [dB $\mu$ V]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB $\mu$ V/m]	LIMIT [dB $\mu$ V/m]	MARGIN [dB]	
----- Horizontal -----									
1	31560.000	21.7	43.3	11.4	26.0	50.4	54.0	3.6	Tx:Ch52
----- Vertical -----									
2	31560.000	21.7	43.3	11.4	26.0	50.4	54.0	3.6	Tx:Ch52

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

**Radiated Spurious Emission (above 1GHz:Outside of the restricted band)**  
**\*Antenna:EA5800 \*used substitution**

UL Apex Co., Ltd.  
Head Office EMC Lab. Semi Anechoic Chamber : No.1

COMPANY	Sony Corporation	REPORT NO	24HE0082-HO
EQUIPMENT	Wireless LAN Module	REGULATION	FCC15.407
MODEL	IRF303U	TEST DISTANCE	3m
ANTENNA	EA5800	DATE	24/06/2004
S/N	85	TEMPERATURE	21
POWER	DC3.3V	HUMIDITY	63%
MODE	Tx 5180/5260/5320/5745/5765/5805	CALIBRATION	OK
POSITION	H: Y-axis / V: Y-axis	ENGINEER	Mitsuru Fujimura
TX ANTENNA HIGH	0.8m		

No.	FREQUENCY [MHz]	(After Factor Calculation) [dBuV/m]		RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode
		HOR	VER	HOR	VER		HOR	VER	
1	3060.13	60.9	64.4	-41.5	-38.1	-27.0	14.5	11.1	Operating
2	3069.49	60.8	65.2	-41.6	-37.3	-27.0	14.6	10.3	Operating
3	3089.49	61.3	66.0	-41.1	-36.5	-27.0	14.1	9.5	Operating
4	6118.98	62.0	60.9	-42.2	-43.2	-27.0	15.2	16.2	Operating
5	6138.99	60.9	60.0	-43.2	-44.0	-27.0	16.2	17.0	Operating
6	6178.98	60.3	58.2	-43.8	-45.7	-27.0	16.8	18.7	Operating

Tx:Ch149  
Tx:Ch153  
Tx:Ch161  
Tx:Ch149  
Tx:Ch153  
Tx:Ch161

Rx-ANTENNA : Biconical Antena(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-12.75GHz)  
Tx-ANTENNA : Dipole Antenna(30-1000MHz), Horn Anrenna(1-12.75GHz)

With the result above, the effective radiated power was calculated on the basis of the reference value  
- for the calibration data on the substitution measurement.  
Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

**Radiated Spurious Emission (above 1GHz:Outside of the restricted band)**  
**\*Antenna:HFT18 \*used substitution**

UL Apex Co., Ltd.  
Head Office EMC Lab. Semi Anechoic Chamber : No.1

COMPANY	Sony Corporation	REPORT NO	24HE0082-HO
EQUIPMENT	Wireless LAN Module	REGULATION	FCC15.407
MODEL	IRF303U	TEST DISTANCE	3m
ANTENNA	HFT18	DATE	24/06/2004
S/N	85	TEMPERATURE	21
POWER	DC3.3V	HUMIDITY	63%
MODE	Tx 5180/5260/5320/5745/5765/5805	CALIBRATION	OK
POSITION	H: Y-axis / V: Y-axis	ENGINEER	Mitsuru Fujimura
TX ANTENNA HIGH	0.8m		

No.	FREQUENCY [MHz]	(After Factor Calculation) [dBuV/m]		RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	
		HOR	VER	HOR	VER		HOR	VER		
1	3059.49	61.8	64.8	-40.6	-37.7	-27.0	13.6	10.7	Operating	Tx:Ch149
2	3069.49	62.0	66.5	-40.4	-36.0	-27.0	13.4	9.0	Operating	Tx:Ch153
3	3089.49	62.0	66.2	-40.4	-36.3	-27.0	13.4	9.3	Operating	Tx:Ch161
4	5553.99	59.7	59.9	-44.8	-44.6	-27.0	17.8	17.6	Operating	Tx:Ch36
5	5634.00	56.3	56.4	-48.2	-48.1	-27.0	21.2	21.1	Operating	Tx:Ch52
6	5693.98	55.8	56.7	-48.7	-47.8	-27.0	21.7	20.8	Operating	Tx:Ch64
7	6118.98	64.7	64.7	-39.5	-39.4	-27.0	12.5	12.4	Operating	Tx:Ch149
8	6138.98	64.2	63.4	-39.9	-40.6	-27.0	12.9	13.6	Operating	Tx:Ch153
9	6178.98	62.4	62.2	-41.7	-41.7	-27.0	14.7	14.7	Operating	Tx:Ch161

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-12.75GHz)  
Tx-ANTENNA : Dipole Antenna(30-1000MHz), Horn Antenna(1-12.75GHz)  
Result(EIRP) = Result(ERP)+2.15

With the result above, the effective radiated power was calculated on the basis of the reference value  
- for the calibration data on the substitution measurement.  
Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

**Radiated Spurious Emission (above 1GHz:Outside of the restricted band)**

**\*Antenna:EA5800 \*used conversion formula**

UL Apex Co., Ltd.  
Head Office EMC Lab. Semi Anechoic Chamber : No.1

COMPANY	Sony Corporation	REPORT NO	24HE0082-HO
EQUIPMENT	Wireless LAN Module	REGULATION	FCC15.407
MODEL	IRF303U	TEST DISTANCE	3m
ANTENNA	EA5800	DATE	23/06/2004
S/N	85	TEMPERATURE	21
POWER	DC3.3V	HUMIDITY	61%
MODE	Tx 5180/5260/5320/5745/5765/5805	CALIBRATION	OK
POSITION	H: Y-axis / V: Y-axis	ENGINEER	Mitsuru Fujimura
TX ANTENNA HIGH	0.8m		

No.	FREQUENCY [MHz]	(After Factor Calculation) [dBuV/m]		RESULT (EIRP) [dBm] (dBm)		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	
		HOR	VER	HOR	VER		HOR	VER		
1	10360.00	47.8	47.5	-46.7	-48.2	-27.0	19.7	21.2	Operating	Tx:Ch36
2	10520.00	48.3	49.1	-46.9	-47.0	-27.0	19.9	20.0	Operating	Tx:Ch52
3	17235.00	60.8	50.7	-40.4	-50.9	-27.0	13.4	23.9	Operating	Tx:Ch149
4	17295.00	60.6	59.7	-40.6	-41.9	-27.0	13.6	14.9	Operating	Tx:Ch153
5	17415.00	60.2	59.7	-41.0	-41.9	-27.0	14.0	14.9	Operating	Tx:Ch161
6	23220.00	52.8	54.3	-48.4	-47.3	-27.0	21.4	20.3	Operating	Tx:Ch161
7	25900.00	54.2	54.2	-47.0	-47.4	-27.0	20.0	20.4	Operating	Tx:Ch36
8	26300.00	54.5	54.7	-46.7	-46.9	-27.0	19.7	19.9	Operating	Tx:Ch52
9	26600.00	59.6	59.8	-41.6	-41.8	-27.0	14.6	14.8	Operating	Tx:Ch64
10	28725.00	59.6	59.3	-41.6	-42.3	-27.0	14.6	15.3	Operating	Tx:Ch149
11	28825.00	59.3	59.2	-41.9	-42.4	-27.0	14.9	15.4	Operating	Tx:Ch153
12	29025.00	59.9	59.6	-41.3	-42.0	-27.0	14.3	15.0	Operating	Tx:Ch161
13	31080.00	62.5	62.0	-38.7	-39.6	-27.0	11.7	12.6	Operating	Tx:Ch36
14	31920.00	63.9	63.5	-37.3	-38.1	-27.0	10.3	11.1	Operating	Tx:Ch64
15	34470.00	61.5	61.5	-39.7	-40.1	-27.0	12.7	13.1	Operating	Tx:Ch149
16	34590.00	61.0	60.8	-40.2	-40.8	-27.0	13.2	13.8	Operating	Tx:Ch153
17	34830.00	61.4	61.4	-39.8	-40.2	-27.0	12.8	13.2	Operating	Tx:Ch161
18	36260.00	63.1	62.3	-38.1	-39.3	-27.0	11.1	12.3	Operating	Tx:Ch36
19	36820.00	62.8	62.5	-38.4	-39.1	-27.0	11.4	12.1	Operating	Tx:Ch52
20	37240.00	64.2	64.3	-37.0	-37.3	-27.0	10.0	10.3	Operating	Tx:Ch64

Rx-ANTENNA : Horn Antenna  
Result(EIRP[dBm])=10\*LOG({ (Electric Field Strength [V/m] \* Distance:3[m] ) ^ 2 } / 30)

Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

**Radiated Spurious Emission (above 1GHz:Outside of the restricted band)**

**\*Antenna:HFT18 \*used conversion formula**

UL Apex Co., Ltd.  
Head Office EMC Lab. Semi Anechoic Chamber : No.1

COMPANY	Sony Corporation	REPORT NO	24HE0082-HO
EQUIPMENT	Wireless LAN Module	REGULATION	FCC:15.407
MODEL	IRF303U	TEST DISTANCE	3m
ANTENNA	HFT18	DATE	23/06/2004
S/N	85	TEMPERATURE	21
POWER	DC3.3V	HUMIDITY	61%
MODE	Tx 5180/5260/5320/5745/5765/5805	CALIBRATION	OK
POSITION	H: Y-axis / V: Y-axis	ENGINEER	Mitsuru Fujimura
TX ANTENNA HIGH	0.8m		

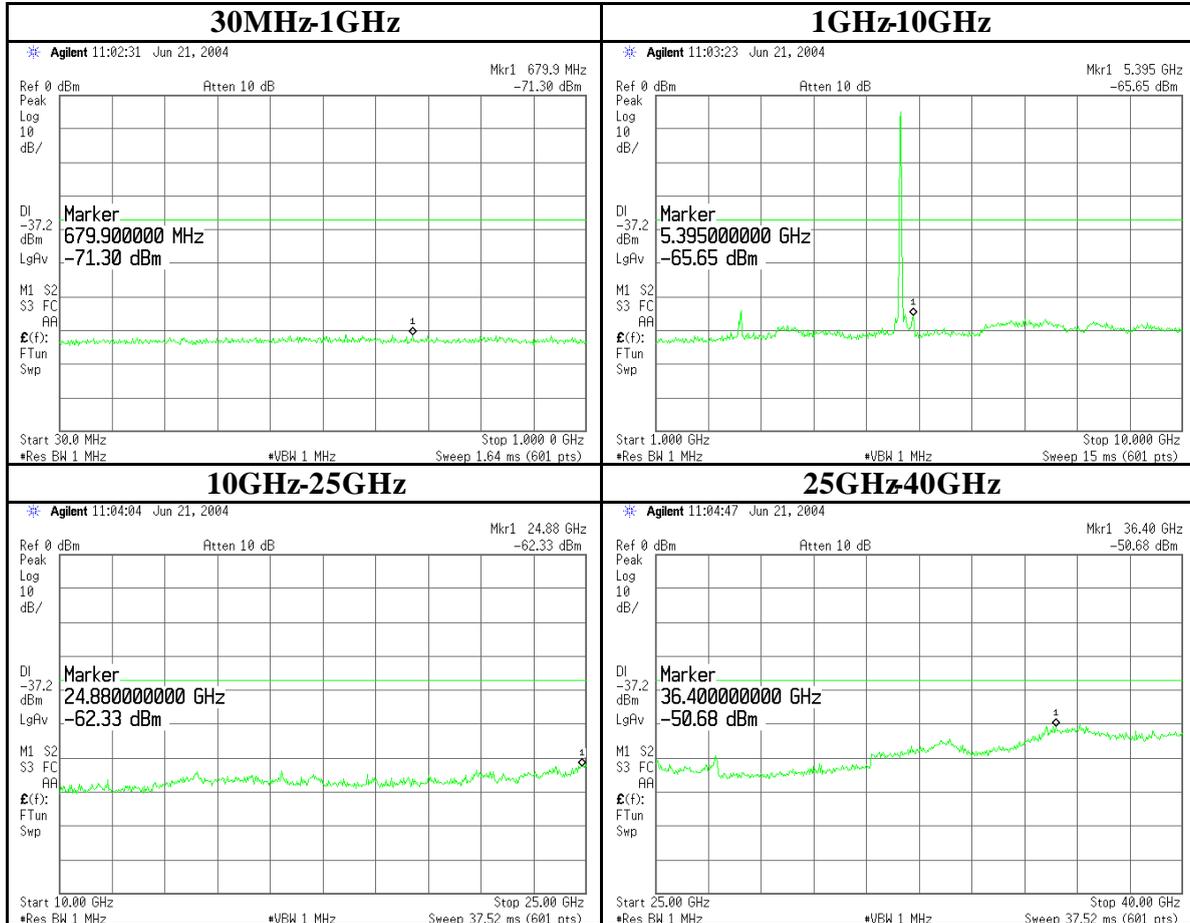
No.	FREQUENCY [MHz]	(After Factor Calculation) [dBuV/m]		RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode
		HOR	VER	HOR	VER		HOR	VER	
1	10360.00	47.7	48.1	-46.8	-47.6	-27.0	19.8	20.6	Operating Tx:Ch36
2	10520.00	48.4	48.7	-46.8	-47.4	-27.0	19.8	20.4	Operating Tx:Ch52
3	17235.00	60.2	60.5	-41.0	-41.1	-27.0	14.0	14.1	Operating Tx:Ch149
4	17295.00	60.0	60.1	-41.2	-41.5	-27.0	14.2	14.5	Operating Tx:Ch153
5	17415.00	59.6	59.7	-41.6	-41.9	-27.0	14.6	14.9	Operating Tx:Ch161
6	21626.50	51.7	52.0	-49.5	-49.6	-27.0	22.5	22.6	Operating Tx:Ch161
7	23220.00	53.8	52.8	-47.4	-48.8	-27.0	20.4	21.8	Operating Tx:Ch161
8	24716.00	53.0	53.9	-48.2	-47.7	-27.0	21.2	20.7	Operating Tx:Ch161
9	24993.00	49.0	49.1	-52.2	-52.5	-27.0	25.2	25.5	Operating Tx:Ch36
10	25900.00	52.3	52.2	-48.9	-49.4	-27.0	21.9	22.4	Operating Tx:Ch36
11	26300.00	55.2	54.7	-46.0	-46.9	-27.0	19.0	19.9	Operating Tx:Ch52
12	26600.00	59.7	59.5	-41.5	-42.1	-27.0	14.5	15.1	Operating Tx:Ch64
13	28725.00	59.1	59.1	-42.1	-42.5	-27.0	15.1	15.5	Operating Tx:Ch149
14	28825.00	59.3	59.5	-41.9	-42.1	-27.0	14.9	15.1	Operating Tx:Ch153
15	29025.00	59.7	60.2	-41.5	-41.4	-27.0	14.5	14.4	Operating Tx:Ch161
16	31080.00	61.8	61.2	-39.4	-40.4	-27.0	12.4	13.4	Operating Tx:Ch36
17	31920.00	63.3	64.0	-37.9	-37.6	-27.0	10.9	10.6	Operating Tx:Ch64
18	34470.00	62.0	61.3	-39.2	-40.3	-27.0	12.2	13.3	Operating Tx:Ch149
19	34590.00	60.2	61.9	-41.0	-39.7	-27.0	14.0	12.7	Operating Tx:Ch153
20	34830.00	61.4	61.4	-39.8	-40.2	-27.0	12.8	13.2	Operating Tx:Ch161
21	36260.00	62.2	62.8	-39.0	-38.8	-27.0	12.0	11.8	Operating Tx:Ch36
22	36820.00	62.0	62.1	-39.2	-39.5	-27.0	12.2	12.5	Operating Tx:Ch52
23	37240.00	64.2	63.9	-37.0	-37.7	-27.0	10.0	10.7	Operating Tx:Ch64

Rx-ANTENNA : Horn Antenna

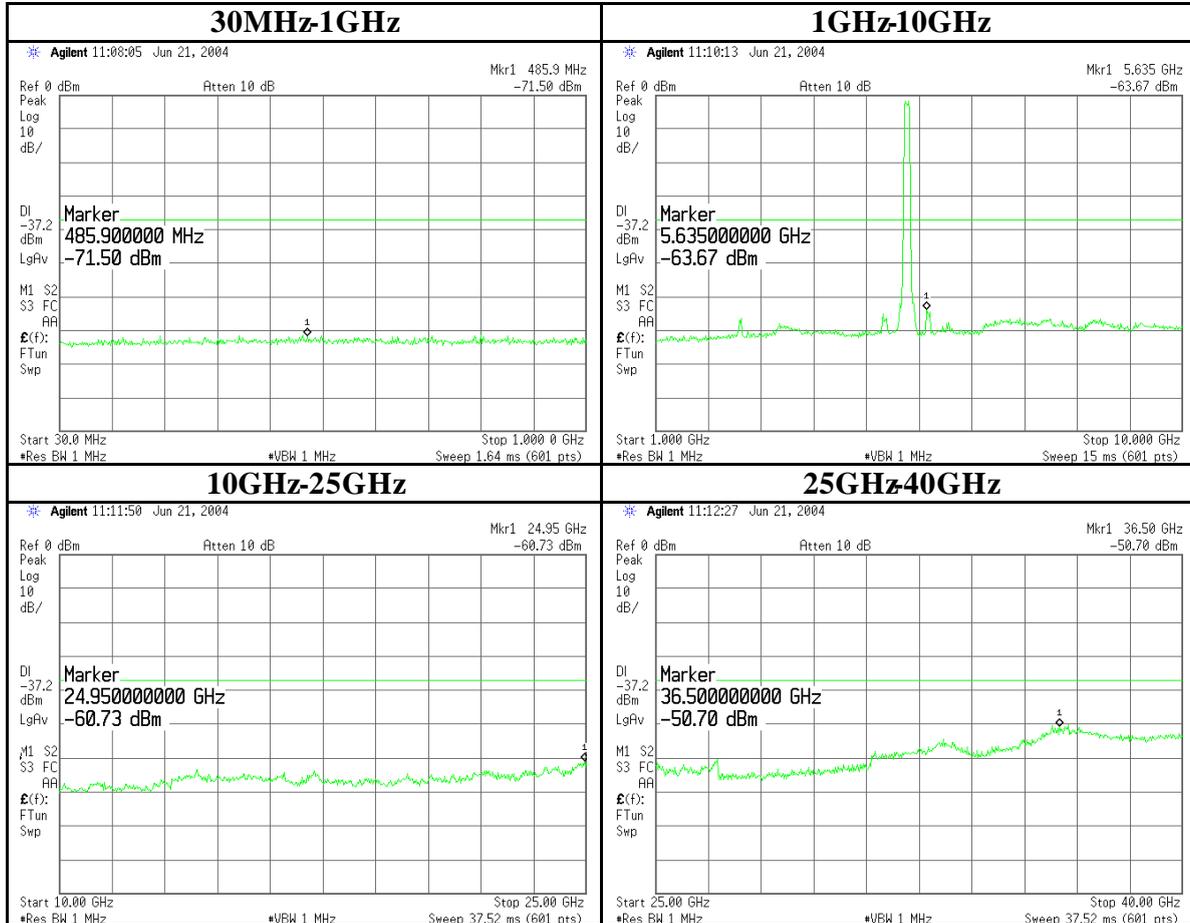
Result(EIRP[dBm])=10\*LOG({ (Electric Field Strength [V/m] \* Distance:3[m] ) ^ 2 } / 30)

Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

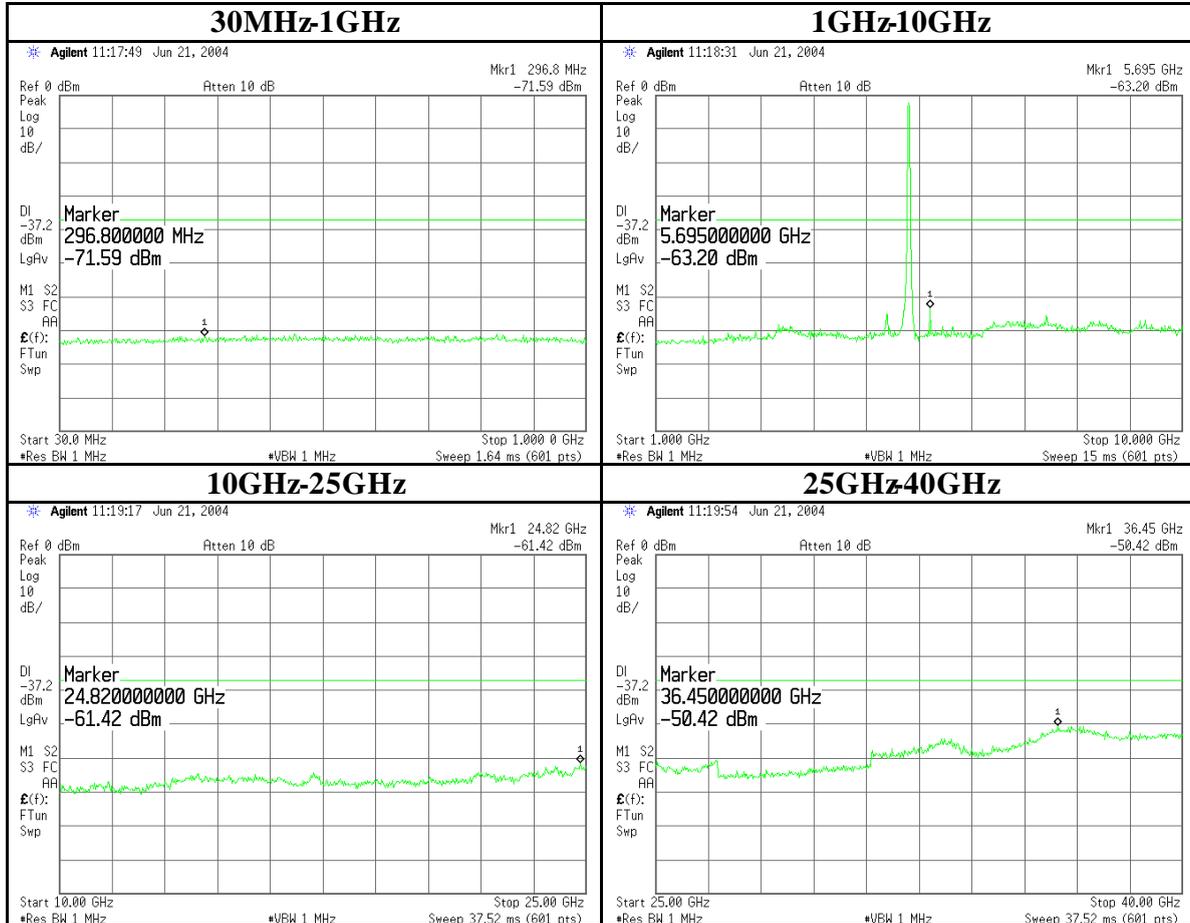
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**Ch : 36**



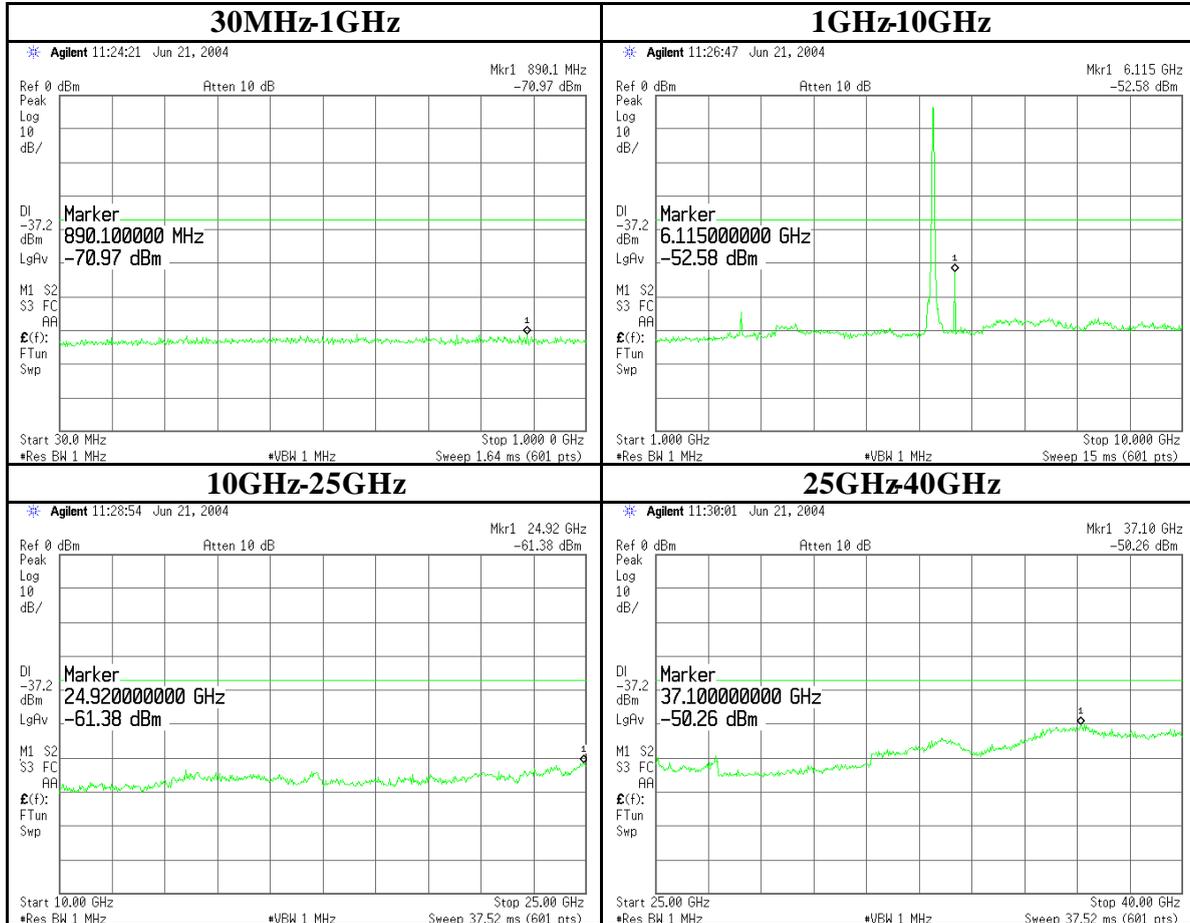
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**Ch : 52**



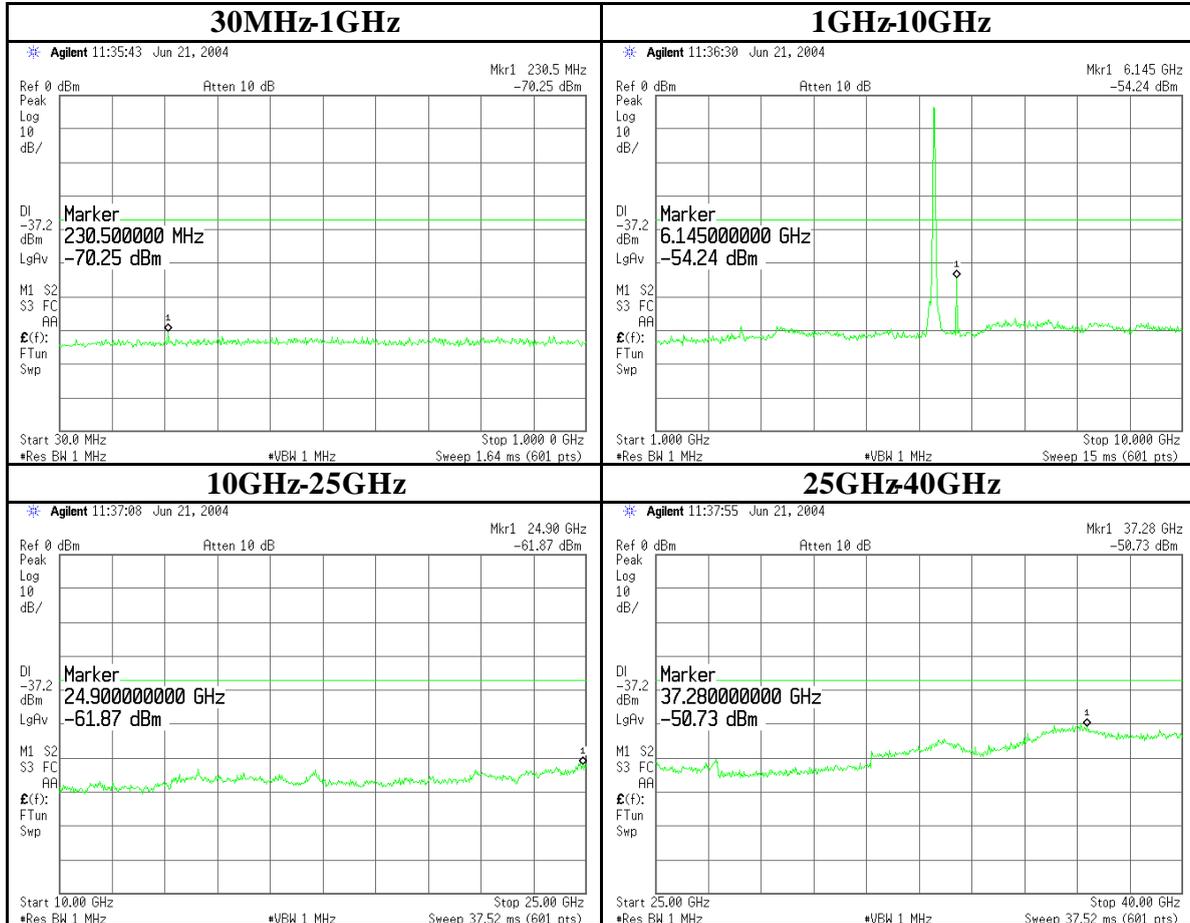
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**Ch : 64**



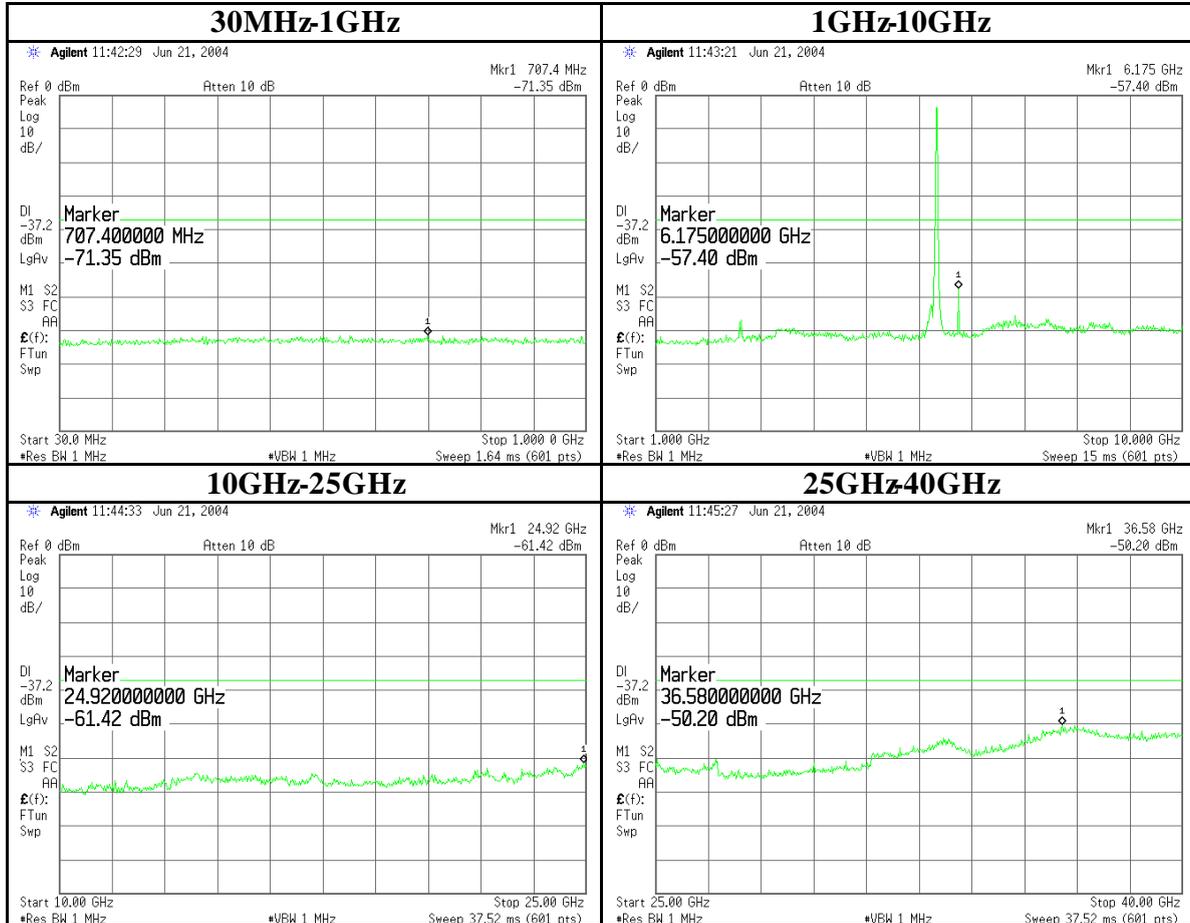
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**Ch : 149**



**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**Ch : 153**



**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**Ch : 161**



**Radiated emission Band Edge compliance**

**\*Antenna:EA5800**

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

COMPANY	Sony Corporation	REPORT NO	24HE0082-HO
EQUIPMENT	Wireless LAN Module	REGULATION	FCC15.407
MODEL	IRF303U, ANT:EA5800	TEST DISTANCE	3m
S/N	85	DATE	13/06/2004
POWER	DC3.3V	TEMPERATURE	25
MODE	Tx 5180/5320/5745/5805	HUMIDITY	60%
POSITION	H: Y-axis / V: Y-axis	CALIBRATION	OK
TX ANTENNA HIGH	0.8m	ENGINEER	Hiroka Umeyama

No.	FREQUENCY [MHz]	(After Factor Calculation) [dBuV/m]		RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode
		HOR	VER	HOR	VER		HOR	VER	
3	5715.00	67.4	69.4	-35.3	-33.1	-27.0	8.3	6.1	Operating
4	5725.00	78.2	82.3	-24.4	-20.2	-17.0	7.4	3.2	Operating
5	5825.00	84.1	83.6	-18.4	-18.7	-17.0	1.4	1.7	Operating
6	5835.00	70.2	71.8	-32.3	-30.5	-27.0	5.3	3.5	Operating

Tx:Ch149  
Tx:Ch149  
Tx:Ch161  
Tx:Ch161

Rx-ANTENNA : Biconical Antena(25-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-12.75GHz)  
Tx-ANTENNA : Dipole Antenna(25-1000MHz), Horn Anrenna(1-12.75GHz)

With the result above, the effective radiated power was calculated on the basis of the reference value - for the calibration data on the substitution measurement.  
Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

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

No.	FREQ [MHz]	S/A READING [dBuV/m]		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Band-Pass Filter [dB]	RESULT [dBuV/m]		Limit PK [dBuV/m]	MARGIN [dB]	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
1	5150.0	41.4	42.3	36.3	35.9	9.9	0.0	51.7	52.6	74.0	22.3	21.4
2	5350.0	57.4	59.3	36.2	35.8	10.0	0.0	67.8	69.7	74.0	6.2	4.3

Tx:Ch36  
Tx:Ch64

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

No.	FREQ [MHz]	S/A READING [dBuV/m]		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Band-Pass Filter [dB]	RESULT [dBuV/m]		Limit AV [dBuV/m]	MARGIN [dB]	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
1	5150.0	30.8	30.7	36.3	35.9	9.9	0.0	41.1	41.0	54.0	12.9	13.0
2	5350.0	40.4	37.9	36.2	35.8	10.0	0.0	50.8	48.3	54.0	3.2	5.7

Tx:Ch36  
Tx:Ch64

**Radiated emission Band Edge compliance**

**\*Antenna:HFT18**

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

COMPANY	Sony Corporation	REPORT NO	24HE0082-HO
EQUIPMENT	Wireless LAN Module	REGULATION	FCC15.407
MODEL	IRF303U, ANT:HFT18	TEST DISTANCE	3m
S/N	85	DATE	13/06/2004
POWER	DC3.3V	TEMPERATURE	25
MODE	Tx 5180/5320/5745/5805	HUMIDITY	60%
POSITION	H: Y-axis / V: Y-axis	CALIBRATION	OK
TX ANTENNA HIGH	0.8m	ENGINEER	Hiroka Umevama

No.	FREQUENCY [MHz]	(After Factor Calculation) [dBuV/m]		RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode
		HOR	VER	HOR	VER		HOR	VER	
3	5715.00	67.1	68.1	-35.6	-34.4	-27.0	8.6	7.4	Operating
4	5725.00	82.1	79.2	-20.5	-23.3	-17.0	3.5	6.3	Operating
5	5825.00	77.5	83.2	-25.0	-19.1	-17.0	8.0	2.1	Operating
6	5835.00	65.7	69.0	-36.8	-33.3	-27.0	9.8	6.3	Operating

Rx-ANTENNA : Biconical Antenna(25-300MHz), Logperiodic Antenna(300-1000MHz), Horn Antenna(1-12.75GHz)  
Tx-ANTENNA : Dipole Antenna(25-1000MHz), Horn Antenna(1-12.75GHz)

With the result above, the effective radiated power was calculated on the basis of the reference value  
- for the calibration data on the substitution measurement.  
Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

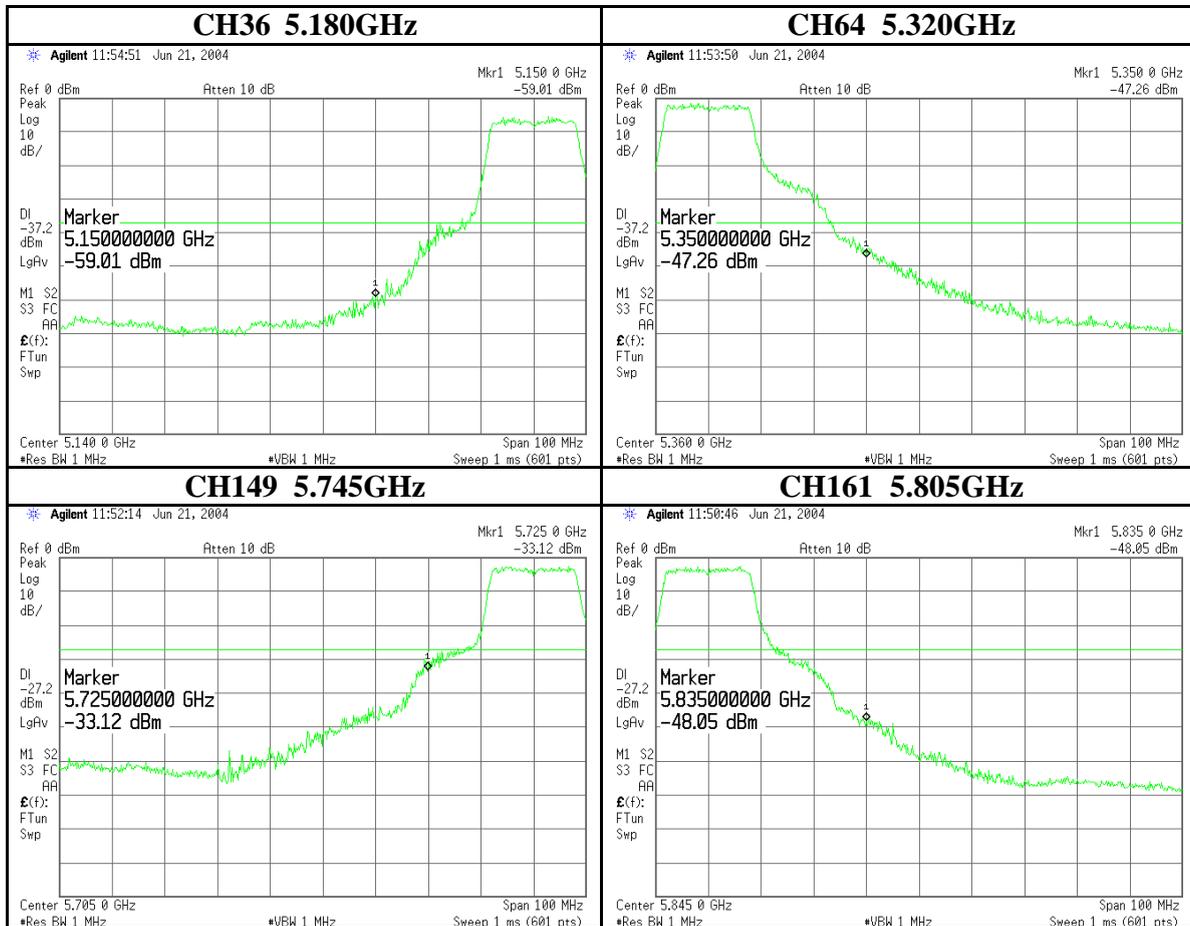
**PK DETECT** (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING [dBuV/m]		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Band-Pass Filter [dB]	RESULT [dBuV/m]		Limit PK [dBuV/m]	MARGIN [dB]	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
1	5150.0	40.9	42.2	36.3	35.9	9.9	0.0	51.2	52.5	74.0	22.8	21.5
2	5350.0	59.8	55.7	36.2	35.8	10.0	0.0	70.2	66.1	74.0	3.8	7.9

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

No.	FREQ [MHz]	S/A READING [dBuV/m]		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Band-Pass Filter [dB]	RESULT [dBuV/m]		Limit AV [dBuV/m]	MARGIN [dB]	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
1	5150.0	30.8	31.4	36.3	35.9	9.9	0.0	41.1	41.7	54.0	12.9	12.3
2	5350.0	40.9	34.7	36.2	35.8	10.0	0.0	51.3	45.1	54.0	2.7	8.9

**Conducted emission Band Edge compliance**



### Peak Power Spectral Density

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

Company : Sony Corporation  
Equipment : Wireless LAN Module  
Model : IRF303U  
Sample No. : 85  
Power : DC3.3V  
Mode : Tx IEEE 802.11a 54Mbps

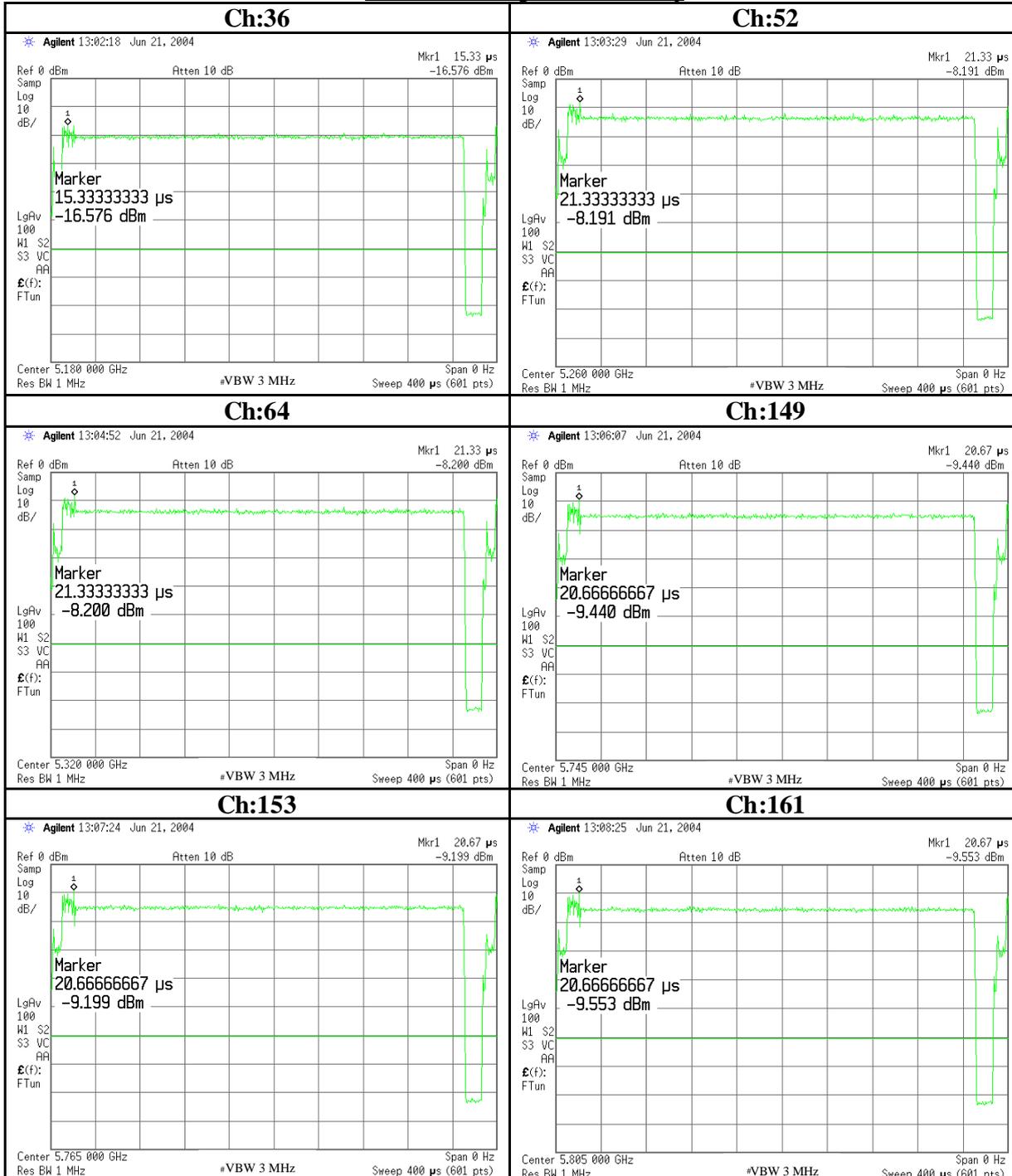
REPORT NO : 24HE0082-HO  
REGULATION : FCC 15.407(a)(1)(2)(3)  
TEST DISTANCE : -  
DATE : 06/21/2004  
TEMPERATURE : 26deg.C  
HUMIDITY : 48%  
ENGINEER : Hiroka Umeyama

Ch	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
36	5180.0	-16.58	2.1	10.0	-4.5	4.0	8.5
52	5260.0	-8.20	2.1	10.0	3.9	11.0	7.1
64	5320.0	-8.20	2.1	10.0	3.9	11.0	7.1
149	5745.0	-9.44	2.1	10.0	2.7	17.0	14.3
153	5765.0	-9.20	2.1	10.0	2.9	17.0	14.1
161	5805.0	-9.55	2.1	10.0	2.5	17.0	14.5

Sample Calculation:

Result = Reading + Cable loss + Attenuator

**Peak Power Spectral Density**



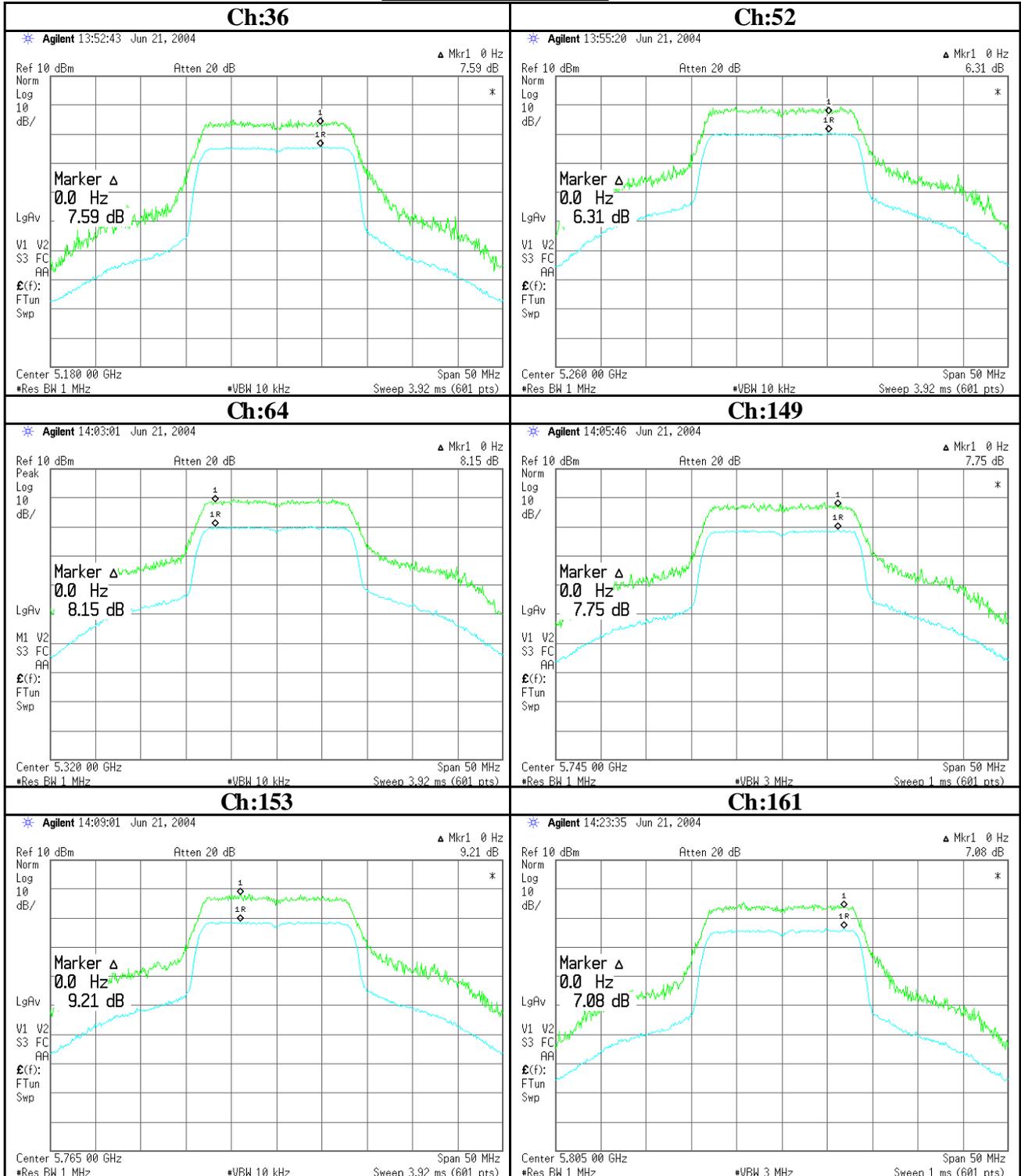
### Peak Excursion Ratio

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

Company	: Sony Corporation	REPORT NO	: 24HE0082-HO
Equipment	: Wireless LAN Module	REGULATION	: FCC 15.407(a)(1)(2)(3)
Model	: IRF303U	TEST DISTANCE	: -
Sample No.	: 85	DATE	: 06/21/2004
Power	: DC3.3V	TEMPERATURE	: 26deg.C
Mode	: Tx IEEE 802.11a 54Mbps	HUMIDITY	: 48%
		ENGINEER	: Hiroka Umeyama

Ch	Freq. [MHz]	Peak Power Excursion [dB]	Limit [dB]
36	5180.0	7.590	13.0
52	5260.0	6.310	13.0
64	5320.0	8.150	13.0
149	5745.0	7.750	13.0
153	5765.0	9.210	13.0
161	5805.0	7.080	13.0

**Peak Excursion Ratio**



### 99% Occupied Bandwidth

