



## EMI TEST REPORT

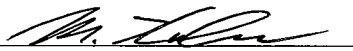
Test Report No.: 25LE0299-HO-1b

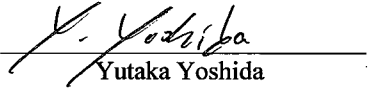
Applicant : Nikon Corporation  
Type of Equipment : Wireless LAN Module  
Model No. : UJ-087  
Test standard : FCC Part 15 Subpart C  
Section 15.207, Section 15.247: 2005  
FCC ID : CGJ2142EB  
Test Result : Complied

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 the 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: August 8 to 11, 2005

Tested by:

  
Makoto Kosaka  
EMC Services

  
Yutaka Yoshida  
EMC Services

Approved by :

  
Naoki Sakamoto  
Group Leader of EMC Services

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## **SECTION 1: Client information**

Company Name : Nikon Corporation  
Address : 6-3, Nishi-ohi 1-chome, Shinagawa-ku, Tokyo 140-8601, Japan  
Telephone Number : +81-3-3773-8395  
Facsimile Number : +81-3-3773-8112  
Contact Person : Makoto Kimura

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

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

Type of Equipment : Wireless LAN Module  
Model No. : UJ-087  
Serial No. : 0060570017E (Conducted emission and Air Spurious),  
0060570014E4 (Antenna terminal tests)  
Country of Manufacture : Japan  
Receipt Date of Sample : August 8, 2005  
Condition of EUT : Production prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)

### **2.2 Product Description**

Model No: UJ-087 (referred to as the EUT in this report) is IEEE802.11b/g Wireless LAN module.

<b>Equipment Type</b>	Transceiver
<b>Frequency of Operation</b>	2412-2462MHz
<b>Bandwidth &amp; Channel spacing</b>	20MHz & 5MHz
<b>Type of Modulation</b>	DSSS/OFDM
<b>Clock frequency in the system</b>	40MHz
<b>Antenna Type</b>	Mono pole
<b>Antenna Connector Type</b>	None
<b>Antenna Gain</b>	-0.4 dBi max
<b>Mode of Operation</b>	Simplex
<b>ITU code</b>	G1D / D1D
<b>Power Supply</b>	DC3.1V-3.5V
<b>Operating frequency</b>	Synthesizer

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

Power source, DC3.3V of EUT is supplied in the device in which the EUT is installed. The following three voltages are supplied with RF module part.

- 3.3V (not regulated)
- 2.9V (regulated)
- 1.8V (regulated)

Testing of the variation of the input power was performed and complied with this requirement.

As for the detail, please refer to APPENDIX 4.

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

The antenna is not removable from EUT. Therefore the equipment complies with the antenna requirement of Section 15.203.

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

### **3.1 Test Specification**

Test Specification : FCC Part15 Subpart C : 2005  
 Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators  
 Section 15.207 Conducted limits: 2005  
 Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz: 2005

### **3.2 Procedures and results**

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207 RSS-210 6.6	-	N/A	21.5 dB 0.27454MHz, QP, L	Complied *1)
2	6dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247(a)(2) RSS-210 5.9.1	Conducted	N/A	See data.	Complied
3	Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247(b)(3) RSS-210 6.2.2(o)(b)	Conducted	N/A		Complied
4	Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (d) RSS-210 6.2.2(o)(e)(e1) and 6.3	Conducted/ Radiated	N/A	<11b> 2.5dB 17234.000MHz, Horizontal/Vertical, AV (11Mbps, ch11) <11g> 2.5dB 17234.000MHz Horizontal/Vertical, AV (54Mbps, ch11)	Complied
5	Restricted Band Edges	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (d) RSS-210 6.2.2(o)(e)(e1) and 6.3	Conducted	N/A	See data	Complied
6	Power Density	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (e) RSS-210 6.2.2(o)(b)	Conducted	N/A		Complied

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

\*1) The specification of AC Adapter has only AC 100V rated input. Therefore, the tests were made with AC 100V/60Hz.

**Uncertainty:**

Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test is  $\pm 1.3$ dB.  
 The data listed in this test report has enough margin, more than the site margin.

Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is  $\pm 4.5$ dB(3m)/  $\pm 4.7$ dB(10m).  
 The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is  $\pm 5.2$ dB(3m)/  $\pm 3.8$ dB(10m).  
 The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is  $\pm 6.6$ dB.  
 The data listed in this report meets the limits unless the uncertainty is taken into consideration.

Other tests except Conducted Emission and Spurious Emission (Radiated)

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

\*These tests were also referred to "Guidance on Measurement for Digital Transmission Systems Section15.247".

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

**3.3 Addition to standards**

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS-210 (issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 + Amendment4: 2004	RSS-210 (issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 + Amendment4: 2004	Conducted	N/A	N/A	N/A

**3.4 Test Location**

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	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	313583	IC4247A	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	846015	IC4247A-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.4 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-

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

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

Refer to APPENDIX 1 to 3.

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

### 4.1 Operating Modes

The mode is used :  
1) Wireless LAN Printing mode for Configuration 1 (for Conducted emission test)  
2) The following modes are for Configuration 2 (for other tests)

#### IEEE 802.11b : CCK (QPSK, 11Mbps)

-Transmitting mode

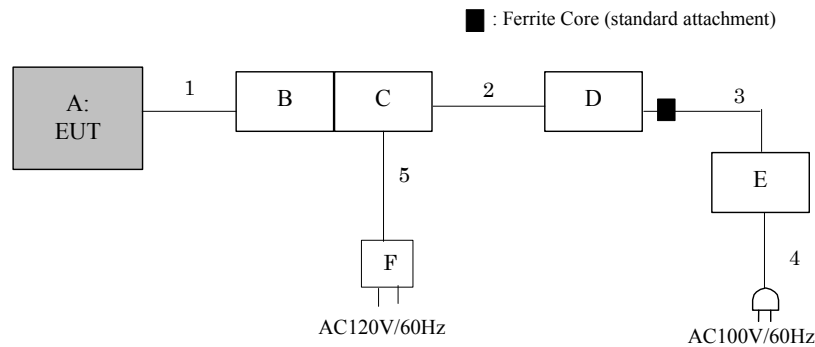
Low channel : 2412MHz  
Middle channel : 2437MHz  
High channel : 2462MHz

#### IEEE 802.11g : OFDM(64QAM, 54Mbps)

-Transmitting mode

Low channel : 2412MHz  
Middle channel : 2437MHz  
High channel : 2462MHz

### 4.2 Configuration and peripherals



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

#### Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID/Remarks
A	WLAN module	UJ-087	0060570017E *1), 0060570014E4 *2)	Nikon	CGJ2142EB (EUT)
B	SD board	-	-	-	-*3)
C	SDIO Platform	-	-	-	-*3)
D	Notebook PC	FCIC300TX	PD9500356	SOTEC	-*3)
E	AC Adapter	ADP-50M13	CTD9914018065	DELTA ELECTRONIC INC.	-*3)
F	AC Adapter	TAS0066	0405GT	KAGA COMPONENTS	-*3)

\*1) used for Conducted emission and Air Spurious test only

\*2) used for Antenna terminal tests.

\*3) EUT is a module for general usage. The test was made with the jigs to operate this module.

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**List of cables used**

No.	Name	Length (m)	Shield	Remakrs
1	Flexible Cable	0.08	N	-*3)
2	RS232C Cable	1.5	Y	-*3)
3	DC Cable	1.8	N	-*3)
4	AC Cable	1.75	N	-*3)
5	DC Cable	2.0	N	-*3)

\*3) EUT is a module for general usage. The test was made with the jigs to operate this module.

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## **SECTION 5: Conducted Emission**

### **Test Procedure and conditions**

EUT was placed on a platform of nominal size, 0.5m by 1.0m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

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

I/O cable and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.

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

Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN / (AMN) to the input power source. All unused 50ohm connectors of the LISN(AMN) were resistivity 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.

**Detector** : CISPR quasi-peak and average detector (IF BW 9 kHz)  
**Measurement range** : 0.15-30MHz  
**Test data** : APPENDIX 3  
**Test result** : Pass

## **SECTION 6: 6dB Bandwidth**

### **Test Procedure**

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

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

## **SECTION 7: Maximum Peak Output Power**

### **Test Procedure**

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

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

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

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## **SECTION 8: Spurious Emission**

**[Conducted]**

### **Test Procedure**

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

**Test data** : APPENDIX 3

**Test result** : Pass

**[Radiated]**

### **Test Procedure**

EUT was placed on a platform of nominal size, 0.5m by 1.0m, raised 80cm above the conducting ground plane.

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

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

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

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

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

**Test data** : APPENDIX 3

**Test result** : Pass

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

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

**[Conducted]**

### **Test Procedure**

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

**Test data** : APPENDIX 3

**Test result** : Pass

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**APPENDIX 1: Photographs of test setup**

**Conducted Emission**  
**Front**



**Rear**



## Spurious Emission (Radiated)

**Front**



**Rear**



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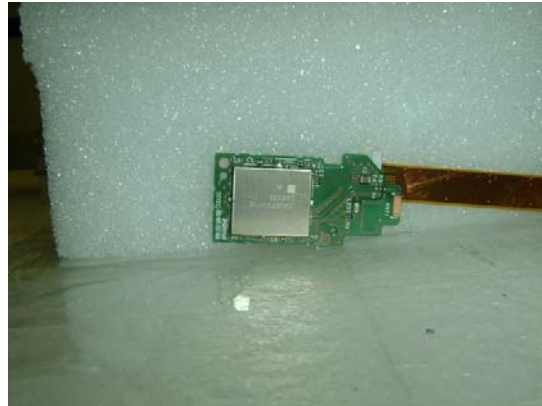
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**Worst Case Position (X-axis:Horizontal / Z-axis:Vertical)**

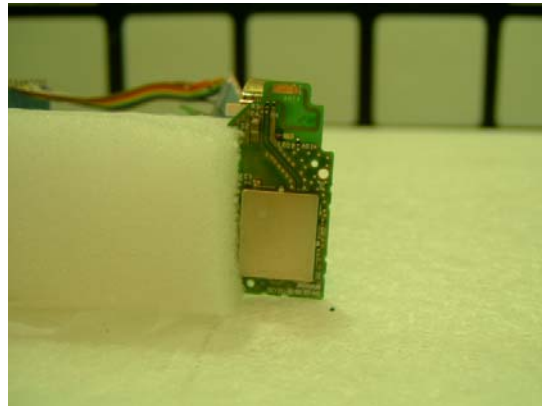
**X-axis**



**Y-axis**



**Z-axis**



## APPENDIX 2: Test instruments

### EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	1 to 2	2005/04/11 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	1 to 2	2005/06/03 * 12
MHA-05	Horn Antenna	Schwarzbeck	BBHA9120D	2	2005/01/10 * 12
MHA-02	Horn Antenna	EMCO	3160-09	2	2005/01/10 * 12
MCC-19	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX 104	2	2005/02/03 * 12
MCC-04	Microwave Cable 1G-50GHz	Storm	421-011 ( 90-1394-079 )	2	2005/01/05 * 12
MCC-25	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	2	2004/08/26 * 12
MPA-01	Pre Amplifier	Agilent	8449B	2	2005/02/05 * 12
MHA-02	Horn Antenna	EMCO	3160-09	2	2005/01/10 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	2	2004/10/14 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	2	2004/10/14 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	1 to 2	2005/02/02 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	2	2005/02/24 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	2	2004/12/16 * 12
MPA-06	Pre Amplifier	Hewlett Packard	8447D	2	2004/08/29 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	1(EUT)	2005/02/04 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	1	2005/02/04 * 12
MTA-02	Termination	TME	CT-01	1	2005/02/03 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	1	2005/02/24 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	3 to 6	2005/05/19 * 12
MAT-23	Attenuator(10dB) (above1GHz)	Orient Microwave	BX10-0476-00	3 to 6	2005/03/16 * 12
MCC-21	Microwave Cable 1G-50GHz	Storm	421-011 ( 90-011-080 )	3 to 6	2005/04/29 * 12
MDPS-04	DC Power Supply	KENWOOD TMI	PW18-1.3AT	3 to 6	Pre Check

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

#### Test Item:

- 1: AC Main Conducted Emission
- 2: Radiated Spurious Emission
- 3: Maximum Peak Output Power
- 4: 6dB Bandwidth [DSSS]
- 5: Peak Output Power Density [DSSS]
- 6: Antenna Terminal Conducted Spurious Emission

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**APPENDIX 3: Data of EMI test**

**Conducted Emission**

**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/10 00:07:25

Applicant	: Nikon Corporation	Report No.	: 25LE0299-HO
Kind of EUT	: W-LAN Module	Power	: DC3.3V (Module) / AC100V 60Hz (Adaptor)
Model No.	: UJ-087	Temp°C/Humi%	: 26deg. C / 59%
Serial No.	: 0060570017E	Operator	: Yutaka Yoshida

Mode / Remarks : Tx 11b 11Mbps chl

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

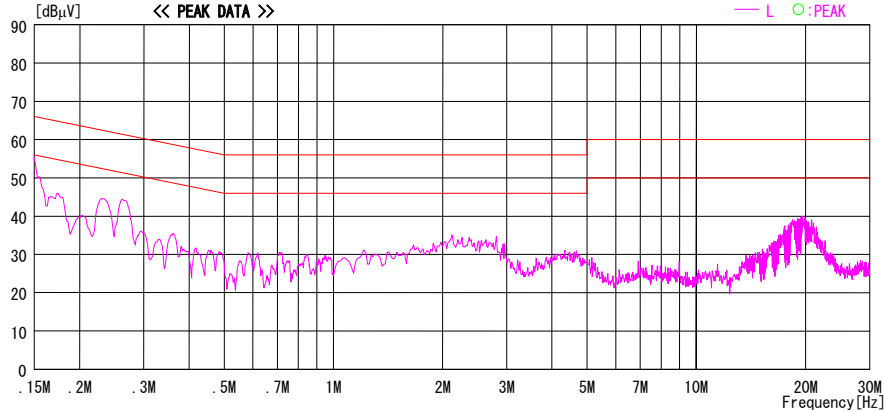
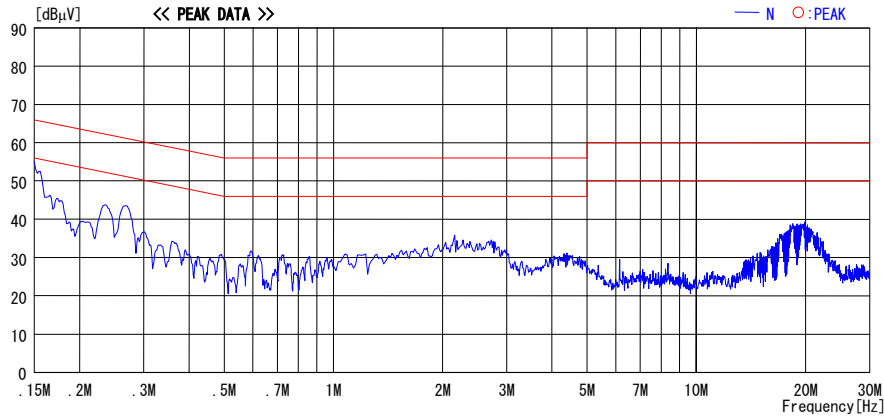


CHART:WITH FACTOR.PEAK hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## Conducted Emission

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/10 00:12:10

Applicant : Nikon Corporation Kind of EUT : W-LAN Module Model No. : UJ-087 Serial No. : 0060570017E	Report No. : 25LE0299-H0 Power : DC3.3V (Module) / AC100V 60Hz (Adaptor) Temp°C/Humi% : 26deg. C / 59% Operator : Yutaka Yoshida
---	---

Mode / Remarks : Tx 11b 11Mbps ch6

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

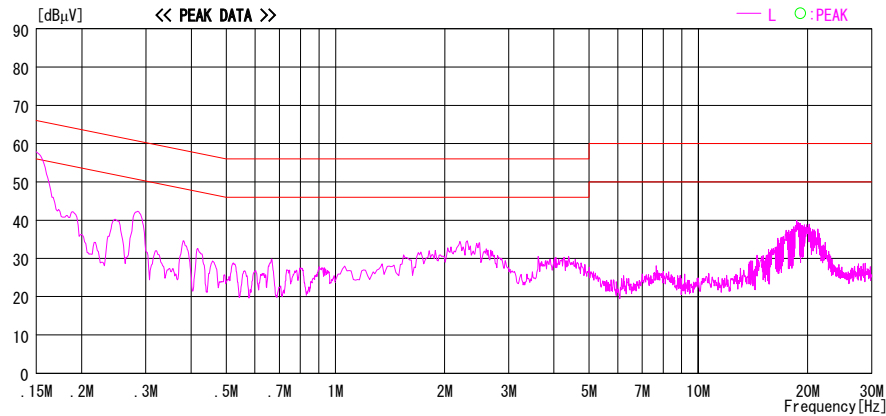
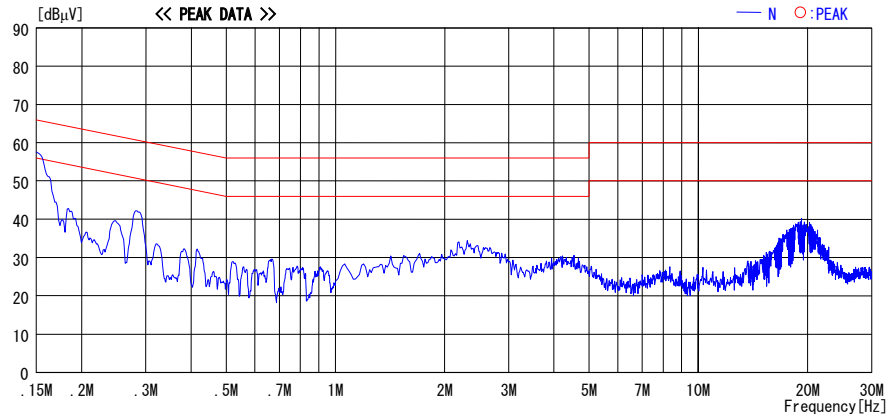


CHART: WITH FACTOR. Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## Conducted Emission

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/10 00:16:13

Applicant : Nikon Corporation Kind of EUT : W-LAN Module Model No. : UJ-087 Serial No. : 0060570017E	Report No. : 25LE0299-HO Power : DC3.3V (Module) / AC100V 60Hz (Adaptor) Temp°C/Humi% : 26deg. C / 59% Operator : Yutaka Yoshida
---	---

Mode / Remarks : Tx 11b 11Mbps ch11

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

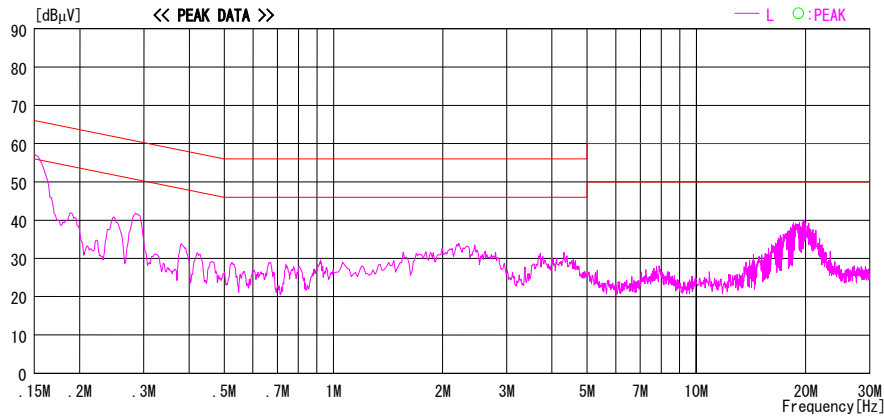
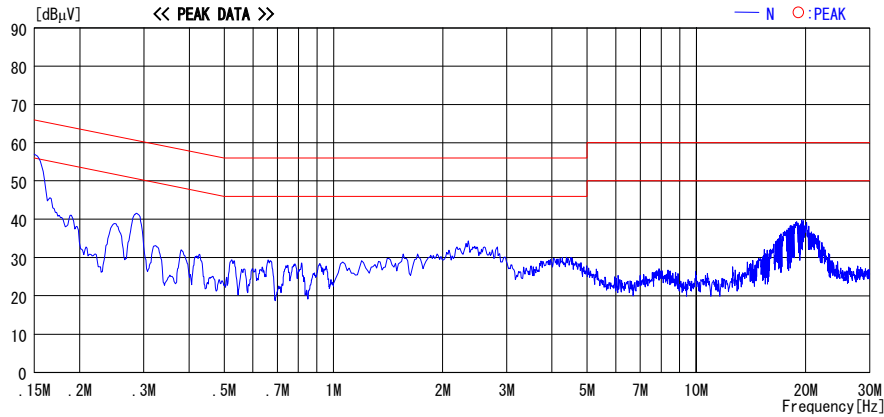


CHART: WITH FACTOR. Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F.(LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.



## Conducted Emission

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/10 00:20:47

Applicant : Nikon Corporation Kind of EUT : W-LAN Module Model No. : UJ-087 Serial No. : 0060570017E	Report No. : 25LE0299-HO Power : DC3.3V (Module) / AC100V 60Hz (Adaptor) Temp°C/Humi% : 26deg. C / 59% Operator : Yutaka Yoshida
---	---

Mode / Remarks : Tx 11g 54Mbps chl

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

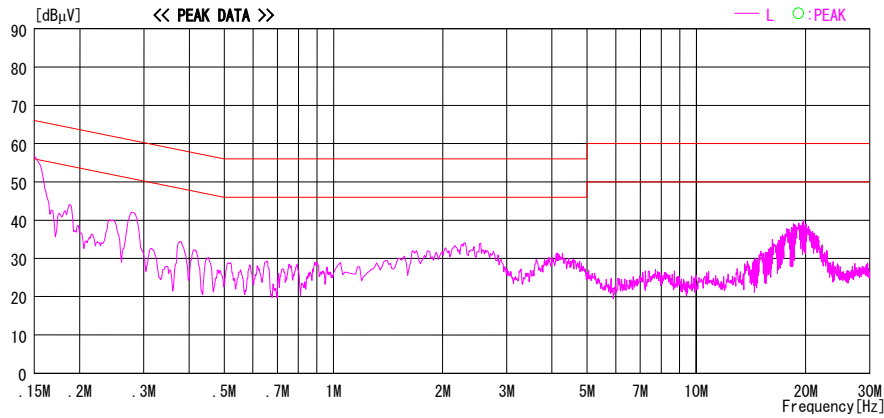
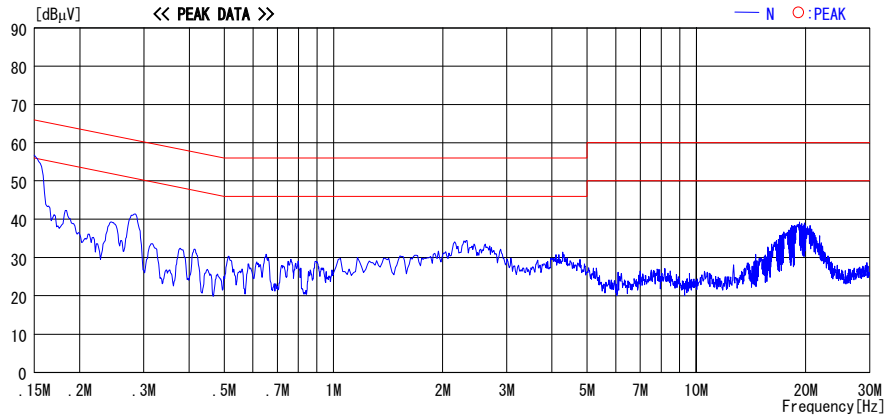


CHART: WITH FACTOR. Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## Conducted Emission

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/10 00:26:01

Applicant : Nikon Corporation Kind of EUT : W-LAN Module Model No. : UJ-087 Serial No. : 0060570017E	Report No. : 25LE0299-HO Power : DC3.3V (Module) / AC100V 60Hz (Adaptor) Temp°C/Humi% : 26deg. C / 59% Operator : Yutaka Yoshida
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Mode / Remarks : Tx 11g 54Mbps ch6

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

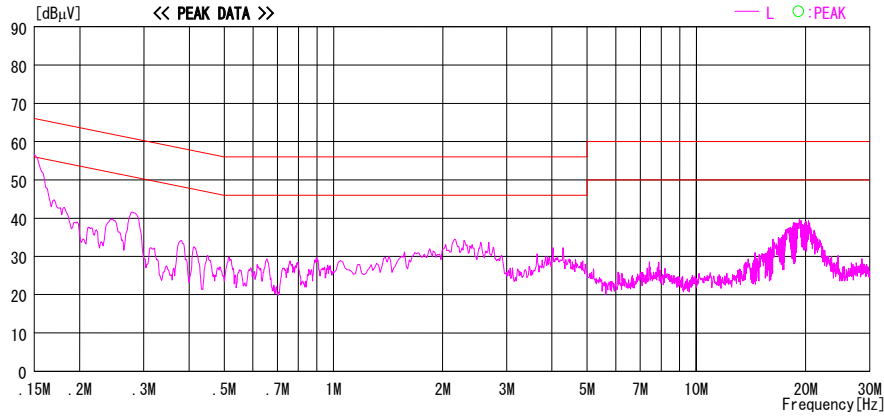
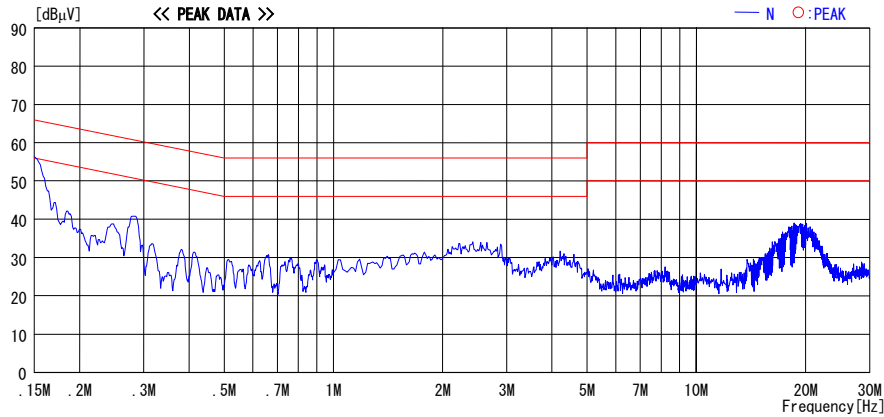


CHART: WITH FACTOR. Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## Conducted Emission

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2005/08/10 00:30:43

Applicant : Nikon Corporation Kind of EUT : W-LAN Module Model No. : UJ-087 Serial No. : 0060570017E	Report No. : 25LE0299-HO Power : DC3.3V (Module) / AC100V 60Hz (Adaptor) Temp°C/Humi% : 26deg. C / 59% Operator : Yutaka Yoshida
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Mode / Remarks : Tx 11g 54Mbps ch11

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

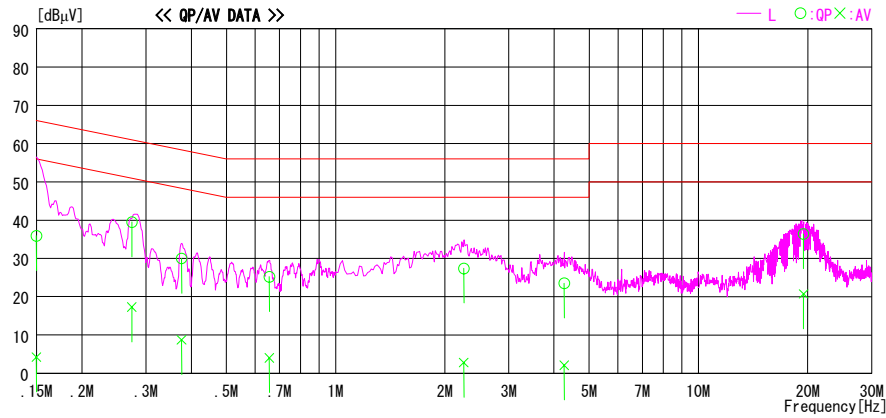
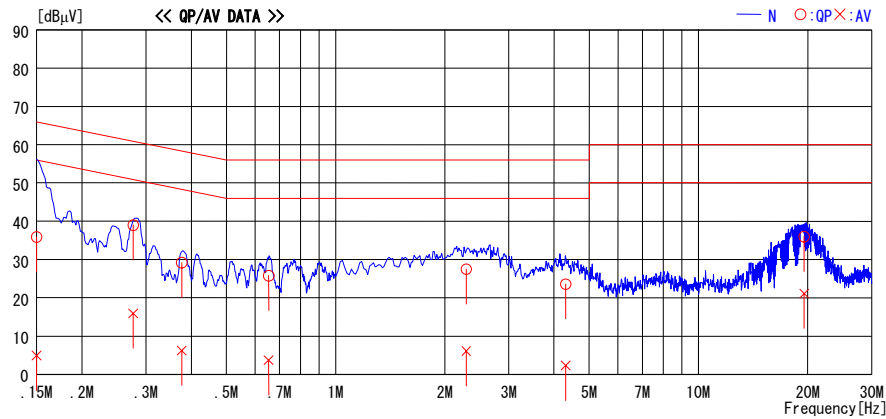


CHART: WITH FACTOR. Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## Conducted Emission

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2005/08/10 00:30:43

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC3.3V (Module) / AC100V 60Hz (Adaptor)  
 Temp°C/Humi% : 26deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11g 54Mbps ch11

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

Frequency [MHz]	Reading		Corr. Factor	Results		Limit		Margin		Phase
	QP	AV		QP	AV	QP	AV	QP	AV	
	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
0.15000	35.8	4.8	0.1	35.9	4.9	66.0	56.0	30.1	51.1	N
0.27680	38.9	15.8	0.1	39.0	15.9	60.9	50.9	21.9	35.0	N
0.37684	29.1	6.1	0.1	29.2	6.2	58.3	48.3	29.1	42.1	N
0.65388	25.6	3.5	0.2	25.8	3.7	56.0	46.0	30.2	42.3	N
2.29175	27.0	5.6	0.5	27.5	6.1	56.0	46.0	28.5	39.9	N
4.30576	22.9	1.6	0.7	23.6	2.3	56.0	46.0	32.4	43.7	N
19.55107	34.2	19.3	1.8	36.0	21.1	60.0	50.0	24.0	28.9	N
0.15000	35.8	4.1	0.1	35.9	4.2	66.0	56.0	30.1	51.8	L
0.27454	39.4	17.2	0.1	39.5	17.3	61.0	51.0	21.5	33.7	L
0.37667	29.9	8.6	0.1	30.0	8.7	58.4	48.4	28.4	39.7	L
0.65689	25.0	3.8	0.2	25.2	4.0	56.0	46.0	30.8	42.0	L
2.25725	26.9	2.3	0.5	27.4	2.8	56.0	46.0	28.6	43.2	L
4.27001	22.8	1.4	0.7	23.5	2.1	56.0	46.0	32.5	43.9	L
19.48406	34.6	18.9	1.8	36.4	20.7	60.0	50.0	23.6	29.3	L

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

[DSSS and other forms of modulation]

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

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

Company : Nikon Corporation  
Equipment : Wireless LAN Module  
Model : UJ-087  
Sample No. : 0060570014E4  
Power : DC 3.3V  
Mode : Tx(ch1,6,11)

REPORT NO : 25LE0299-HO  
REGULATION : Fcc Part15 Subpart C 15.247(a)(2)  
TEST DISTANCE : -  
DATE : 08/11/2005  
TEMPERATURE : 24deg.C.  
HUMIDITY : 58%  
ENGINEER : Makoto Kosaka

**[IEEE802.11b] (11Mbps)**

Ch	Freq. [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2412.0	9.512	500.0
Mid	2437.0	9.513	500.0
High	2462.0	9.508	500.0

**[IEEE802.11g] (54Mbps)**

Ch	Freq. [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2412.0	16.525	500.0
Mid	2437.0	16.530	500.0
High	2462.0	16.528	500.0

---

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

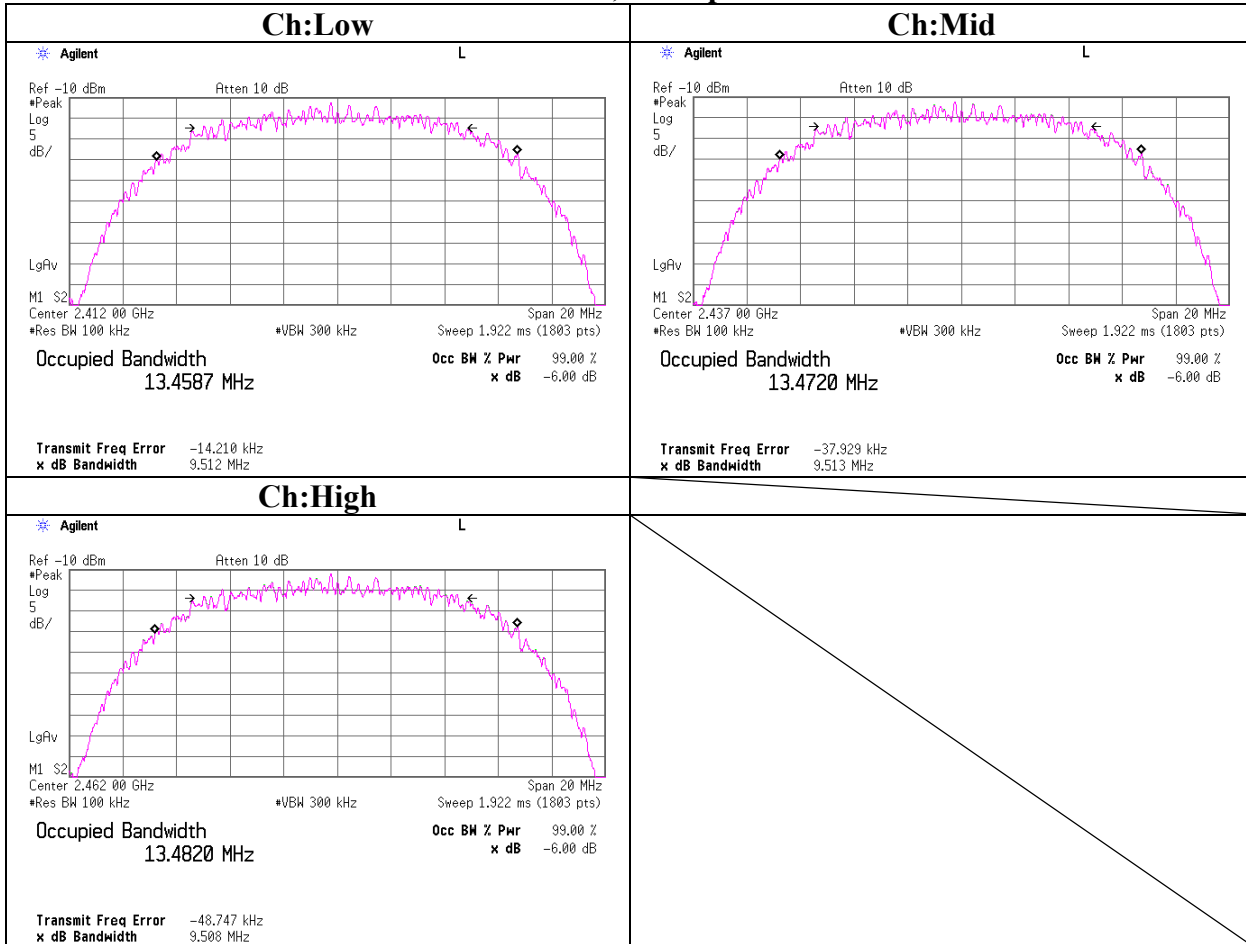
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(01.06.05)

**6dB Bandwidth(DSSS and other forms of modulation)**  
**11b, 11Mbps**



**6dB Bandwidth(DSSS and other forms of modulation)**  
**11g, 54Mbps**



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

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

Company	: Nikon Corporation	REPORT NO	: 25LE0299-HO
Equipment	: Wireless LAN Module	REGULATION	: Fcc Part15 Subpart C 15.247(b)(3)
Model	: UJ-087	TEST DISTANCE	: -
Sample No.	: 0060570014E4	DATE	: 08/11/2005
Power	: DC 3.3V	TEMPERATURE	: 24deg.C.
Mode	: Tx(ch1,6,11)	HUMIDITY	: 58%
		ENGINEER	: Makoto Kosaka

**[IEEE802.11b] (11Mbps)**

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	3.72	1.80	10.68	16.20	30.00	13.80
Mid	2437.0	3.77	1.83	10.68	16.28	30.00	13.72
High	2462.0	3.91	1.84	10.68	16.43	30.00	13.57

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Attenuator

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

**[IEEE802.11g] (54Mbps)**

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	6.08	1.80	10.68	18.56	30.00	11.44
Mid	2437.0	5.63	1.83	10.68	18.14	30.00	11.86
High	2462.0	5.64	1.84	10.68	18.16	30.00	11.84

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Attenuator

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

**Reference data (SAR Test Report No. 25LE0299-HO-5)**

**[IEEE802.11g] (36Mbps)**

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	5.63	1.80	10.68	18.11	30.00	11.89
Mid	2437.0	5.65	1.83	10.68	18.16	30.00	11.84
High	2462.0	4.78	1.84	10.68	17.30	30.00	12.70

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Attenuator

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

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

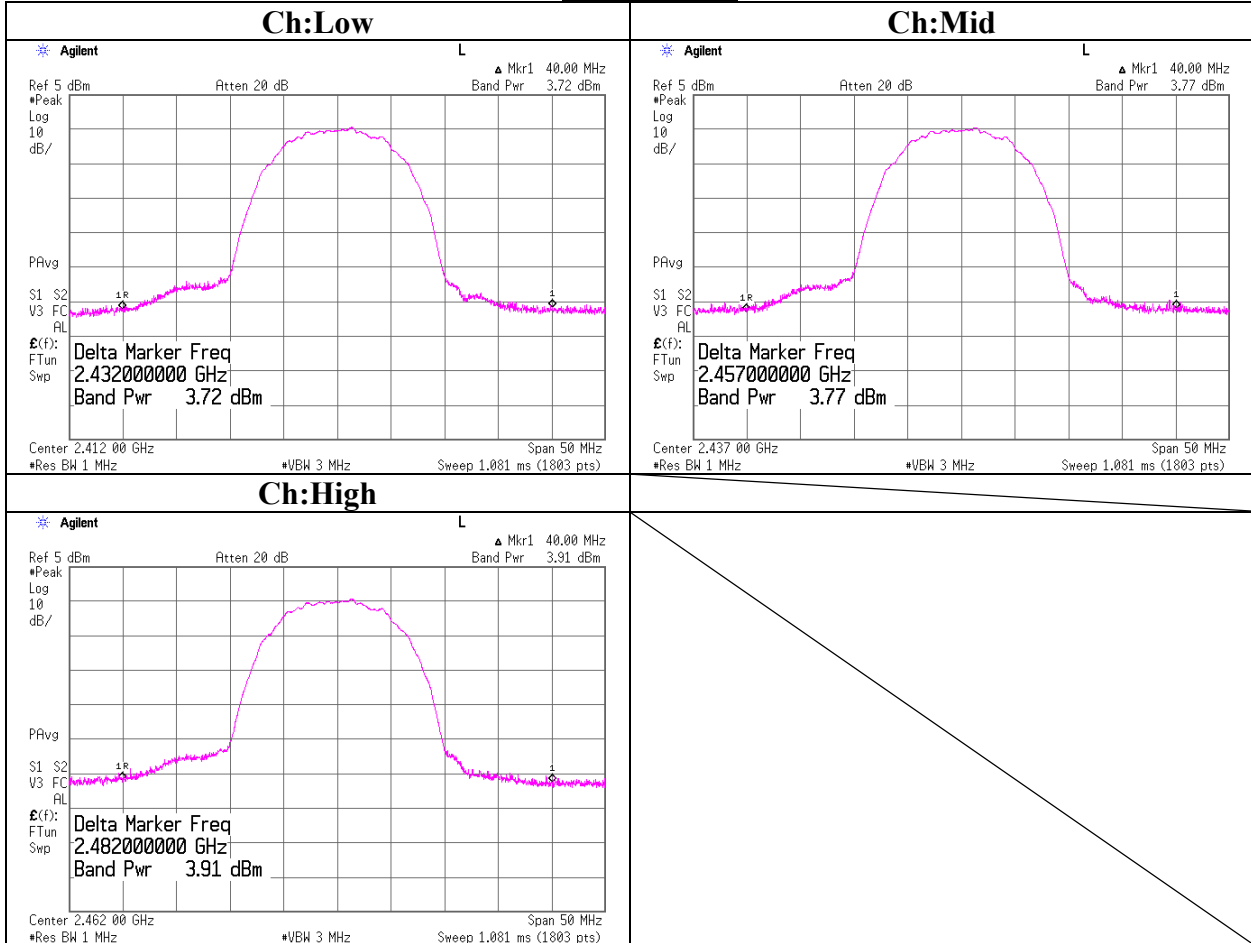
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

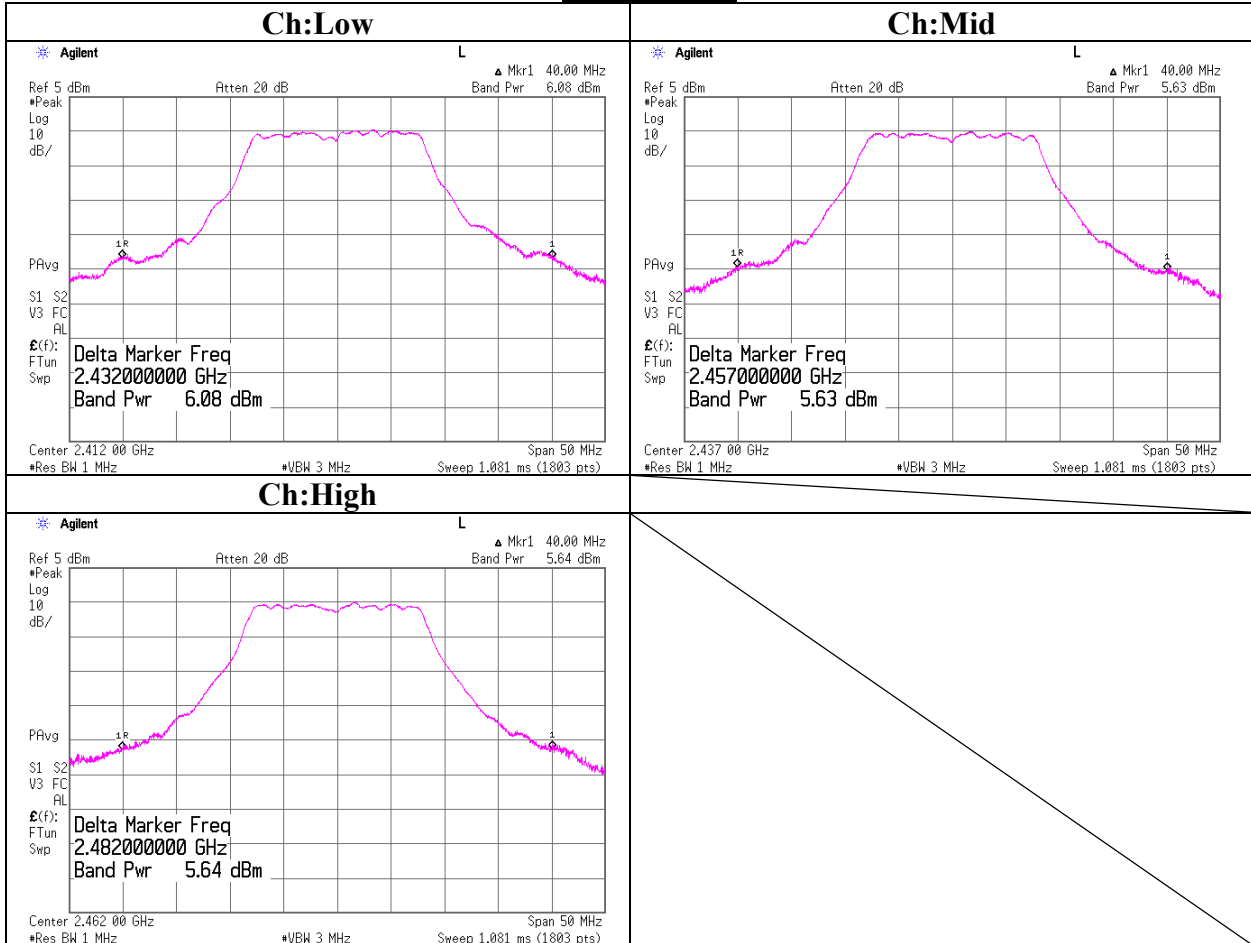


**Maximum Peak OutPut Power (DSSS and other forms of modulation)**  
**11b, 11Mbps**



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

**11g, 54Mbps**



**Radiated Spurious Emission(DSSS and other forms of modulation ) (below 1GHz)**

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

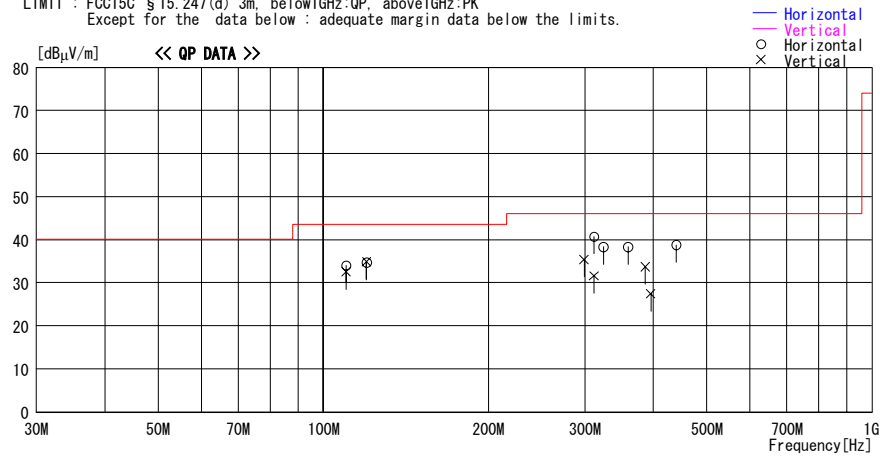
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 21:41:39

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 26deg.C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11b 11Mbps chl (Worst Data; Hor:X-axis, Ver:Z-Axis)

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



Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]
			Factor [dB/m]	Loss& Gain [dB]						
110.100	43.0	QP	11.8	-20.8	34.0	210	275	Hori	43.5	9.5
110.100	41.5	QP	11.8	-20.8	32.5	56	100	Vert	43.5	11.0
120.001	42.3	QP	13.1	-20.7	34.7	45	148	Hori	43.5	8.8
120.001	42.5	QP	13.1	-20.7	34.9	40	100	Vert	43.5	8.6
299.100	34.0	QP	20.3	-18.9	35.4	290	115	Vert	46.0	10.6
311.667	44.3	QP	15.3	-18.9	40.7	290	100	Hori	46.0	5.3
311.691	35.2	QP	15.3	-18.9	31.6	317	100	Vert	46.0	14.4
324.171	41.4	QP	15.8	-18.9	38.3	280	100	Hori	46.0	7.7
359.500	40.2	QP	17.2	-19.1	38.3	102	100	Hori	46.0	7.7
386.490	34.8	QP	18.1	-19.2	33.7	172	116	Vert	46.0	12.3
395.686	28.1	QP	18.5	-19.2	27.4	147	119	Vert	46.0	18.6
440.004	39.5	QP	18.7	-19.4	38.8	310	100	Hori	46.0	7.2

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

## Radiated Spurious Emission(DSSS and other forms of modulation) (below 1GHz)

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

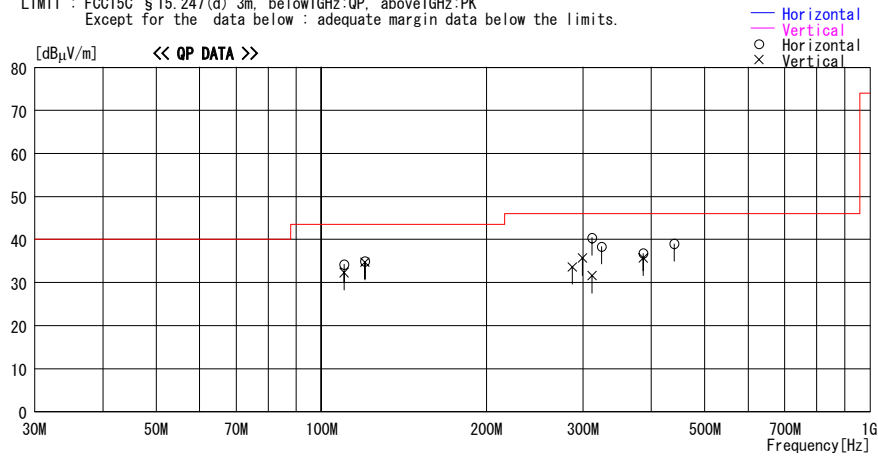
### DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 22:31:11

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 26deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11b 11Mbps ch6 (Worst Data; Hor:X-axis, Ver:Z-Axis)

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



Frequency [MHz]	Reading [dBµV]	DET	Antenna		Level [dBµV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBµV/m]	Margin [dB]
			Factor [dB/m]	Loss& Gain [dB]						
110.001	41.3	QP	11.8	-20.8	32.3	61	100	Vert	43.5	11.2
110.001	43.2	QP	11.8	-20.8	34.2	201	289	Hori	43.5	9.3
120.001	42.3	QP	13.1	-20.7	34.7	40	100	Vert	43.5	8.8
120.001	42.5	QP	13.1	-20.7	34.9	41	100	Hori	43.5	8.6
286.950	33.0	QP	19.6	-19.0	33.6	307	109	Vert	46.0	12.4
299.229	34.2	QP	20.4	-18.9	35.7	300	120	Vert	46.0	10.3
311.695	35.2	QP	15.3	-18.9	31.6	319	115	Vert	46.0	14.4
311.691	44.0	QP	15.3	-18.9	40.4	292	100	Hori	46.0	5.6
324.155	41.4	QP	15.8	-18.9	38.3	284	104	Hori	46.0	7.7
386.529	36.8	QP	18.1	-19.2	35.7	115	170	Vert	46.0	10.3
386.496	37.8	QP	18.1	-19.2	36.7	100	100	Hori	46.0	9.3
440.004	39.7	QP	18.7	-19.4	39.0	301	100	Hori	46.0	7.0

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP. GAIN

## Radiated Spurious Emission(DSSS and other forms of modulation) (below 1GHz)

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

### DATA OF RADIATED EMISSION TEST

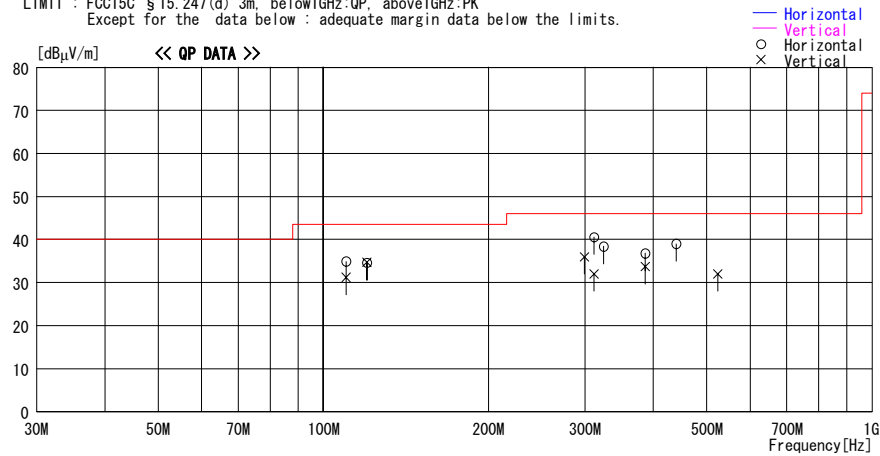
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 22:53:57

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E

Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 26deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11b 11Mbps ch11 (Worst Data: Hor:X-axis, Ver:Z-Axis)

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



Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]
			Factor [dB/m]	Loss& Gain [dB]						
110.001	40.2	QP	11.8	-20.8	31.2	0	100	Vert	43.5	12.3
110.001	43.9	QP	11.8	-20.8	34.9	58	100	Hori	43.5	8.6
120.001	42.3	QP	13.1	-20.7	34.7	181	280	Vert	43.5	8.8
120.001	42.2	QP	13.1	-20.7	34.6	38	100	Hori	43.5	8.9
299.244	34.5	QP	20.4	-18.9	36.0	272	110	Vert	46.0	10.0
311.689	35.6	QP	15.3	-18.9	32.0	320	100	Vert	46.0	14.0
311.691	44.2	QP	15.3	-18.9	40.6	286	100	Hori	46.0	5.4
324.154	41.5	QP	15.8	-18.9	38.4	283	110	Hori	46.0	7.6
386.491	34.8	QP	18.1	-19.2	33.7	129	100	Vert	46.0	12.3
386.530	37.9	QP	18.1	-19.2	36.8	98	100	Hori	46.0	9.2
440.000	39.7	QP	18.7	-19.4	39.0	301	100	Hori	46.0	7.0
523.680	32.3	QP	19.1	-19.4	32.0	47	100	Vert	46.0	14.0

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP. GAIN

**Radiated Spurious Emission(DSSS and other forms of modulation) (below 1GHz)**

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

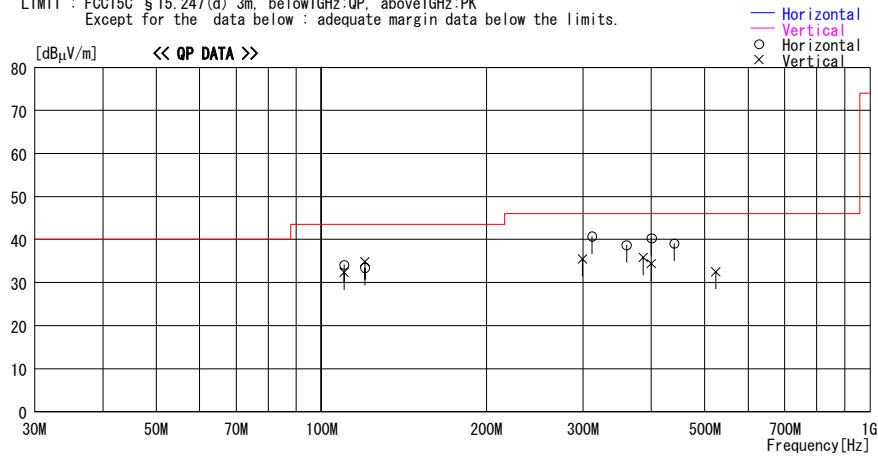
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 19:16:04

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 26deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11g 54Mbps ch1 (Worst Data; Hor:X-axis, Ver:Z-Axis)

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



Frequency [MHz]	Reading [dBμV]	DET	Antenna	Loss	Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]
			Factor [dB/m]	Gain [dB]						
110.001	43.1	QP	11.8	-20.8	34.1	209	270	Hori	43.5	9.4
110.001	41.4	QP	11.8	-20.8	32.4	57	100	Vert	43.5	11.1
120.001	41.0	QP	13.1	-20.7	33.4	46	152	Hori	43.5	10.1
120.001	42.4	QP	13.1	-20.7	34.8	42	100	Vert	43.5	8.7
299.229	34.0	QP	20.4	-18.9	35.5	296	118	Vert	46.0	10.5
311.691	44.3	QP	15.3	-18.9	40.7	289	100	Hori	46.0	5.3
360.004	40.6	QP	17.2	-19.1	38.7	109	100	Hori	46.0	7.3
386.529	36.9	QP	18.1	-19.2	35.8	172	116	Vert	46.0	10.2
400.005	35.0	QP	18.6	-19.2	34.4	159	117	Vert	46.0	11.6
400.004	40.9	QP	18.6	-19.2	40.3	111	100	Hori	46.0	5.7
440.004	39.8	QP	18.7	-19.4	39.1	307	100	Hori	46.0	6.9
523.674	32.8	QP	19.1	-19.4	32.5	203	100	Vert	46.0	13.5

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP. GAIN

## Radiated Spurious Emission(DSSS and other forms of modulation) (below 1GHz)

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

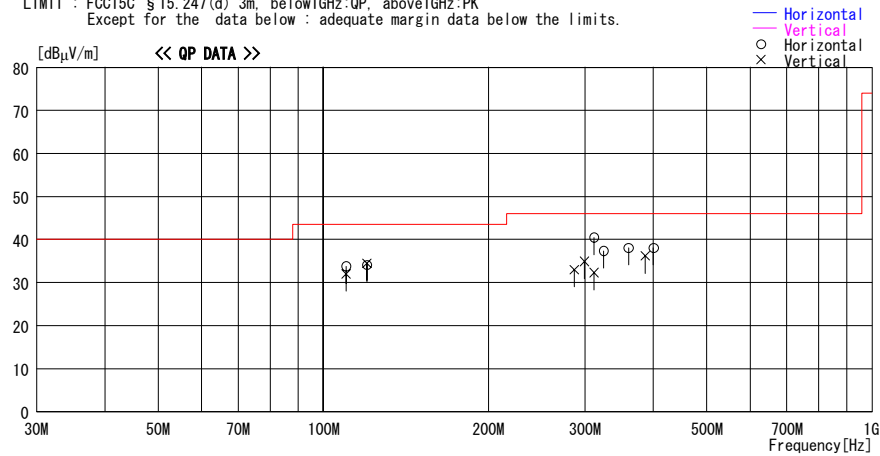
### DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 20:12:45

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 26deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11g 54Mbps ch6 (Worst Data; Hor:X-axis, Ver:Z-Axis)

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



Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]
			Factor [dB/m]	Loss& Gain						
110.002	42.8	QP	11.8	-20.8	33.8	213	262	Hori	43.5	9.7
110.001	41.0	QP	11.8	-20.8	32.0	65	100	Vert	43.5	11.5
120.001	41.7	QP	13.1	-20.7	34.1	205	292	Hori	43.5	9.4
120.001	42.1	QP	13.1	-20.7	34.5	41	100	Vert	43.5	9.0
286.773	32.4	QP	19.6	-19.0	33.0	280	100	Vert	46.0	13.0
299.244	33.4	QP	20.4	-18.9	34.9	302	100	Vert	46.0	11.1
311.690	35.9	QP	15.3	-18.9	32.3	360	386	Vert	46.0	13.7
311.704	44.1	QP	15.3	-18.9	40.5	286	109	Hori	46.0	5.5
324.167	40.5	QP	15.8	-18.9	37.4	292	107	Hori	46.0	8.6
360.005	40.0	QP	17.2	-19.1	38.1	114	100	Hori	46.0	7.9
386.495	37.3	QP	18.1	-19.2	36.2	11	182	Vert	46.0	9.8
400.006	38.7	QP	18.6	-19.2	38.1	118	100	Hori	46.0	7.9

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP. GAIN





**Radiated Spurious Emission(DSSS and other forms of modulation) (above 1GHz)**

**DATA OF SPURIOUS EMISSIONS(1GHz to 10GHz)**

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

Company : Nikon Corporation  
Equipment : W-LAN Module  
Model : UJ-087  
Sample No. : 0060570017E  
Power : DC3.3V  
Mode : 11b 11Mbps, Tx 2412MHz  
Remarks : Hor X , Ver Z-axis

REPORT NO : 25LE0299-HO  
REGULATION : Fcc Part15 Subpart C 15.247(d)  
TEST DISTANCE : 3m  
DATE : 08/08/2005  
TEMPERATURE : 25deg.C  
HUMIDITY : 59%  
ENGINEER : Yutaka Yoshida

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass or ATT [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1425.4	57.1	56.3	24.1	36.7	2.9	0.0	47.4	46.6	74.0	26.6	27.4
2	2390.0	53.7	51.0	30.5	36.4	3.7	0.0	51.5	48.8	74.0	22.5	25.2
3	4824.0	48.2	49.2	35.3	36.0	5.3	1.0	53.8	54.8	74.0	20.2	19.2
4	7236.0	50.3	50.0	37.7	36.0	6.6	0.4	59.0	58.7	74.0	15.0	15.3
5	9648.0	48.8	48.4	36.9	36.4	8.0	0.2	57.5	57.1	74.0	16.5	16.9

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1425.4	49.4	48.0	24.1	36.7	2.9	0.0	39.7	38.3	54.0	14.3	15.7
2	2390.0	40.1	37.5	30.5	36.4	3.7	0.0	37.9	35.3	54.0	16.1	18.7
3	4824.0	37.3	36.2	35.3	36.0	5.3	1.0	42.9	41.8	54.0	11.1	12.2
4	7236.0	37.4	37.5	37.7	36.0	6.6	0.4	46.1	46.2	54.0	7.9	7.8
5	9648.0	36.4	36.5	36.9	36.4	8.0	0.2	45.1	45.2	54.0	8.9	8.8

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2412.0	101.6	97.7	30.5	36.4	3.7	0.0	99.4	95.5	-	-	-
2	2400.0	50.7	47.3	30.5	36.4	3.7	0.0	48.5	45.1	Funda-20dB	30.9	30.4

\*Except for the above table : All other spurious emissions were less than 20dB for the limit.  
\*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.  
\*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.  
\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 10GHz)**

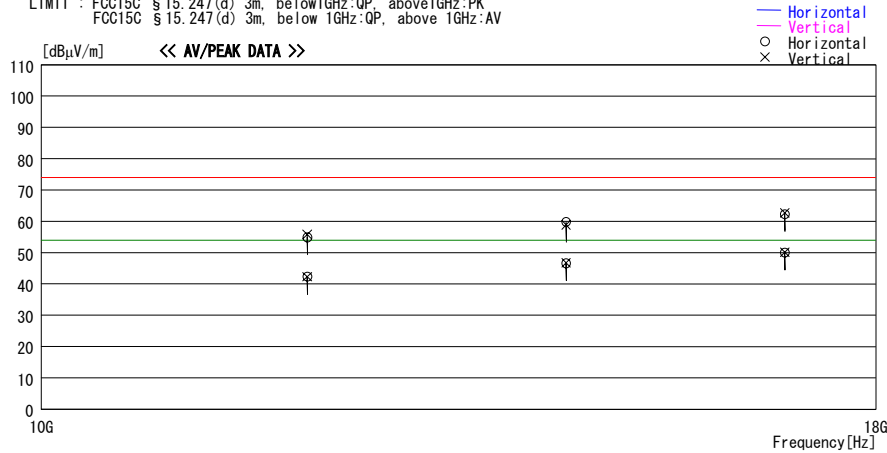
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 00:17:53

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 25deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11b 11Mbps chl (Worst Data: Hor:X-axis, Ver:Z-Axis)

LIMIT : FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:PK  
 FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBiμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBiμV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss* Gain [dB]							
12060.000	50.3	PK	41.6	-36.1	55.8	0	100	Vert	74.0	18.2	
12060.000	49.4	PK	41.6	-36.1	54.9	0	100	Hori	74.0	19.1	
12060.000	36.8	AV	41.6	-36.1	42.3	0	100	Vert	54.0	11.7	
12060.000	36.8	AV	41.6	-36.1	42.3	0	100	Hori	54.0	11.7	
14472.000	51.4	PK	41.9	-34.4	58.9	0	100	Vert	74.0	15.1	
14472.000	52.4	PK	41.9	-34.4	59.9	0	100	Hori	74.0	14.1	
14472.000	39.2	AV	41.9	-34.4	46.7	0	100	Vert	54.0	7.3	
14472.000	39.1	AV	41.9	-34.4	46.6	0	100	Hori	54.0	7.4	
16884.000	51.2	PK	45.2	-33.7	62.7	0	100	Vert	74.0	11.3	
16884.000	50.8	PK	45.2	-33.7	62.3	0	100	Hori	74.0	11.7	
16884.000	38.6	AV	45.2	-33.7	50.1	0	100	Vert	54.0	3.9	
16884.000	38.5	AV	45.2	-33.7	50.0	0	100	Hori	54.0	4.0	

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 18GHz)**

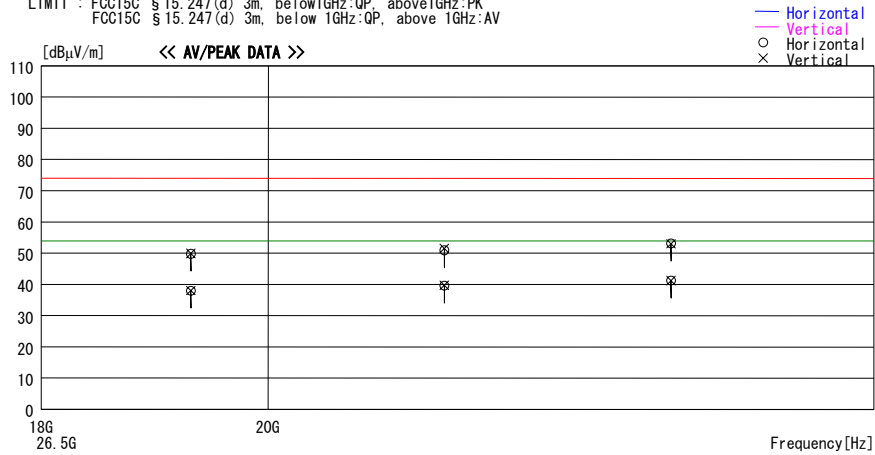
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2005/08/09 01:41:09

Applicant : Nikon Corporation Report No. : 25LE0299-HO  
Kind of EUT : W-LAN Module Power : DC 3.3V  
Model No. : UJ-087 Temp./Humi. : 25deg. C / 59%  
Serial No. : 0060570017E Operator : Yutaka Yoshida

Mode / Remarks : Tx 11b 11Mbps ch1 (Worst Data: Hor:X-axis, Ver:Z-Axis)

LIMIT : FCC15C § 15. 247 (d) 3m. below 1GHz:QP, above 1GHz:PK  
FCC15C § 15. 247 (d) 3m. below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
19296.000	45.8	PK	40.2	-36.1	49.9	0	100	Vert	74.0	24.1	
19296.000	45.7	PK	40.2	-36.1	49.8	0	100	Hori	74.0	24.2	
19296.000	33.9	AV	40.2	-36.1	38.0	0	100	Vert	54.0	16.0	
19296.000	33.9	AV	40.2	-36.1	38.0	0	100	Hori	54.0	16.0	
21708.000	47.9	PK	39.8	-36.2	51.5	0	100	Vert	74.0	22.5	
21708.000	47.3	PK	39.8	-36.2	50.9	0	100	Hori	74.0	23.1	
21708.000	36.1	AV	39.8	-36.2	39.7	0	100	Vert	54.0	14.3	
21708.000	36.0	AV	39.8	-36.2	39.6	0	100	Hori	54.0	14.4	
24120.000	49.4	PK	40.4	-36.8	53.0	0	100	Vert	74.0	21.0	
24120.000	49.5	PK	40.4	-36.8	53.1	0	100	Hori	74.0	20.9	
24120.000	37.6	AV	40.4	-36.8	41.2	0	100	Vert	54.0	12.8	
24120.000	37.6	AV	40.4	-36.8	41.2	0	100	Hori	54.0	12.8	

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
Except for the data below : adequate margin data below the limits.  
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 1GHz)**

**DATA OF SPURIOUS EMISSIONS(1GHz to 10GHz)**

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

Company	: Nikon Corporation	REPORT NO	: 25LE0299-HO
Equipment	: W-LAN Module	REGULATION	: Fcc Part15 Subpart C 15.247(d)
Model	: UJ-087	TEST DISTANCE	: 3m
Sample No.	: 0060570017E	DATE	: 08/08/2005
Power	: DC3.3V	TEMPERATURE	: 25deg.C
Mode	: 11b 11Mbps, Tx 2437MHz	HUMIDITY	: 59%
Remarks	: Hor X , Ver Z-axis	ENGINEER	: Yutaka Yoshida

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass or ATT [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1425.4	57.1	56.4	24.1	36.7	2.9	0.0	47.4	46.7	74.0	26.6	27.3
2	4874.0	47.8	48.7	35.6	36.0	5.3	1.0	53.7	54.6	74.0	20.3	19.4
3	7311.0	50.2	50.0	37.9	36.0	6.6	0.5	59.2	59.0	74.0	14.8	15.0
4	9748.0	48.4	48.4	36.8	36.4	8.1	0.2	57.1	57.1	74.0	16.9	16.9

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1425.4	49.5	48.0	24.1	36.7	2.9	0.0	39.8	38.3	54.0	14.2	15.7
2	4874.0	35.7	35.7	35.6	36.0	5.3	1.0	41.6	41.6	54.0	12.4	12.4
3	7311.0	37.6	37.6	37.9	36.0	6.6	0.5	46.6	46.6	54.0	7.4	7.4
4	9748.0	36.4	36.4	36.8	36.4	8.1	0.2	45.1	45.1	54.0	8.9	8.9

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

\*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.

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

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

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

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(01.06.05)

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 10GHz)**

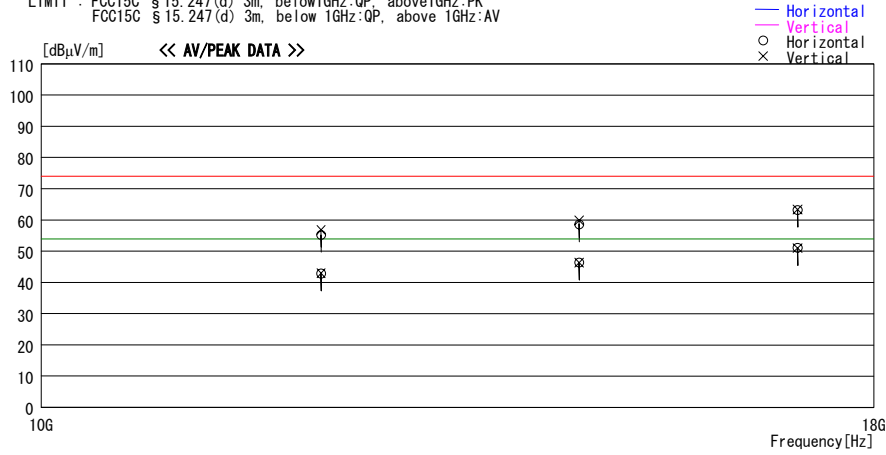
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 00:41:07

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-H0  
 Power : DC 3.3V  
 Temp./Humi. : 25deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11b 11Mbps ch6 (Worst Data: Hor:X-axis, Ver:Z-Axis)

LIMIT : FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:PK  
 FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBμV]	DET	Antenna	Loss&	Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]							
12185.000	51.3	PK	41.6	-36.0	56.9	0	100	Vert	74.0	17.1	
12185.000	49.6	PK	41.6	-36.0	55.2	0	100	Hori	74.0	18.8	
12185.000	37.3	AV	41.6	-36.0	42.9	0	100	Vert	54.0	11.1	
12185.000	37.3	AV	41.6	-36.0	42.9	0	100	Hori	54.0	11.1	
14622.000	52.6	PK	42.1	-34.8	59.9	0	100	Vert	74.0	14.1	
14622.000	51.3	PK	42.1	-34.8	58.6	0	100	Hori	74.0	15.4	
14622.000	39.0	AV	42.1	-34.8	46.3	0	100	Vert	54.0	7.7	
14622.000	39.1	AV	42.1	-34.8	46.4	0	100	Hori	54.0	7.6	
17059.000	51.6	PK	45.3	-33.6	63.3	0	100	Vert	74.0	10.7	
17059.000	51.5	PK	45.3	-33.6	63.2	0	100	Hori	74.0	10.8	
17059.000	39.3	AV	45.3	-33.6	51.0	0	100	Vert	54.0	3.0	
17059.000	39.4	AV	45.3	-33.6	51.1	0	100	Hori	54.0	2.9	

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 18GHz)**

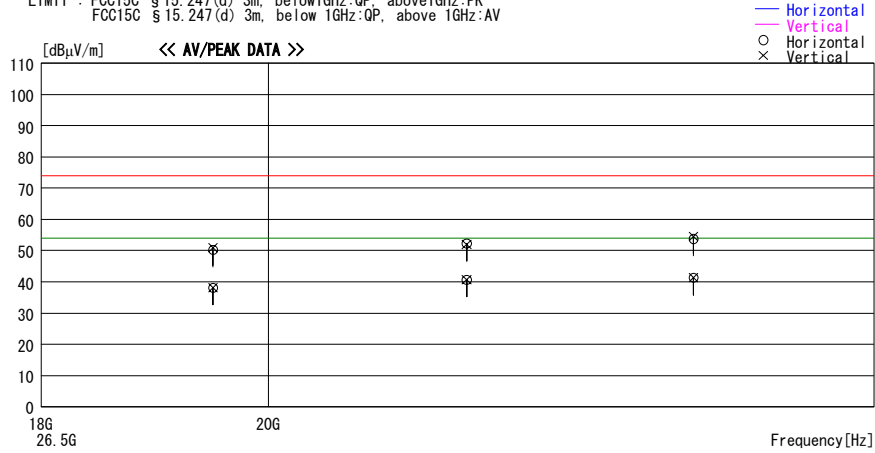
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 01:51:06

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 25deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11b 11Mbps ch6 (Worst Data: Hor:X-axis, Ver:Z-Axis)

LIMIT : FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:PK  
 FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBµV]	DET	Antenna	Loss&	Level [dBµV/m]	Angle [Deg]	Height [cm]	Polar	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]					[dBµV/m]	[dB]	
19496.000	46.2	PK	40.3	-36.3	50.2	0	100	Hori	74.0	23.8	
19496.000	46.9	PK	40.3	-36.3	50.9	0	100	Vert	74.0	23.1	
19496.000	34.1	AV	40.3	-36.3	38.1	0	100	Hori	54.0	15.9	
19496.000	34.1	AV	40.3	-36.3	38.1	0	100	Vert	54.0	15.9	
21933.000	48.1	PK	39.8	-35.6	52.3	0	100	Hori	74.0	21.7	
21933.000	47.8	PK	39.8	-35.6	52.0	0	100	Vert	74.0	22.0	
21933.000	36.5	AV	39.8	-35.6	40.7	0	100	Hori	54.0	13.3	
21933.000	36.5	AV	39.8	-35.6	40.7	0	100	Vert	54.0	13.3	
24370.000	50.1	PK	40.4	-36.7	53.8	0	100	Hori	74.0	20.2	
24370.000	50.8	PK	40.4	-36.7	54.5	0	100	Vert	74.0	19.5	
24370.000	37.7	AV	40.4	-36.7	41.4	0	100	Hori	54.0	12.6	
24370.000	37.6	AV	40.4	-36.7	41.3	0	100	Vert	54.0	12.7	

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP. GAIN

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 1GHz)**

**DATA OF SPURIOUS EMISSIONS(1GHz to 10GHz)**

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

Company : Nikon Corporation  
Equipment : W-LAN Module  
Model : UJ-087  
Sample No. : 0060570017E  
Power : DC3.3V  
Mode : 11b 11Mbps, Tx 2462MHz  
Remarks : Hor X , Ver Z-axis

REPORT NO : 25LE0299-HO  
REGULATION : Fcc Part15 Subpart C 15.247(d)  
TEST DISTANCE : 3m  
DATE : 08/08/2005  
TEMPERATURE : 25deg.C  
HUMIDITY : 59%  
ENGINEER : Yutaka Yoshida

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass or ATT [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1226.9	57.2	54.9	23.4	36.8	2.7	0.0	46.5	44.2	74.0	27.5	29.8
2	2483.5	54.5	52.3	30.5	36.4	3.7	0.0	52.3	50.1	74.0	21.7	23.9
3	4924.0	47.6	47.8	35.9	35.9	5.3	1.0	53.9	54.1	74.0	20.1	19.9
4	7386.0	49.6	49.1	38.0	36.0	6.7	0.6	58.9	58.4	74.0	15.1	15.6
5	9848.0	49.4	48.9	36.7	36.4	8.1	0.3	58.1	57.6	74.0	15.9	16.4

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1226.9	46.9	46.5	23.4	36.8	2.7	0.0	36.2	35.8	54.0	17.8	18.2
2	2483.5	41.0	39.0	30.5	36.4	3.7	0.0	38.8	36.8	54.0	15.2	17.2
3	4924.0	35.3	35.6	35.9	35.9	5.3	1.0	41.6	41.9	54.0	12.4	12.1
4	7386.0	37.4	37.4	38.0	36.0	6.7	0.6	46.7	46.7	54.0	7.3	7.3
5	9848.0	36.1	36.1	36.7	36.4	8.1	0.3	44.8	44.8	54.0	9.2	9.2

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

\*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.

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

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

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

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MF060b(01.06.05)

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 10GHz)**

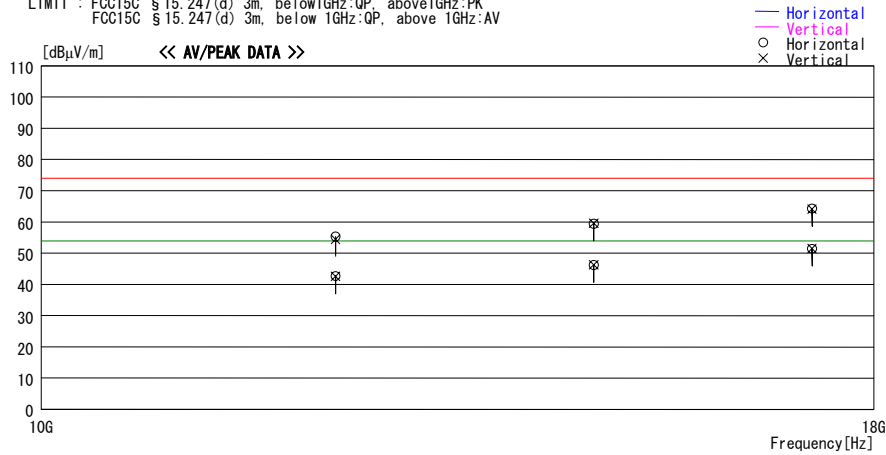
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 00:51:48

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 25deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11b 11Mbps ch11 (Worst Data: Hor:X-axis, Ver:Z-Axis)

LIMIT : FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:PK  
 FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
12310.000	49.6	PK	41.7	-35.9	55.4	0	100	Hori	74.0	18.6	
12310.000	48.7	PK	41.7	-35.9	54.5	0	100	Vert	74.0	19.5	
12310.000	36.9	AV	41.7	-35.9	42.7	0	100	Hori	54.0	11.4	
12310.000	36.8	AV	41.7	-35.9	42.6	0	100	Vert	54.0	11.4	
14772.000	52.3	PK	42.4	-35.2	59.5	0	100	Hori	74.0	14.5	
14772.000	52.5	PK	42.4	-35.2	59.7	0	100	Vert	74.0	14.3	
14772.000	39.0	AV	42.4	-35.2	46.2	0	100	Hori	54.0	7.8	
14772.000	39.1	AV	42.4	-35.2	46.3	0	100	Vert	54.0	7.7	
17234.000	52.9	PK	44.9	-33.5	64.3	0	100	Hori	74.0	9.7	
17234.000	52.7	PK	44.9	-33.5	64.1	0	100	Vert	74.0	9.9	
17234.000	40.1	AV	44.9	-33.5	51.5	0	100	Hori	54.0	2.5	
17234.000	40.1	AV	44.9	-33.5	51.5	0	100	Vert	54.0	2.5	

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN



**Radiated Spurious Emission(DSSS and other forms of modulation) (above 18GHz)**

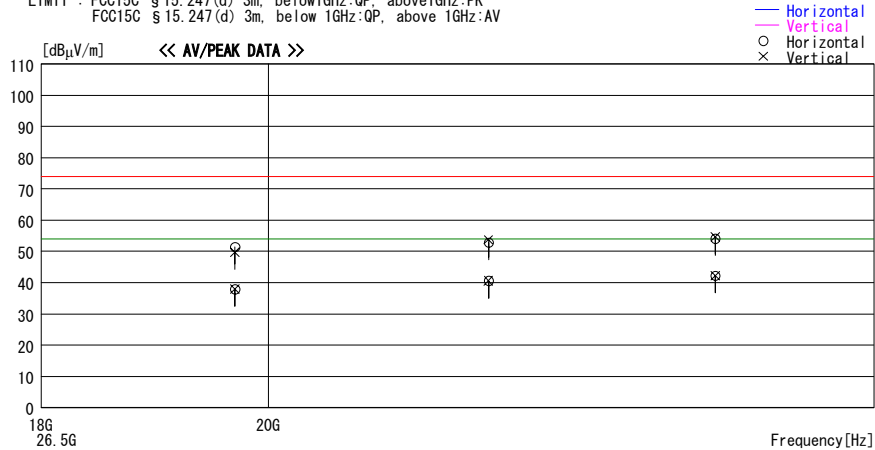
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2005/08/09 02:02:24

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 25deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11b 11Mbps ch11 (Worst Data: Hor:X-axis, Ver:Z-Axis)

LIMIT : FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:PK  
 FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
19696.000	47.7	PK	40.3	-36.5	51.5	0	100	Hori	74.0	22.6	
19696.000	46.0	PK	40.3	-36.5	49.8	0	100	Vert	74.0	24.2	
19696.000	34.1	AV	40.3	-36.5	37.9	0	100	Hori	54.0	16.1	
19696.000	34.2	AV	40.3	-36.5	38.0	0	100	Vert	54.0	16.0	
22158.000	48.5	PK	39.8	-35.5	52.8	0	100	Hori	74.0	21.2	
22158.000	49.5	PK	39.8	-35.5	53.8	0	100	Vert	74.0	20.3	
22158.000	36.3	AV	39.8	-35.5	40.6	0	100	Hori	54.0	13.4	
22158.000	36.3	AV	39.8	-35.5	40.6	0	100	Vert	54.0	13.4	
24620.000	50.0	PK	40.5	-36.3	54.2	0	100	Hori	74.0	19.8	
24620.000	50.5	PK	40.5	-36.3	54.7	0	100	Vert	74.0	19.3	
24620.000	38.0	AV	40.5	-36.3	42.2	0	100	Hori	54.0	11.8	
24620.000	38.1	AV	40.5	-36.3	42.3	0	100	Vert	54.0	11.7	

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 1GHz)**

**DATA OF SPURIOUS EMISSIONS(1GHz to 10GHz)**

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

Company : Nikon Corporation  
Equipment : W-LAN Module  
Model : UJ-087  
Sample No. : 0060570017E  
Power : DC3.3V  
Mode : 11g 54Mbps, Tx 2412MHz  
Remarks : Hor X , Ver Z-axis

REPORT NO : 25LE0299-HO  
REGULATION : Fcc Part15 Subpart C 15.247(d)  
TEST DISTANCE : 3m  
DATE : 08/08/2005  
TEMPERATURE : 25deg.C  
HUMIDITY : 59%  
ENGINEER : Yutaka Yoshida

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass or ATT [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1179.7	54.4	55.2	23.2	36.8	2.7	0.0	43.5	44.3	74.0	30.5	29.7
2	2390.0	60.0	58.5	30.5	36.4	3.7	0.0	57.8	56.3	74.0	16.2	17.7
3	4824.0	48.9	48.8	35.3	36.0	5.3	1.0	54.5	54.4	74.0	19.5	19.6
4	7236.0	50.9	51.9	37.7	36.0	6.6	0.4	59.6	60.6	74.0	14.4	13.4
5	9648.0	49.8	49.4	36.9	36.4	8.0	0.2	58.5	58.1	74.0	15.5	15.9

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1179.7	46.3	47.6	23.2	36.8	2.7	0.0	35.4	36.7	54.0	18.6	17.3
2	2390.0	45.6	43.6	30.5	36.4	3.7	0.0	43.4	41.4	54.0	10.6	12.6
3	4824.0	35.4	35.4	35.3	36.0	5.3	1.0	41.0	41.0	54.0	13.0	13.0
4	7236.0	37.3	37.2	37.7	36.0	6.6	0.4	46.0	45.9	54.0	8.0	8.1
5	9648.0	36.0	36.7	36.9	36.4	8.0	0.2	44.7	45.4	54.0	9.3	8.6

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	2412.0	97.9	95.3	30.5	36.4	3.7	0.0	95.7	93.1	-	-	-
2	2400.0	63.7	61.9	30.5	36.4	3.7	0.0	61.5	59.7	Funda-20dB	14.2	13.4

\*Except for the above table : All other spurious emissions were less than 20dB for the limit.  
\*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.  
\*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.  
\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.



**Radiated Spurious Emission(DSSS and other forms of modulation) (above 18GHz)**

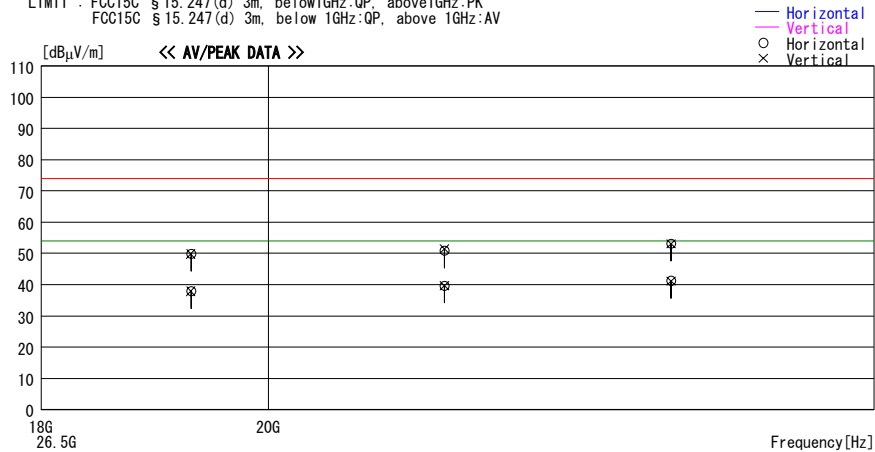
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 01:41:09

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 25deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11g 54Mbps ch1 (Worst Data: Hor:X-axis, Ver:Z-Axis)

LIMIT : FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:PK  
 FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
19296.000	45.7	PK	40.2	-36.1	49.8	0	100	Vert	74.0	24.2	
19296.000	45.8	PK	40.2	-36.1	49.9	0	100	Hori	74.0	24.1	
19296.000	33.8	AV	40.2	-36.1	37.9	0	100	Vert	54.0	16.1	
19296.000	33.9	AV	40.2	-36.1	38.0	0	100	Hori	54.0	16.0	
21708.000	47.8	PK	39.8	-36.2	51.4	0	100	Vert	74.0	22.6	
21708.000	47.3	PK	39.8	-36.2	50.9	0	100	Hori	74.0	23.1	
21708.000	36.1	AV	39.8	-36.2	39.7	0	100	Vert	54.0	14.3	
21708.000	36.1	AV	39.8	-36.2	39.7	0	100	Hori	54.0	14.3	
24120.000	49.5	PK	40.4	-36.8	53.1	0	100	Vert	74.0	20.9	
24120.000	49.5	PK	40.4	-36.8	53.1	0	100	Hori	74.0	20.9	
24120.000	37.5	AV	40.4	-36.8	41.1	0	100	Vert	54.0	12.9	
24120.000	37.6	AV	40.4	-36.8	41.2	0	100	Hori	54.0	12.8	

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP. GAIN

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 1GHz)**

**DATA OF SPURIOUS EMISSIONS(1GHz to 10GHz)**

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

Company	: Nikon Corporation	REPORT NO	: 25LE0299-HO
Equipment	: W-LAN Module	REGULATION	: Fcc Part15 Subpart C 15.247(d)
Model	: UJ-087	TEST DISTANCE	: 3m
Sample No.	: 0060570017E	DATE	: 08/08/2005
Power	: DC3.3V	TEMPERATURE	: 25deg.C
Mode	: 11g 54Mbps, Tx 2437MHz	HUMIDITY	: 59%
Remarks	: Hor X , Ver Z-axis	ENGINEER	: Yutaka Yoshida

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass or ATT [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1179.7	56.5	56.6	23.2	36.8	2.7	0.0	45.6	45.7	74.0	28.4	28.3
2	4874.0	49.1	49.6	35.6	36.0	5.3	1.0	55.0	55.5	74.0	19.0	18.5
3	7311.0	50.0	49.9	37.9	36.0	6.6	0.5	59.0	58.9	74.0	15.0	15.1
4	9748.0	48.5	48.3	36.8	36.4	8.1	0.2	57.2	57.0	74.0	16.8	17.0

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1179.7	49.6	49.7	23.2	36.8	2.7	0.0	38.7	38.8	54.0	15.3	15.2
2	4874.0	37.3	35.3	35.6	36.0	5.3	1.0	43.2	41.2	54.0	10.8	12.8
3	7311.0	37.3	37.3	37.9	36.0	6.6	0.5	46.3	46.3	54.0	7.7	7.7
4	9748.0	36.1	36.1	36.8	36.4	8.1	0.2	44.8	44.8	54.0	9.2	9.2

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

\*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.

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

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

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MF060b(01.06.05)

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 10GHz)**

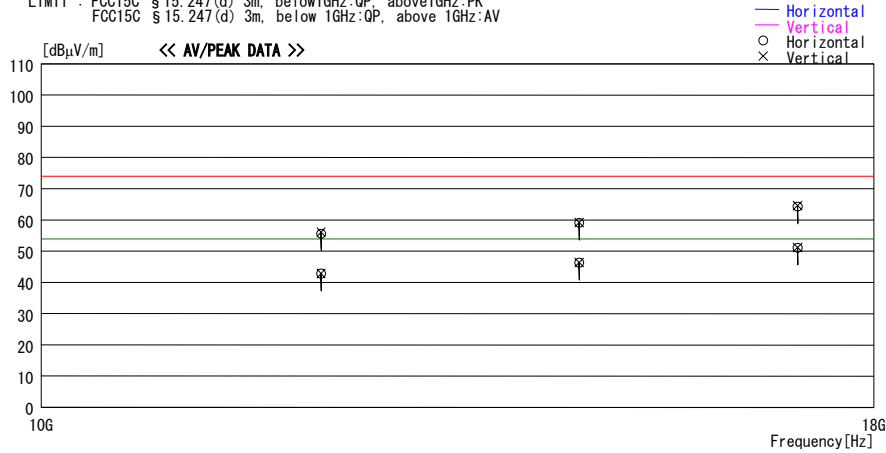
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 01:16:23

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 25deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11g 54Mbps ch6 (Worst Data: Hor:X-axis, Ver:Z-Axis)

LIMIT : FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:PK  
 FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
12185.000	50.6	PK	41.6	-36.0	56.2	0	100	Vert	74.0	17.9	
12185.000	50.0	PK	41.6	-36.0	55.6	0	100	Hori	74.0	18.4	
12185.000	37.3	AV	41.6	-36.0	42.9	0	100	Vert	54.0	11.1	
12185.000	37.3	AV	41.6	-36.0	42.9	0	100	Hori	54.0	11.1	
14622.000	51.9	PK	42.1	-34.8	59.2	0	100	Vert	74.0	14.8	
14622.000	51.9	PK	42.1	-34.8	59.2	0	100	Hori	74.0	14.9	
14622.000	39.1	AV	42.1	-34.8	46.4	0	100	Vert	54.0	7.6	
14622.000	39.0	AV	42.1	-34.8	46.3	0	100	Hori	54.0	7.7	
17059.000	52.9	PK	45.3	-33.6	64.6	0	100	Vert	74.0	9.4	
17059.000	52.6	PK	45.3	-33.6	64.3	0	100	Hori	74.0	9.7	
17059.000	39.5	AV	45.3	-33.6	51.2	0	100	Vert	54.0	2.8	
17059.000	39.5	AV	45.3	-33.6	51.2	0	100	Hori	54.0	2.8	

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 18GHz)**

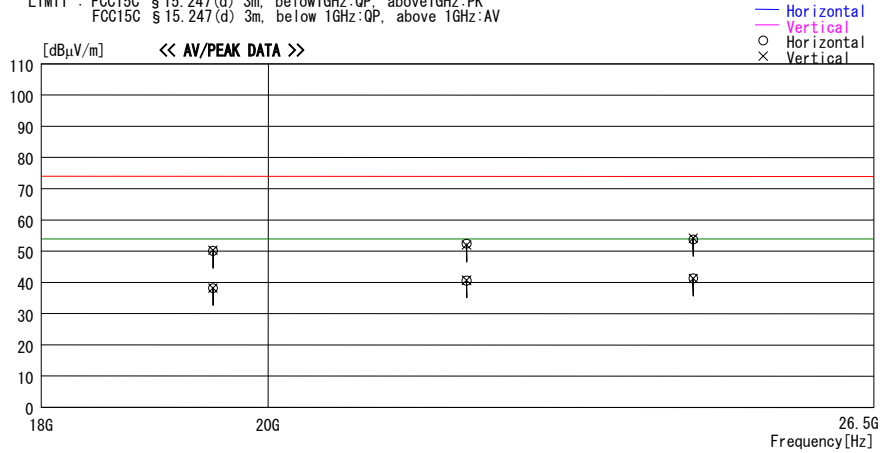
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/08/09 01:51:06

Applicant : Nikon Corporation  
 Kind of EUT : W-LAN Module  
 Model No. : UJ-087  
 Serial No. : 0060570017E  
 Report No. : 25LE0299-HO  
 Power : DC 3.3V  
 Temp./Humi. : 25deg. C / 59%  
 Operator : Yutaka Yoshida

Mode / Remarks : Tx 11g 54Mbps ch6 (Worst Data: Hor:X-axis, Ver:Z-Axis)

LIMIT : FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:PK  
 FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
19496.000	46.1	PK	40.3	-36.3	50.1	0	100	Hori	74.0	23.9	
19496.000	46.3	PK	40.3	-36.3	50.3	0	100	Vert	74.0	23.7	
19496.000	34.2	AV	40.3	-36.3	38.2	0	100	Hori	54.0	15.8	
19496.000	34.2	AV	40.3	-36.3	38.2	0	100	Vert	54.0	15.8	
21933.000	48.2	PK	39.8	-35.6	52.4	0	100	Hori	74.0	21.6	
21933.000	47.8	PK	39.8	-35.6	52.0	0	100	Vert	74.0	22.0	
21933.000	36.4	AV	39.8	-35.6	40.6	0	100	Hori	54.0	13.4	
21933.000	36.5	AV	39.8	-35.6	40.7	0	100	Vert	54.0	13.3	
24370.000	50.1	PK	40.4	-36.7	53.8	0	100	Hori	74.0	20.2	
24370.000	50.5	PK	40.4	-36.7	54.2	0	100	Vert	74.0	19.8	
24370.000	37.6	AV	40.4	-36.7	41.3	0	100	Hori	54.0	12.7	
24370.000	37.6	AV	40.4	-36.7	41.3	0	100	Vert	54.0	12.7	

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
 Except for the data below : adequate margin data below the limits.  
 CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 1GHz)**

**DATA OF SPURIOUS EMISSIONS(1GHz to 10GHz)**

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

Company	: Nikon Corporation	REPORT NO	: 25LE0299-HO
Equipment	: W-LAN Module	REGULATION	: Fcc Part15 Subpart C 15.247(d)
Model	: UJ-087	TEST DISTANCE	: 3m
Sample No.	: 0060570017E	DATE	: 08/08/2005
Power	: DC3.3V	TEMPERATURE	: 25deg.C
Mode	: 11g 54Mbps, Tx 2462MHz	HUMIDITY	: 59%
Remarks	: Hor X , Ver Z-axis	ENGINEER	: Yutaka Yoshida

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass or ATT [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1425.4	57.0	56.6	24.1	36.7	2.9	0.0	47.3	46.9	74.0	26.7	27.1
2	2483.5	60.6	57.7	30.5	36.4	3.7	0.0	58.4	55.5	74.0	15.6	18.5
3	4924.0	48.2	48.8	35.9	35.9	5.3	1.0	54.5	55.1	74.0	19.5	18.9
4	7386.0	49.9	49.8	38.0	36.0	6.7	0.6	59.2	59.1	74.0	14.8	14.9
5	9848.0	49.6	48.4	36.7	36.4	8.1	0.3	58.3	57.1	74.0	15.7	16.9

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

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	1425.4	49.5	48.4	24.1	36.7	2.9	0.0	39.8	38.7	54.0	14.2	15.3
2	2483.5	45.7	42.2	30.5	36.4	3.7	0.0	43.5	40.0	54.0	10.5	14.0
3	4924.0	35.4	35.6	35.9	35.9	5.3	1.0	41.7	41.9	54.0	12.3	12.1
4	7386.0	37.5	37.4	38.0	36.0	6.7	0.6	46.8	46.7	54.0	7.2	7.3
5	9848.0	36.1	36.2	36.7	36.4	8.1	0.3	44.8	44.9	54.0	9.2	9.1

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

\*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.

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

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

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**Radiated Spurious Emission(DSSS and other forms of modulation) (above 10GHz)**

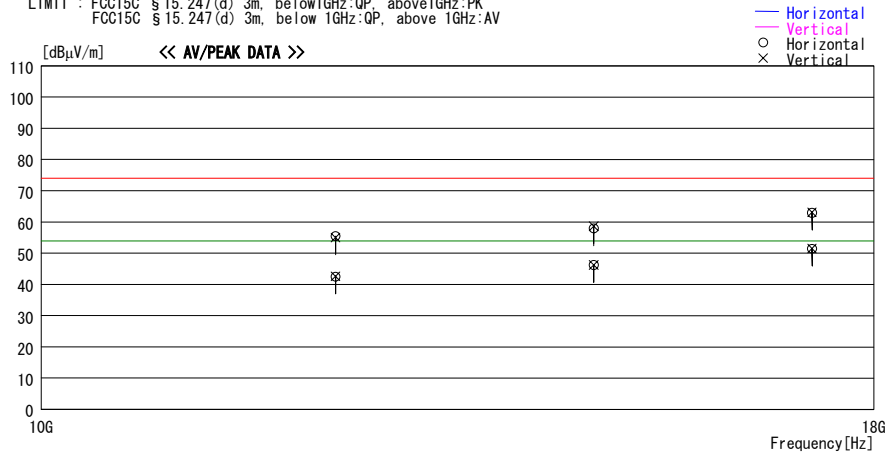
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2005/08/09 01:24:11

Applicant : Nikon Corporation  
Kind of EUT : W-LAN Module  
Model No. : UJ-087  
Serial No. : 0060570017E  
Report No. : 25LE0299-HO  
Power : DC 3.3V  
Temp./Humi. : 25deg. C / 59%  
Operator : Yutaka Yoshida

Mode / Remarks : Tx 11g 54Mbps ch11 (Worst Data: Hor:X-axis, Ver:Z-Axis)

LIMIT : FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:PK  
FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
12310.000	49.8	PK	41.7	-35.9	55.6	0	100	Hori	74.0	18.4	
12310.000	49.2	PK	41.7	-35.9	55.0	0	100	Vert	74.0	19.0	
12310.000	36.8	AV	41.7	-35.9	42.6	0	100	Hori	54.0	11.4	
12310.000	36.8	AV	41.7	-35.9	42.6	0	100	Vert	54.0	11.4	
14772.000	50.8	PK	42.4	-35.2	58.0	0	100	Hori	74.0	16.0	
14772.000	51.5	PK	42.4	-35.2	58.7	0	100	Vert	74.0	15.3	
14772.000	39.0	AV	42.4	-35.2	46.2	0	100	Hori	54.0	7.8	
14772.000	39.0	AV	42.4	-35.2	46.2	0	100	Vert	54.0	7.8	
17234.000	51.6	PK	44.9	-33.5	63.0	0	100	Hori	74.0	11.1	
17234.000	51.7	PK	44.9	-33.5	63.1	0	100	Vert	74.0	10.9	
17234.000	40.1	AV	44.9	-33.5	51.5	0	100	Hori	54.0	2.5	
17234.000	40.1	AV	44.9	-33.5	51.5	0	100	Vert	54.0	2.5	

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
Except for the data below : adequate margin data below the limits.  
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

**Radiated Spurious Emission(DSSS and other forms of modulation) (above 18GHz)**

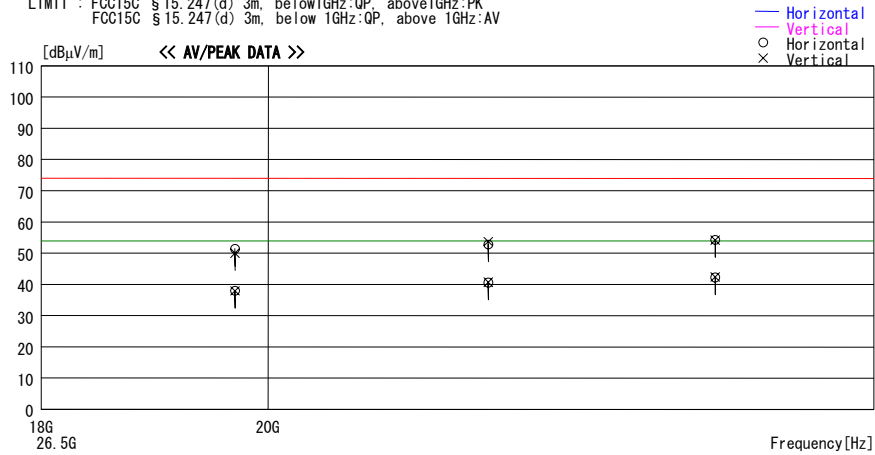
**DATA OF RADIATED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2005/08/09 02:02:24

Applicant : Nikon Corporation Report No. : 25LE0299-HO  
Kind of EUT : W-LAN Module Power : DC 3.3V  
Model No. : UJ-087 Temp./Humi. : 25deg.C / 59%  
Serial No. : 0060570017E Operator : Yutaka Yoshida

Mode / Remarks : Tx 11g 54Mbps ch11 (Worst Data: Hor:X-axis, Ver:Z-Axis)

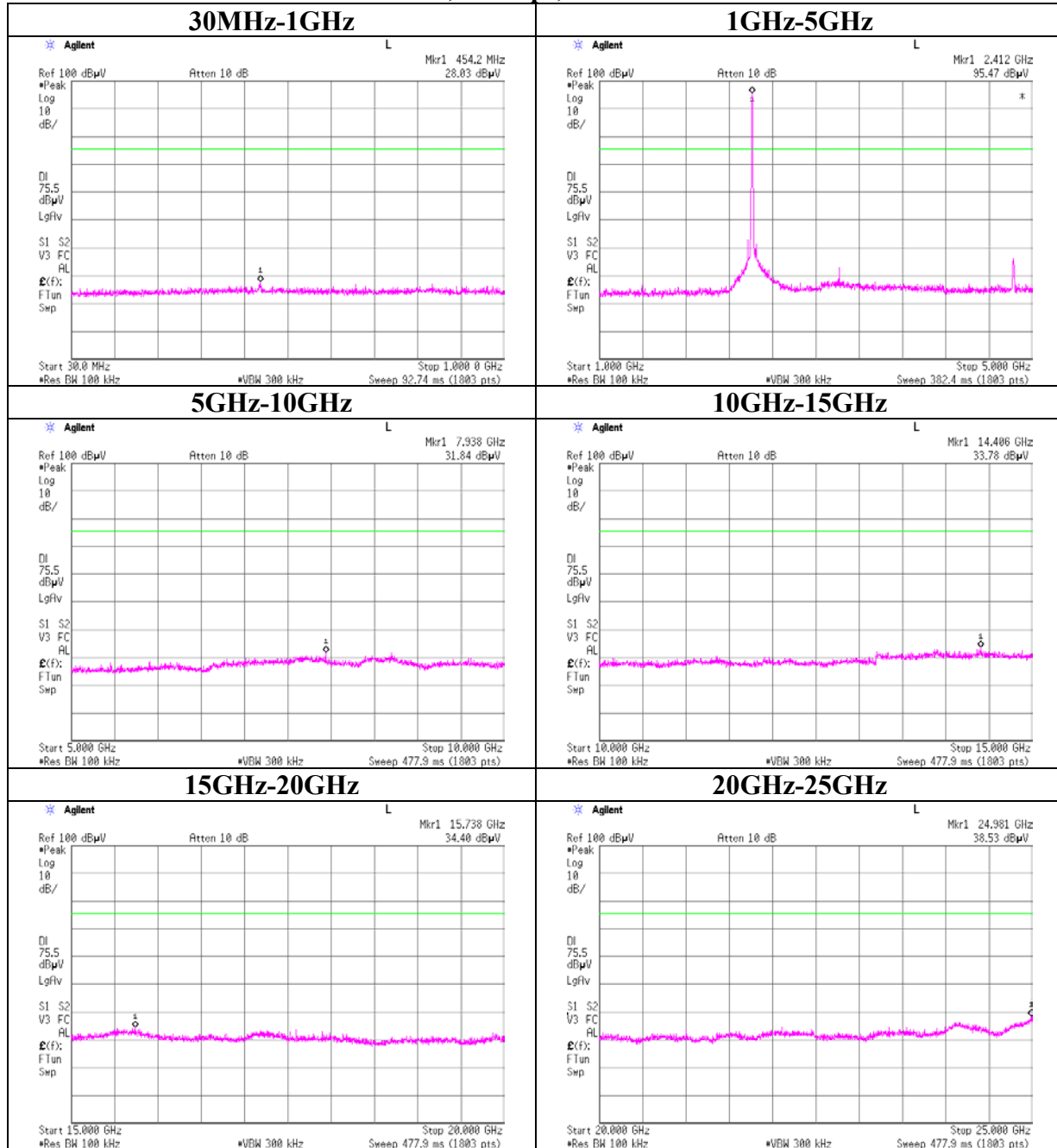
LIMIT : FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:PK  
FCC15C § 15.247(d) 3m. below 1GHz:QP, above 1GHz:AV



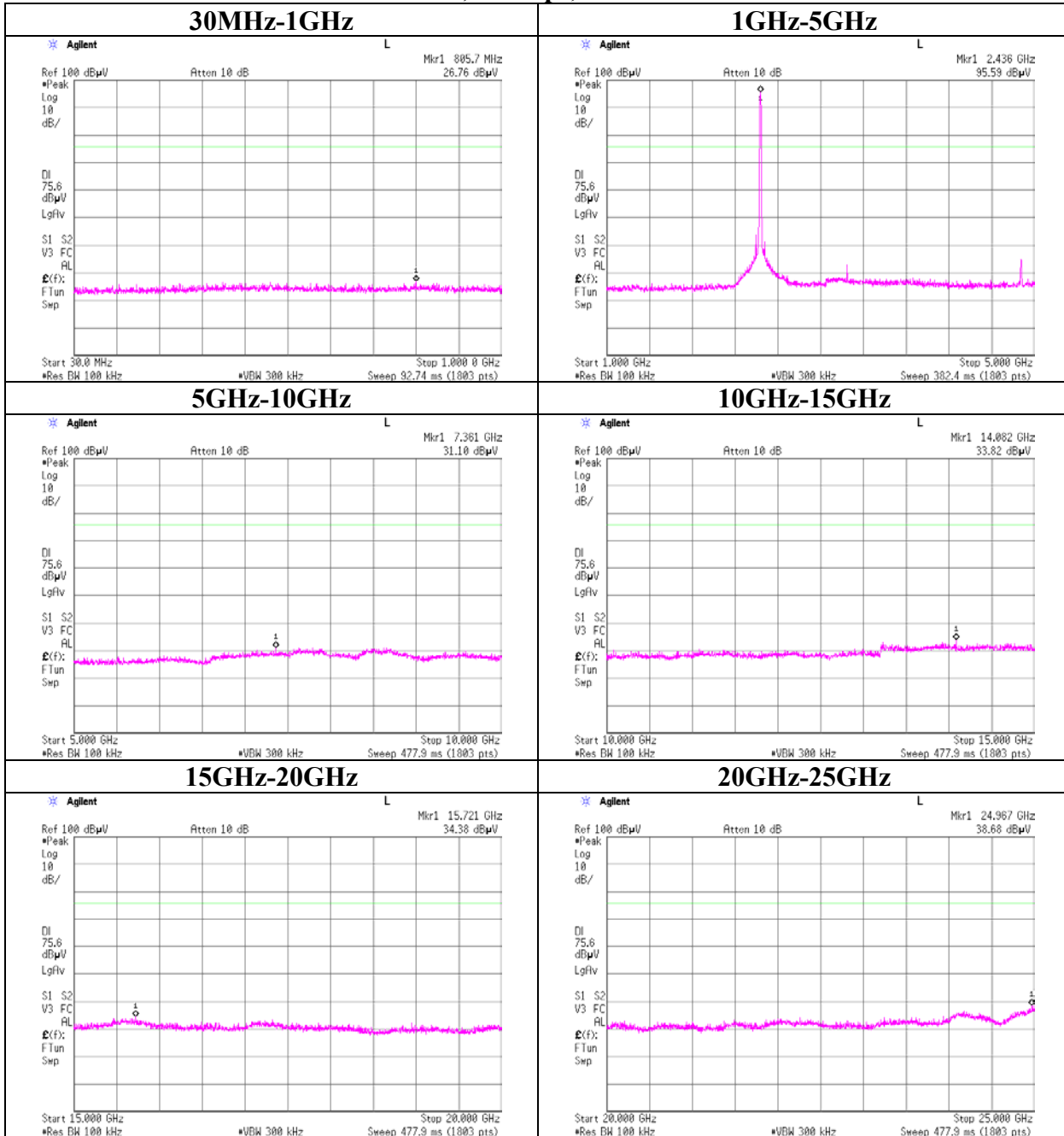
Frequency [MHz]	Reading [dBμV]	DET	Antenna		Level [dBμV/m]	Angle [Deg]	Height [cm]	Polar	Limit [dBμV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
19696.000	47.6	PK	40.3	-36.5	51.4	0	100	Hori	74.0	22.6	
19696.000	46.2	PK	40.3	-36.5	50.0	0	100	Vert	74.0	24.0	
19696.000	34.2	AV	40.3	-36.5	38.0	0	100	Hori	54.0	16.0	
19696.000	34.2	AV	40.3	-36.5	38.0	0	100	Vert	54.0	16.0	
22158.000	48.5	PK	39.8	-35.5	52.8	0	100	Hori	74.0	21.2	
22158.000	49.4	PK	39.8	-35.5	53.7	0	100	Vert	74.0	20.3	
22158.000	36.3	AV	39.8	-35.5	40.6	0	100	Hori	54.0	13.4	
22158.000	36.4	AV	39.8	-35.5	40.7	0	100	Vert	54.0	13.3	
24620.000	50.1	PK	40.5	-36.3	54.3	0	100	Hori	74.0	19.7	
24620.000	50.0	PK	40.5	-36.3	54.2	0	100	Vert	74.0	19.8	
24620.000	38.0	AV	40.5	-36.3	42.2	0	100	Hori	54.0	11.8	
24620.000	38.2	AV	40.5	-36.3	42.4	0	100	Vert	54.0	11.6	

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN  
Except for the data below : adequate margin data below the limits.  
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

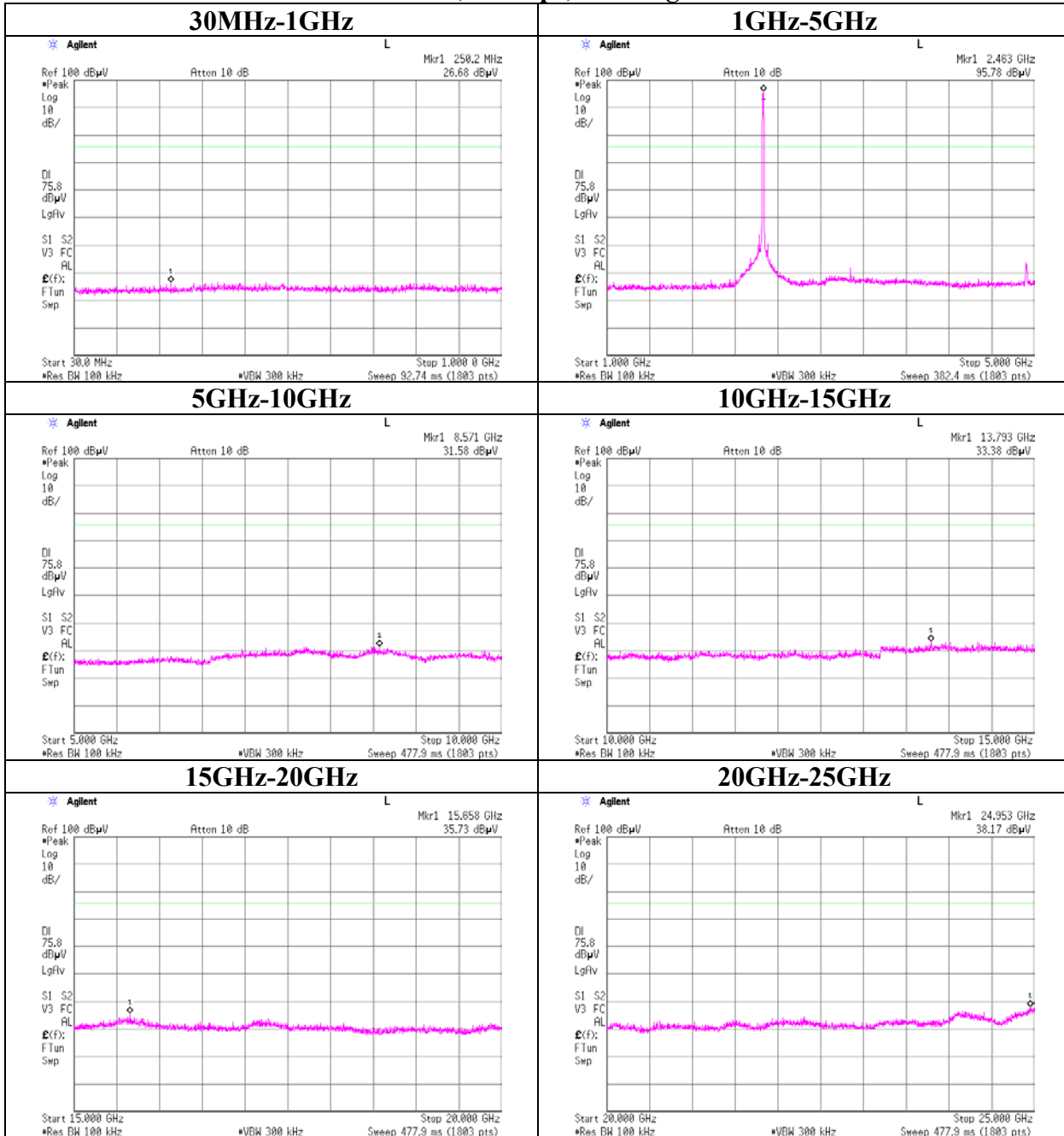
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**11b, 11Mbps, Ch : Low**



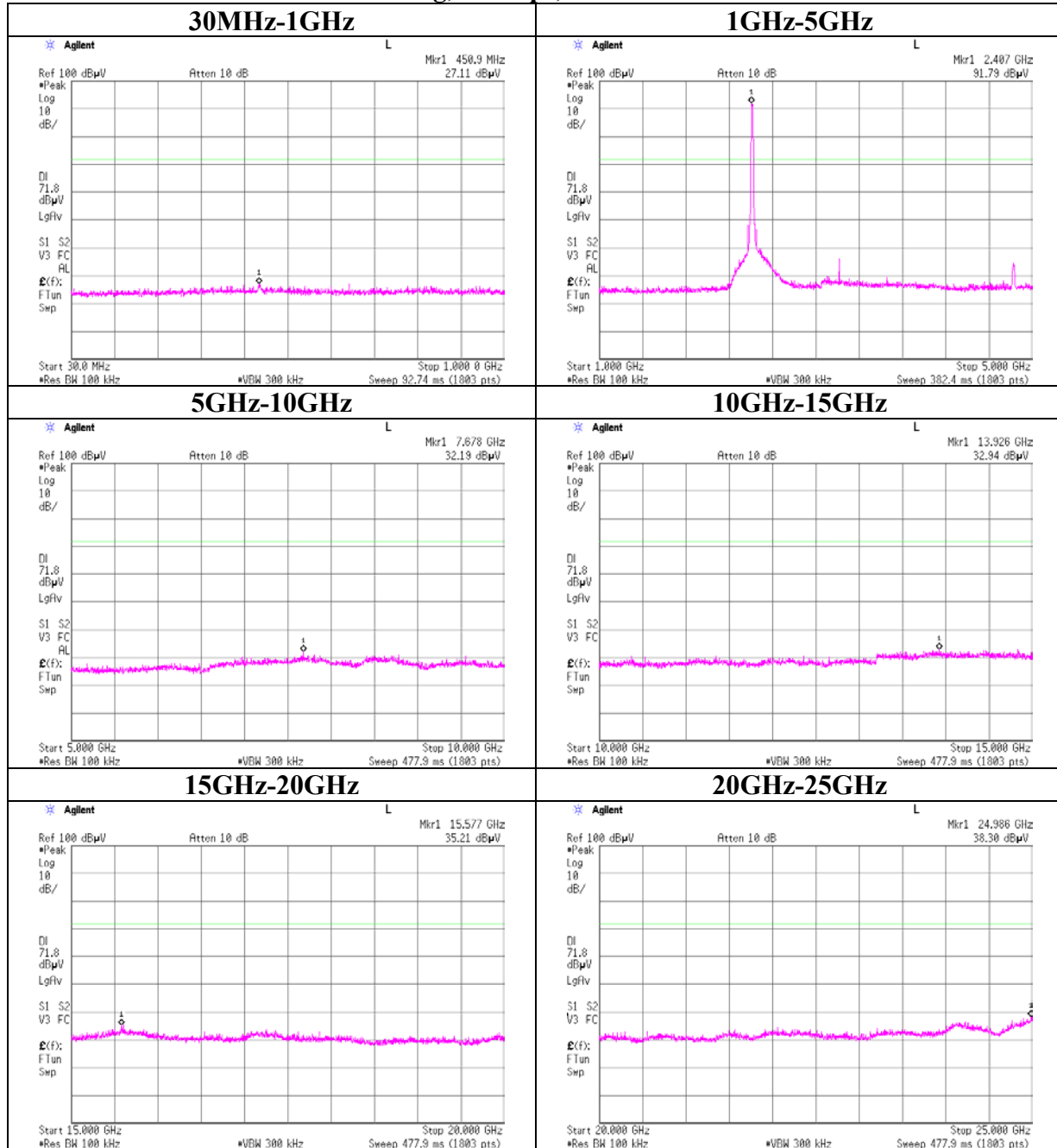
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**11b, 11Mbps, Ch : Mid**



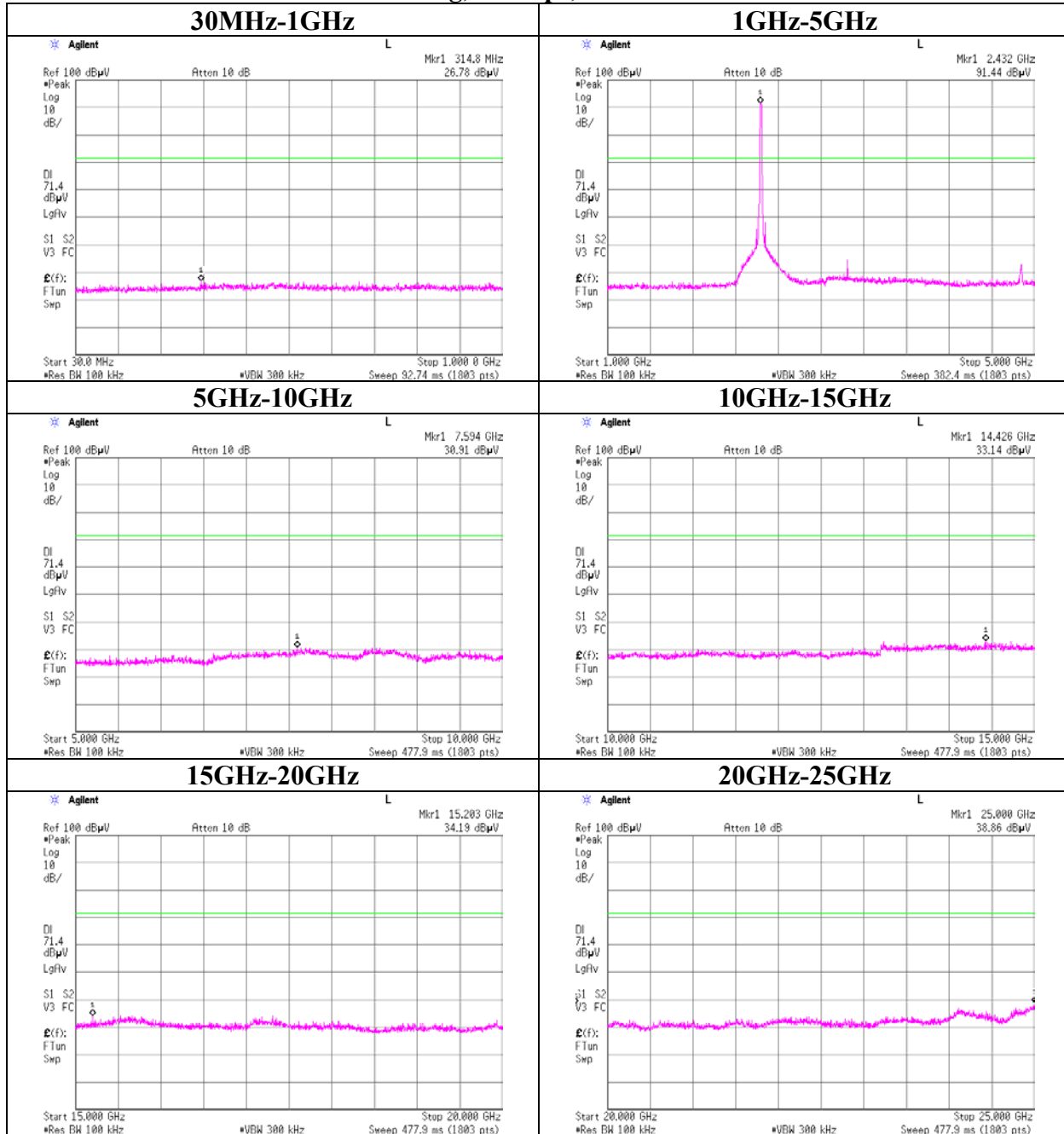
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**11b, 11Mbps, Ch : High**



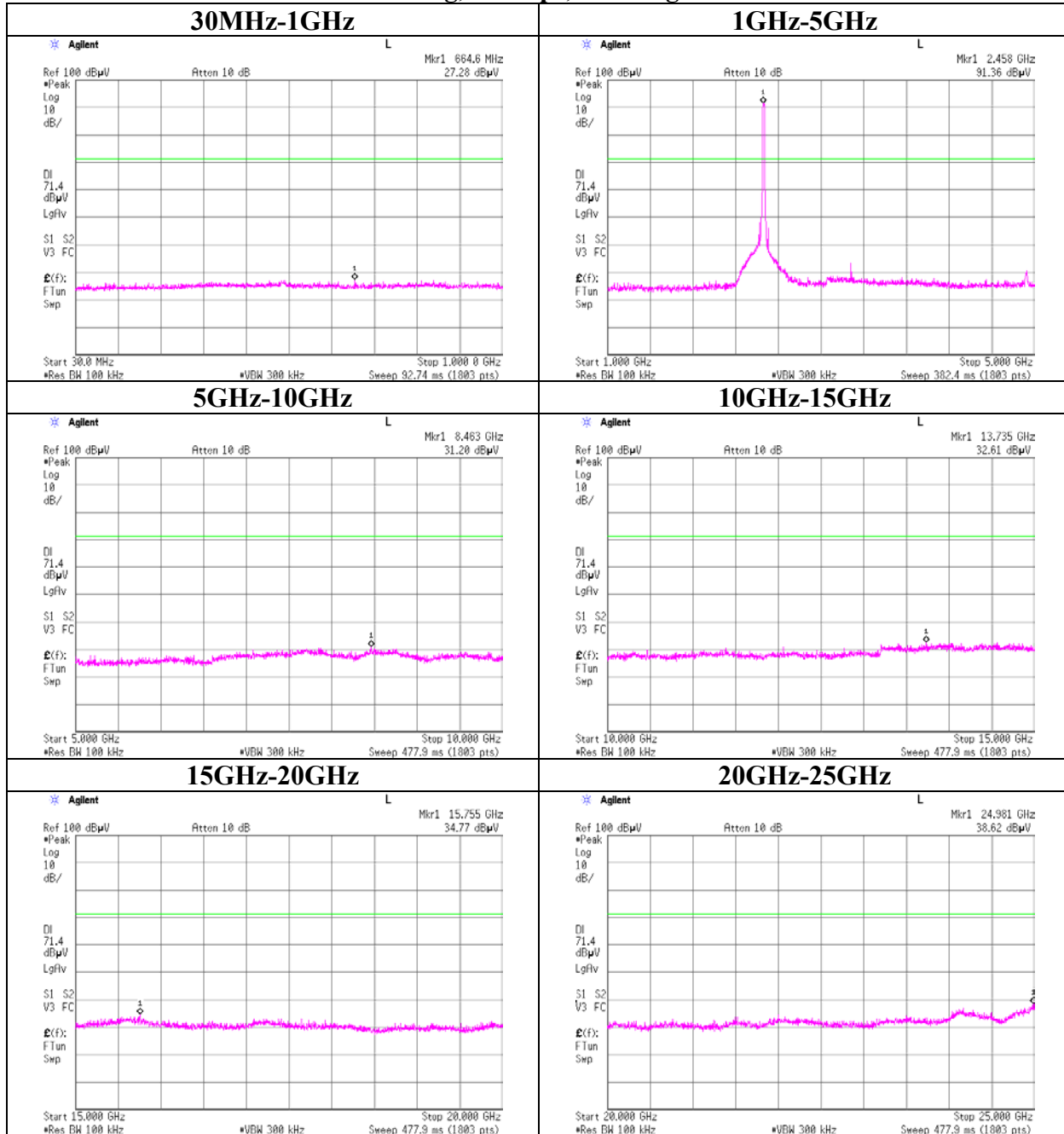
**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**11g, 54Mbps, Ch : Low**



**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**11g, 54Mbps, Ch : Mid**

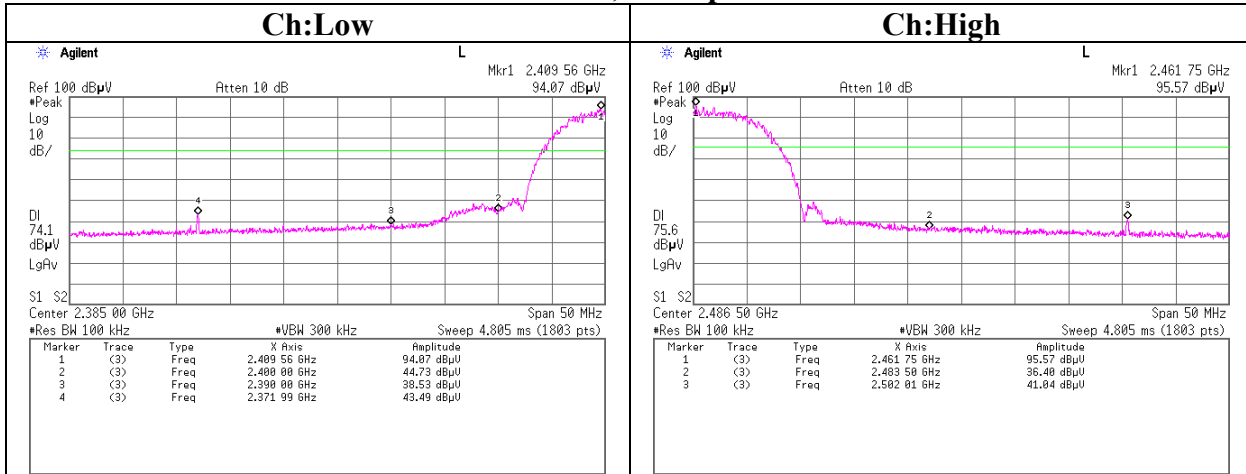


**Conducted Spurious Emission(DSSS and other forms of modulation)**  
**11g, 54Mbps, Ch : High**

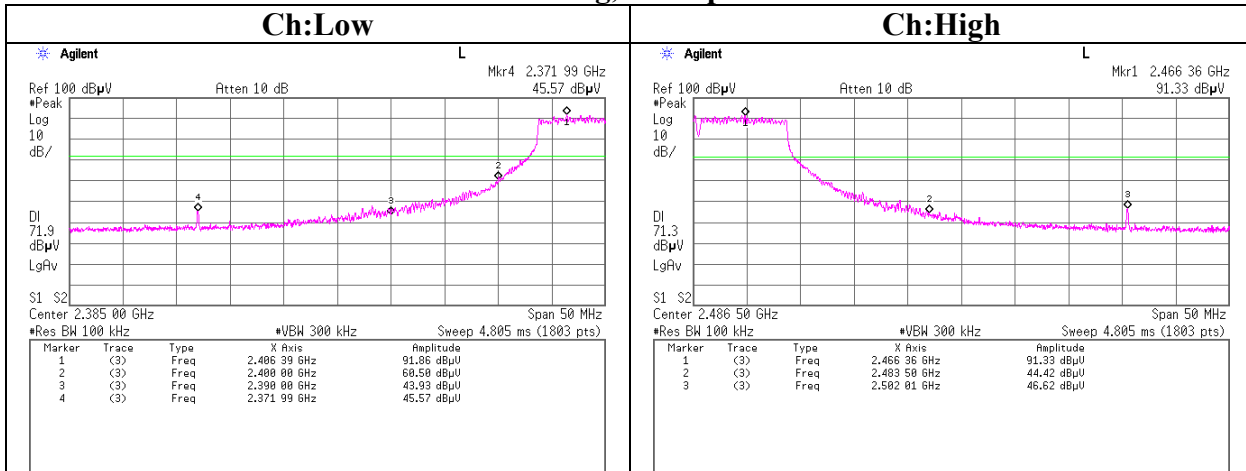




**Conducted emission Band Edge compliance (DSSS and other forms of modulation)**  
**11b, 11Mbps**



**11g, 54Mbps**



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

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

Company : Nikon Corporation  
Equipment : Wireless LAN Module  
Model : UJ-087  
Sample No. : 0060570014E4  
Power : DC 3.3V  
Mode : Tx(ch1,6,11)

REPORT NO : 25LE0299-HO  
REGULATION : FCC Part15 Subpart C 15.247(e)  
TEST DISTANCE : -  
DATE : 08/11/2005  
TEMPERATURE : 24deg.C.  
HUMIDITY : 58%  
ENGINEER : Makoto Kosaka

#### [IEEE802.11b] (11Mbps)

Ch	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2411.3	-25.52	1.80	10.68	-13.04	8.0	21.0
Mid	2436.3	-26.11	1.83	10.68	-13.60	8.0	21.6
High	2461.3	-26.02	1.84	10.68	-13.50	8.0	21.5

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Attenuator

#### [IEEE802.11g] (54Mbps)

Ch	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2416.4	-29.50	1.80	10.68	-17.02	8.0	25.0
Mid	2440.2	-29.64	1.83	10.68	-17.13	8.0	25.1
High	2460.2	-29.18	1.84	10.68	-16.66	8.0	24.7

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer)+ Attenuator

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

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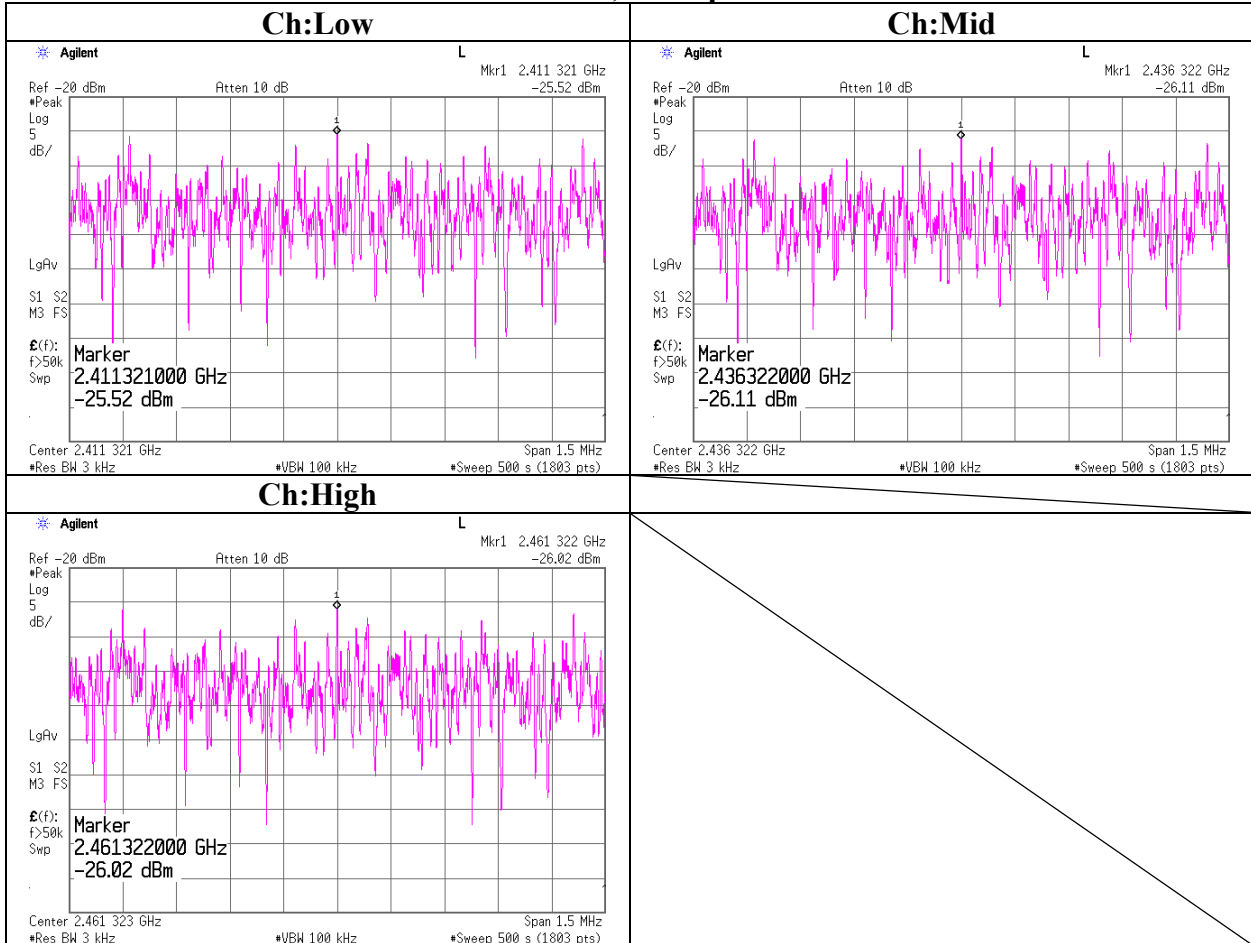
Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

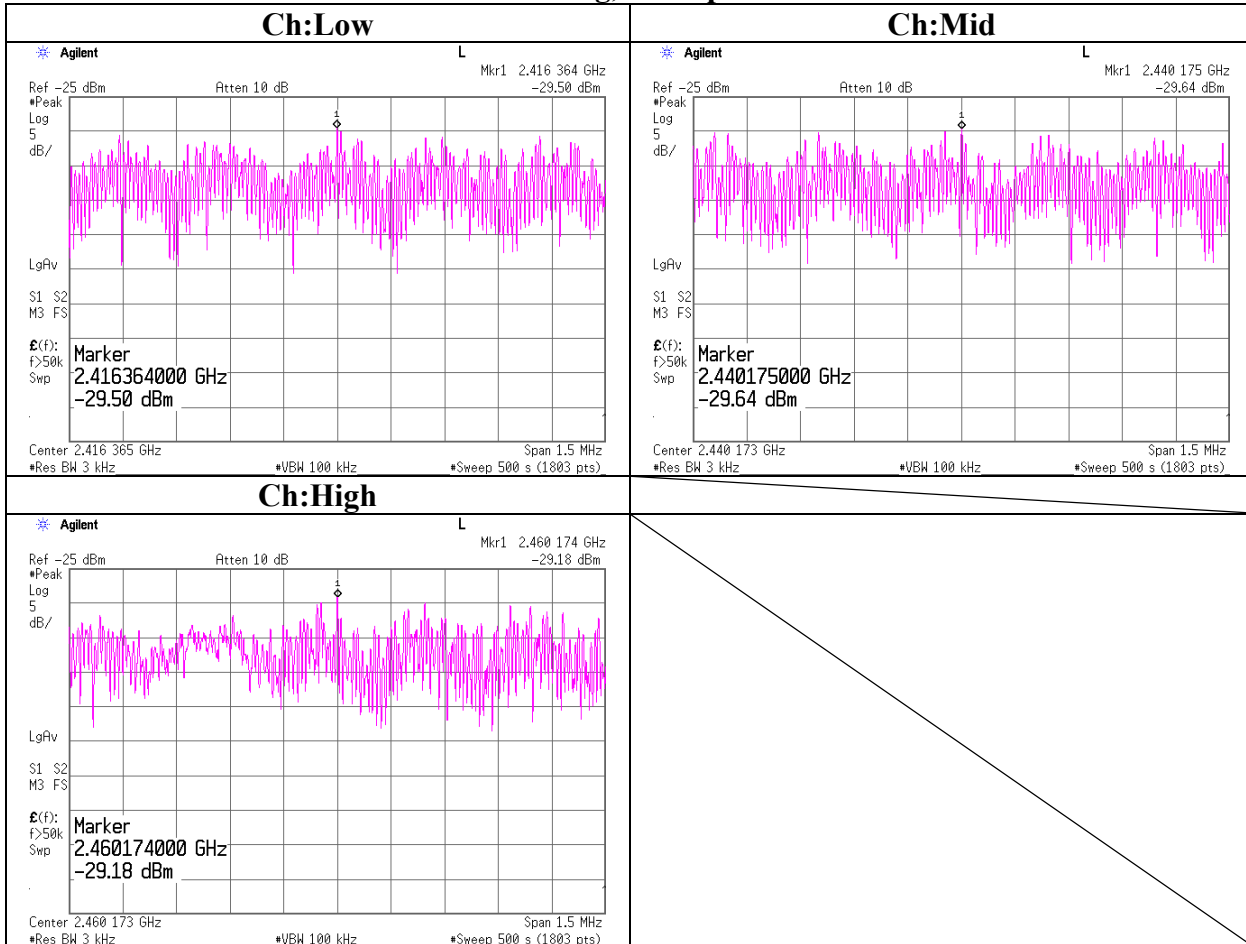
MF060b(01.06.05)

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

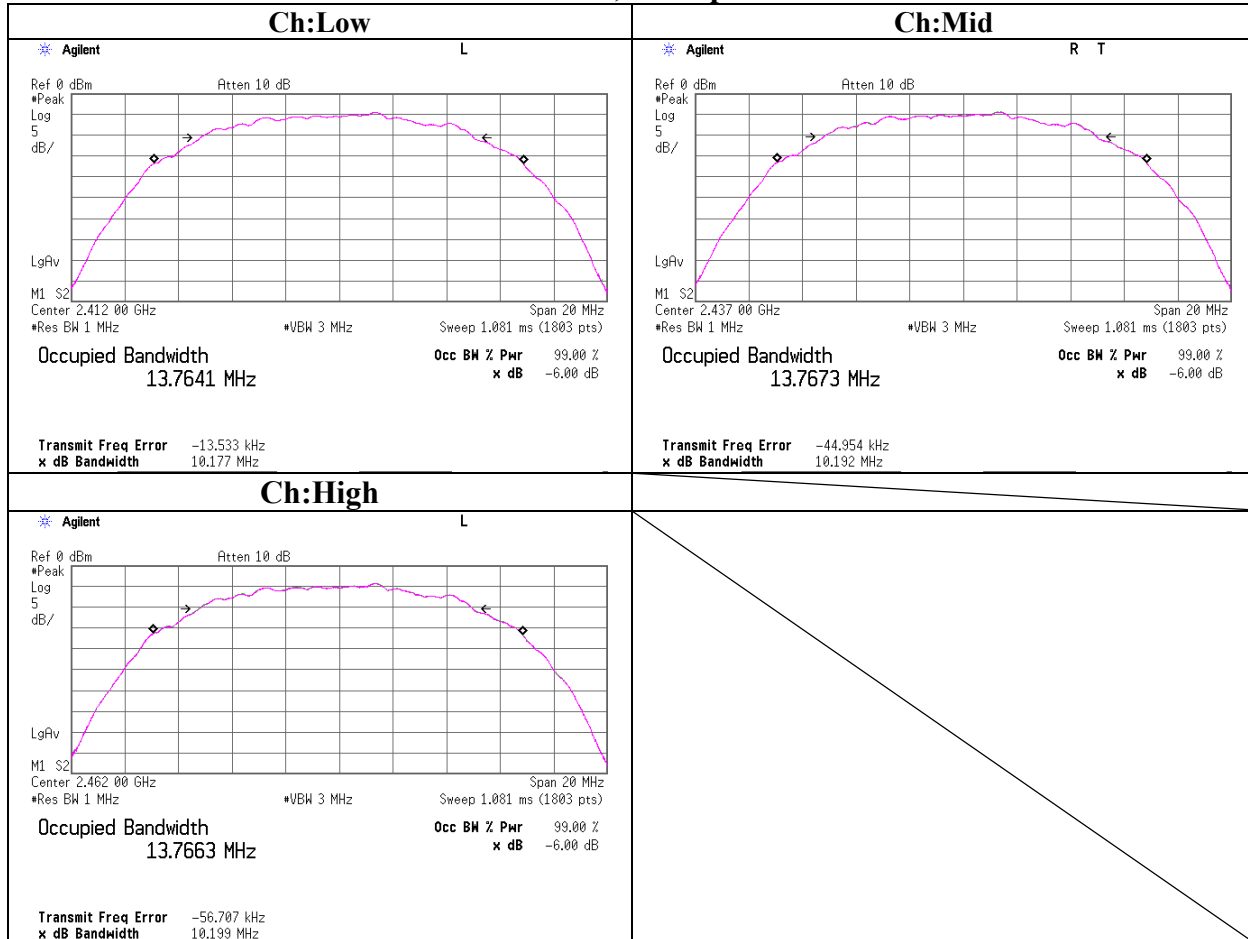
**11b, 11Mbps**



**Power Density(DSSS and other forms of modulation)**  
**11g, 54Mbps**

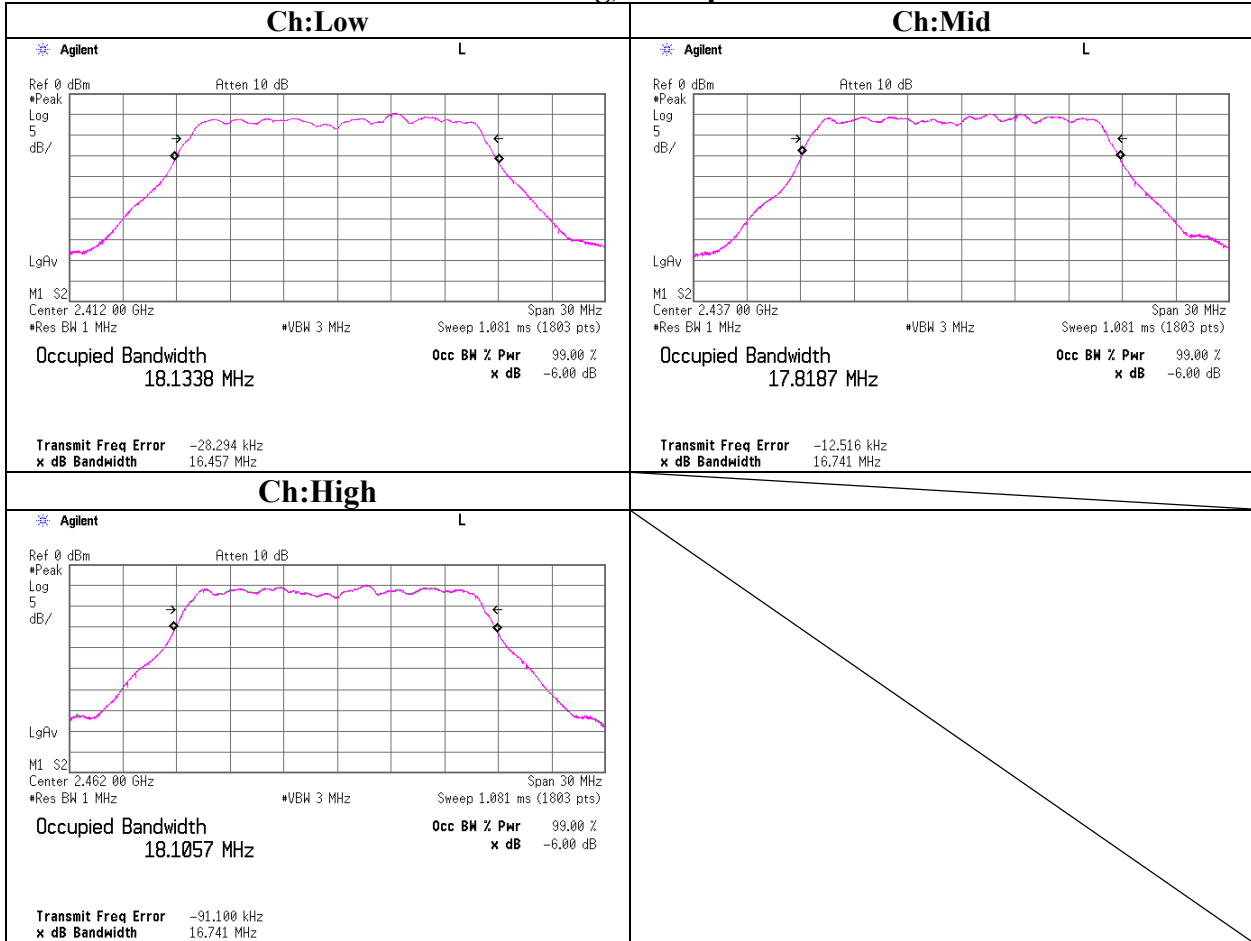


**99%Occupied Bandwidth(DSSS and other forms of modulation)**  
**11b, 11Mbps**



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

**11g, 54Mbps**



#### **APPENDIX 4: Reference data [Characteristic and destructive tests]**

The module has a voltage regulator circuit inside and the regulated voltage is provided with IC chip and the circuit which determines RF characteristics.

However, only RF power amplifier is operated with the voltage (+3.3V) supplied directly from outside.

We performed tests with the following conditions,

- Low threshold voltage ; until transmission stops
- High voltage: +5V (50% up of rated voltage +3.3V),

Then we confirmed that there were no changes in the transmission bandwidth, the transmission power, and the spurious emission of frequencies adjacent to carrier by supply voltage.

In addition, we found no abnormal signal.

See the following data:

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**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

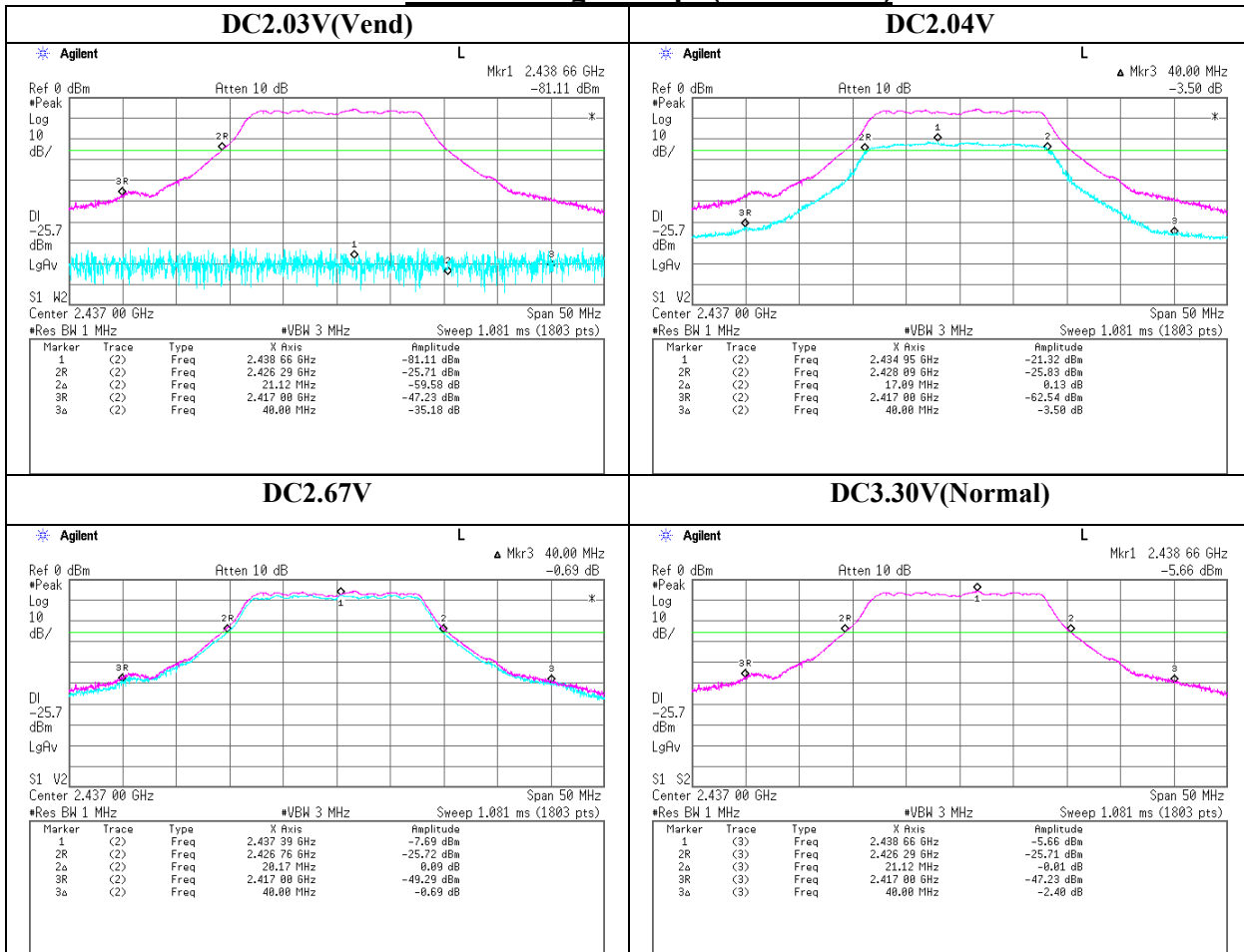
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MF060b(01.06.05)

**Maximum Peak OutPut Power and 20dB Band Width**  
**Characteristic and destructive tests**  
**IEEE802.11g 54Mbps (Worst Case)**





**Maximum Peak OutPut Power and 20dB Band Width**  
**Characteristic and destructive tests**  
**IEEE802.11g 54Mbps (Worst Case)**

