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# TEST REPORT

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**REPORT NUMBER** : ANKK-101423  
**APPLICANT** : Sony Corporation  
**MODEL NUMBER** : PCWA-C500  
**FCC ID** : AK8PCWAC500  
**REGULATION** : FCC Part15 Subpart E



NVLAP accreditation is valid for  
FCC Part15 (Digital Devices),  
CISPR22 and AS/NZS 3548.  
NVLAP accreditation does not cover  
ICES-003.

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**ABBREVIATIONS**

<b>LISN</b>	<b>= Line Impedance Stabilization Network</b>
<b>AMN</b>	<b>= Artificial Mains Network</b>
<b>ANT</b>	<b>= Antenna</b>
<b>BBA</b>	<b>= Broad-band Antenna</b>
<b>DIP</b>	<b>= Dipole Antenna</b>
<b>AMP</b>	<b>= Amplifier</b>
<b>ATT</b>	<b>= Attenuator</b>
<b>EUT</b>	<b>= Equipment Under Test</b>
<b>Q-P</b>	<b>= Quasi-peak</b>
<b>AVG</b>	<b>= Average</b>
<b>Ch</b>	<b>= Channel</b>
<b>OFDM</b>	<b>= Orthogonal Frequency Division Multiplexing</b>
<b>BPSK</b>	<b>= Binary Phase Shift Keying</b>
<b>QPSK</b>	<b>= Quadrature Phase Shift Keying</b>
<b>QAM</b>	<b>= Quadrature Amplitude Modulation</b>
<b>EIRP</b>	<b>= Effective Isotropic Radiated Power</b>

**SECTION 1. TEST CERTIFICATION****APPLICANT INFORMATION**

Company	: Sony Corporation
Address	: 6-7-35, Kitashinagawa, Shinagawa-ku, Tokyo, 141-0001 Japan
Telephone number	: +81 3 5795 8712
Fax number	: +81 3 5795 8981

**DESCRIPTION OF TEST ITEM**

Kind of equipment	: Wireless LAN PC Card
Condition of equipment	: Pre-Production
Type	: Tabletop
Trademark	: SONY
FCC ID	: AK8PCWAC500
Model number	: PCWA-C500
Serial number	: 0000000

**TEST PERFORMED**

Location	: Kashima No. 1 Test Site (FCC File No. : 31040/SIT)
EUT received	: November 22, 2001
Test started	: December 18, 2001
Test completed	: January 24, 2002
Regulation	: FCC Part15 Subpart E Section 407 Intentional Radiators
Test setup	: ANSI C63.4-1992

Report number : ANKK-101423

Report issue date : January 24, 2002

Test engineer : Kazuhiro Ando

Report approved by : Junichi Okada  
[Site Manager]

**On the basis of the measurements made, the equipment tested is capable of operation in compliance with the requirements of Part 15 of the FCC Rules under normal use and maintenance.**

## SECTION 2. SUMMARY OF RESULTS

Test	Reference	Result
26dB Emission Bandwidth	15.407(a)(1) 15.407(a)(2)	N.A.
Maximum Peak Output Power	15.407(a)(1) 15.407(a)(2)	Pass
Peak Power Spectral Density	15.407(a)(1) 15.407(a)(2)	Pass
Peak Excursion Ratio	15.407(a)(6)	Pass
Spurious Emissions - RF Antenna Conducted	15.407(b)(1) 15.407(b)(2)	Pass
Spurious Emissions - Radiated Emissions (below 1 GHz)	15.407(b)(5) 15.209	Pass
Spurious Emissions - Radiated Emissions (above 1 GHz)	15.407(b)(6) 15.205	Pass
Spurious Emissions - Radiated Emissions (Band Edge)	15.407(b)(6) 15.205	Pass
AC Conducted Emissions	15.407(b)(5) 15.207	Pass
Automatic Discontinuance of Transmission	15.407(c)	Pass <sup>Note 1</sup>
Antenna Requirement	15.407(d) 15.203	Pass <sup>Note 2</sup>
Indoor Operation	15.407(e)	Pass <sup>Note 3</sup>
Frequency Stability	15.407(g)	Pass <sup>Note 4</sup>
Unintentional Radiators	15.107 15.109	<sup>Note 5</sup>

Note 1 : Refer to the "Theory of Operations" in separate attachment.

Note 2 : The EUT uses Integral antenna. As for the requirement in Section 15.203, refer to "Antenna Structure" in separate attachment.

Note 3 : Refer to page 2 of the user's manual in separate attachment for the statement regarding restriction of indoor operation.

Note 4 : Frequency Stability is  $\pm 20$ ppm. Refer to the data in separate attachment.

Note 5 : As for the FCC Part 15 Subpart B-Unintentional Radiators, refer to another report in separate attachment(ANKK-101475).

**SECTION 3. EQUIPMENT UNDER TEST**

The equipment under test (EUT) consisted of the following equipment.  
Indication in the following left side column corresponds to Section 6.

Symbol	Item	Model No.	Serial No.	FCC ID / DoC	Manufacturer	Remarks
A)	Wireless LAN PC Card	PCWA-C500	0000000	AK8PCWAC500	Sony Corporation	

Power ratings of EUT : DC 3.3V, Max. 560mW

DoC : Device for Declaration of Conformity

**3.1 Overview of EUT**

Operating Frequency Range	5.15 - 5.35 GHz	
Modulation Method	OFDM	
Number of Operating Channel	8	
Data Rate and Modulation	6 Mbps	BPSK
	9 Mbps	BPSK
	12 Mbps	QPSK
	18 Mbps	QPSK
	24 Mbps	16-QAM
	36 Mbps	16-QAM
	48 Mbps	64-QAM
	54 Mbps	64-QAM
Antenna Gain	Antenna A	4.29 dBi
	Antenna B	3.59 dBi
Output Power	30.2 mW	
EIRP	81.1 mW	

### 3.2 Operating channels and frequencies

Ch	Frequency (GHz)
6	5.18
8	5.20
10	5.22
12	5.24
14	5.26
16	5.28
18	5.30
20	5.32

**Note:**

1. This is for sure that all frequencies are in 5.18GHz to 5.32GHz.
2. Section 15.31(m): Measurements on intentional radiators or receivers shall be performed at three frequencies for operating frequency range over 10 MHz. (The locations of these frequencies one near the low, one near the middle and one near the high.)
3. After test, the EUT operating frequencies are in 5.18GHz to 5.32GHz. So all the items as followed in testing report are need to test these three frequencies: low: ch 6, middle: ch 12, high: ch 20.

### 3.3 Port(s)/Connector(s) :

Port name	Connector type	Connector pin	Remarks
Card Bus Port	PC Card Card Bus	68 pin	

### 3.4 Oscillator(s)/Crystal(s) :

Oscillator	Operating frequency	Board name	Remarks
32 MHz	40 MHz	IFX-186	Highest frequency
	32 MHz	IFX-186	
	4.144 GHz	IFX-186	
	5.18-5.32 GHz	IFX-186	

**SECTION 4. SUPPORT EQUIPMENT USED**

The EUT was supported by the following equipment during the test. Indication in the following left side column corresponds to Section 6.

Symbol	Item	Model No.	Serial No.	FCC ID / DoC	Manufacturer	Remarks
B)	Computer	PCG-N505VE	28303130 3211365	DoC	Sony Corporation	
C)	i. LINK PORT REPLICATOR	PCGA-UPR5	28994300 1123885	None	Sony Corporation	
D)	Modem	C202A	010058	BKM552C202A	EPSON	
E)	Printer	P12PB	0E11397879	BKM9A8P12PB	EPSON	
F)	AC Adapter	PCGA-AC5N	0088428	N.A.	Sony Corporation	
G)	AC Adapter	H00CAA	019770	N.A.	EPSON	

DoC : Device was tested and authorized under a Declaration of Conformity to the applicable FCC rules.



**SECTION 5. CABLE (S) USED**

The following cable(s) was used for the test.

Indication number in the following left side column corresponds to Section 6.

Number	Name	Length	Shield	Connector	Core
1)	Centronics cable	2.40 m	Yes	Metal	
2)	RS-232C cable	3.00 m	Yes	Metal	
3) i.	LINK PORT REPLICATOR cable	1.50 m	Yes	Metal	Fixed ×1
4)	Power cable for Computer	1.80 m	None		
5)	Power cable for AC Adapter	0.80 m	None		
6)	Power cable for Modem	1.80 m	None		
7)	Power cable for Printer	1.80 m	None		

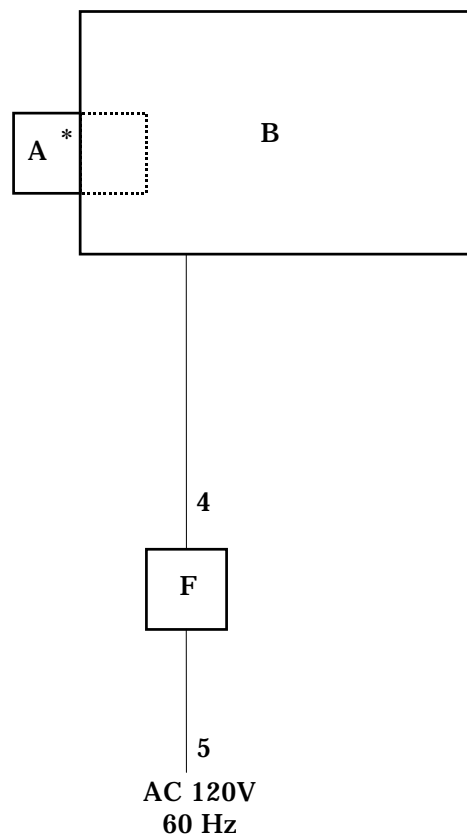
## SECTION 6. CONSTRUCTION OF EQUIPMENT

The construction of EUT during the test was as follows.

### 6.1 RF Conducted Measurement

System configuration

\* : EUT  
■ : Ferrite core

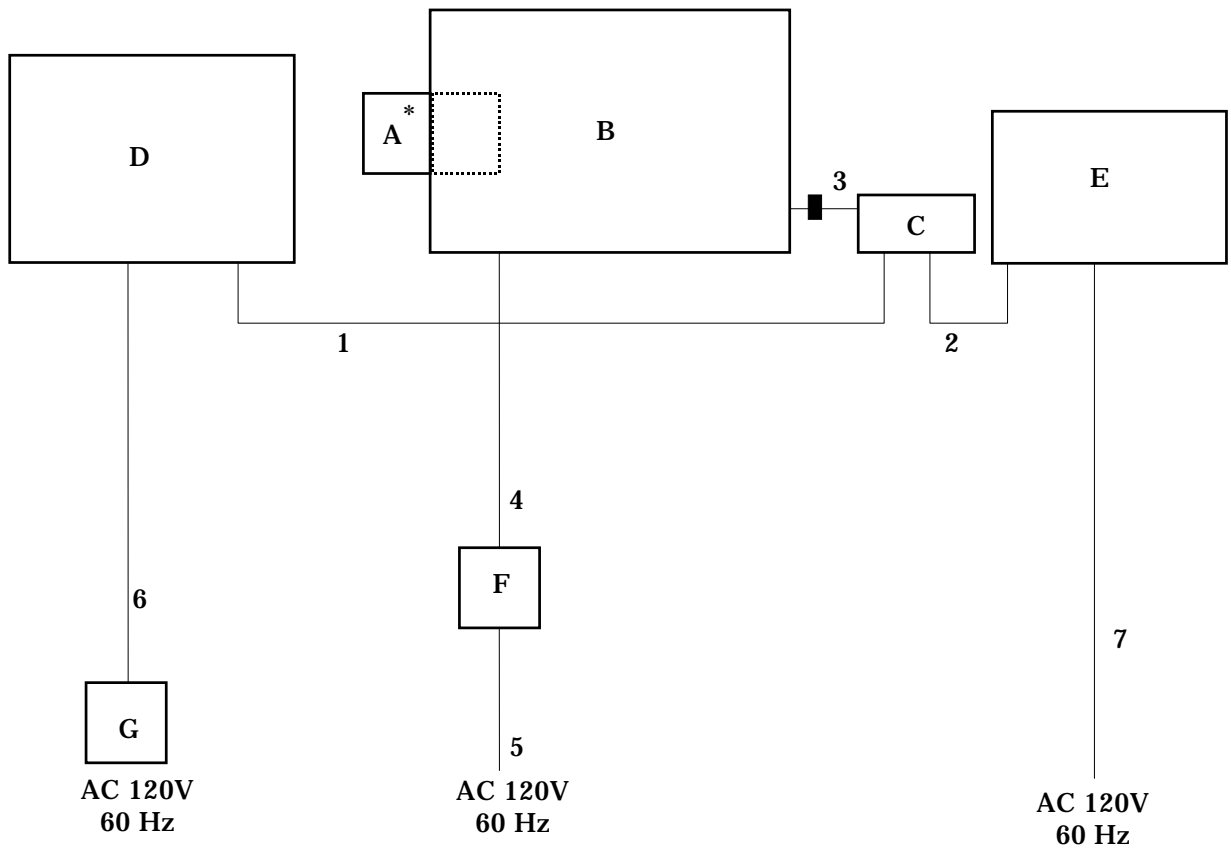


Symbols or numbers assigned to equipment or cables on this diagram are corresponded to the symbols or numbers assigned to equipment or cables on tables in Sections 3 to 5.

### 6.2 Other Measurements

#### System configuration

\* : EUT  
■ : Ferrite core



Symbols or numbers assigned to equipment or cables on this diagram are corresponded to the symbols or numbers assigned to equipment or cables on tables in Sections 3 to 5.

## SECTION 7. GENERAL TEST CONDITIONS

The EUT was operated under the following conditions during the test.

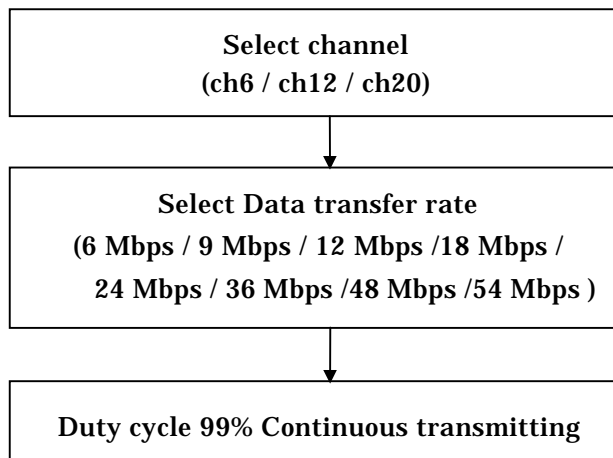
### 7.1 Operating condition

The test was carried out with the transmitter set at maximum power in Test mode. EUT was examined in the operating conditions that had maximum emissions.

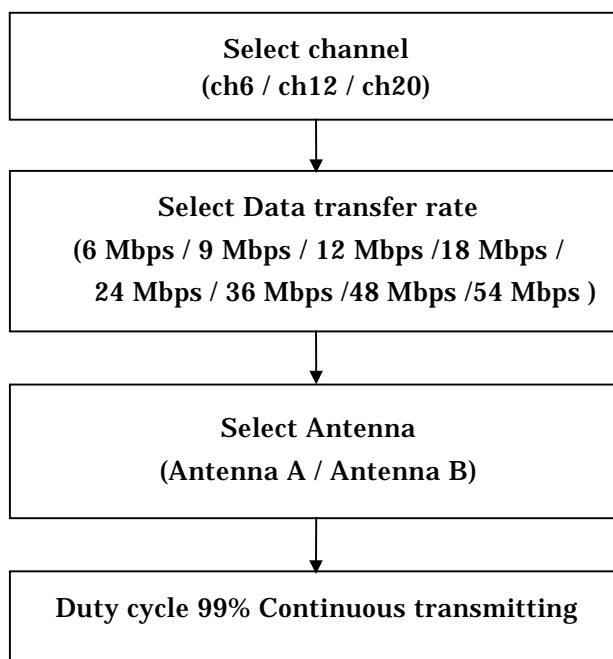
### 7.2 Operating flow

Following operations were performed continuously.

#### 7.2.1 RF Conducted Measurement



#### 7.2.2 Other Measurements



## SECTION 8. TEST PROCEDURE(S)

Test was carried out under the following conditions.

Test was carried out with no deviations from standards and test methods.

### 8.1 Conducted Emission Test [15.407(b), 15.207]

#### 8.1.1 Equipment Setup

System configuration and Equipment setup are shown on Section 6 and Section 10.

##### 8.1.1.1 Table-Top Equipment

EUT is placed on the wooden table raised 0.8meter above the metal ground plane.

##### 8.1.1.2 Interconnecting Cables

Excess part of the interconnecting cables longer than 1 meter are bundled in the center. Cables that hang closer than 40 cm to the ground plane is folded back and forth forming bundle 30 to 40 cm long, hanging approx, in the middle between ground plane and table.

##### 8.1.1.3 AC Power Cable

AC power cable for EUT is connected to one LISN which is placed on the ground plane. The LISN is placed in 80 cm from the nearest part of EUT chassis.

The excess power cable is bundled in the center, or shortened to appropriate length. AC cables except from the EUT are connected second LISN.

#### 8.1.2 Measuring Instruments

Brief description of Measuring Instruments are as follows;

##### 8.1.2.1 Spectrum Analyzer

The Spectrum analyzer is used for preliminary measurement.

##### 8.1.2.2 EMI Test Receiver

The Quasi-peak detector (IF bandwidth : 10 kHz) and average detector (IF bandwidth : 10 kHz) built in test receiver is used for final measurement.

The test receiver is complied with the specification of the CISPR publication 16.

##### 8.1.2.3 LISN

Two 50 $\mu$ H//50 $\Omega$  LISN are used. The chassis of the LISN is bonded to the ground plane by the copper blade.

One LISN is connected to the EUT. Other LISN (2nd LISN) is connected to the support equipment. The signal output of the 2nd LISN is terminated with a 50 $\Omega$  termination.

### 8.1.3 Test Procedure

#### 8.1.3.1 Preliminary Measurement

EUT is tested on all operating conditions.

The spectrum analyzer is controlled by the computer program to sweep regulation frequency, then spectrum chart are plotted out to detect the worst conditions in operating mode and/or configuration for the final test.

All leads other than safety ground are tested.

#### 8.1.3.2 Final Measurement

The EUT is operated in the worst condition where maximum emission is detected by the preliminary test. The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.

The each spectrum to be tested are measured in quasi-peak using the test receiver. When the value in the quasi-peak mode is higher than the limit in the standard, the measurement in the average mode is done to compare to the value in the quasi-peak mode. If the value in the quasi-peak mode exceeds the value in the average mode by more than 6 dB, the value reducing 13 dB from the value in the quasi-peak mode is used to compare to the limit.

## **8.2 Radiated Emission Test [15.407(b), 15.205, 15.209]**

### **8.2.1 Equipment Setup**

System configuration and Equipment setup are shown on Section 6 and Section 10.

#### **8.2.1.1 Table-Top Equipment**

EUT is placed on the wooden table raised 0.8meter above the metal ground plane (turntable).

#### **8.2.1.2 Interconnecting Cables**

Excess part of the interconnecting cables longer than 1 meter are bundled in the center. Cables that hang closer than 40 cm to the ground plane is folded back and forth forming bundle 30 to 40 cm long, hanging approx, in the middle between ground plane and table.

### **8.2.2 Measuring Instruments**

Brief description of Measuring Instruments are as follows;

#### **8.2.2.1 Antennas**

The Double ridged guide antenna and the Standard gain horn antennas are used for frequency higher than 1000 MHz.

If uncertain result was obtained, the broadband antenna is replaced by the half wave length dipole, then measurement is carried out over again.

#### **8.2.2.2 Pre-amplifier**

The broadband pre-amplifier is used for radiated emission measurement.

The signal to noise ratio is improved by using pre-amplifier.

#### **8.2.2.3 Spectrum Analyzer**

The spectrum analyzer is used for preliminary measurement of frequency range 30 – 1000 MHz, and also used for final measurement of higher than 1000 MHz

#### **8.2.2.4 EMI Test Receiver**

The Quasi-peak detector (IF bandwidth : 120 kHz) built in test receiver is used for final measurement of the frequency 30 – 1000 MHz.

The test receiver is complied with the specification of the CISPR publication 16.

#### **8.2.2.5 Turntable**

The turntable is capable for EUT weight and rotatable 0 to 360 degree horizontally by remote control in the test room.

#### **8.2.2.6 Antenna Mast**

The antenna mast is attachable to all antennas described on clause 8.2.2.1 and antenna height is adjustable 1 to 4 meters continuously by remote control at the test room, and antenna polarization is also changed by the remote control.

### 8.2.3 Test Procedure

#### 8.2.3.1 Preliminary Measurement

EUT is tested on all operating conditions.

The spectrum analyzer is set max-hold mode and swept during turntable was rotated 0 to 360 degree. Then spectrum chart are plotted out to detect the worst conditions in configuration, operating mode, or ambient noise notation.

#### 8.2.3.2 Final Measurement

The EUT operated in the condition where maximum emission is detected in the preliminary test.

The turntable azimuth (EUT direction) and antenna height are adjusted the position so that maximum field strength is obtained for each frequency spectrum to be measured. The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.

When the uncertain result was obtained, the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.

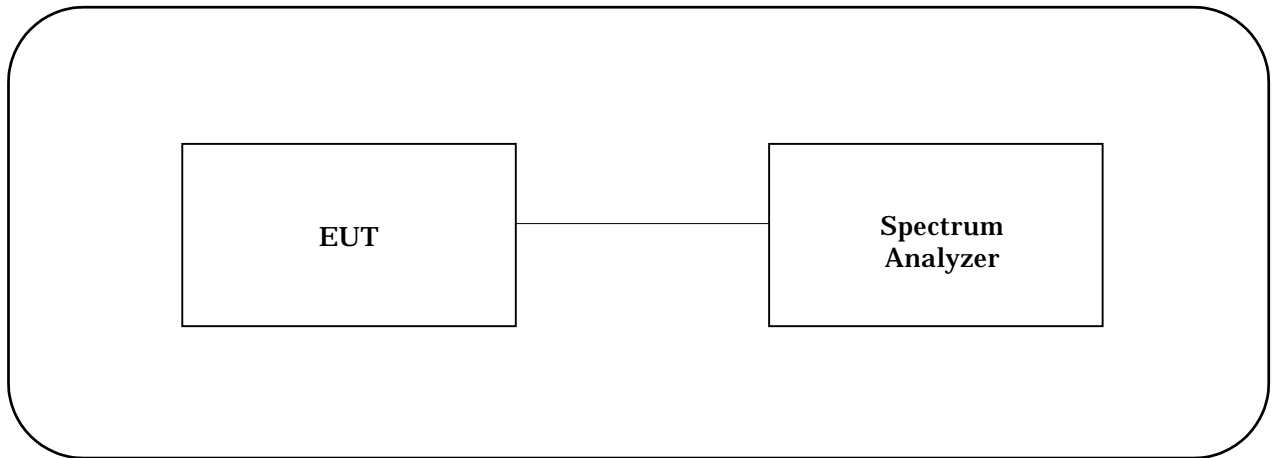


**SECTION 9. TEST DATA****9.1 26dB Emission Bandwidth [15.407(a)(1), 15.407(a)(2)]****MEASUREMENT PROCEDURE:**

1. The EUT was set to operate with following conditions.
  - ch6 / ch12 / ch20
  - Data Transfer Rate (6 Mbps/9 Mbps/12 Mbps/18 Mbps/24 Mbps/36 Mbps/48 Mbps/54 Mbps)
2. The Spectrum Analyzer was connected directly to the transmitter output.
3. The Spectrum Analyzer was set up using RBW = 300kHz, VBW = 300kHz.
4. Following data is the worst case.
5. As for the typical chart of the observed RF profiles, refer to page 19-20.

Test date : December 18, 2001  
 Temperature variation : 18 °C  
 Humidity variation : 41 %

ch	Frequency (GHz)	Data Rate (Mbps)	26dB Emission Bandwidth (MHz)	Chart
6	5.18	6	23.5	-
		9	22.2	Page 19
		12	22.9	-
		18	23.6	-
		24	23.6	-
		36	22.9	-
		48	22.2	-
		54	22.5	-
12	5.24	6	23.8	-
		9	24.3	-
		12	23.9	-
		18	24.0	-
		24	23.2	-
		36	22.2	Page 19
		48	22.5	-
		54	22.6	-
20	5.32	6	24.3	-
		9	23.8	-
		12	23.5	-
		18	24.2	-
		24	23.1	-
		36	23.4	-
		48	22.1	-
		54	22.0	Page 20

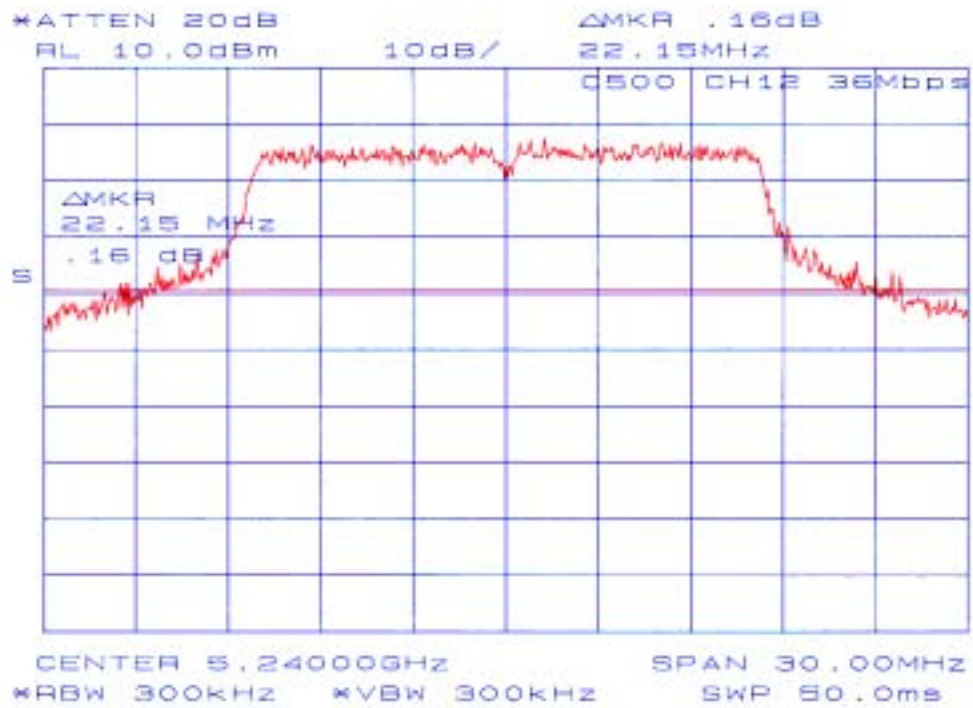
**TEST INSTRUMENTS CONFIGURATION****TEST INSTRUMENTS**

<b>Instrument</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Manufacturer</b>	<b>Last cal. date</b>	<b>Period</b>
<b>Spectrum analyzer</b>	<b>8564E</b>	<b>3643A00665</b>	<b>HEWLETT PACKARD</b>	<b>July 9, 01</b>	<b>1 Year</b>

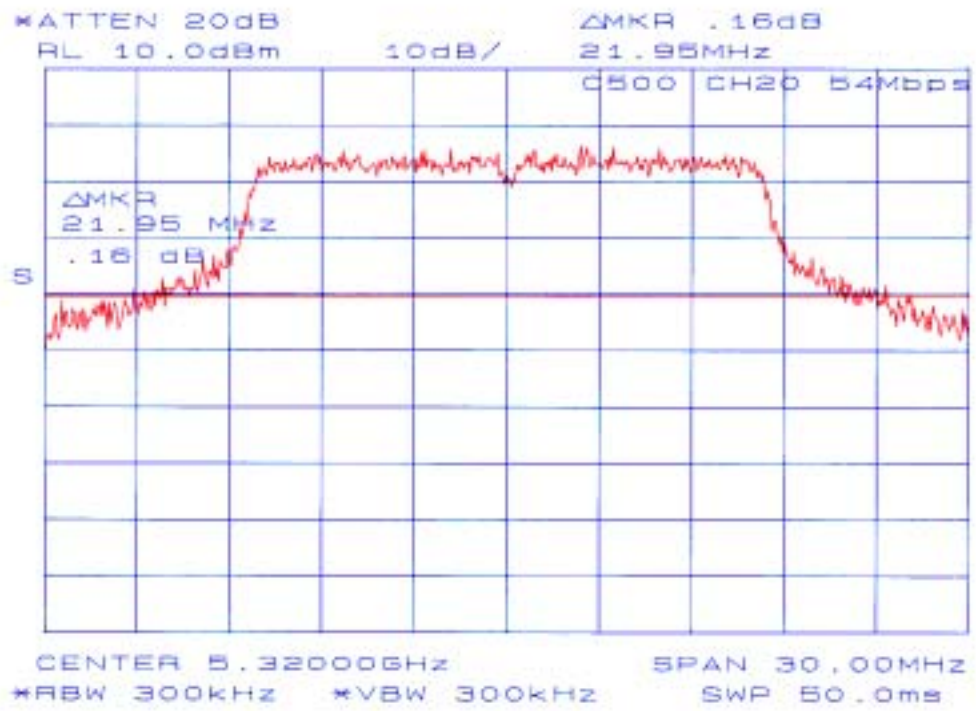
**Chart of ch 6 with 9Mbps**



**Chart of ch 12 with 36Mbps**



**Chart of ch 20 with 54Mbps**



**9.2 Maximum Peak Output Power [15.407(a)(1), 15.407(a)(2)]****MEASUREMENT PROCEDURE:**

- The EUT was set to operate with following conditions.
  - ch6 / ch12 / ch20
  - Data Transfer Rate (6 Mbps/9 Mbps/12 Mbps/18 Mbps/24 Mbps/36 Mbps/48 Mbps/54 Mbps)
- Either of Power Meter and Spectrum Analyzer was connected directly to the transmitter output.
- The Spectrum Analyzer was set up using RBW = 1MHz, VBW = 30kHz.
- Following limit was applied for the measurement.
  - 5.15-5.25 GHz : lessor of 17dBm or 4dBm+10logB, where B is the 26dB emission bandwidth
  - 5.25-5.35 GHz : lessor of 24dBm or 11dBm +10logB, where B is the 26dB emission bandwidth
- Maximum Antenna Gain : Antenna A = 4.29 dBi  
Antenna B = 3.59 dBi
- As for the typical chart of the observed RF profiles, refer to page 23-24.

Test date : December 18, 2001  
 Temperature variation : 18 °C  
 Humidity variation : 41 %

ch	Freq. (GHz)	Data Rate (Mbps)	Reading (dBm)		Cable Loss (dB)	Maximum Peak Output Power (dBm)		FCC Limit (dBm)	Chart
			Power Meter	Spectrum Analyzer		Power Meter	Spectrum Analyzer		
6	5.18	6	9.2	9.1	1.6	10.8	10.7	17	-
		9	9.4	9.5	1.6	11.0	11.1	17	-
		12	9.4	9.1	1.6	11.0	10.7	17	-
		18	9.2	9.0	1.6	10.8	10.6	17	-
		24	9.2	9.9	1.6	10.8	11.5	17	-
		36	9.2	10.1	1.6	10.8	11.7	17	Page 23
		48	7.5	8.3	1.6	9.1	9.9	17	-
12	5.24	6	11.1	12.8	1.6	12.7	14.4	17	-
		9	11.1	13.1	1.6	12.7	14.7	17	-
		12	11.1	12.4	1.6	12.7	14.0	17	-
		18	11.1	12.4	1.6	12.7	14.0	17	-
		24	11.1	13.2	1.6	12.7	14.8	17	Page 23
		36	11.1	12.7	1.6	12.7	14.3	17	-
		48	7.3	8.1	1.6	8.9	9.7	17	-
20	5.32	6	8.7	10.6	1.6	10.3	12.2	24	-
		9	8.7	10.5	1.6	10.3	12.1	24	-
		12	8.6	10.1	1.6	10.2	11.7	24	-
		18	8.6	10.4	1.6	10.2	12.0	24	-
		24	8.6	10.7	1.6	10.2	12.3	24	Page 24
		36	8.7	10.6	1.6	10.3	12.2	24	-
		48	6.4	8.5	1.6	8.0	10.1	24	-
	54	6.4	8.6	1.6	8.0	10.2	24	-	

Note : Maximum peak output power level with spectrum analyzer was calculated as follows;

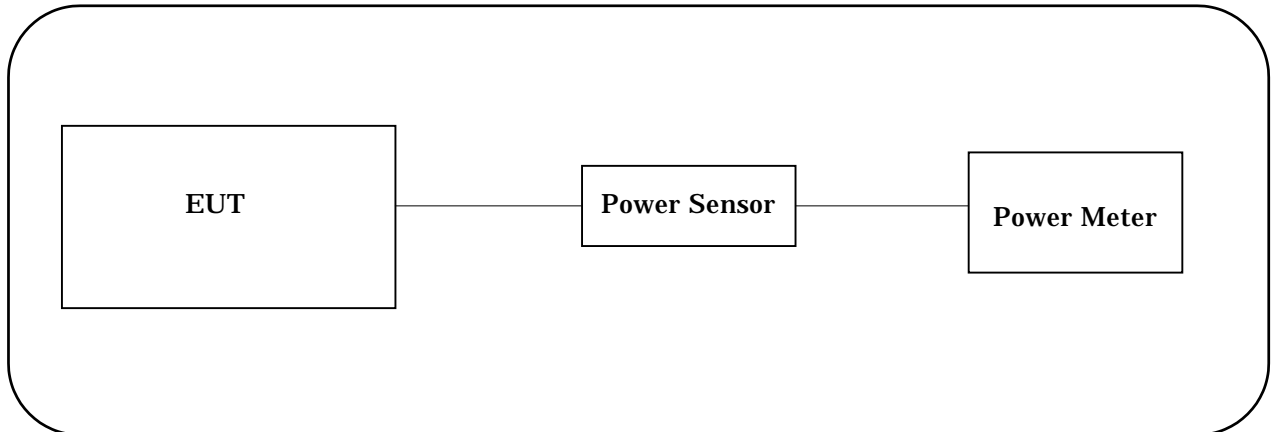
$$\begin{aligned} &\text{Maximum peak output power} \\ &= \text{Reading Level} + \text{Cable Loss} + \text{Factor}(10 \log \text{emissionBW}/1\text{MHz}) \end{aligned}$$

Maximum peak output power was detected at ch12 with 24Mbps in Antenna A.  
 = 14.8dBm (= 30.2mW)

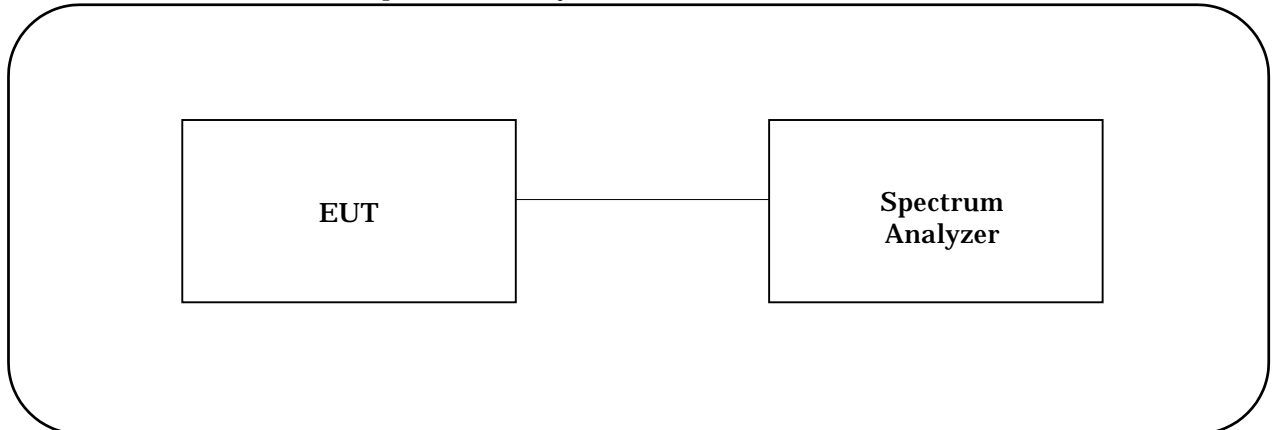
Therefore, the Maximum EIRP = 14.8dBm + 4.29dBm = 19.09dBm (= 81.1 mW)

## TEST INSTRUMENTS CONFIGURATION

## [Measurement with Power Meter]



## [Measurement with Spectrum Analyzer]



## TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Power Meter	E4418B	GB38410265	HEWLETT PACKARD	Feb. 14, 01	1 Year
Power Sensor	8481A	3318A99780	HEWLETT PACKARD	Feb. 7, 01	1 Year
Spectrum analyzer	8564E	3643A00665	HEWLETT PACKARD	July 9, 01	1 Year

**Chart of ch 6 with 36 Mbps**



**Chart of ch 12 with 24 Mbps**



Chart of ch 20 with 24 Mbps



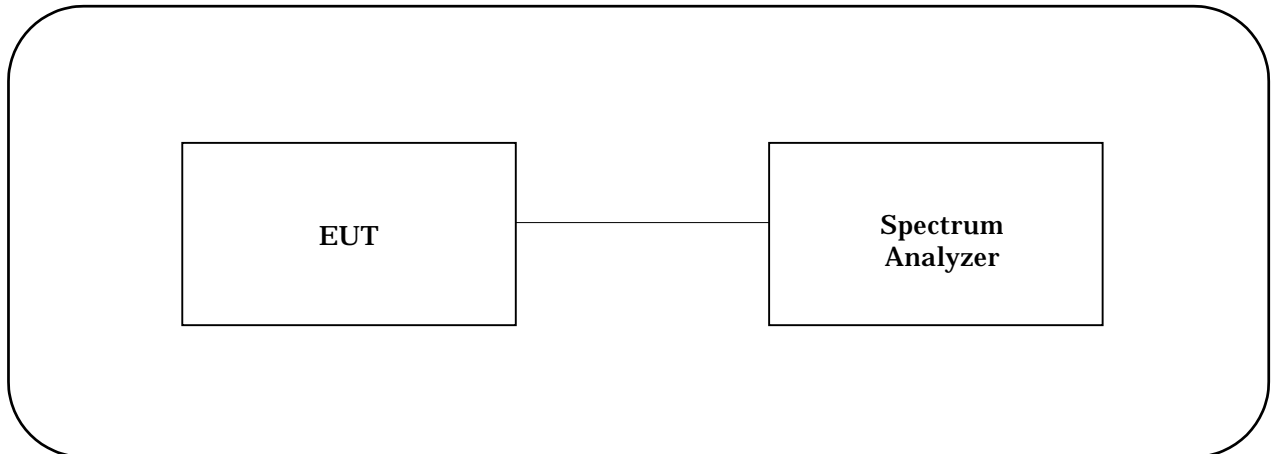


**9.3 Peak Power Spectral Density [15.407(a)(1), 15.407(a)(2)]****MEASUREMENT PROCEDURE:**

1. The EUT was set to operate with following conditions.
  - ch6 / ch12 / ch20
  - Data Transfer Rate (6 Mbps/9 Mbps/12 Mbps/18 Mbps/24 Mbps/36 Mbps/48 Mbps/54 Mbps)
2. Spectrum Analyzer was connected directly to the transmitter output.
3. The Spectrum Analyzer was setup using RBW = 1MHz, VBW = 3MHz and Video average.
4. Maximum Antenna Gain : Antenna A = 4.29 dBi  
Antenna B = 3.59 dBi
5. As for the typical chart of the observed RF profiles, refer to page 27-28.

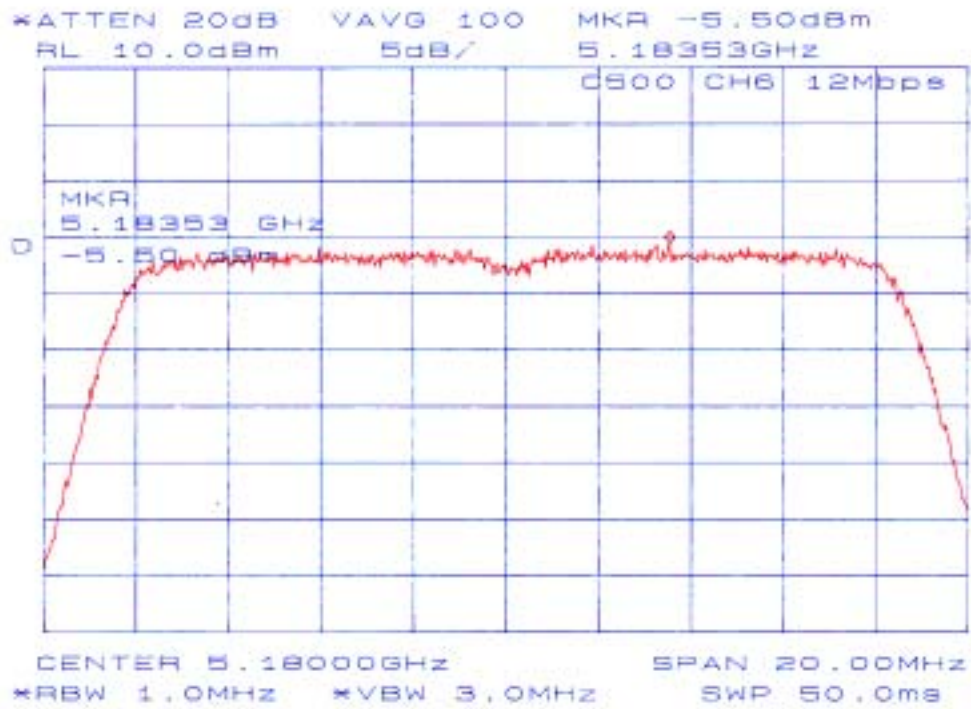
Test date : December 25, 2001  
 Temperature variation : 20 °C  
 Humidity variation : 38 %

ch	Frequency (GHz)	Data Rate (Mbps)	Reading (dBm)	Cable Loss (dB)	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
6	5.18	6	-5.9	1.6	-4.3	4	-
		9	-5.7	1.6	-4.1	4	-
		12	-5.5	1.6	-3.9	4	Page 27
		18	-6.0	1.6	-4.4	4	-
		24	-6.0	1.6	-4.4	4	-
		36	-5.8	1.6	-4.2	4	-
		48	-7.7	1.6	-6.1	4	-
		54	-7.6	1.6	-6.0	4	-
12	5.24	6	-3.5	1.6	-1.9	4	Page 27
		9	-3.5	1.6	-1.9	4	-
		12	-3.8	1.6	-2.2	4	-
		18	-3.7	1.6	-2.1	4	-
		24	-3.8	1.6	-2.2	4	-
		36	-3.8	1.6	-2.2	4	-
		48	-7.8	1.6	-6.2	4	-
		54	-7.9	1.6	-6.3	4	-
20	5.32	6	-5.3	1.6	-3.7	11	-
		9	-5.3	1.6	-3.7	11	Page 28
		12	-5.8	1.6	-4.2	11	-
		18	-5.8	1.6	-4.2	11	-
		24	-5.6	1.6	-4.0	11	-
		36	-5.4	1.6	-3.8	11	-
		48	-7.9	1.6	-6.3	11	-
		54	-7.8	1.6	-6.2	11	-

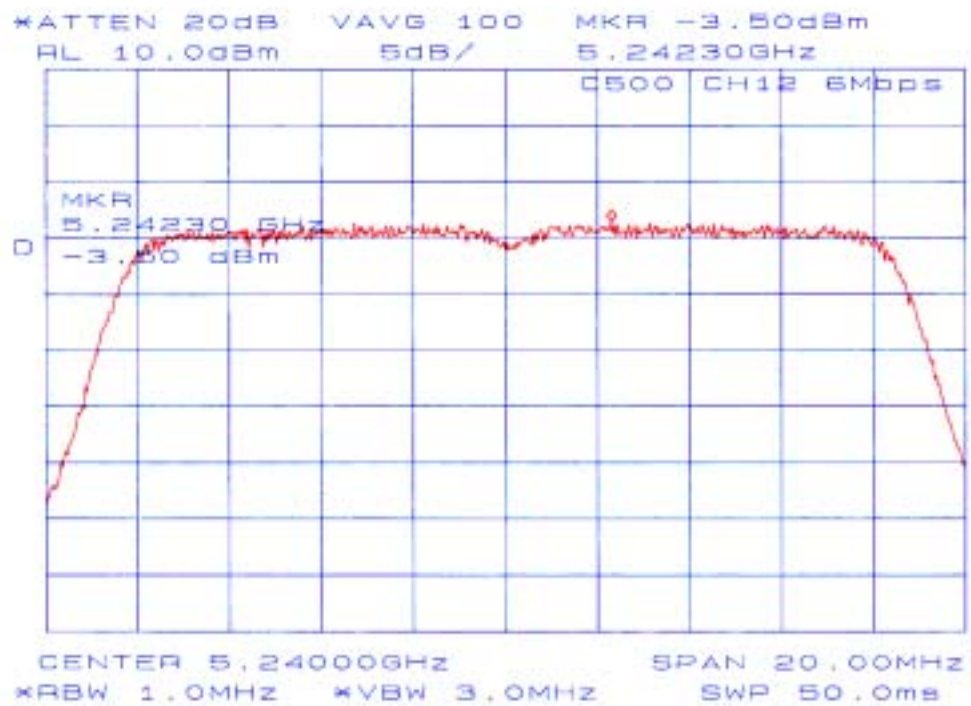
**TEST INSTRUMENTS CONFIGURATION****TEST INSTRUMENTS**

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum analyzer	8564E	3643A00665	HEWLETT PACKARD	July 9, 01	1 Year

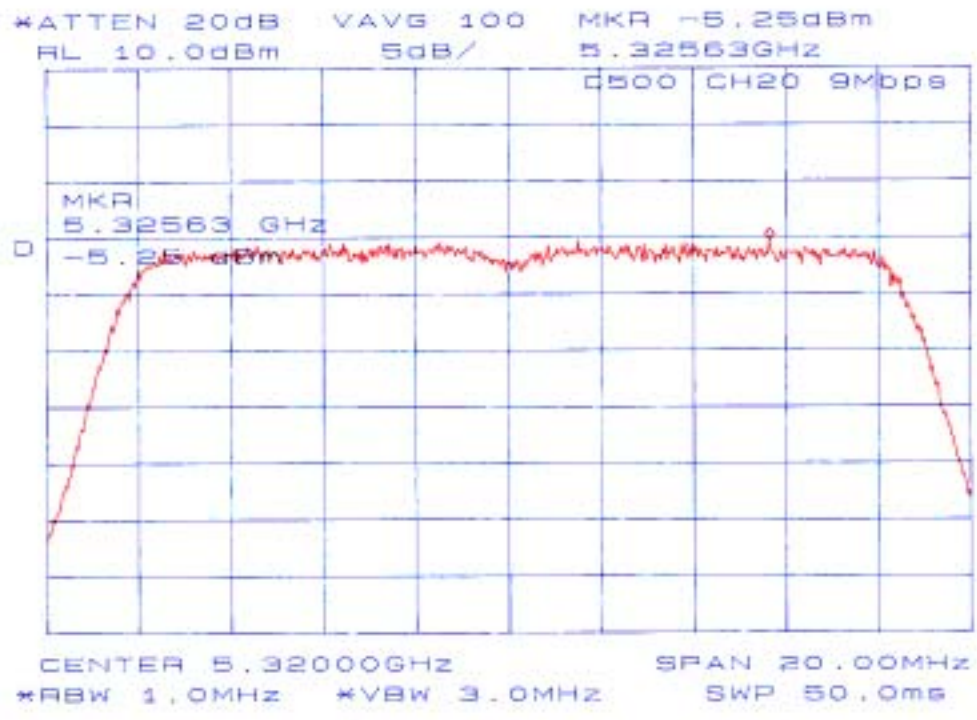
**Chart of ch 6 with 12 Mbps**



**Chart of ch 12 with 6 Mbps**



**Chart of ch 20 with 9 Mbps**



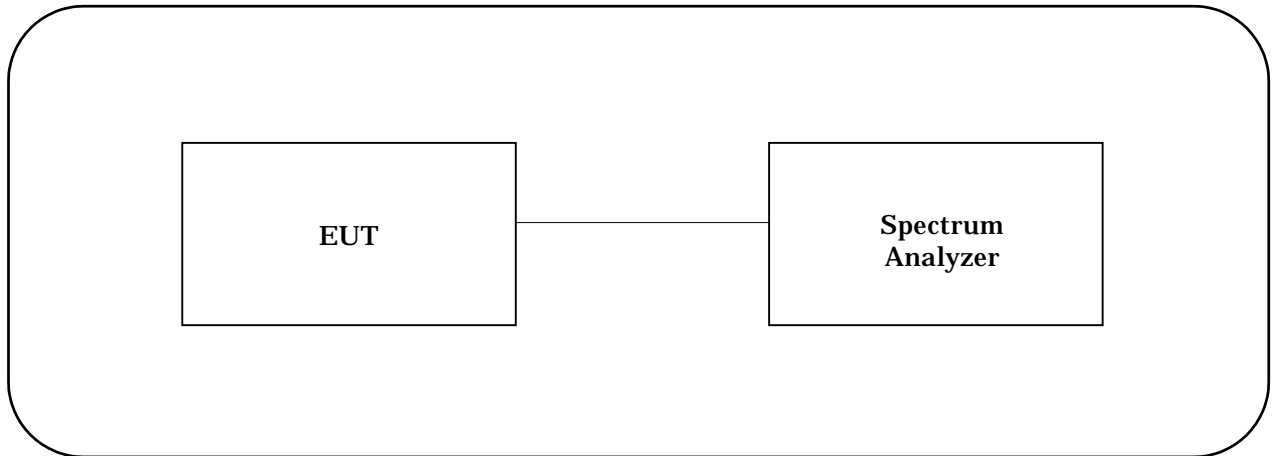
**9.4 Peak Excursion Ratio [15.407(a)(6)]****MEASUREMENT PROCEDURE:**

1. The EUT was set to operate with following conditions.
  - ch6 / ch12 / ch20
  - Data Transfer Rate (6 Mbps/9 Mbps/12 Mbps/18 Mbps/24 Mbps/36 Mbps/48 Mbps/54 Mbps)
2. Spectrum Analyzer was connected directly to the transmitter output.
3. The Spectrum Analyzer was set up using
  - 1<sup>st</sup> Trace : RBW = VBW = 1MHz
  - 2<sup>nd</sup> Trace : RBW =1MHz, VBW = 30kHz
4. As for the typical chart of the observed RF profiles, refer to page 31-32.

Test date : December 25, 2001  
 Temperature variation : 20 °C  
 Humidity variation : 38 %

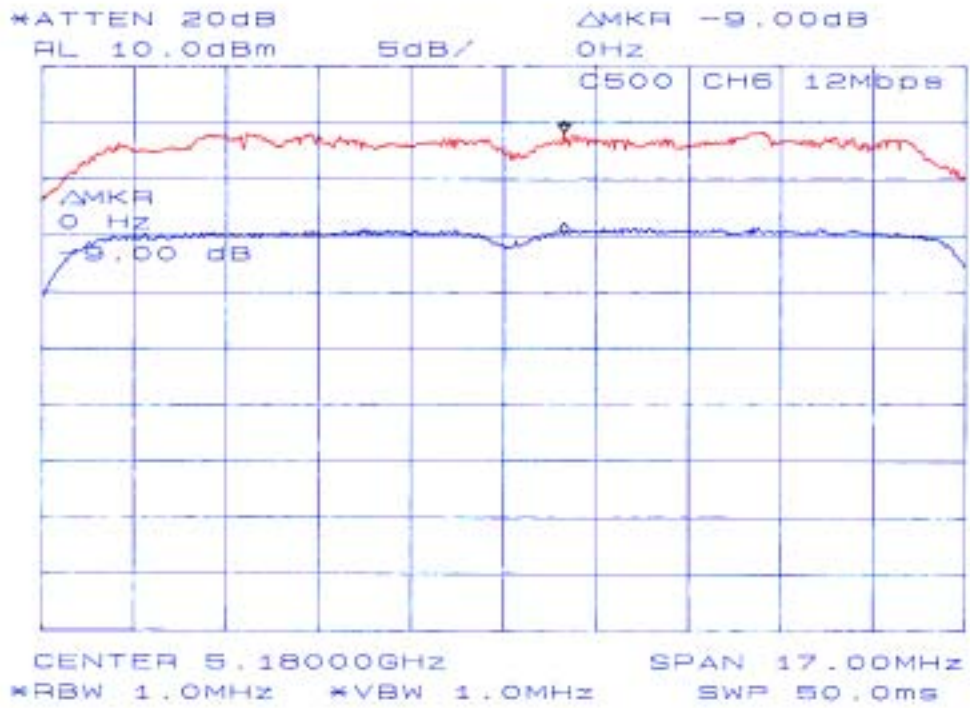
ch	Frequency (GHz)	Data Rate (Mbps)	Peak Excursion (dB)	FCC Limit (dB)	Chart
6	5.18	6	8.6	13	-
		9	8.9	13	-
		12	9.0	13	Page 31
		18	8.9	13	-
		24	8.4	13	-
		36	8.7	13	-
		48	7.9	13	-
		54	8.3	13	-
12	5.24	6	8.3	13	-
		9	8.6	13	-
		12	8.9	13	-
		18	8.5	13	-
		24	8.3	13	-
		36	8.9	13	-
		48	9.0	13	Page 31
		54	8.3	13	-
20	5.32	6	8.3	13	-
		9	8.4	13	-
		12	8.3	13	-
		18	8.7	13	-
		24	9.0	13	Page 32
		36	8.8	13	-
		48	8.8	13	-
		54	8.8	13	-

Note : Peak Excursion Ratio is the largest difference between two traces.

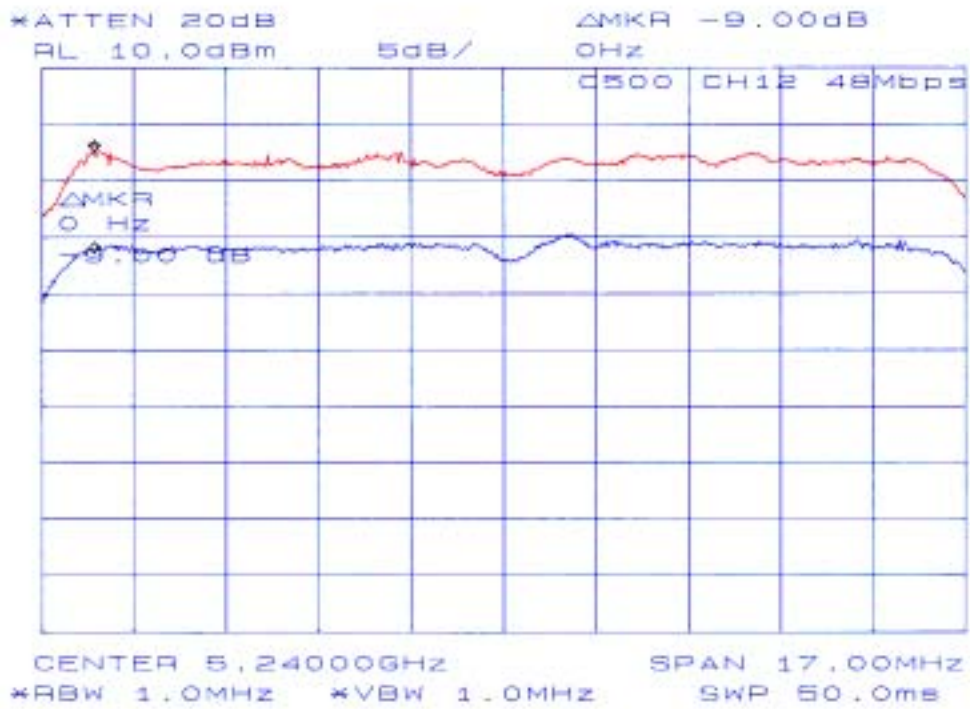
**TEST INSTRUMENTS CONFIGURATION****TEST INSTRUMENTS**

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum analyzer	8564E	3643A00665	HEWLETT PACKARD	July 9, 01	1 Year

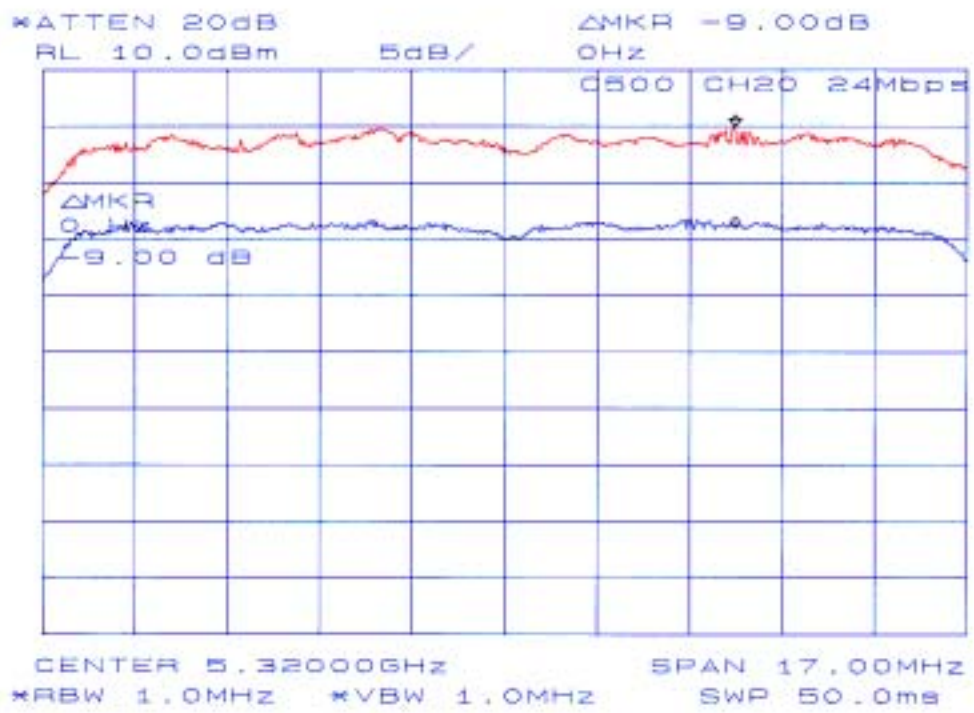
**Chart of ch 6 with 12 Mbps**



**Chart of ch 12 with 48 Mbps**



**Chart of ch 20 with 24 Mbps**





**9.5 Spurious Emissions – RF Antenna Conducted [15.407(b)(1), 15.407(b)(2)]****MEASUREMENT PROCEDURE:**

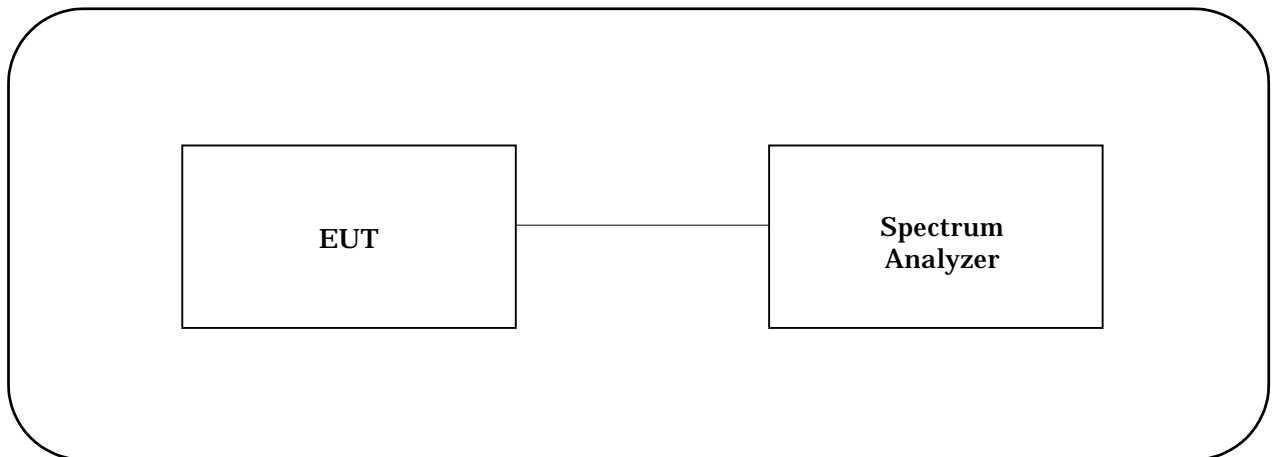
1. The EUT was set to operate with following conditions.
  - ch6 / ch12 / ch20
  - Data Transfer Rate (6 Mbps/9 Mbps/12 Mbps/18 Mbps/24 Mbps/36 Mbps/48 Mbps/54 Mbps)
2. The Spectrum Analyzer was connected directly to the transmitter output.
3. The Spectrum Analyzer was set up using RBW = 1MHz, VBW = 1MHz.
4. As for the typical chart of the observed RF profiles, refer to page 34-36.

Test date : December 21, 2001  
 Temperature variation : 18 °C  
 Humidity variation : 43 %

ch	Frequency (MHz)	Chart
6	5.18	-
12	5.24	Page 34-36
20	5.32	-

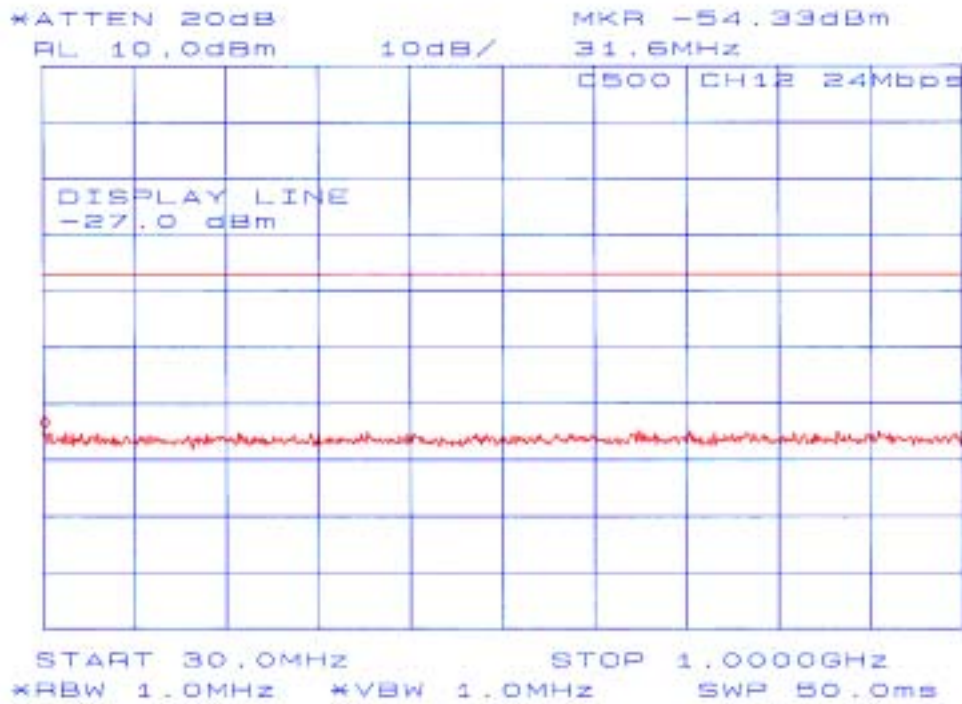
**Note:**

1. All out-of-band conducted emissions were more than 27 dB below a carrier.

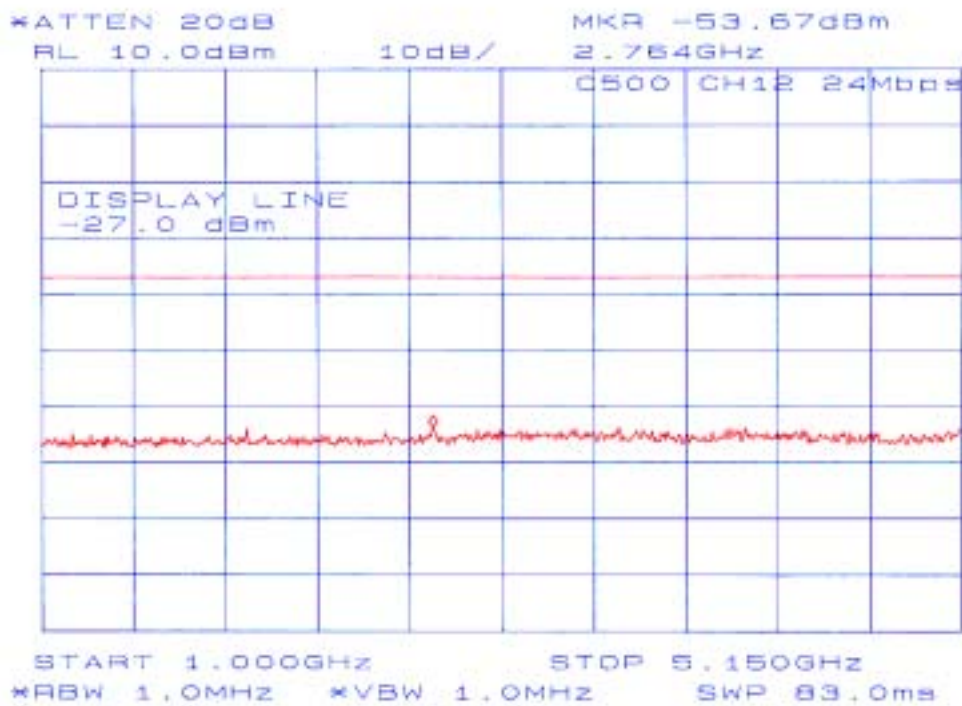
**TEST INSTRUMENTS CONFIGURATION****TEST INSTRUMENTS**

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum analyzer	8564E	3643A00665	HEWLETT PACKARD	July 9, 01	1 Year

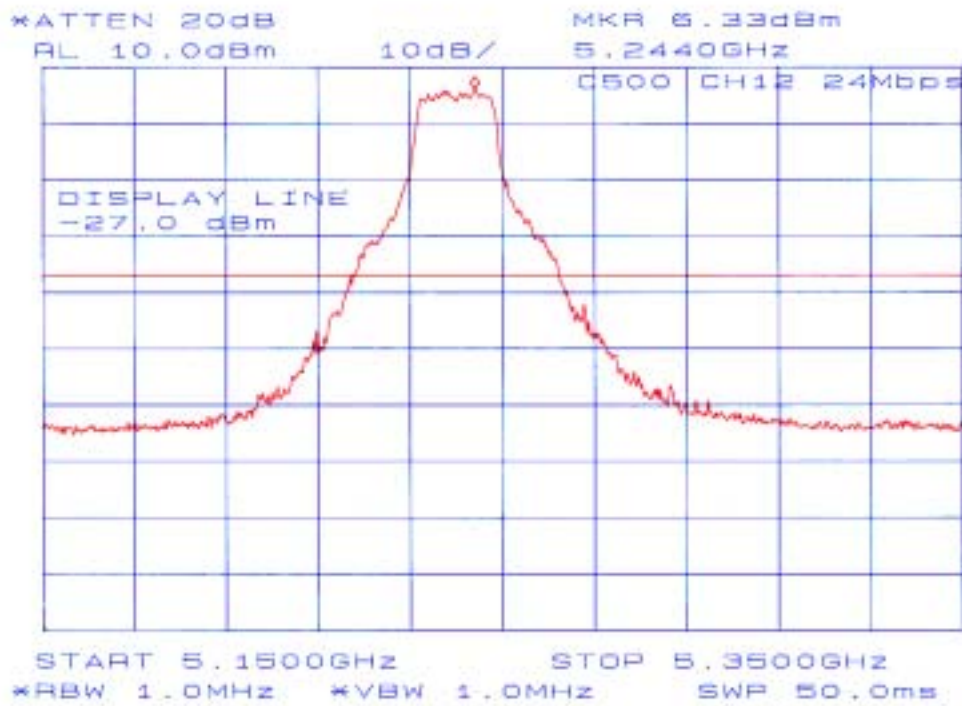
**Chart of ch 12 with 24Mbps (30MHz-1GHz)**



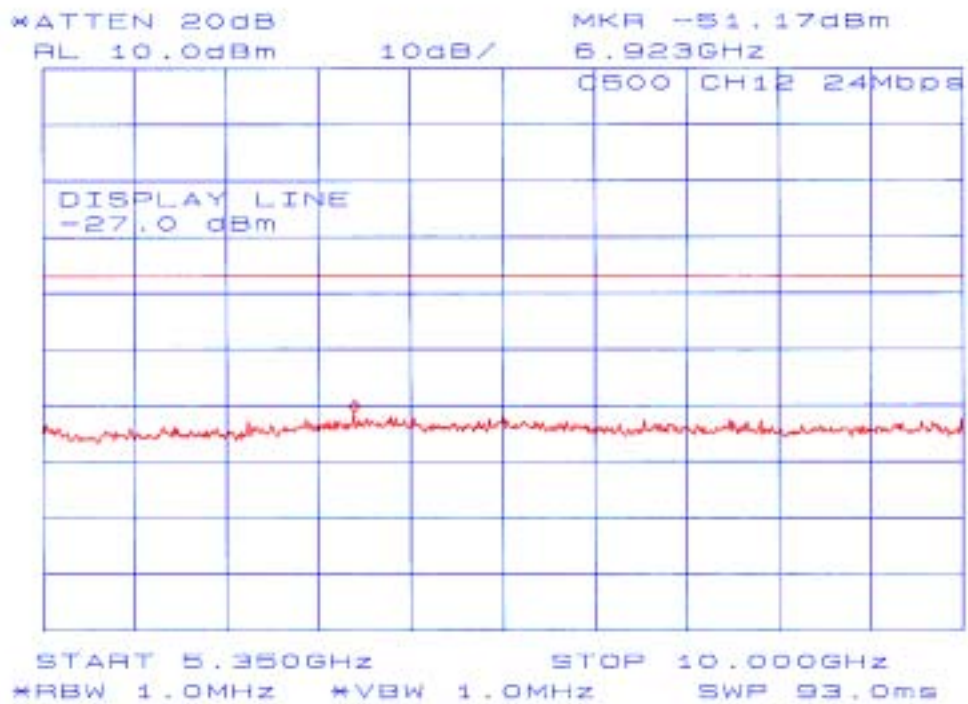
**Chart of ch 12 with 24Mbps (1GHz-5.15GHz)**



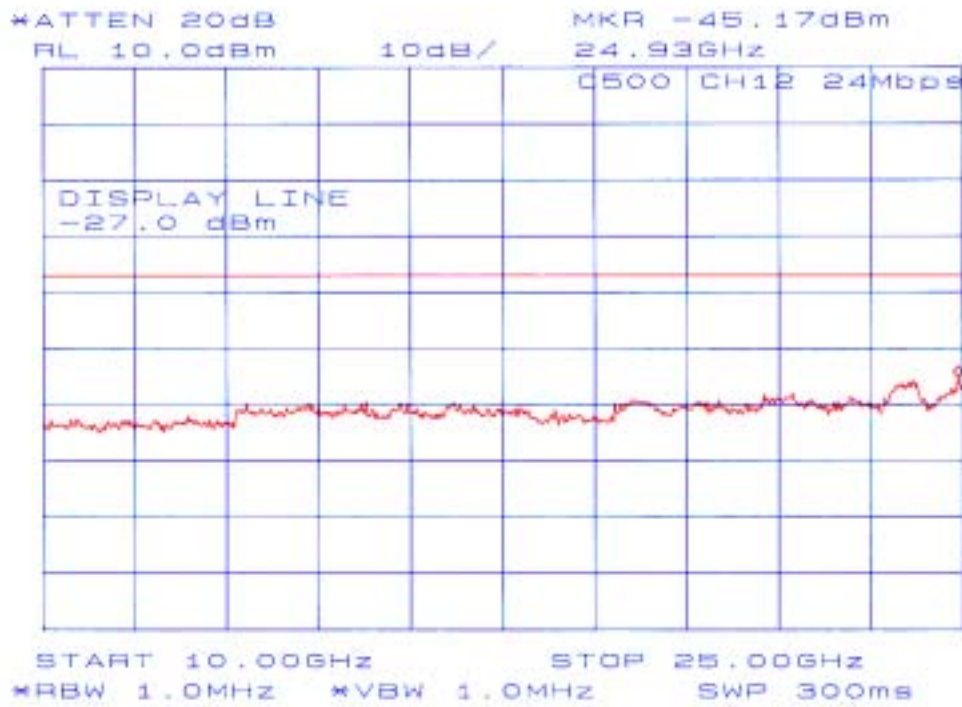
**Chart of ch 12 with 24Mbps (5.15GHz-5.35GHz)**



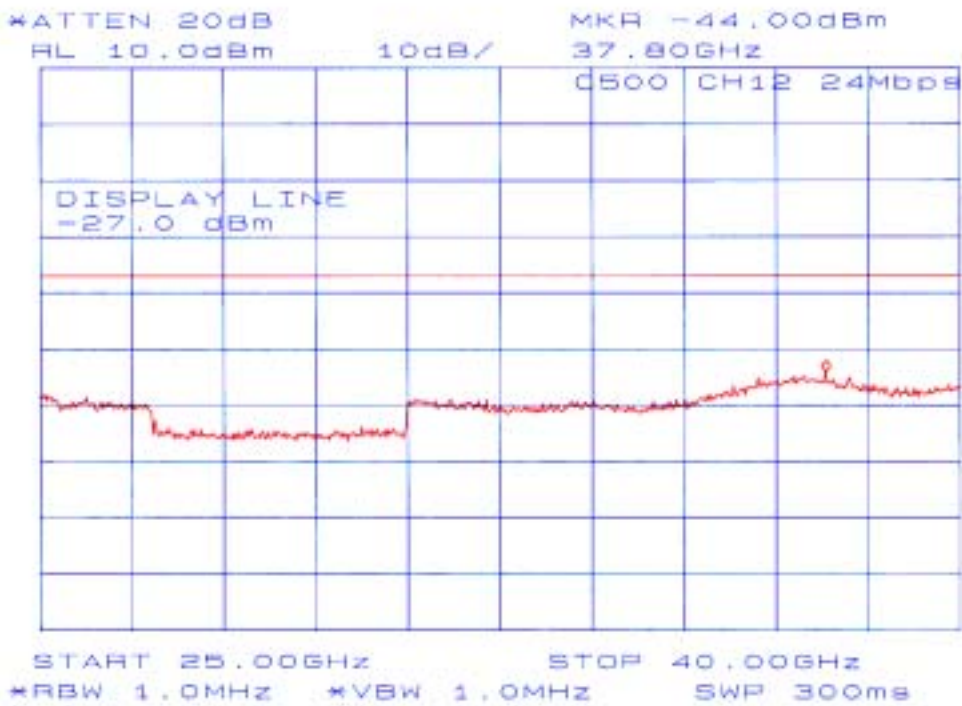
**Chart of ch 12 with 24Mbps (5.35GHz-10GHz)**



**Chart of ch 12 with 24Mbps (10GHz-25GHz)**



**Chart of ch 12 with 24Mbps (25GHz-40GHz)**



**9.6 Spurious Emissions – Radiated Emissions (below 1GHz) [15.407(b)(5), 15.209]****MEASUREMENT PROCEDURE:**

1. The EUT was set to operate with following conditions.
  - Antenna A / Antenna B
  - ch6 / ch12 / ch20
  - Data Transfer Rate (6 Mbps/9 Mbps/12 Mbps/18 Mbps/24 Mbps/36 Mbps/48 Mbps/54 Mbps)
2. The Test Receiver is complied with the specification of the CISPR publication 16.
3. Measurement distance was 3 meters.
4. Following data is the worst case.

Data of ch 12 with 6 Mbps in Antenna A

## Akzo Nobel K. K.

### Kashima No.1 Test Site

### Radiated Electric Field

APPLICANT	: Sony Corporation	FILE NO.	: ANKK-101423
EUT NAME	: Wireless LAN PC Card	REGULATION	: FCC 15.407(b), 15.209
MODEL NO.	: PCWA-C500	TEST METHOD	: ANSI C63.4-1992
SERIAL NO.	: 0000000	DISTANCE	: 3.0 [m]
TEST MODE	: Tx 5.24GHz 6Mbps Ant:A	TEMPERATURE	: 20.0 [degC]
POWER SOURCE	: AC120V/60Hz	HUMIDITY	: 38.0 [%]
DATE TESTED	: Dec 25 2001		

ENGINEER : Kazuhiro Ando

FREQUENCY No	[MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	
1	88.83	-	36.5	-11.0	-11.0	-	25.5	43.5	-	18.0
2	118.50	35.4	-	-7.6	-7.6	27.8	-	43.5	15.7	-
3	130.45	-	41.2	-8.4	-8.4	-	32.8	43.5	-	10.7
4	160.39	35.3	-	-10.8	-10.8	24.5	-	43.5	19.0	-
5	196.62	34.3	-	-8.6	-8.6	25.7	-	43.5	17.8	-
6	266.40	42.8	-	-6.1	-6.1	36.7	-	46.0	9.3	-
7	532.94	35.2	-	1.6	1.6	36.8	-	46.0	9.2	-
8	800.01	35.9	34.2	6.1	6.1	42.0	40.3	46.0	4.0	5.7
9	832.01	30.3	27.2	6.8	6.8	37.1	34.0	46.0	8.9	12.0
10	960.00	28.4	25.2	8.4	8.4	36.8	33.6	46.0	9.2	12.4

Other frequencies : Below the FCC 15.407(b), 15.209 limit  
Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)

Data of ch 12 with 6 Mbps in Antenna B

## Akzo Nobel K. K.

### Kashima No.1 Test Site

### Radiated Electric Field

APPLICANT : Sony Corporation  
 EUT NAME : Wireless LAN PC Card  
 MODEL NO. : PCWA-C500  
 SERIAL NO. : 0000000  
 TEST MODE : Tx 5.24GHz 6Mbps Ant:B  
 POWER SOURCE : AC120V/60Hz  
 DATE TESTED : Dec 25 2001

FILE NO. : ANKK-101423  
 REGULATION : FCC 15.407(b), 15.209  
 TEST METHOD : ANSI C63.4-1992  
 DISTANCE : 3.0 [m]  
 TEMPERATURE : 20.0 [degC]  
 HUMIDITY : 38.0 [%]

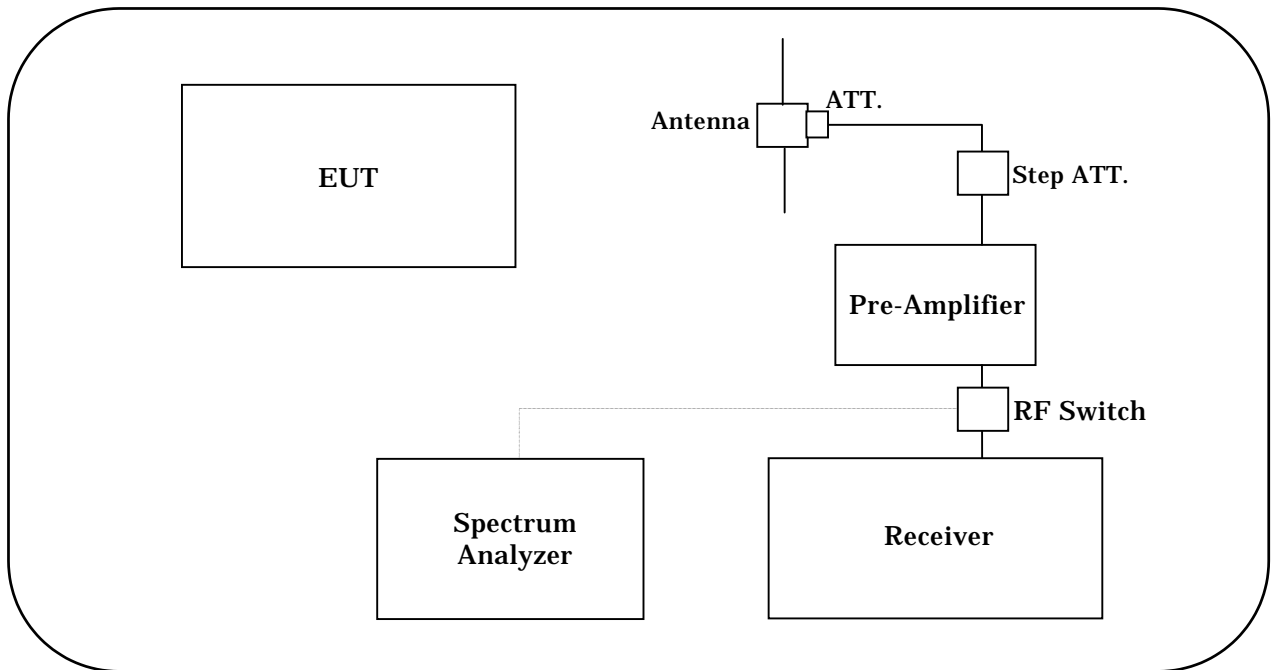
ENGINEER : Kazuhiro Ando

FREQUENCY No	[MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	88.83	-	36.4	-11.0	-11.0	-	25.4	43.5	-	18.1
2	118.50	35.8	-	-7.6	-7.6	28.2	-	43.5	15.3	-
3	130.45	-	40.9	-8.4	-8.4	-	32.5	43.5	-	11.0
4	160.39	35.7	-	-10.8	-10.8	24.9	-	43.5	18.6	-
5	196.62	32.6	-	-8.6	-8.6	24.0	-	43.5	19.5	-
6	266.40	42.5	-	-6.1	-6.1	36.4	-	46.0	9.6	-
7	532.94	32.4	-	1.6	1.6	34.0	-	46.0	12.0	-
8	800.01	35.4	34.2	6.1	6.1	41.5	40.3	46.0	4.5	5.7
9	832.01	24.6	26.4	6.8	6.8	31.4	33.2	46.0	14.6	12.8
10	960.00	22.8	25.1	8.4	8.4	31.2	33.5	46.0	14.8	12.5

-----

Other frequencies : Below the FCC 15.407(b), 15.209 limit  
 Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)

## TEST INSTRUMENTS CONFIGURATION



## TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Test Receiver	ESS	844861/004	ROHDE & SCHWARZ	Apr. 11, 01	1 Year
Pre-Amplifier	8447D	1937A03130	HEWLETT PACKARD	Oct. 4, 01	1 Year
6dB Attenuator	MP721B	M57593	ANRITSU	Oct. 4, 01	1 Year
Step Attenuator	8494B	2726A14513	HEWLETT PACKARD	Oct. 4, 01	1 Year
RF Switch	ACX-150	None	AKZO NOBEL	Oct. 4, 01	1 Year
Bi-Cog Antenna	LPB-2513-A	1103	ARA	May 17, 01	1 Year



**9.7 Spurious Emissions – Radiated Emissions (above 1 GHz) [15.407(b)(6), 15.205]****MEASUREMENT PROCEDURE:**

1. The EUT was set to operate with following conditions.
  - Antenna A / Antenna B
  - ch6 / ch12 / ch20
  - Data Transfer Rate (6 Mbps/9 Mbps/12 Mbps/18 Mbps/24 Mbps/36 Mbps/48 Mbps/54 Mbps)
2. For the measurements in restricted bands, the Spectrum Analyzer was set up using
  - Peak mode: RBW = 1MHz, VBW = 1MHz
  - Average mode: RBW = 1MHz, VBW = 10Hz
 And for the measurements out of restricted bands, the Spectrum Analyzer was set up using
  - RBW = 1MHz, VBW = 30kHz.
3. Measurement distance was 3 meter.
4. Limit for emissions outside of restricted bands : EIRP < -27dBm/MHz  
 In case of 3 meter measurement distance, the limit was calculated as follows:

$$P = (E * d)^2 / 30G$$

$$E = \frac{\sqrt{30xPxG}}{d}$$

$$= 2.58 \times 10^{-3} \text{ V/m}$$

$$\text{Limit : } 20\log(2.58 \times 10^{-3}) = 68.2\text{dBuV/m}$$

where

P is the power, in Watts

E is the measured peak field strength, in Volts/meter

d is the distance at which the measurement was made, in meters

G is the numeric gain of the radiating element

5. Following data is the worst case.

Data of ch 12 with 6 Mbps in Antenna A

**Akzo Nobel K. K.**  
**Kashima No.1 Test Site**  
**Spurious Emissions**

APPLICANT	: Sony Corporation	FILE NO.	: ANKK-101423
EUT NAME	: Wireless LAN PC Card	REGULATION	: FCC 15.407(b), 15.209, 15.205
MODEL NO.	: PCWA-C500	TEST METHOD	: ANSI C63.4:1992
SERIAL NO.	: 0000000	DISTANCE	: 3.0 [m]
TEST MODE	: Tx 5.24GHz 6Mbps Ant:A	TEMPERATURE	: 23.0 [degC]
POWER SOURCE	: AC120V/60Hz	HUMIDITY	: 31.0 [%]
DATE TESTED	: Jan 24 2002		

ENGINEER : Kazuhiro Ando

FREQ No	MODE	FREQUENCY [MHz]	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	PEK	1040.05	43.6	-	0.3	0.3	43.9	-	74.0	30.1	-	
2	AVG	1040.05	33.3	-	0.3	0.3	33.6	-	54.0	20.4	-	
3	PEK	1119.90	43.8	-	0.5	0.5	44.3	-	74.0	29.7	-	
4	AVG	1119.90	31.7	-	0.5	0.5	32.2	-	54.0	21.8	-	
5		2080.00	36.2	34.7	4.7	4.7	40.9	39.4	68.2	27.3	28.8	
6		10480.30	-	31.7	25.7	25.7	-	57.4	68.2	-	10.8	

---

Other frequencies : Below the FCC 15.407(b), 15.209, 15.205 limit  
 Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)

Data of ch 12 with 6 Mbps in Antenna B

## Akzo Nobel K. K.

### Kashima No.1 Test Site

### Spurious Emissions

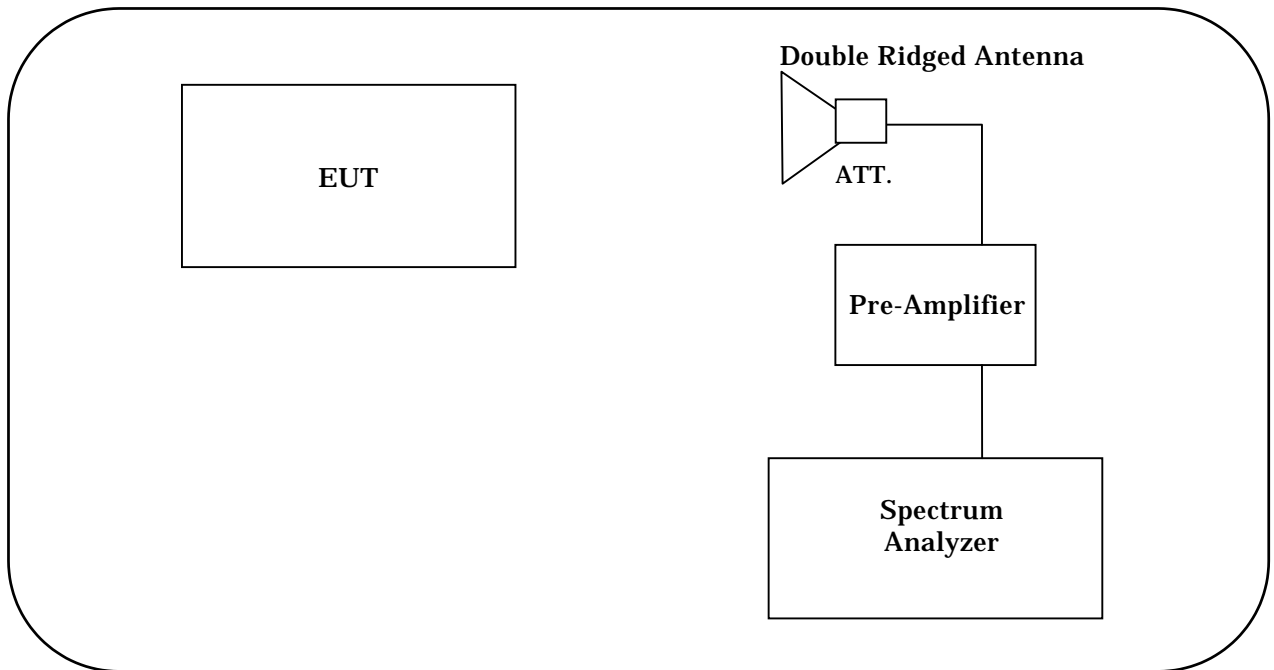
APPLICANT	: Sony Corporation	FILE NO.	: ANKK-101423
EUT NAME	: Wireless LAN PC Card	REGULATION	: FCC 15.407(b), 15.209, 15.205
MODEL NO.	: PCWA-C500	TEST METHOD	: ANSI C63.4:1992
SERIAL NO.	: 0000000	DISTANCE	: 3.0 [m]
TEST MODE	: Tx 5.24GHz 6Mbps Ant:B	TEMPERATURE	: 23.0 [degC]
POWER SOURCE	: AC120V/60Hz	HUMIDITY	: 31.0 [%]
DATE TESTED	: Jan 24 2002		

ENGINEER : Kazuhiro Ando

FREQUENCY No	MODE [MHz]	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]		
		Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert	
1	1040.12	PEK	42.4	-	0.3	0.3	42.7	-	74.0	31.3	-
2	1040.12	AVG	32.8	-	0.3	0.3	33.1	-	54.0	20.9	-
3	1119.90	PEK	43.6	-	0.5	0.5	44.1	-	74.0	29.9	-
4	1119.90	AVG	33.4	-	0.5	0.5	33.9	-	54.0	20.1	-
5	1696.07	PEK	43.3	-	2.6	2.6	45.9	-	74.0	28.1	-
6	1696.07	AVG	29.8	-	2.6	2.6	32.4	-	54.0	21.6	-
7	2080.00		35.5	34.6	4.7	4.7	40.2	39.3	68.2	28.0	28.9
8	10480.30		-	32.4	25.7	25.7	-	58.1	68.2	-	10.1

Other frequencies : Below the FCC 15.407(b), 15.209, 15.205 limit  
Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)

## TEST INSTRUMENTS CONFIGURATION



## TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum analyzer	8564E	3643A00665	HEWLETT PACKARD	Jun. 14, 01	1 Year
Pre-Amplifier	83051A	3332A00329	HEWLETT PACKARD	Jan. 5, 01	1 Year
3dB Attenuator	6803.17B	None	SUHNER	Mar. 18, 01	1 Year
Double Ridged Antenna	3115	5044	EMCO	Jul. 16, 01	1 Year
	3116	9612-2320	EMCO	Jul. 7, 01	1 Year

**9.8 Spurious Emissions – Radiated Emissions (Band Edge) [15.407(b)(6), 15.205]****MEASUREMENT PROCEDURE:**

1. The EUT was set to operate with following conditions.
  - Antenna A / Antenna B
  - ch6 / ch20
  - Data Transfer Rate (6 Mbps/9 Mbps/12 Mbps/18 Mbps/24 Mbps/36 Mbps/48 Mbps/54 Mbps)
2. The Spectrum Analyzer was setup using
  - Peak mode: RBW = 1MHz, VBW = 1MHz
  - Average mode: RBW = 1MHz, VBW = 10Hz
3. Measurement distance was 3 meter.
4. Following data is the worst case.
5. As for the typical chart of the observed RF profiles, refer to page 50-53.

Data of ch 6 with 9 Mbps in Antenna A

## Akzo Nobel K. K.

### Kashima No.1 Test Site

### Spurious Emissions -Band Edge

APPLICANT : Sony Corporation  
 EUT NAME : Wireless PC Card  
 MODEL NO. : PCWA-C500  
 SERIAL NO. : 0000000  
 TEST MODE : Tx 5.18GHz 9Mbps Ant:A  
 POWER SOURCE : DC 3.3V  
 DATE TESTED : Dec 19 2001

FILE NO. : ANKK-101423  
 REGULATION : FCC 15.407(b), 15.209, 15.205  
 TEST METHOD : ANSI C63.4:1992  
 DISTANCE : 3.0 [m]  
 TEMPERATURE : 20.0 [degC]  
 HUMIDITY : 45.0 [%]

ENGINEER : Kazuhiro Ando

No	FREQUENCY [MHz]	MODE	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	5150.00	PEK	40.7	40.0	16.0	16.0	56.7	56.0	74.0	17.3	18.0
2	5150.00	AVG	29.0	29.0	16.0	16.0	45.0	45.0	54.0	9.0	9.0

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Other frequencies : Below the FCC 15.407(b), 15.209, 15.205 limit  
 Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)

Data of ch 20 with 6 Mbps in Antenna A

**Akzo Nobel K. K.**  
**Kashima No.1 Test Site**  
**Spurious Emissions -Band Edge**

APPLICANT : Sony Corporation  
 EUT NAME : Wireless PC Card  
 MODEL NO. : PCWA-C500  
 SERIAL NO. : 0000000  
 TEST MODE : Tx 5.32GHz 6Mbps Ant:A  
 POWER SOURCE : DC 3.3V  
 DATE TESTED : Dec 19 2001

FILE NO. : ANKK-101423  
 REGULATION : FCC 15.407(b), 15.209, 15.205  
 TEST METHOD : ANSI C63.4:1992  
 DISTANCE : 3.0 [m]  
 TEMPERATURE : 20.0 [degC]  
 HUMIDITY : 45.0 [%]

ENGINEER : Kazuhiro Ando

FREQUENCY No	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	5350.00	PEK	41.5	41.2	16.5	16.5	58.0	57.7	74.0	16.0	16.3
2	5350.00	AVG	28.8	29.2	16.5	16.5	45.3	45.7	54.0	8.7	8.3

---

Other frequencies : Below the FCC 15.407(b), 15.209, 15.205 limit  
 Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)

Data of ch 6 with 18 Mbps in Antenna B

**Akzo Nobel K. K.**  
**Kashima No.1 Test Site**  
**Spurious Emissions -Band Edge**

APPLICANT	: Sony Corporation	FILE NO.	: ANKK-101423
EUT NAME	: Wireless PC Card	REGULATION	: FCC 15.407(b), 15.209, 15.205
MODEL NO.	: PCWA-C500	TEST METHOD	: ANSI C63.4:1992
SERIAL NO.	: 0000000	DISTANCE	: 3.0 [m]
TEST MODE	: Tx 5.18GHz 18Mbps Ant:B	TEMPERATURE	: 20.0 [degC]
POWER SOURCE	: DC 3.3V	HUMIDITY	: 45.0 [%]
DATE TESTED	: Dec 19 2001		

ENGINEER : Kazuhiro Ando

FREQUENCY No	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	5150.00	PEK	41.3	41.2	16.0	16.0	57.3	57.2	74.0	16.7	16.8
2	5150.00	AVG	28.7	28.8	16.0	16.0	44.7	44.8	54.0	9.3	9.2

---

Other frequencies : Below the FCC 15.407(b), 15.209, 15.205 limit  
 Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)



Data of ch 20 with 9 Mbps in Antenna B

**Akzo Nobel K. K.**  
**Kashima No.1 Test Site**  
**Spurious Emissions -Band Edge**

APPLICANT : Sony Corporation  
 EUT NAME : Wireless PC Card  
 MODEL NO. : PCWA-C500  
 SERIAL NO. : 0000000  
 TEST MODE : Tx 5.32GHz 9Mbps Ant:B  
 POWER SOURCE : DC 3.3V  
 DATE TESTED : Dec 19 2001

FILE NO. : ANKK-101423  
 REGULATION : FCC 15.407(b), 15.209, 15.205  
 TEST METHOD : ANSI C63.4:1992  
 DISTANCE : 3.0 [m]  
 TEMPERATURE : 20.0 [degC]  
 HUMIDITY : 45.0 [%]

ENGINEER : Kazuhiro Ando

No	FREQUENCY [MHz]	MODE	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	5350.00	PEK	40.8	40.8	16.5	16.5	57.3	57.3	74.0	16.7	16.7
2	5350.00	AVG	28.7	28.7	16.5	16.5	45.2	45.2	54.0	8.8	8.8

---

Other frequencies : Below the FCC 15.407(b), 15.209, 15.205 limit  
 Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)

Chart of ch 6 with 9Mbps in Antenna A

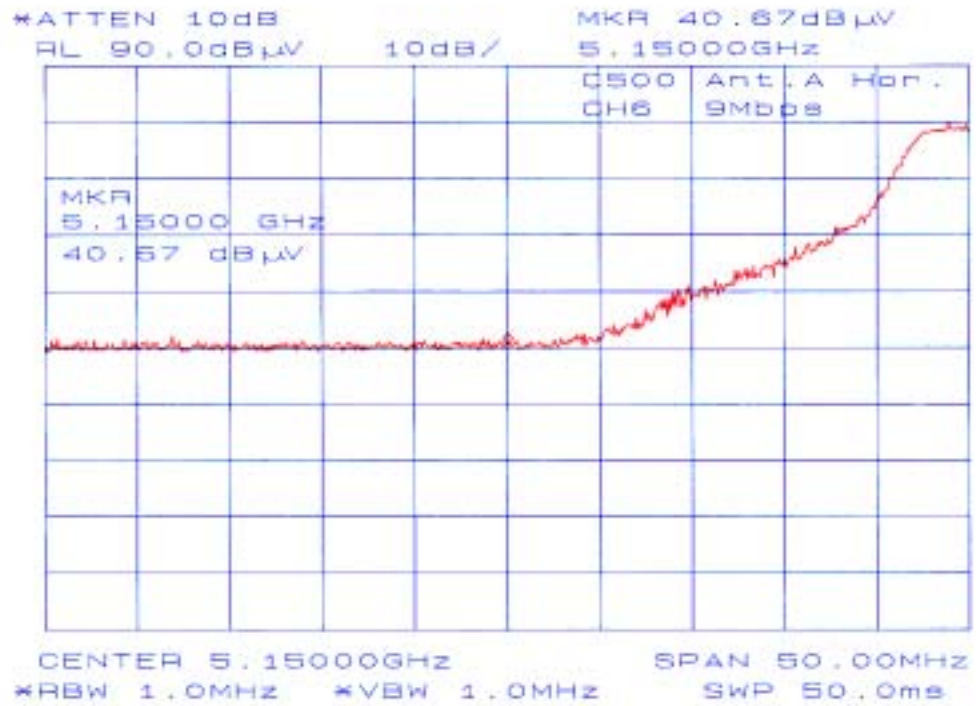


Chart of ch 6 with 9Mbps in Antenna A

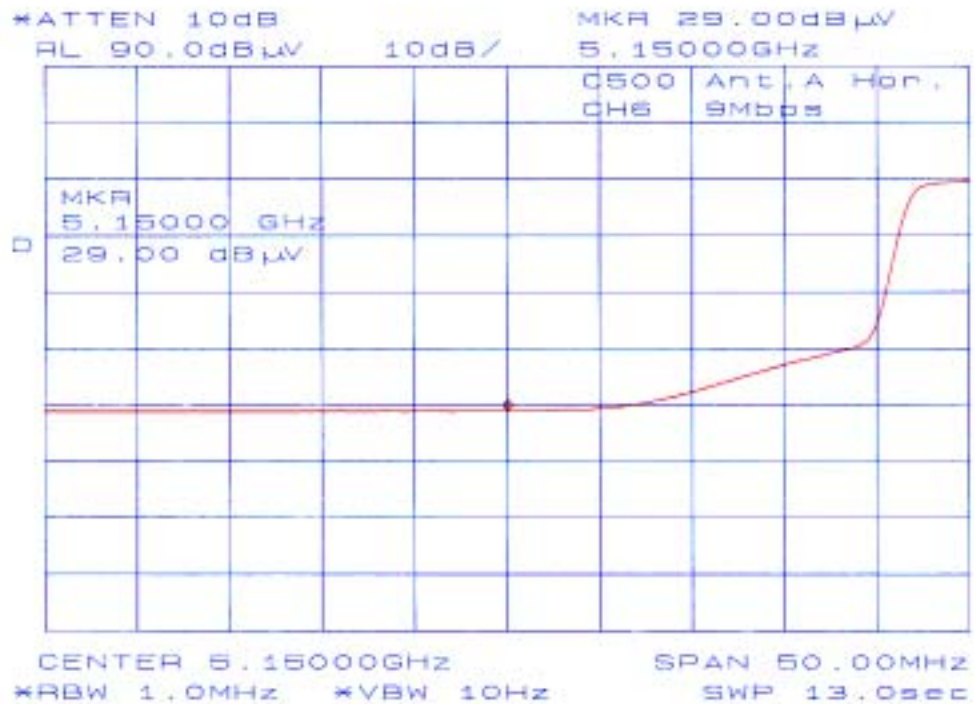


Chart of ch 20 with 6Mbps in Antenna A

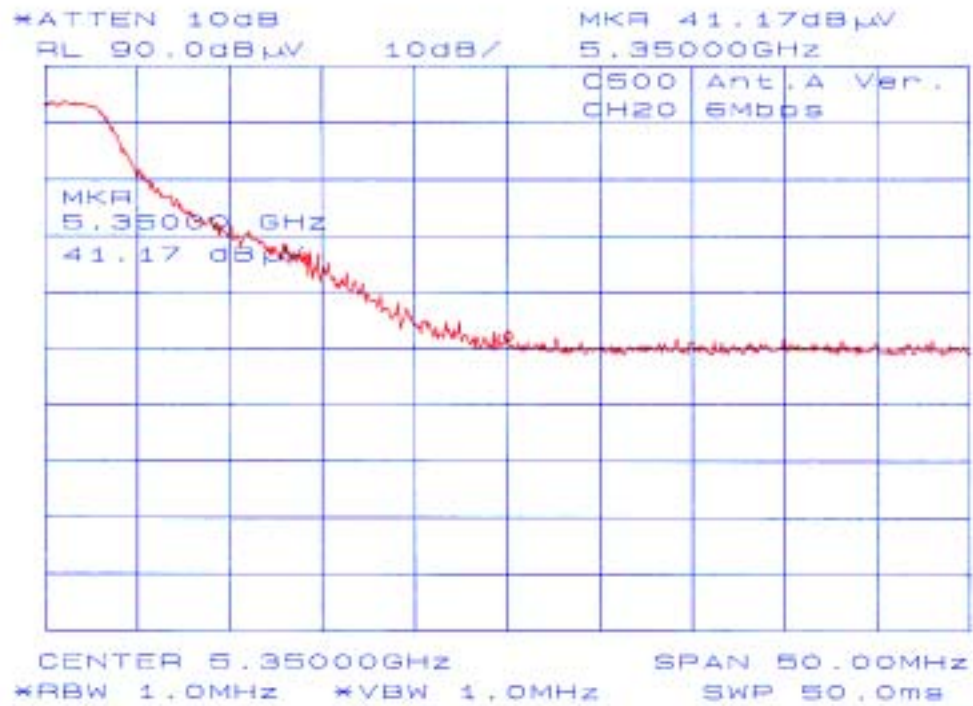


Chart of ch 20 with 6Mbps in Antenna A

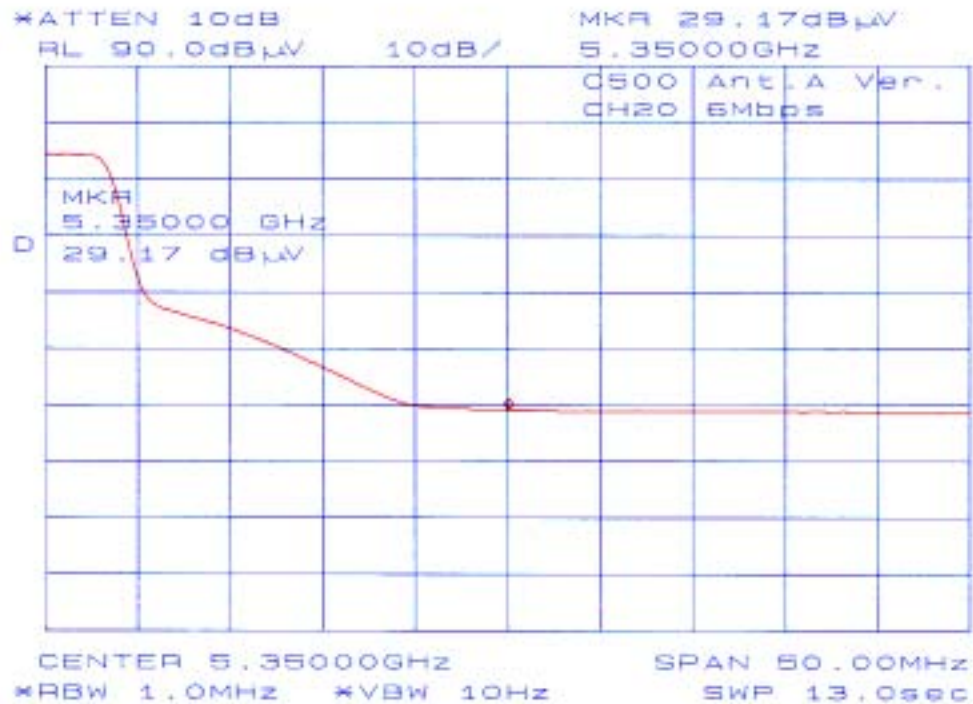


Chart of ch 6 with 18Mbps in Antenna B

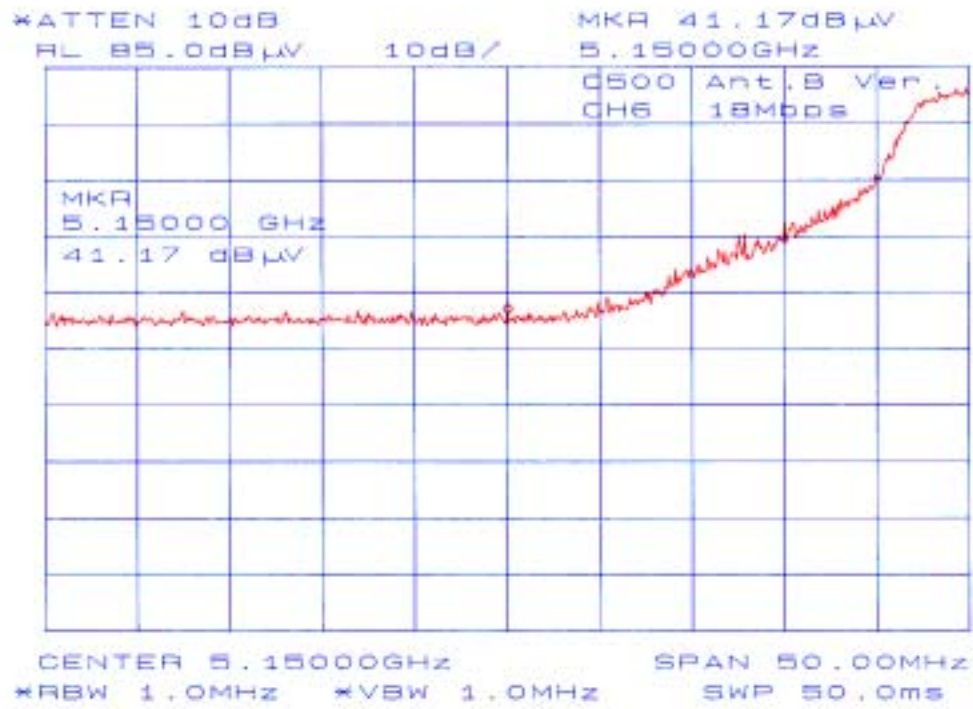


Chart of ch 6 with 18Mbps in Antenna B

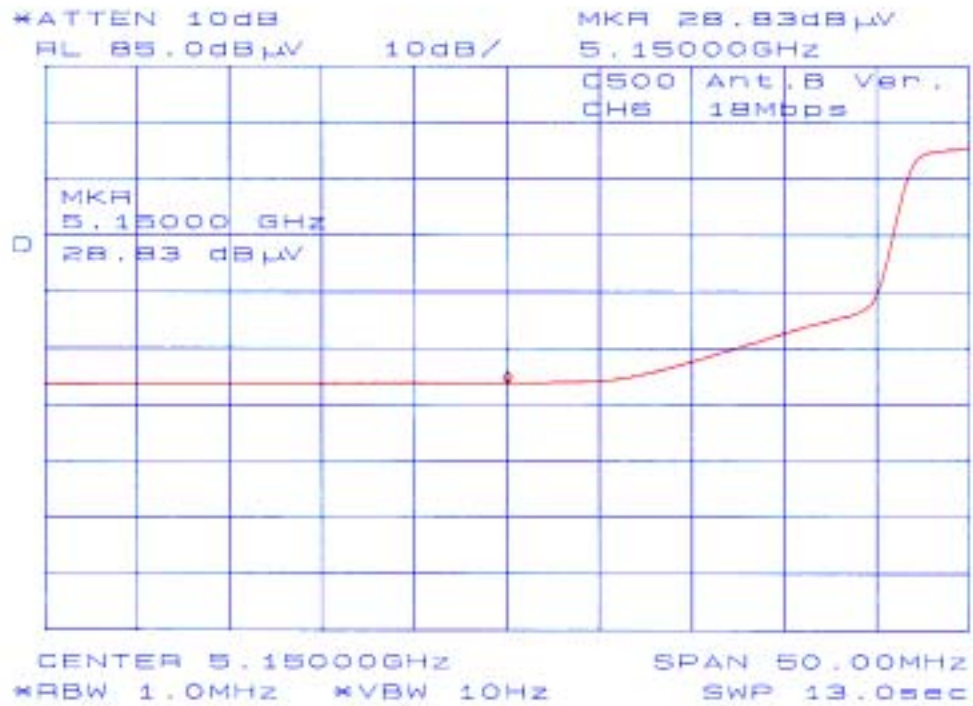


Chart of ch 20 with 9Mbps in Antenna B

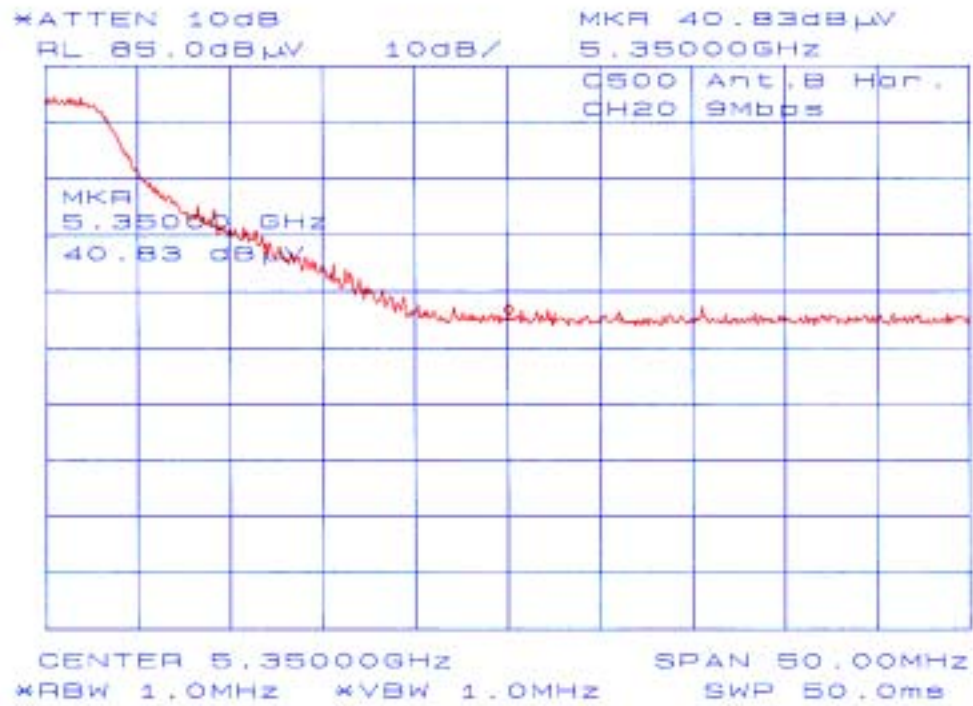
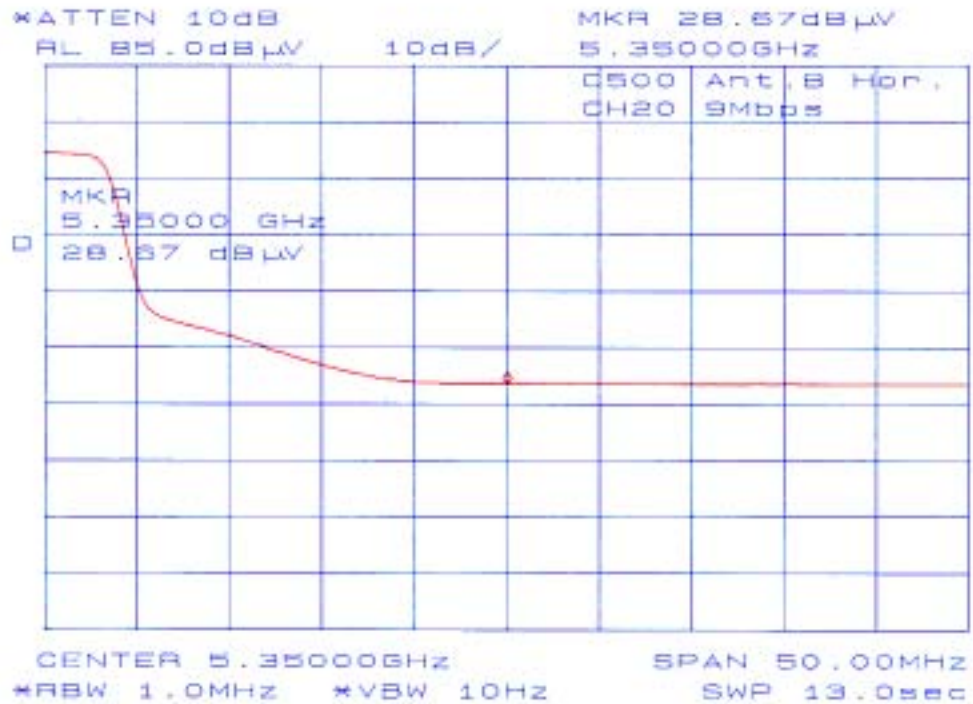
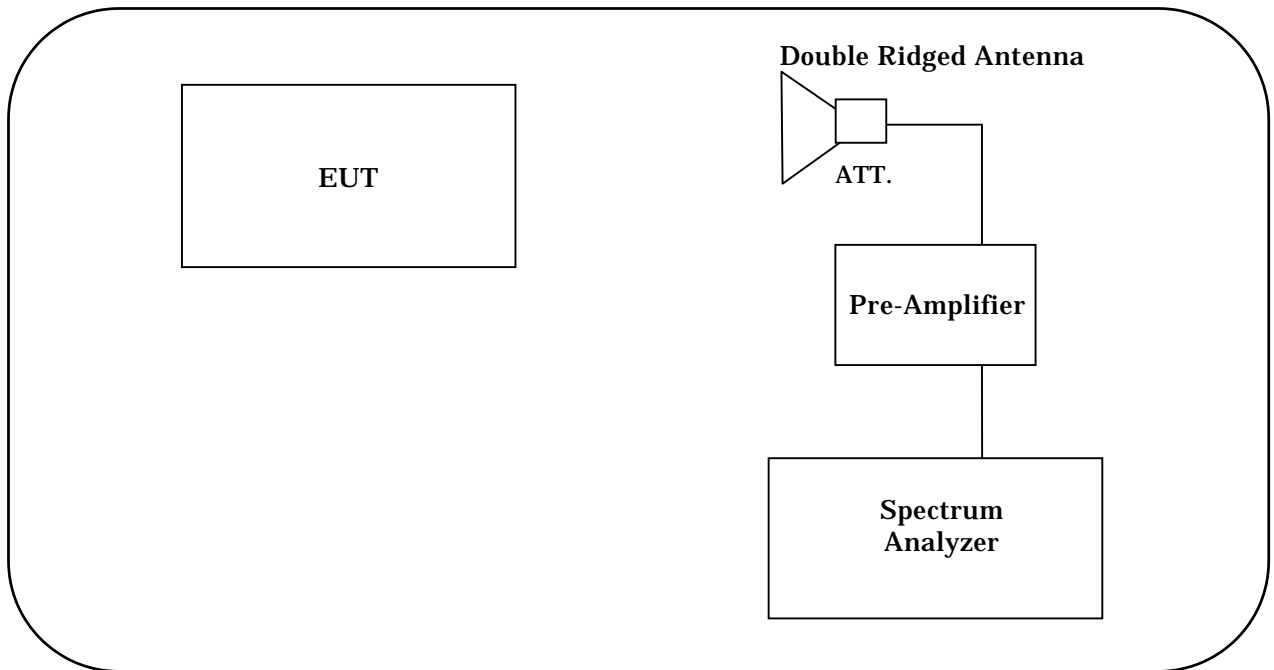


Chart of ch 20 with 9Mbps in Antenna B



## TEST INSTRUMENTS CONFIGURATION



## TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum analyzer	8564E	3643A00665	HEWLETT PACKARD	Jun. 14, 01	1 Year
Pre-Amplifier	83051A	3332A00329	HEWLETT PACKARD	Jan. 5, 01	1 Year
3dB Attenuator	6803.17B	None	SUHNER	Mar. 18, 01	1 Year
Double Ridged Antenna	3115	5044	EMCO	Jul. 16, 01	1 Year

**9.9 AC Conducted Emissions [15.407(b)(5),15.207]****MEASUREMENT PROCEDURE:**

- 1. The EUT was set to operate with following conditions.**
  - ch6 / ch12 / ch20
  - Data Transfer Rate (6 Mbps/9 Mbps/12 Mbps/18 Mbps/24 Mbps/36 Mbps/48 Mbps/54 Mbps)
- 2. The Test Receiver is complied with the specification of the CISPR publication 16.**
- 3. Following data is the worst case.**

Data of ch 12 with 6 Mbps in Antenna A

## Akzo Nobel K. K.

### Kashima No.1 Test Site

### Conducted Voltages on Mains Port

APPLICANT	: Sony Corporation	FILE NO.	: ANKK-101423
EUT NAME	: Wireless LAN PC Card	REGULATION	: FCC 15.407(b), 15.207
MODEL NO.	: PCWA-C500	TEST METHOD	: ANSI C63.4-1992
SERIAL NO.	: 0000000		
TEST MODE	: Tx 5.24GHz 6Mbps Ant.A	TEMPERATURE	: 20.0 [degC]
POWER SOURCE	: AC120V/60Hz	HUMIDITY	: 38.0 [%]
DATE TESTED	: Dec 25 2001		

ENGINEER : Kazuhiro Ando

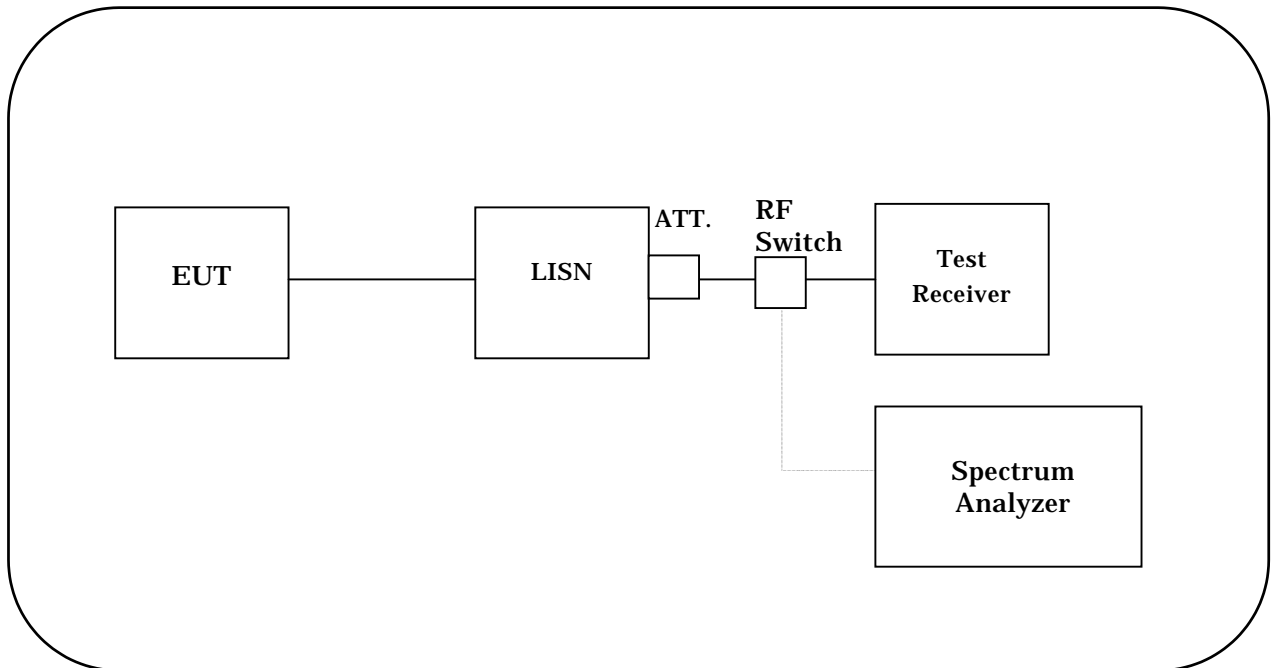
FREQUENCY No	[MHz]	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
		Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.4965	23.0	23.9	5.9	5.9	28.9	29.8	48.0	19.1	18.2
2	0.5802	18.8	17.6	5.9	5.9	24.7	23.5	48.0	23.3	24.5
3	0.6619	19.1	20.8	5.9	5.9	25.0	26.7	48.0	23.0	21.3
4	4.3860	19.2	18.4	6.2	6.2	25.4	24.6	48.0	22.6	23.4
5	6.4542	26.4	25.5	6.3	6.4	32.7	31.9	48.0	15.3	16.1
6	7.5301	22.5	23.5	6.3	6.3	28.8	29.8	48.0	19.2	18.2
7	10.0137	21.3	21.5	6.3	6.3	27.6	27.8	48.0	20.4	20.2
8	16.5498	22.0	23.0	6.6	6.6	28.6	29.6	48.0	19.4	18.4
9	21.6828	22.9	21.9	6.5	6.8	29.4	28.7	48.0	18.6	19.3

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Other frequencies : Below the FCC 15.407(b), 15.207 limit  
Emission Level = Read + Factor(LISN,Pad,Cable)



## TEST INSTRUMENTS CONFIGURATION



## TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Test receiver	ESS	844861/004	ROHDE & SCHWARZ	Apr. 11, 01	1 Year
LISN (EUT)	ESH2-Z5	881492/014	ROHDE & SCHWARZ	Oct. 3, 01	1 Year
6dB Attenuator	CFA-01	None	TME	Oct. 4, 01	1 Year
LISN (Peripheral)	KNW-242	8-851-21	KYORITSU	Feb. 20, 01	1 Year
50Ω Termination	CT-01	A010CON50	TME	Feb. 20, 01	1 Year
RF Switch	ACX-150	None	AKZO NOBEL	Oct. 4, 01	1 Year

**SECTION 10. PHOTOGRAPHS OF MAXIMUM EMISSION SET-UP****10.1 RF Conducted Emission Test**

Test setup in accordance with ANSI C63.4-1992



Front view

**10.2 Radiated Emission Test**

Test setup in accordance with ANSI C63.4-1992



Front view



Rear view

**10.3 Conducted Emission Test**

Test setup in accordance with ANSI C63.4-1992



Front view



Side view

**SECTION 11. MEASUREMENT UNCERTAINTY**

The uncertainty of the measurements performed for this report lies:

26dB Emission Bandwidth	[15.407(a)(1),15.407(a)(2)]	
Above 1 GHz .....		+/- 46.7kHz
Maximum Peak Output Power (Spectrum Analyzer)	[15.407(a)(1),15.407(a)(2)]	
Above 1 GHz .....		+/- 3.9 dB
Peak Power Spectral Density	[15.407(a)(1),15.407(a)(2)]	
Above 1 GHz .....		+/- 2.9 dB
Spurious Emissions - RF Antenna Conducted Test	[15.407(b)(1),15.407(b)(2)]	
Above 1 GHz .....		+/- 2.9 dB
Spurious Emissions - Radiated Emission Test	[15.407(b)(5), 15.209]	
Below 1 GHz .....		+/- 3.9 dB
Spurious Emissions - Radiated Emission Test	[15.407(b)(6), 15.205]	
Above 1 GHz .....		+/- 3.9 dB
Spurious Emissions - Radiated Emission Test	[15.407(b)(6), 15.205]	
Band Edge .....		+/- 3.9 dB
AC Conducted Emission	[15.407(b)(5),15.207]	
9 kHz – 30 MHz .....		+/- 1.8 dB

**Note on Radiated Emission measurement uncertainty**

The following items are not included in the calculations in spite of their own uncertainty components because it is impracticable to find the value.

It is our problem awaiting solution in future.

**(1)Repeatability of measurement**

It is not possible to calculate repeatability since the measurement was carried out only one time.

**(2)Antenna factor variation**

The definition of measured (radiated electric field strength) is not completed on the referred standard(s).

**(3)Loss of EUT radiation propagation**

It is certainly one of the uncertainty components, however is not able to calculate.

Please note that these uncertainties are not reflected to the compliance judgement of the test results in this report.

**SECTION 12. VALIDITY OF TEST REPORT**

- 12.1 The test result of this report is effective for equipment under test itself and under the test configuration described on the report.
- 12.2 This test report does not assure that whether the test result taken in other testing laboratory is compatible or reproducible to the test result on this report or not.
- 12.3 This test report shall not be reproduced except in full, without issuer's permission.

## SECTION 13. DESCRIPTION OF TEST LABORATORY

### 13.1 Outline of Akzo Nobel K. K. (formerly Akzo Kashima Limited), EMC Division

Akzo Nobel K. K., the country organization in Japan for Akzo Nobel NV, was established in 1968. The shares are owned by Akzo Nobel NV (100%). Akzo Nobel NV, headquartered in the Netherlands, is one of the world's leading companies in selected areas of chemicals, coatings, healthcare products and fibers with work force of approximately 70,000 people in over 50 countries.

In 1984, in order to respond to the growing testing demand, in particular, for FCC filing, Akzo Nobel K. K. started EMI testing business, installing the first open air test site in Kashima, Ibaraki prefecture. Further the business has been expanded by installing additional testing facilities not only in Ibaraki but also in other areas such as Shizuoka, Nagano, Kanagawa and Tochigi. As results, Akzo Nobel K. K. has now 16 open air test sites and 4 anechoic chambers for EMI/EMC testing. As the largest EMC testing laboratory in number of testing facilities and staffs, EMC Division has been organized separately in the company and independently operated in conformity with the requirements of ISO Guide 25 (EN 45000) for its competency as a testing laboratory.

Akzo Nobel K. K. EMC Division is the first foreign private laboratory accredited by NVLAP, National Voluntary Laboratory Accreditation Program-NIST, USA. The division has been certified, authorized and/or filed as a competent testing laboratory by various testing organizations/authorities as described below.

### 13.2 Filing, certification, authorization and accreditation list

#### EMI/EMC testing

FCC	(USA)
NVLAP	(USA)
NEMKO	(Norway)
VCCI	(Japan)
ETL SEMKO Japan	(Sweden)
TÜV PRODUCT SERVICE	(Germany)

#### Telecommunications terminal testing

FCC	(USA)
NVLAP	(USA)
NATA	(Australia)
IC	(Canada)

Note 1 : NVLAP accreditation does not constitute any product endorsement by NVLAP or any agent of the U.S. Government.