MEASUREMENT/TECHNICAL REPORT
FCC Part 15 Subpart C

Issued: October 10, 2008

Name and Address of the Applicant:	Buffalo Inc. 15, Shibata Hondori 4-chome, Minami-ku, Nagoya, 457-5820, Japan
Test Item:	Wireless Broadband Router
Identification:	WAP-001
Serial No.:	001D730A0588
FCC ID:	FDI-04610020-0
Sample Receipt Date:	August 29, 2008
Test Specification:	FCC Part 15 Subpart C, 15.247
Date of Testing:	August 29, September 2, 3,4,5, 8 and October 2
Test Result:	PASS

Report Prepared by: Cosmos Corporation
2-3571 Ohnogi, Watarai-cho, Watarai-gun, Mie, Japan 516-2102
Phone: +81-596-63-0707 Fax: +81-596-63-0777

Tested by: M. Yamanaka, Engineer — Date: October 10, 2008

Reviewed by: Y. Kawahara, Deputy General Manager — Date: October 10, 2008

Notes:
1. This report should not be reproduced except in full, without the written approval of Cosmos Corporation.
2. All measurement data contained in this report may have uncertainty. A judgment for the limitation should be taken into the count.
3. The report in this report apply only to the sample tested.

List of Contents

Page

1. Description of Equipment Under Test

1.1 Product Description

Manufacturer	: BUFFALO INC.
Model (referred to as the EUT)	: WAP-001
Nominal Voltage	: DC 4.6V
Type of Modulation	: DSSS, CCK, OFDM
Mode of Operation	: ☐ duplex ☐ 1/2 duplex ☒ simplex ☐ other
The type of the equipment	: ☐ Stand-alone ☐ Combined Equipment ☐ Plug –In Card ☐ Other (Module Unit)
The type of the antenna	: ☒ Integral ☐ external ☐ Other
The type of power source	: ☐ AC mains ☒ Dedicated AC adapter (V) ☐ DC Voltage ☐ Battery
The type of battery (if applicable)	: N/A
Type of Operation	: ☒ Continuous ☐ Burst ☐ Intermittent
Stand by Mode	: ☐ Available ☒ N/A
Intended functions	: Wireless Broadband Router
The bandwidth of the IF filters	: N/A
Method of Communication Link	: Software to make maximum speed transmitting
The operating frequency band	: 2412 to 2462 MHz
The thermal limitation	: Max 40 degrees

1.2 Antenna Description

No.	Type Name	Gain	Antenna Type	Remarks
1	WRTB204G	2.9 dBi	Dipole	Originally Integrated.

1.3 Accompanied Peripherals Description

No	Equipment Name	Manufacturer	Type Name	Serial Number	Remarks
1	Note PC (LAN)	Apple	A1260	None	DC18.5V, Max4.6A
2	Note PC (WAN)	Apple	A1260	None	DC18.5V, Max4.6A
3	Note PC (Wireless)	Apple	A1211	None	DC18.5V, Max4.6A
4	Note PC	Panasonic	CF-Y2CW4AXS	4DKSA12129	DC16V
5	AC Adapter (LAN PC)	Apple	A1222	None	AC100-240V, 50-60Hz, 1.5A
6	AC Adapter (WAN PC)	Apple	A1222	None	AC100-240V, 50-60Hz, 1.5A
7	AC Adapter (Wireless PC)	Apple	A1172	None	AC100-240V, 50-60Hz, 1.5A
8	AC Adapter	Panasonic	CF-AA1625A M5	Unspecified	AC100-240V, 50-60Hz, 0.9-0.5A

2. General Information

2.1 Test Methodology

All measurement subject to the present report was carried out according to the procedures in ANSI C63.4: 2003.

2.2 Test Facility

All measurement was performed in the following facility;

Cosmos Corporation EMC Lab. Ohnogi

(2-3571 Ohaza-iwatachi, Ohnogi, Watarai-cho, Watarai-gun, Mie-ken 516-2102, Japan) The test firm has been filed since November 2, 2004 under CFR 47 Part.2.948.

2.3 Traceability

The calibration of measurement equipment used in the test subject to the present report is designed and operated to ensure that the measurement is traceable to national standards of measurement or equivalent abroad.

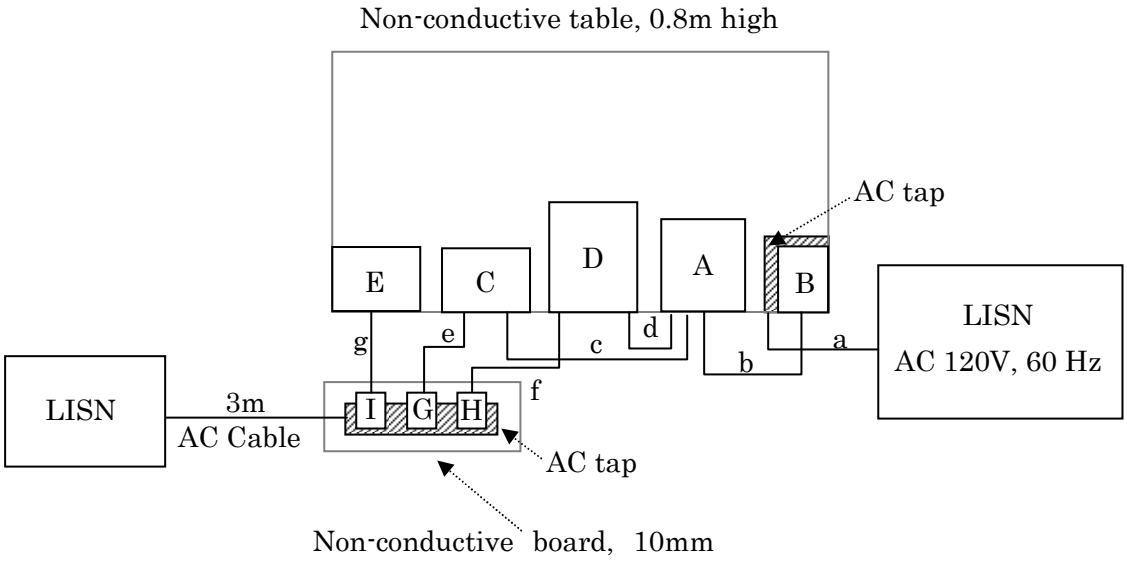
3. Summary of Test Results

Section	Test Item	Limit	Result
15. 207	AC Power Conducted Emission	See 5.1.2	Pass
15. 247(a)(2)	Spectrum Bandwidth of Direct Sequence Spread Spectrum System	Min. 500kHz	Pass
15. 247(b)	Maximum Peak Output Power	Max. 30dBm	Pass
15. 247(c) 15. 209	Transmitter Radiated Emissions	See 5.4.2 See 5.5.2	Pass
15. 247(d)	Power Spectrum Density	Max. 8dBm	Pass
15. 247(c)	Band Edge Measurement	See 5.7.2	Pass
15.215(c)	20dB Bandwidth	---	---

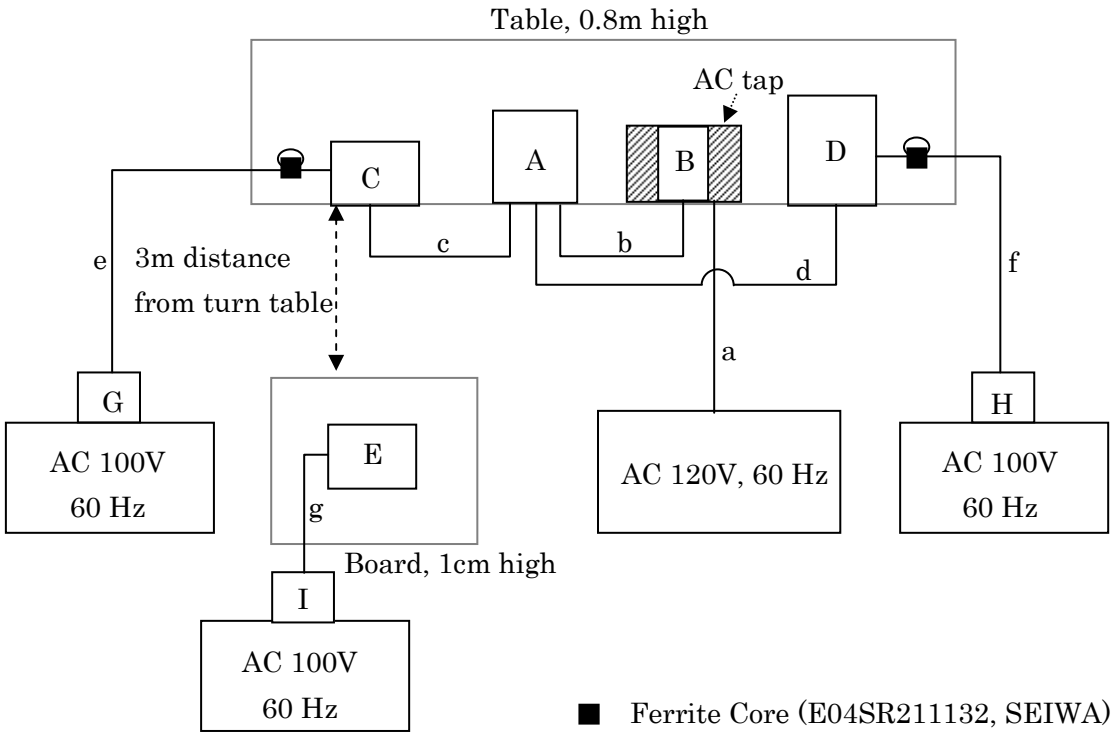
4. Test Configuration

	Instrument	Model		Cable	Length	Shield
A	EUT (Wireless Broadband Router)	WAP-001	a	AC Power Cable	1.0 m	×
B	EUT (AC Adapter)	WAP-002(USA)	b	DC Power Cable	1.8 m	×
C	Note PC (LAN)	A1260	c	LAN Cable	2.0 m	×
D	Note PC (WAN)	A1260	d	LAN Cable	0.4 m	×
E	Note PC (Wireless)	A1211	e	DC Power Cable	1.75 m	○
F	Note PC	CF-Y2CW4AXS	f	DC Power Cable	1.75 m	○
G	AC Adapter (LAN PC)	A1222	g	DC Power Cable	1.9 m	○
H	AC Adapter (WAN PC)	A1222	h	AC Power Cable	1.1 m	○
I	AC Adapter (Wireless PC)	A1172	i	DC Power Cable	0.9 m	×
J	AC Adapter	CF-AA1625A M5				

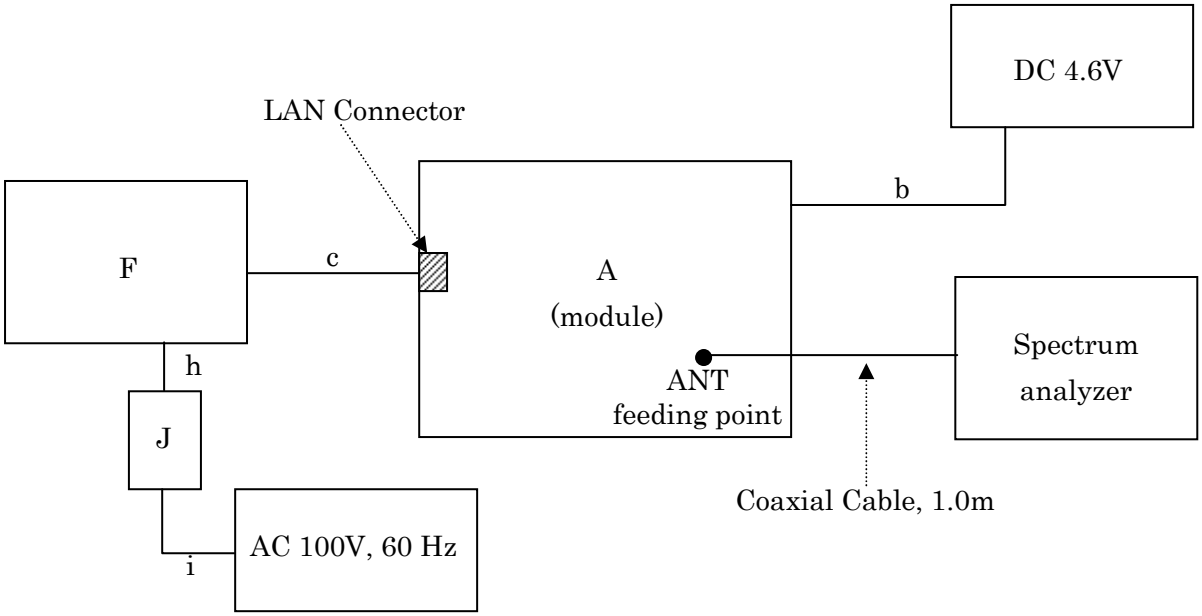
4.1 15. 207 AC Power Conducted Emission in Shield Room



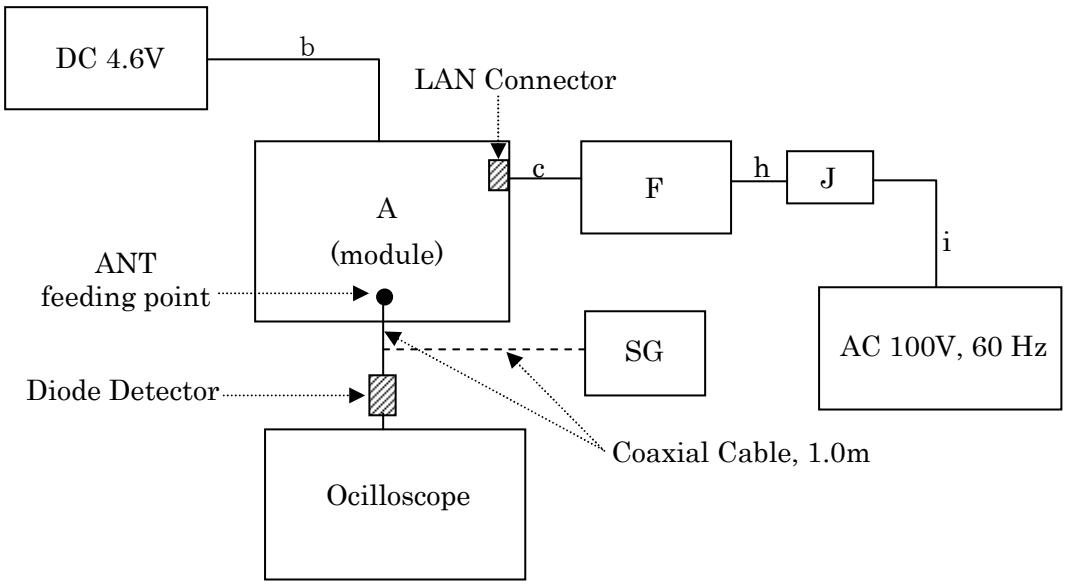
4.2 15. 247(d), 15.209 Transmitter Radiated Emissions, 15.209 Band Edge (Radiated), and 15.215(c) 20dB Bandwidth in 3m Anechoic Chamber



4.3 All Other Test Items (Except Maximum Peak Output Power)



4.4 Maximum Peak Output Power



4.5 Test Mode

In all test configurations above, EUT makes continuous RF transmitting with manufacturer's specified power.

Maximum Peak Output Power measurement is performed with an external stabilized power supply voltage varied between 85% and 115% of the nominal rated supply voltage in accordance with the section 15.31 (e) of the part.

5. Measurement Result

5.1 15. 207 AC Power Conducted Emission

5.1.1 Setting Remarks

- Configure the EUT System in accordance with ANSI C63.4-2003.
- Non-conductive board (10mm thick) for EUT and non-conductive table (80cm high) for personal computer were used.
- Other power cord of support equipment is connected to another LISN to isolate its emission from the measured emission of EUT.
- The measuring port of LISN for support equipment was terminated by the 50Ω
- Activate the EUT System and run the software prepared for the test, if necessary.
- Refer to test configuration figure 4.1.

5.1.2 Minimum Standard

15. 207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

5.1.3 Result

EUT complies with the requirement.

Uncertainty of measurement : ± 2.26 dB
Temperature, Humidity : 23˚C, 36 %

5.1.4 Measured Data

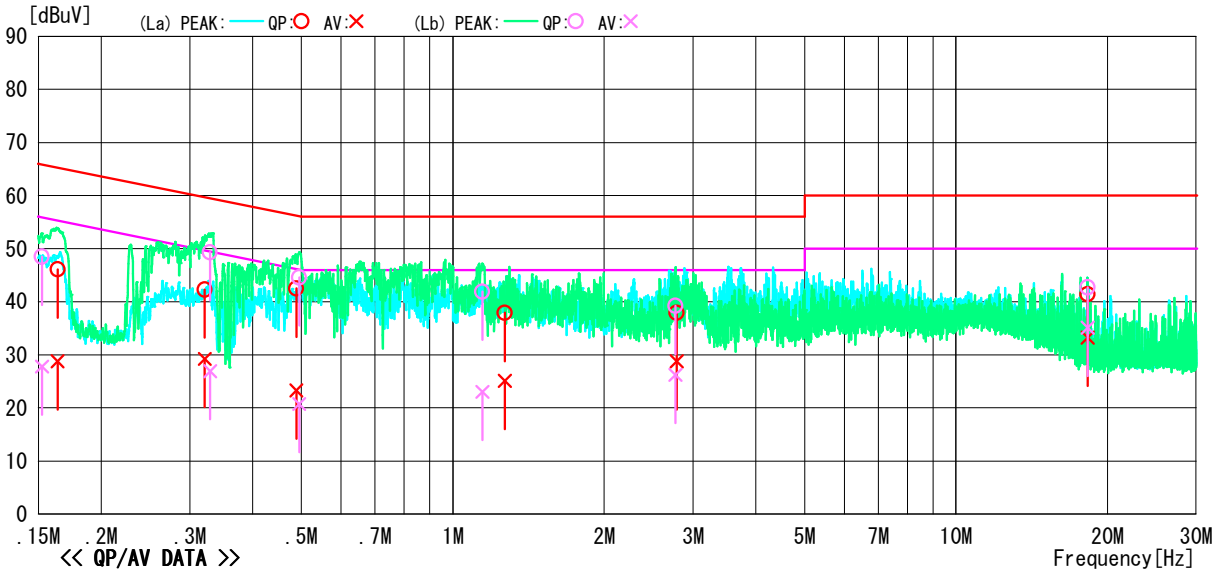
Measured Value Table

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V, 60Hz

Job No : CJ08-076762E
Temp/Humi : 23℃/36%
Condition : CH:06
Remark :

Memo : RBW:9kHz (150k-30MHz)

LIMIT : FCC 15.207 (QP)
FCC 15.207 (AV)



No	Freq.	Reading Level		C.Fac	Results		Limit		Margin		Phase	Comment
		QP	AV		QP	AV	QP	AV	QP	AV		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.16395	35.9	18.6	10.2	46.1	28.8	65.3	55.3	19.2	26.5	La	
2	0.32150	32.2	19.1	10.1	42.3	29.2	59.7	49.7	17.4	20.5	La	
3	0.48865	32.4	13.2	10.1	42.5	23.3	56.2	46.2	13.7	22.9	La	
4	1.26820	27.8	15.0	10.1	37.9	25.1	56.0	46.0	18.1	20.9	La	
5	2.78370	27.7	18.6	10.2	37.9	28.8	56.0	46.0	18.1	17.2	La	
6	18.24500	30.4	22.2	11.0	41.4	33.2	60.0	50.0	18.6	16.8	La	
7	0.15260	38.3	17.6	10.2	48.5	27.8	65.9	55.9	17.4	28.1	Lb	
8	0.32940	39.2	16.8	10.1	49.3	26.9	59.5	49.5	10.2	22.6	Lb	
9	0.49530	34.5	10.6	10.1	44.6	20.7	56.1	46.1	11.5	25.4	Lb	
10	1.14430	31.8	12.9	10.1	41.9	23.0	56.0	46.0	14.1	23.0	Lb	
11	2.76900	29.0	16.0	10.2	39.2	26.2	56.0	46.0	16.8	19.8	Lb	
12	18.24560	31.7	24.1	11.0	42.7	35.1	60.0	50.0	17.3	14.9	Lb	

-TEPTO-DV/CE Ver1.50.0128

5.2 15. 247(a)(2) Spectrum Bandwidth of Direct Sequence Spread Spectrum System

5.2.1 Setting Remarks

- The both side of 6dB down value from peak power are measured by using delta-maker function of the spectrum analyzer.
- The spectrum analyzer is set-up as following;

✓	Frequency Span	: 30 MHz
✓	Resolution bandwidth	: 100 kHz
✓	Video bandwidth	: 300 kHz
✓	Sweep	: 1sec
✓	Detector function	: Peak
✓	Trace Mode	: Max Hold

- See test configuration figure 4.3.

5.2.2 Minimum Standard

(2) Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

5.2.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 0.8 dB
Temperature, Humidity : 25˚C, 53 %

5.2.4 Measured Data

Frequency (MHz)	Measured Bandwidth (MHz)	Limit (MHz)
CCK (1Mbps)		
2412 (1ch)	11.10	> 0.5
2437 (6ch)	10.23	> 0.5
2462 (11ch)	10.23	> 0.5
OFDM (6Mbps)		
2412 (1ch)	16.35	> 0.5
2437 (6ch)	16.29	> 0.5
2462 (11ch)	16.20	> 0.5

Frequency (MHz)	Measured Bandwidth (MHz)	Limit (MHz)
CCK (11Mbps)		
2412 (1ch)	10.80	> 0.5
2437 (6ch)	10.92	> 0.5
2462 (11ch)	10.89	> 0.5
OFDM (54Mbps)		
2412 (1ch)	16.65	> 0.5
2437 (6ch)	16.59	> 0.5
2462 (11ch)	16.59	> 0.5

5.3 15. 247(b) Maximum Peak Output Power

5.3.1 Setting Remarks

- See test configuration figure 4.4.
- The maximum peak output power is measured as following;

1. The diode detector is inserted between EUT and the oscilloscope.
2. The oscilloscope is used to read the peak response of the detector.
3. Replaced EUT by the signal generator (SG).
4. Adjusted the frequency of SG to the fundamental frequency.
5. Adjusted the amplitude of SG to be the same peak recorded in 2.

- The oscilloscope is set-up as following;

✓	Voltage level range	: 10 mV / Div
✓	Sampling time	: 1.00GS / s
✓	Function	: Peak search

5.3.2 Minimum Standard

The maximum peak output power shall not exceed 1 watt. If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.3.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 0.5 dB
Temperature, Humidity : 25˚C, 53%

5.3.4 Measured Data

(Normal Rated Voltage, 4.6 V)

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
CCK (1 Mbps)			
2412 (1ch)	12.82	30	17.18
2437 (6ch)	12.44	30	17.56
2462 (11ch)	12.58	30	17.42
OFDM (6 Mbps)			
2412 (1ch)	13.66	30	16.34
2437 (6ch)	13.50	30	16.50
2462 (11ch)	13.32	30	16.68
CCK (11 Mbps)			
2412 (1ch)	12.80	30	17.20
2437 (6ch)	12.64	30	17.36
2462 (11ch)	12.60	30	17.40
OFDM (54 Mbps)			
2412 (1ch)	13.48	30	16.52
2437 (6ch)	13.20	30	16.80
2462 (11ch)	13.20	30	16.80

(High-varied voltage, 5.29 V)

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
CCK (1 Mbps)			
2412 (1ch)	12.86	30	17.14
2437 (6ch)	12.59	30	17.41
2462 (11ch)	12.44	30	17.56
OFDM (6 Mbps)			
2412 (1ch)	13.66	30	16.34
2437 (6ch)	13.34	30	16.66
2462 (11ch)	13.32	30	16.68
CCK (11 Mbps)			
2412 (1ch)	12.82	30	17.18
2437 (6ch)	12.64	30	17.36
2462 (11ch)	12.66	30	17.34
OFDM (54 Mbps)			
2412 (1ch)	13.38	30	16.62
2437 (6ch)	13.20	30	16.80
2462 (11ch)	13.20	30	16.80

(Low-varied voltage, 3.91 V)

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
CCK (1 Mbps)			
2412 (1ch)	12.80	30	17.20
2437 (6ch)	12.60	30	17.40
2462 (11ch)	12.64	30	17.36
OFDM (6Mbps)			
2412 (1ch)	13.72	30	16.28
2437 (6ch)	13.32	30	16.68
2462 (11ch)	13.28	30	16.72
CCK (11 Mbps)			
2412 (1ch)	12.82	30	17.18
2437 (6ch)	12.64	30	17.36
2462 (11ch)	12.66	30	17.34
OFDM (54 Mbps)			
2412 (1ch)	13.44	30	16.56
2437 (6ch)	13.12	30	16.88
2462 (11ch)	13.26	30	16.74

5.4 15. 247(c) Transmitter Spurious Emissions (Conducted)

5.4.1 Setting Remarks

- EUT directly connects to the spectrum analyzer via calibrated coaxial cable and 10 dB attenuator.
- The Spectrums are scanned from the lowest generated frequency of EUT up to the 10th harmonics by using the spectrum analyzer.
- The spectrum analyzer is set-up as following;

✓	Resolution bandwidth	: 100 kHz
✓	Video bandwidth	: 100 kHz
✓	Sweep	: Auto
✓	Detector function	: Peak
✓	Trace Mode	: Max Hold

- See test configuration figure 4.3.

5.4.2 Minimum Standard

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

5.4.3 Result

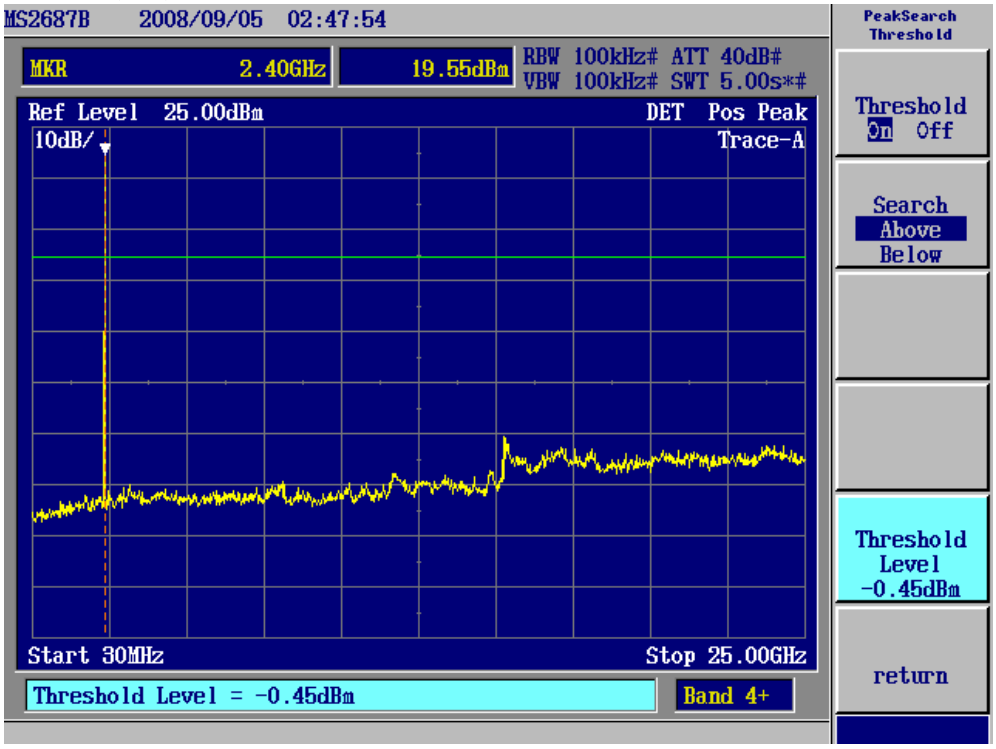
EUT complies with the requirement.

Uncertainty of measurement result: ± 0.8 dB
Temperature, Humidity : 25˚C, 53%

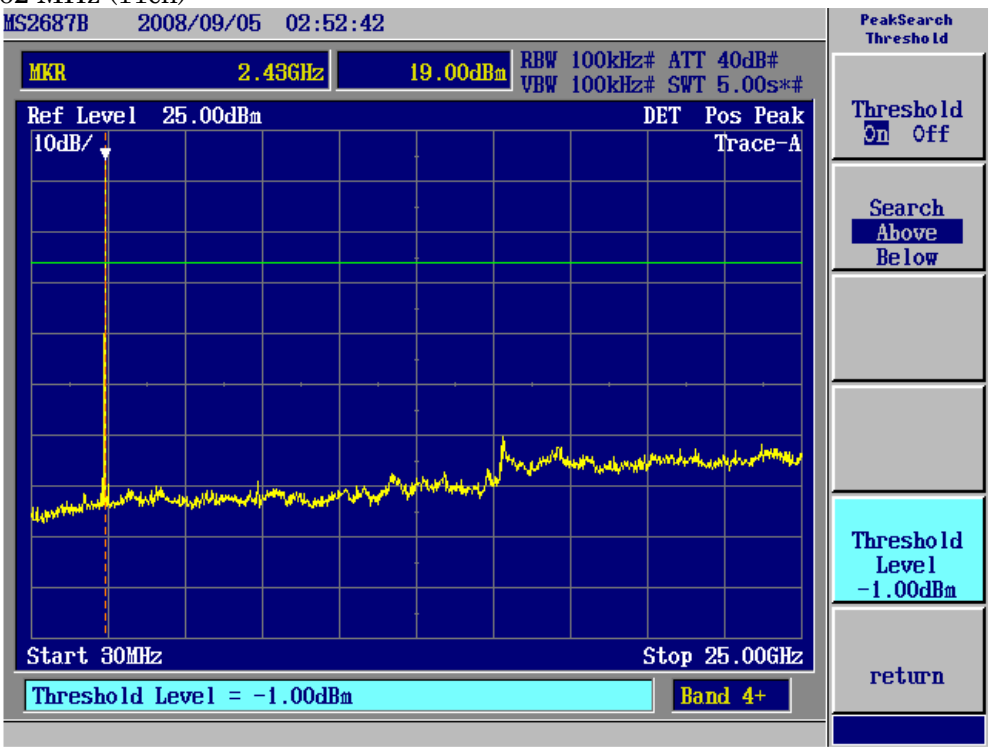
5.4.4 Measured Data (No emission exceeding the 20dB limit was found)

2412 MHz (1ch)

2437 MHz (6ch)



2462 MHz (11ch)



5.5 15. 247(c) Transmitter Radiated Emissions (Radiated)

5.5.1 Setting Remarks

- The data lists in "5.5.4 Measured Data " list the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, plus the limit.
- In the frequency range between 30MHz to 25 GHz (as 10th harmonics), the Electric Field Strength is measured in accordance with ANSI C63.4: 2003 and CISPR22: 1997.
- The test setup is made in accordance with ANSI C63.4: 2003.
- The antenna is measured at 1-4m height.
- The EUT is placed on the non-conductive table in the center of turntable. The height of this table is 0.8m.
- The measurement is carried out with both horizontal and vertical antenna polarization.
- The highest radiation from the equipment is recorded.
- By varying the configuration of the test sample and the cable routing, it is attempted to maximize the emission.
- The test receiver with Quasi Peak and Average detector is in compliance with CISPR 16-1:1993.
- The spectrum analyzer is set-up as following;

  (Frequency range : 30 - 1000 MHz)
  - ✓ Resolution bandwidth : 100 kHz
  - ✓ Video bandwidth : 300 kHz
  - ✓ Detector function : Peak
  - ✓ Trace Mode : Max Hold

  (Frequency range : Above 1000 MHz)
  - ✓ Resolution bandwidth : 1 MHz
  - ✓ Video bandwidth : 1 MHz
  - ✓ Detector function : Peak
  - ✓ Trace Mode : Max Hold

- EMI Test Receiver analyzer is set-up as following;

  - ✓ IF bandwidth : 120 kHz (Quasi-Peak Detector)
  - ✓ IF bandwidth : 1 MHz (Average Detector)

- See test configuration figure 4.2.

5.5.2 Minimum Standard

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.5.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 3.28 dB
Temperature, Humidity : Refer to each data table

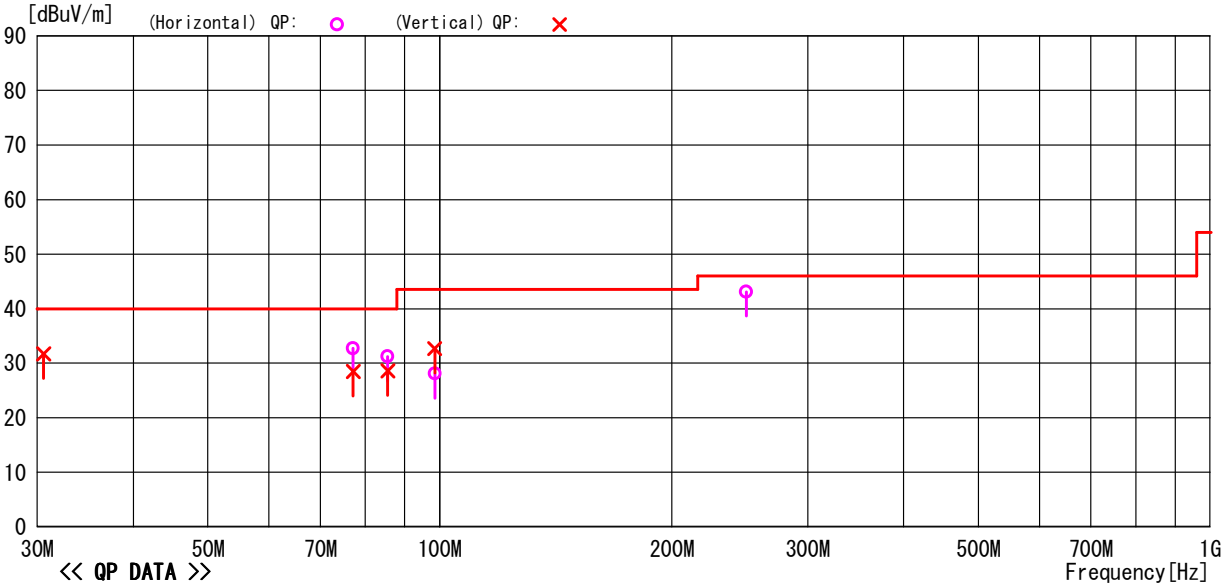
5.5.4 Measured Data

30MHz to 1GHz, Channel 1, 2412MHz

Model Name	: WAP-001	Job No	: CJ08-076762E
Serial No.	: 001D730A0588	Temp./Humi.	: 21℃/47%
Operator	: M.Yamanaka	Condition	: CH:01
Power Supply	: AC 120V, 60Hz	Remark	:

Memo : RBW:30M～1GHz(120kHz)

LIMIT : Fcc15C 15_209 (3m) 30MHz-1000MHz



No	Freq. [MHz]	Reading [dBuV]	C.Fac [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant Type	Comment
1	77.196	47.0	-14.3	32.7	40.0	7.3	Hori.	273	193	BC	
2	85.524	45.3	-14.1	31.2	40.0	8.8	Hori.	268	198	BC	
3	98.481	41.7	-13.6	28.1	43.5	15.4	Hori.	190	192	BC	
4	249.995	47.8	-4.7	43.1	46.0	2.9	Hori.	136	33	BC	
5	30.606	42.5	-10.8	31.7	40.0	8.3	Vert.	100	64	BC	
6	77.206	42.8	-14.3	28.5	40.0	11.5	Vert.	100	143	BC	
7	85.544	42.7	-14.1	28.6	40.0	11.4	Vert.	100	185	BC	
8	98.451	46.3	-13.6	32.7	43.5	10.8	Vert.	100	127	BC	

-TEPTO-DV/RE Ver 1.80.0020

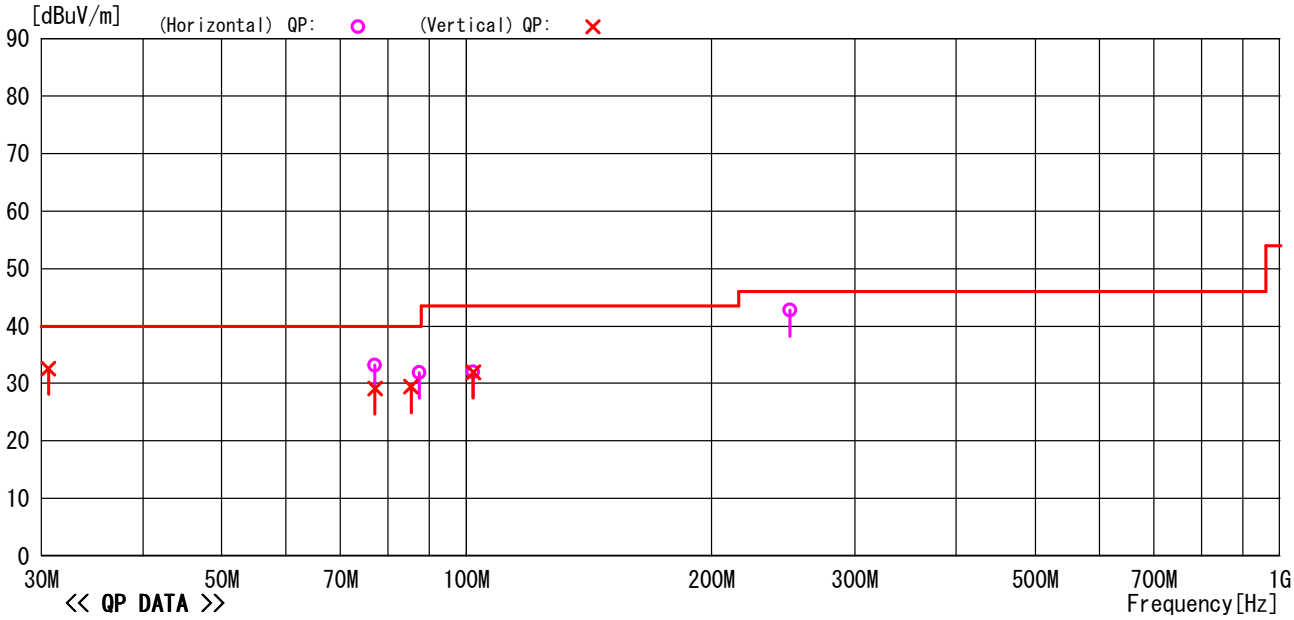
30MHz to 1GHz, Channel 6, 2437MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V, 60Hz

Job No : CJ08-076762E
Temp./Humi. : 21℃/47%
Condition : CH:06
Remark :

Memo : RBW:30M～1GHz(120kHz)

LIMIT : Fcc15C 15_209 (3m) 30MHz-1000MHz



No	Freq. [MHz]	Reading [dBuV]	C.Fac [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant Type	Comment
1	77.196	47.4	-14.3	33.1	40.0	6.9	Hori.	278	190	BC	
2	87.458	46.1	-14.2	31.9	40.0	8.1	Hori.	274	199	BC	
3	101.869	45.5	-13.5	32.0	43.5	11.5	Hori.	186	191	BC	
4	250.005	47.4	-4.7	42.7	46.0	3.3	Hori.	134	32	BC	
5	30.616	43.4	-10.8	32.6	40.0	7.4	Vert.	100	68	BC	
6	77.176	43.4	-14.3	29.1	40.0	10.9	Vert.	100	143	BC	
7	85.474	43.5	-14.1	29.4	40.0	10.6	Vert.	128	160	BC	
8	101.889	45.4	-13.5	31.9	43.5	11.6	Vert.	100	273	BC	

-TEPTO-DV/RE Ver 1.80.0020

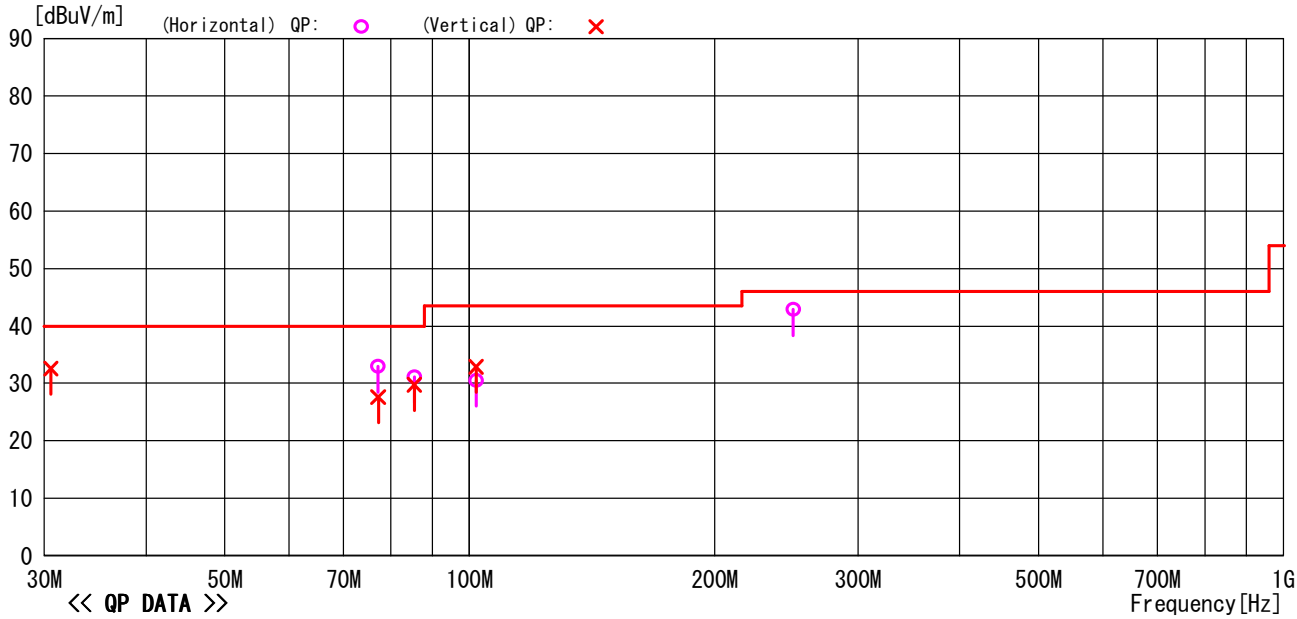
30MHz to 1GHz, Channel 11, 2462MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V, 60Hz

Job No : CJ08-076762E
Temp./Humi. : 21℃/47%
Condition : CH:11
Remark :

Memo : RBW:30M～1GHz(120kHz)

LIMIT : Fcc15C 15_209 (3m) 30MHz-1000MHz



No	Freq. [MHz]	Reading [dBuV]	C.Fac [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant Type	Comment
1	77.186	47.2	-14.3	32.9	40.0	7.1	Hori.	271	195	BC	
2	85.524	45.2	-14.1	31.1	40.0	8.9	Hori.	284	198	BC	
3	101.899	44.0	-13.5	30.5	43.5	13.0	Hori.	180	189	BC	
4	249.995	47.5	-4.7	42.8	46.0	3.2	Hori.	135	33	BC	
5	30.586	43.4	-10.8	32.6	40.0	7.4	Vert.	100	117	BC	
6	77.216	41.9	-14.3	27.6	40.0	12.4	Vert.	100	150	BC	
7	85.504	43.9	-14.1	29.8	40.0	10.2	Vert.	100	162	BC	
8	101.879	46.4	-13.5	32.9	43.5	10.6	Vert.	100	130	BC	

-TEPTO-DV/RE Ver 1.80.0020

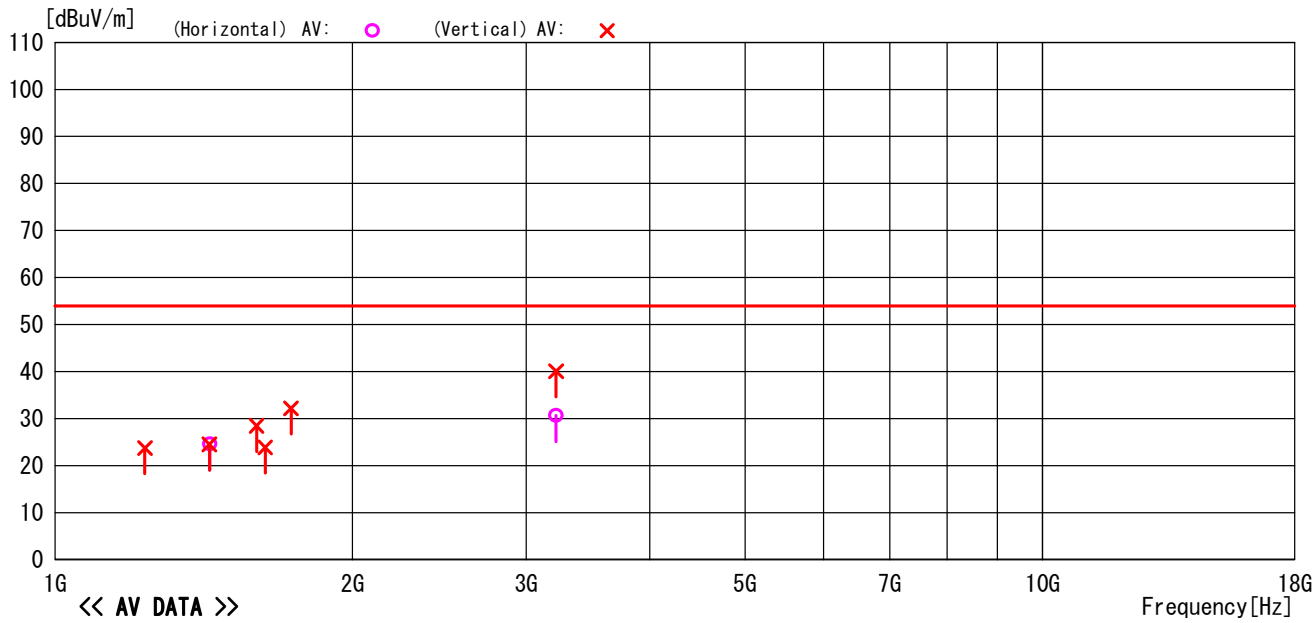
1GHz to 18GHz, Channel 1, 2412MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V, 60Hz

Job No. : CJ08-076762E
Temp/Humi : 23℃/39%
Condition : CH:01
Remark :

Memo : RBW:1GHz～(1MHz)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)



No	Freq. [MHz]	Reading [dBuV]	C.Fac [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant Type	Comment
1	1433.671	30.9	-6.3	24.6	54.0	29.4	Hori.	100	195	HRN	
2	3215.976	31.6	-1.0	30.6	54.0	23.4	Hori.	100	238	HRN	
3	1232.860	31.3	-7.5	23.8	54.0	30.2	Vert.	100	70	HRN	
4	1433.350	30.8	-6.3	24.5	54.0	29.5	Vert.	100	306	HRN	
5	1599.872	34.8	-6.3	28.5	54.0	25.5	Vert.	100	77	HRN	
6	1632.738	30.2	-6.3	23.9	54.0	30.1	Vert.	100	112	HRN	
7	1733.349	38.2	-6.1	32.1	54.0	21.9	Vert.	100	114	HRN	
8	3215.966	41.0	-1.0	40.0	54.0	14.0	Vert.	100	299	HRN	

-TEPTO-DV/RE Ver1.80.0020

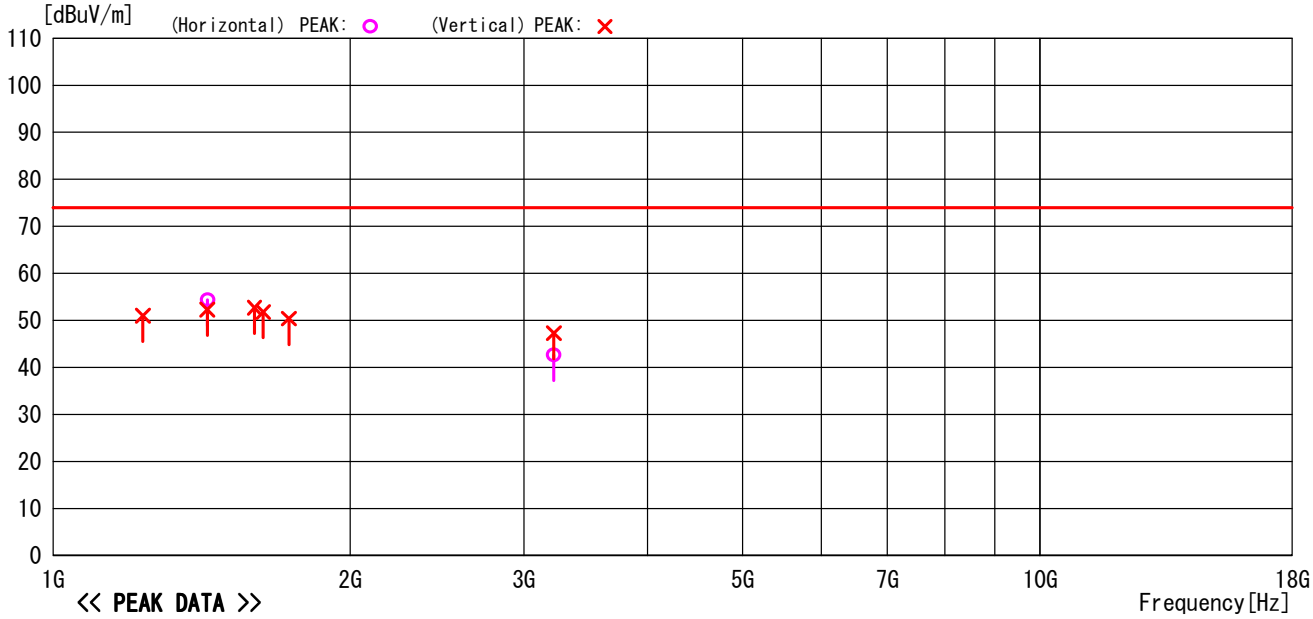
1GHz to 18GHz, Channel 1, 2412MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V, 60Hz

Job No. : CJ08-076762E
Temp/Humi : 23℃/39%
Condition : CH:01
Remark :

Memo : RBW:1GHz～(1MHz)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



No	Freq. [MHz]	Reading [dBuV]	C.Fac [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant Type	Comment
1	1433.671	60.6	-6.3	54.3	74.0	19.7	Hori.	100	195	HRN	
2	3215.976	43.7	-1.0	42.7	74.0	31.3	Hori.	100	238	HRN	
3	1232.860	58.5	-7.5	51.0	74.0	23.0	Vert.	100	70	HRN	
4	1433.350	58.6	-6.3	52.3	74.0	21.7	Vert.	100	306	HRN	
5	1599.872	59.0	-6.3	52.7	74.0	21.3	Vert.	100	77	HRN	
6	1632.738	58.1	-6.3	51.8	74.0	22.2	Vert.	100	112	HRN	
7	1733.349	56.5	-6.1	50.4	74.0	23.6	Vert.	100	114	HRN	
8	3215.966	48.3	-1.0	47.3	74.0	26.7	Vert.	100	299	HRN	

-TEPTO-DV/RE Ver1.80.0020

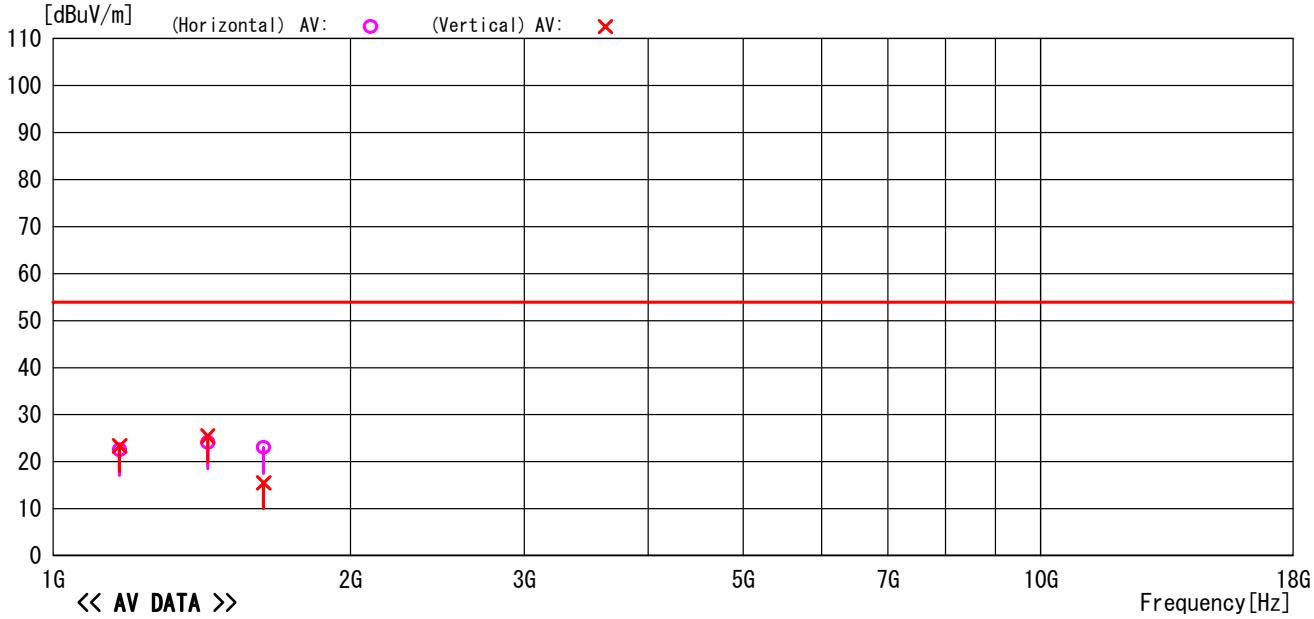
1GHz to 18GHz, Channel 6, 2437MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V, 60Hz

Job No. : CJ08-076762E
Temp/Humi : 23℃/39%
Condition : CH:06
Remark :

Memo : RBW:1GHz～(1MHz)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)



No	Freq. [MHz]	Reading [dBuV]	C.Fac [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant Type	Comment
1	1167.078	30.4	-7.9	22.5	54.0	31.5	Hori.	100	26	HRN	
2	1433.761	30.3	-6.3	24.0	54.0	30.0	Hori.	100	135	HRN	
3	1632.818	29.3	-6.3	23.0	54.0	31.0	Hori.	100	0	HRN	
4	1167.038	31.3	-7.9	23.4	54.0	30.6	Vert.	100	75	HRN	
5	1433.771	31.7	-6.3	25.4	54.0	28.6	Vert.	100	305	HRN	
6	1632.888	21.8	-6.3	15.5	54.0	38.5	Vert.	100	84	HRN	

-TEPTO-DV/RE Ver1.80.0020

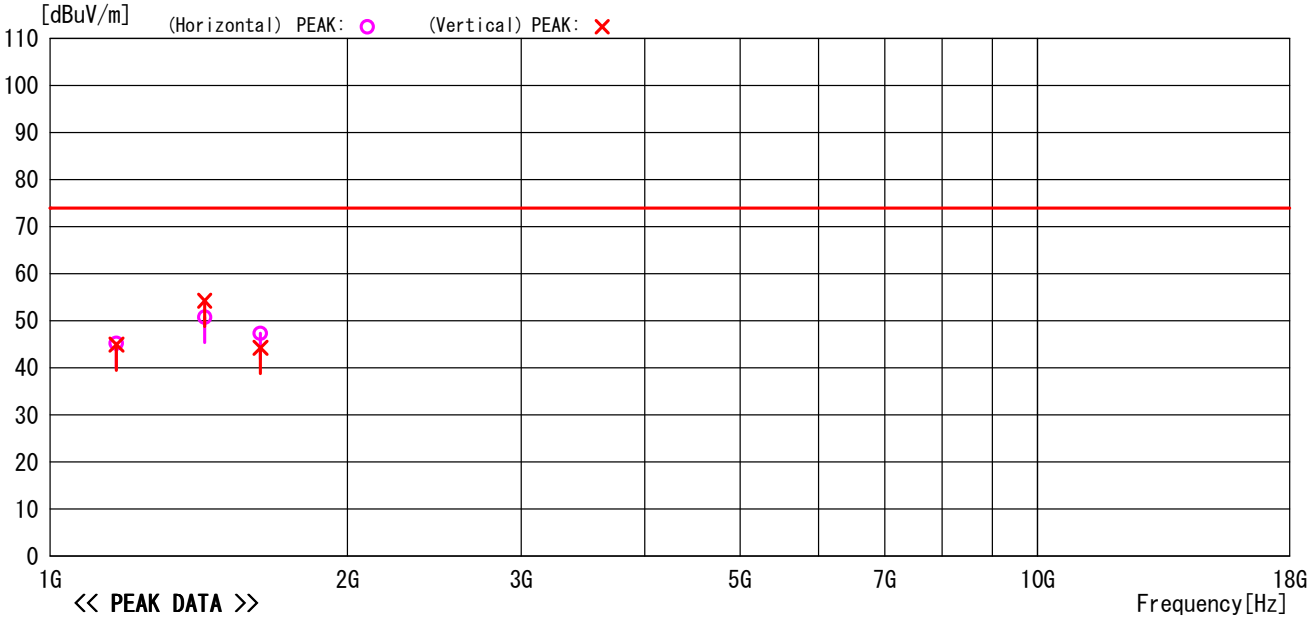
1GHz to 18GHz, Channel 6, 2437MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V, 60Hz

Job No. : CJ08-076762E
Temp/Humi : 23℃/39%
Condition : CH:06
Remark :

Memo : RBW:1GHz～(1MHz)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant	Comment
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type	
1	1167.078	53.1	-7.9	45.2	74.0	28.8	Hori.	100	26	HRN	
2	1433.761	57.2	-6.3	50.9	74.0	23.1	Hori.	100	135	HRN	
3	1632.818	53.6	-6.3	47.3	74.0	26.7	Hori.	100	0	HRN	
4	1167.038	52.8	-7.9	44.9	74.0	29.1	Vert.	100	75	HRN	
5	1433.771	60.6	-6.3	54.3	74.0	19.7	Vert.	100	305	HRN	
6	1632.888	50.6	-6.3	44.3	74.0	29.7	Vert.	100	84	HRN	

-TEPTO-DV/RE Ver1.80.0020

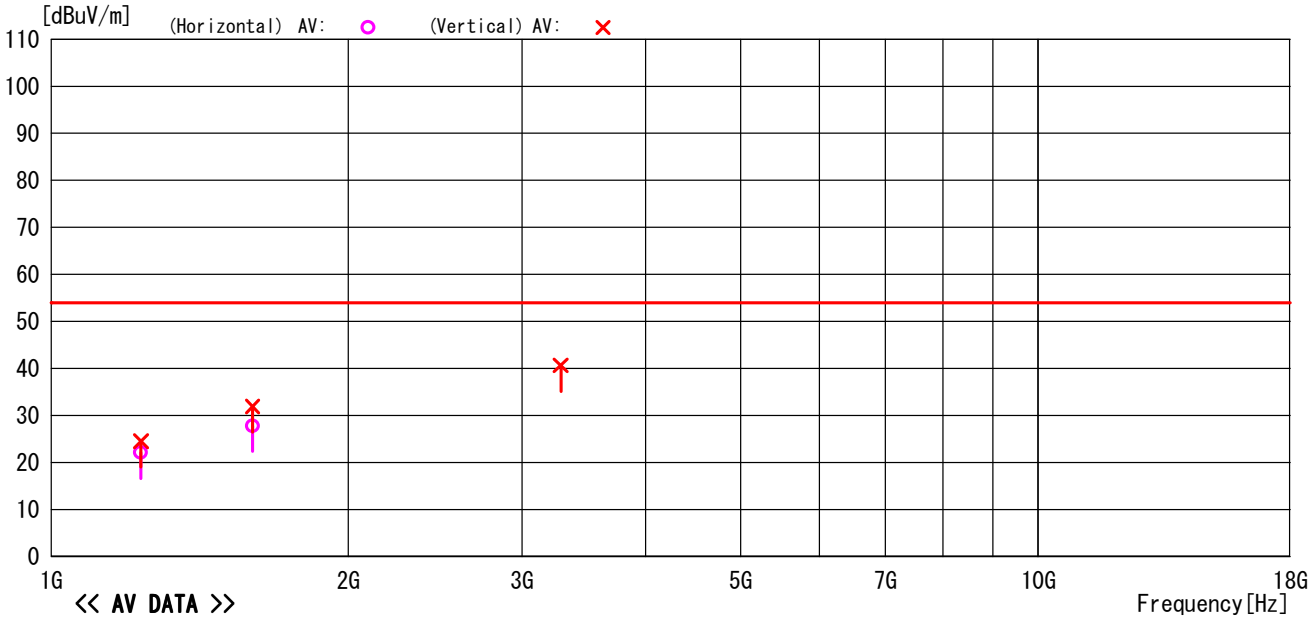
1GHz to 18GHz, Channel 11, 2462MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V, 60Hz

Job No. : CJ08-076762E
Temp/Humi : 23℃/39%
Condition : CH:11
Remark :

Memo : RBW:1GHz～(1MHz)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)



No	Freq. [MHz]	Reading [dBuV]	C.Fac [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant Type	Comment
1	1232.910	29.6	-7.5	22.1	54.0	31.9	Hori.	100	315	HRN	
2	1599.912	34.1	-6.3	27.8	54.0	26.2	Hori.	100	57	HRN	
3	1232.840	32.1	-7.5	24.6	54.0	29.4	Vert.	100	64	HRN	
4	1599.973	38.2	-6.3	31.9	54.0	22.1	Vert.	100	148	HRN	
5	3282.653	42.0	-1.3	40.7	54.0	13.3	Vert.	100	299	HRN	

-TEPTO-DV/RE Ver1.80.0020

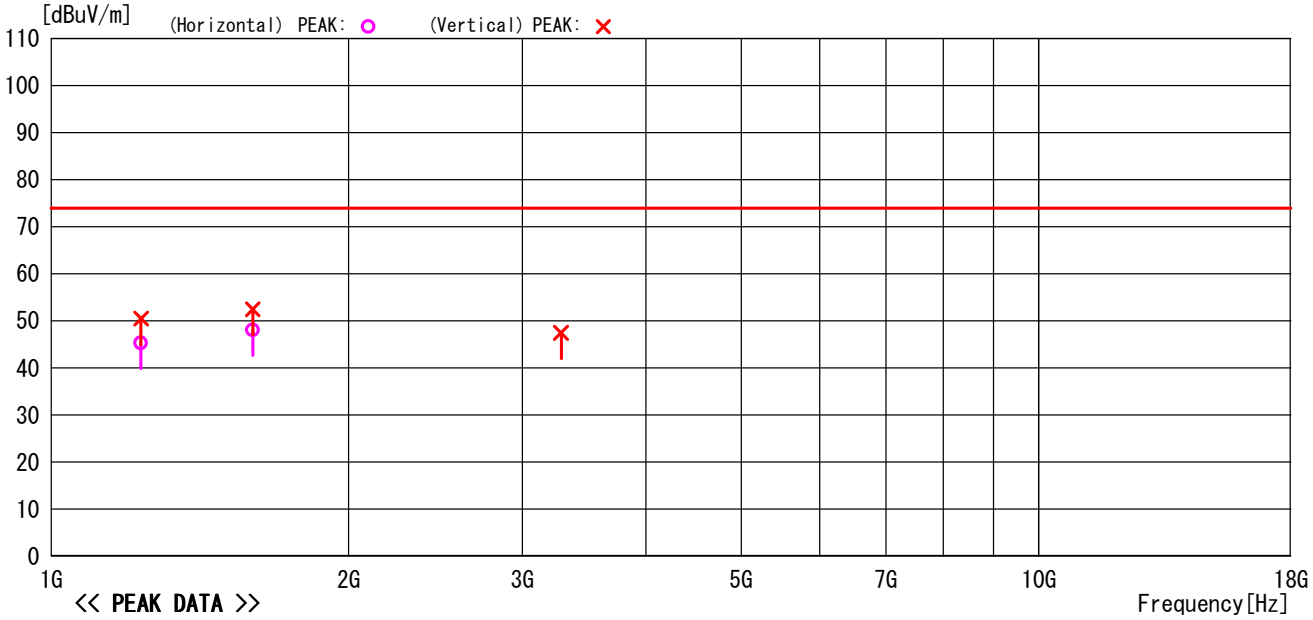
1GHz to 18GHz, Channel 11, 2462MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V, 60Hz

Job No. : CJ08-076762E
Temp/Humi : 23℃/39%
Condition : CH:11
Remark :

Memo : RBW:1GHz～(1MHz)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



<< PEAK DATA >>

No	Freq. [MHz]	Reading [dBuV]	C.Fac [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant Type	Comment
1	1232.910	52.8	-7.5	45.3	74.0	28.7	Hori.	100	315	HRN	
2	1599.912	54.4	-6.3	48.1	74.0	25.9	Hori.	100	57	HRN	
3	1232.840	57.9	-7.5	50.4	74.0	23.6	Vert.	100	64	HRN	
4	1599.973	58.8	-6.3	52.5	74.0	21.5	Vert.	100	148	HRN	
5	3282.653	48.8	-1.3	47.5	74.0	26.6	Vert.	100	299	HRN	

-TEPTO-DV/RE Ver1.80.0020

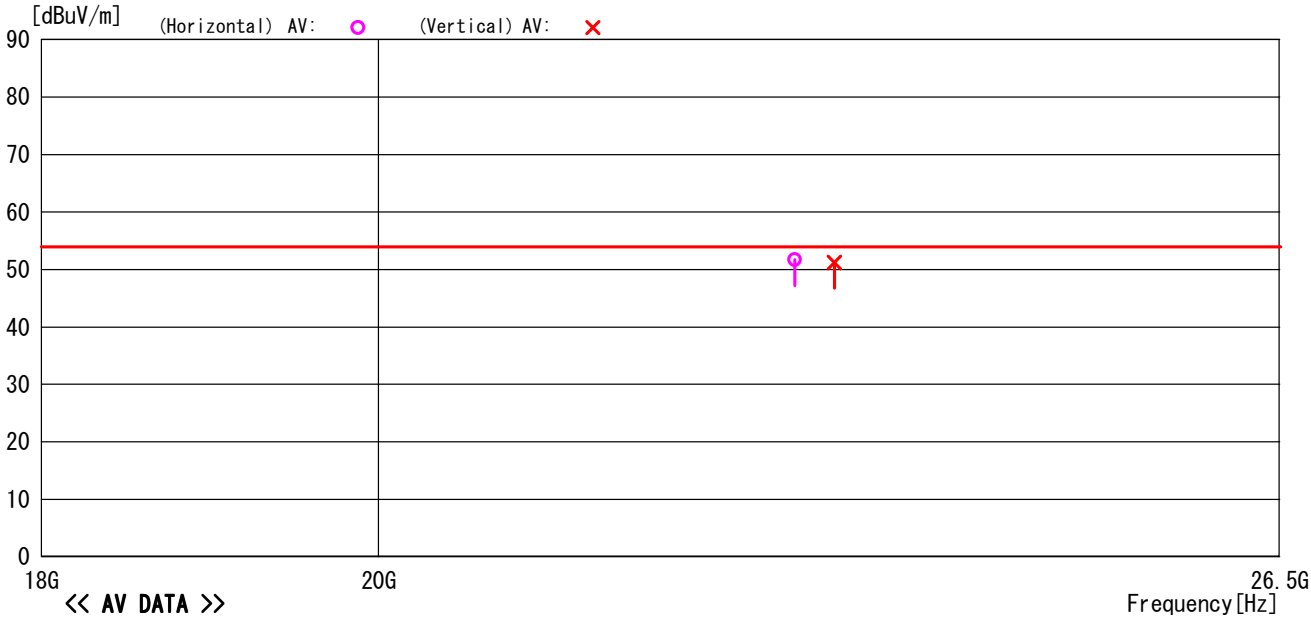
18GHz to 26.5GHz, Channel 1, 2412MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V , 60Hz

Job No : CJ08-076762E
Temp/Humi : 24℃,37%
Condition : CH:01
Remark :

Memo : RBW:1MHz(1G～)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type
1	22773.930	30.7	21.0	51.7	54.0	2.3	Hori.	100	0	HRN
2	23058.640	30.2	21.0	51.2	54.0	2.8	Vert.	100	0	HRN

-TEPTO-DV/Ver 1.80.0020

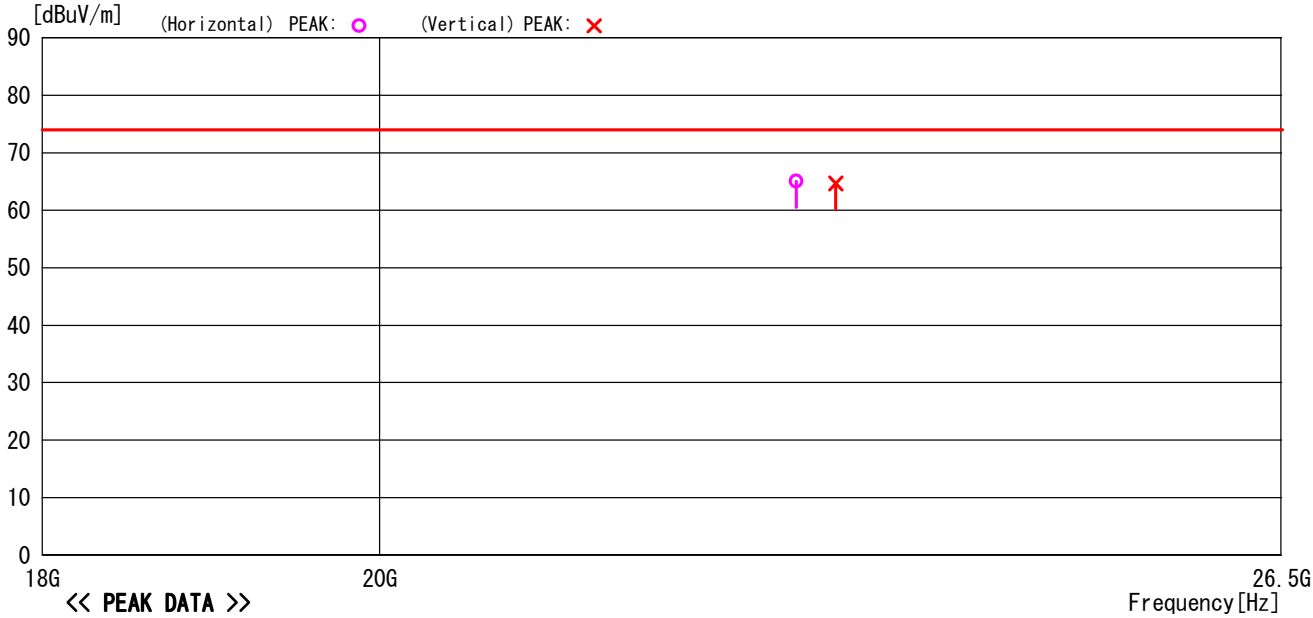
18GHz to 26.5GHz, Channel 1, 2412MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V , 60Hz

Job No : CJ08-076762E
Temp/Humi : 24℃,37%
Condition : CH:01
Remark :

Memo : RBW:1MHz(1G～)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



<< PEAK DATA >>

No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type
1	22773.930	44.0	21.0	65.0	74.0	9.0	Hori.	100	0	HRN
2	23058.640	43.6	21.0	64.6	74.0	9.4	Vert.	100	0	HRN

-TEPTO-DV/Ver 1.80.0020

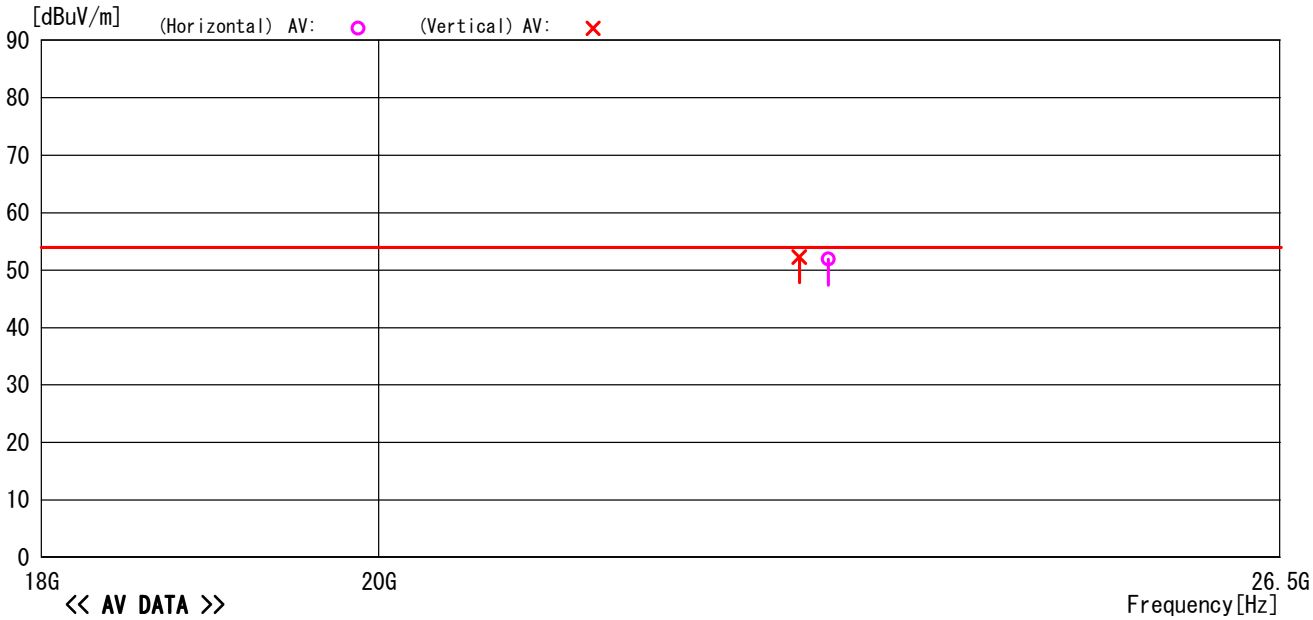
18GHz to 26.5GHz, Channel 6, 2437MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V , 60Hz

Job No : CJ08-076762E
Temp/Humi : 24℃,37%
Condition : CH:06
Remark :

Memo : RBW:1MHz(1G～)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)



<< AV DATA >>

No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type
1	23014.530	30.9	21.0	51.9	54.0	2.1	Hori.	100	0	HRN
2	22806.010	31.2	21.0	52.2	54.0	1.8	Vert.	100	0	HRN

-TEPTO-DV/Ver 1.80.0020

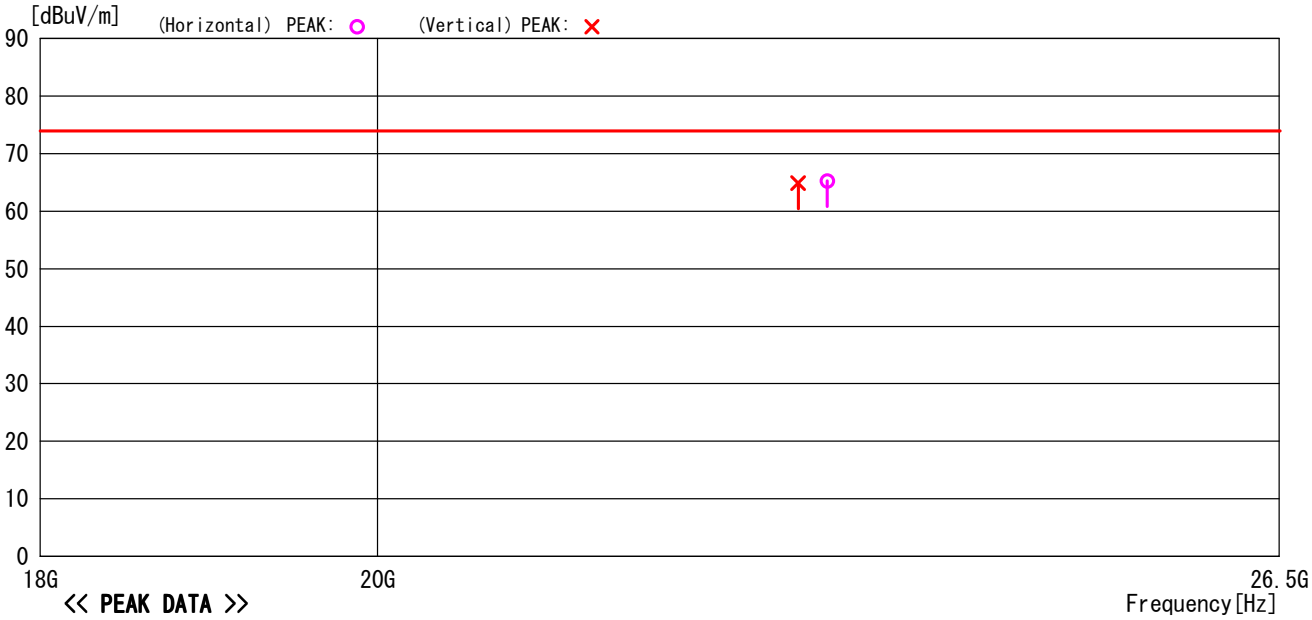
18GHz to 26.5GHz, Channel 6, 2437MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V , 60Hz

Job No : CJ08-076762E
Temp/Humi : 24℃,37%
Condition : CH:06
Remark :

Memo : RBW:1MHz(1G～)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



<< PEAK DATA >>

No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type
1	23014.530	44.3	21.0	65.3	74.0	8.7	Hori.	100	0	HRN
2	22806.010	43.9	21.0	64.9	74.0	9.1	Vert.	100	0	HRN

-TEPTO-DV/Ver 1.80.0020

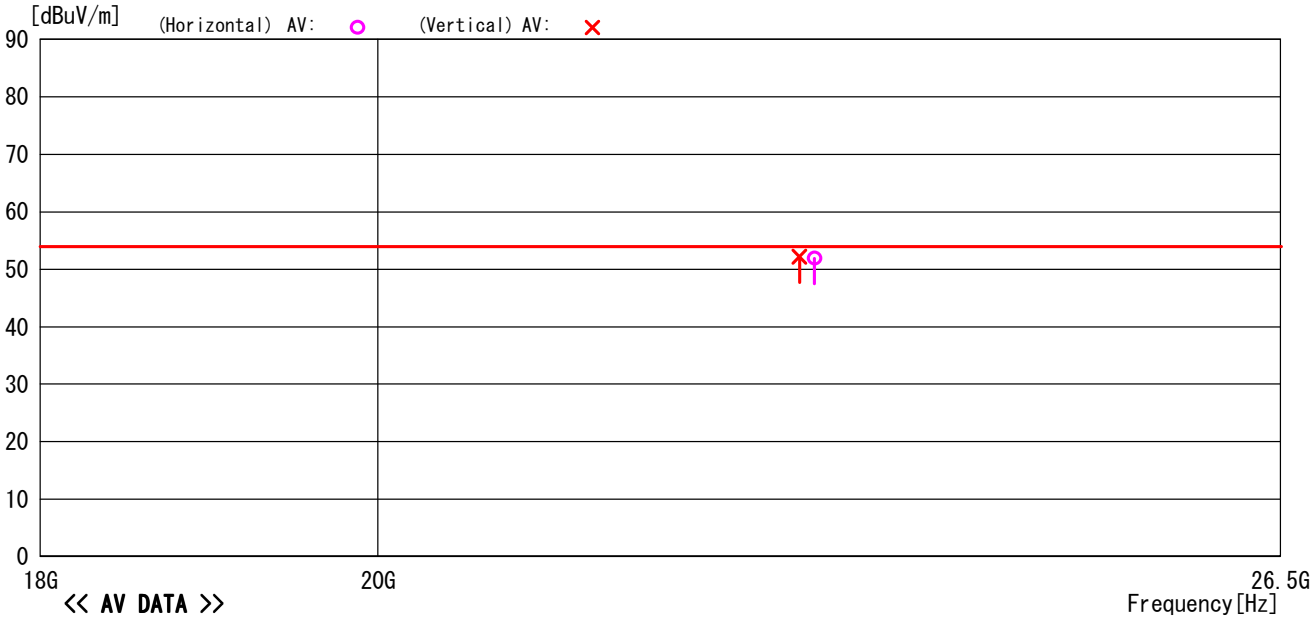
18GHz to 26.5GHz, Channel 11, 2462MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V , 60Hz

Job No : CJ08-076762E
Temp/Humi : 24℃,37%
Condition : CH:11
Remark :

Memo : RBW:1MHz(1G～)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type
1	22918.290	30.9	21.0	51.9	54.0	2.1	Hori.	100	0	HRN
2	22810.020	31.2	20.9	52.1	54.0	1.9	Vert.	100	0	HRN

-TEPTO-DV/Ver 1.80.0020

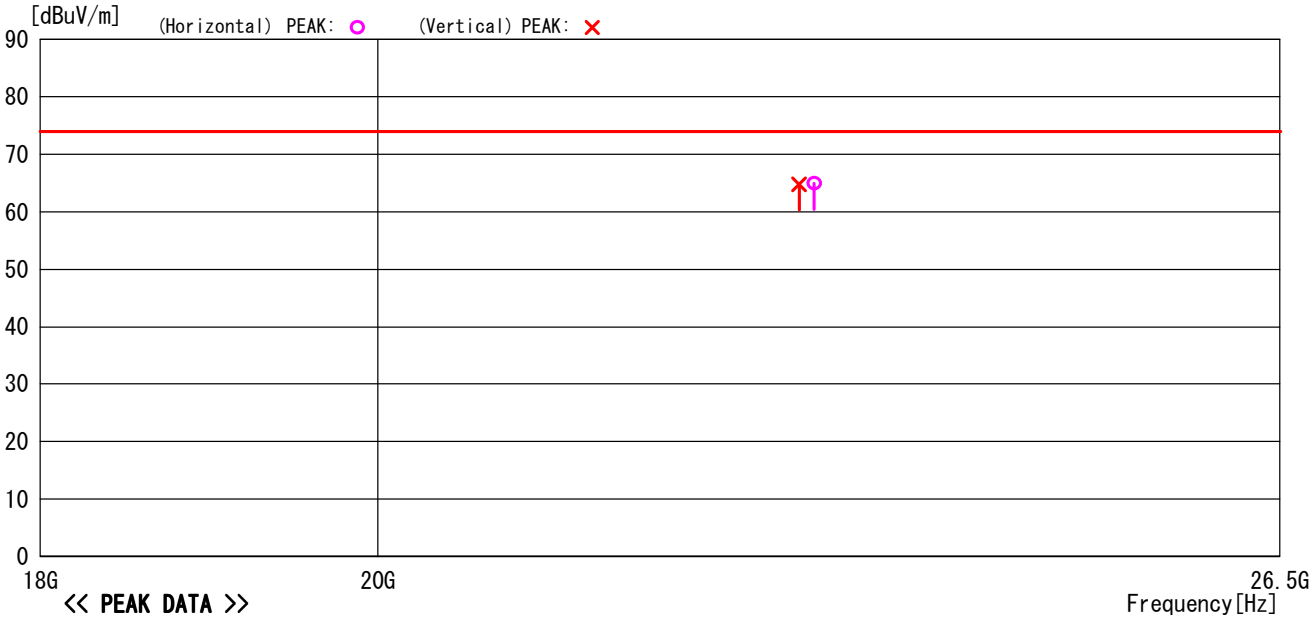
18GHz to 26.5GHz, Channel 11, 2462MHz

Model Name : WAP-001
Serial No. : 001D730A0588
Operator : M.Yamanaka
Power Supply : AC 120V , 60Hz

Job No : CJ08-076762E
Temp/Humi : 24℃,37%
Condition : CH:11
Remark :

Memo : RBW:1MHz(1G～)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type
1	22918.290	43.9	21.0	64.9	74.0	9.1	Hori.	100	0	HRN
2	22810.020	43.9	20.9	64.8	74.0	9.2	Vert.	100	0	HRN

-TEPTO-DV/Ver 1.80.0020

5.6 15. 247(d) Power Spectrum Density

5.6.1 Setting Remarks

- EUT directly connects to the spectrum analyzer via calibrated coaxial cable and 10 dB attenuator.
- The loss of the coaxial cable is maximum 1 dB.
- The peak output power is determined by using the marker-data function of spectrum analyzer.
- The spectrum analyzer is set-up as following;

✓	Frequency Span	: 1.5 MHz
✓	Resolution bandwidth	: 3 kHz
✓	Video bandwidth	: 3 MHz
✓	Sweep	: 500sec
✓	Detector function	: Peak
✓	Trace Mode	: Max Hold

- See test configuration figure 4.3.

5.6.2 Minimum Standard

(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

5.6.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 0.8 dB
Temperature, Humidity : 25˚C, 53%

5.6.4 Measured Data

Frequency (MHz)	Correction Factor (dB)	Reading (dBm)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
CCK (1 Mbps)					
2412 (1ch)	0.88	-10.32	-9.44	8	17.44
2437 (6ch)	0.89	-11.38	-10.5	8	18.49
2462 (11ch)	0.89	-10.75	-9.86	8	17.86
OFDM (6 Mbps)					
2412 (1ch)	0.88	-11.27	-10.4	8	18.39
2437 (6ch)	0.89	-12.38	-11.5	8	19.49
2462 (11ch)	0.89	-12.53	-11.6	8	19.64

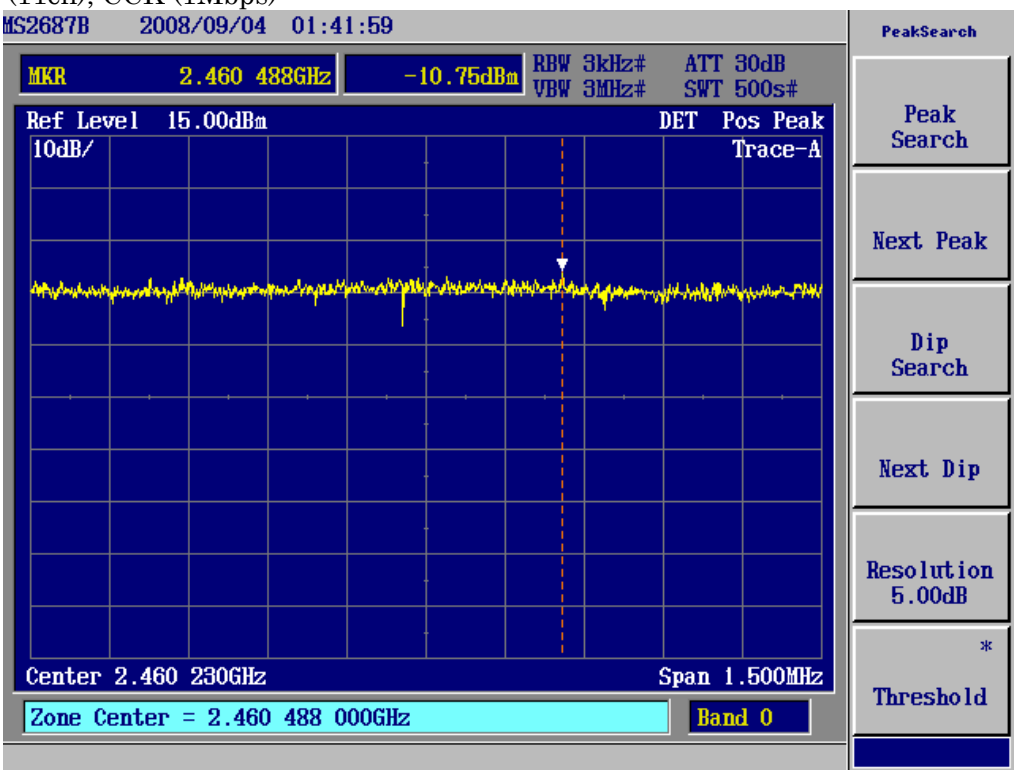
Frequency (MHz)	Correction Factor (dB)	Reading (dBm)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
CCK (11 Mbps)					
2412 (1ch)	0.88	-9.63	-8.75	8	16.75
2437 (6ch)	0.89	-11.17	-10.3	8	18.28
2462 (11ch)	0.89	-8.97	-8.08	8	16.08
OFDM (54 Mbps)					
2412 (1ch)	0.88	-12.08	-11.2	8	19.2
2437 (6ch)	0.89	-9.24	-8.35	8	16.35
2462 (11ch)	0.89	-13.32	-12.4	8	20.43

* Correction Factor = Cable Loss (dB) + External Attenuator (dB)

2412 MHz (1ch), CCK (1Mbps)

2437 MHz (6ch), CCK (1Mbps)

2462 MHz (11ch), CCK (1Mbps)

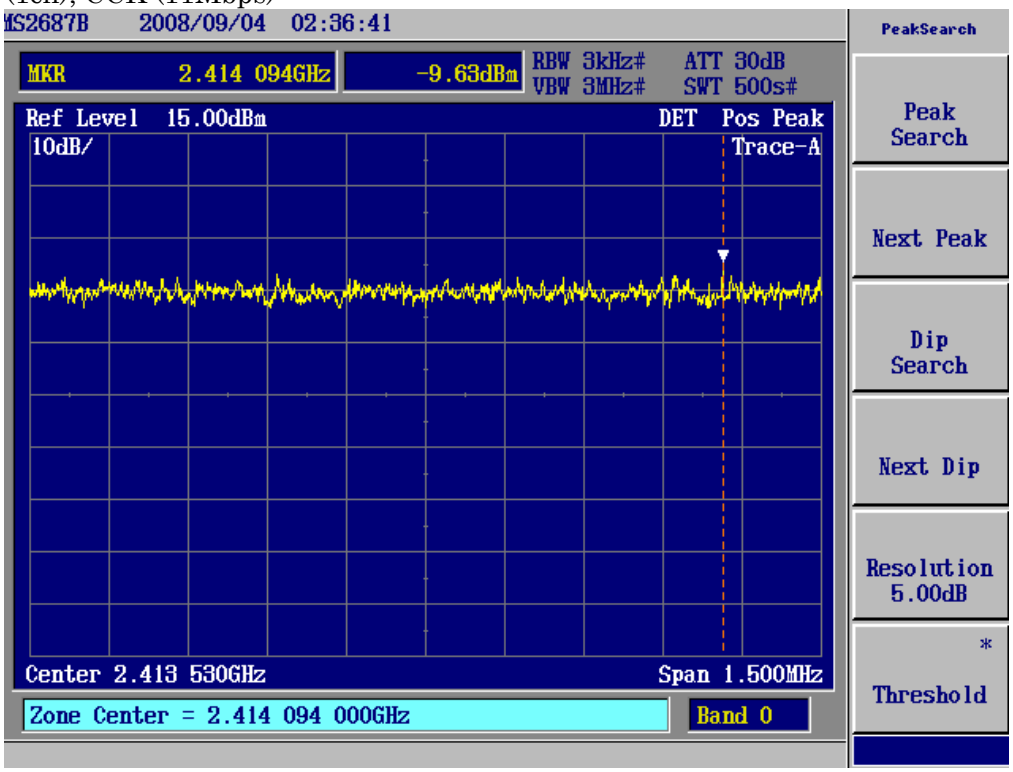


2412 MHz (1ch), OFDM (6Mbps)

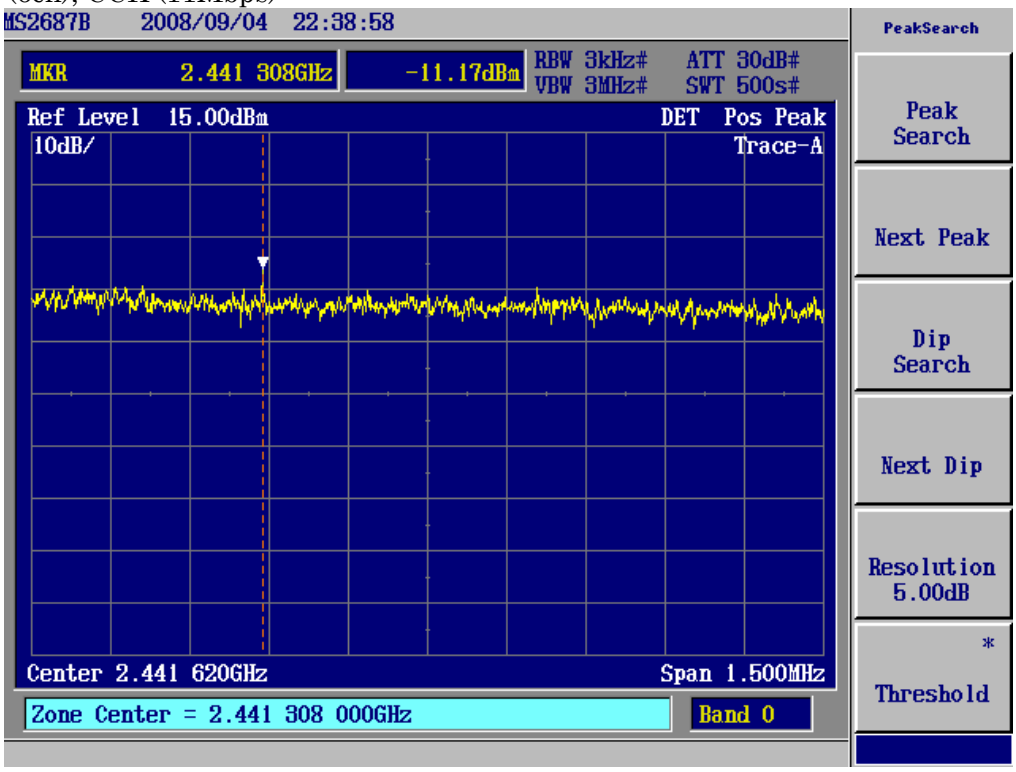
2437MHz (6ch), OFDM (6Mbps)

2462 MHz (11ch), OFDM (6Mbps)

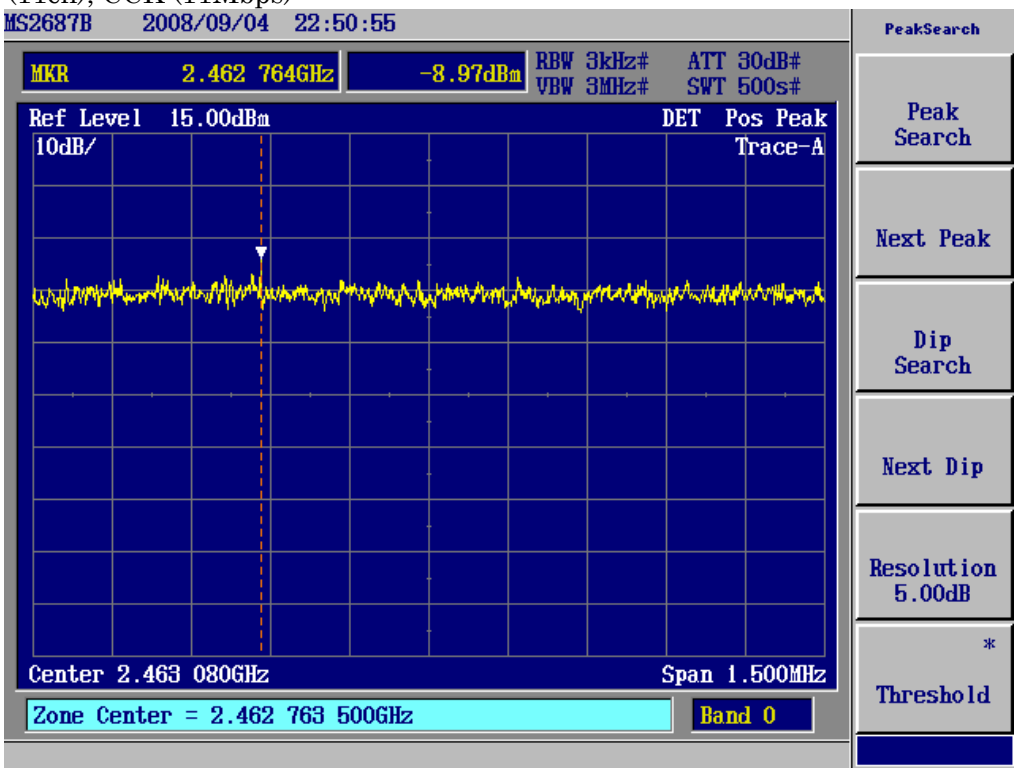
2412 MHz (1ch), CCK (11Mbps)



2437 MHz (6ch), CCK (11Mbps)



2462 MHz (11ch), CCK (11Mbps)



2412 MHz (1ch), OFDM (54Mbps)

2437MHz (6ch), OFDM (54Mbps)

2462 MHz (11ch), OFDM (54Mbps)

5.7 15. 247(c) Band Edge Measurement

5.7.1 Setting Remarks

- EUT directly connects to the spectrum analyzer via calibrated coaxial cable and 10 dB attenuator.
- The loss of the coaxial cable is maximum 1 dB.
- The emission at the band edge is measured by using the marker function of spectrum analyzer.
- The peak of the in-band emission is measured by using the marker to peak function of spectrum analyzer.
- This measurement is repeated in both side of the spectrum.
- The spectrum analyzer is set-up as following;

✓	Frequency Span	: 30MHz
✓	Resolution bandwidth	: 300kHz (1% of frequency span)
✓	Video bandwidth	: ≧ RBW
✓	Sweep	: Auto
✓	Detector function	: Peak
✓	Trace Mode	: Max Hold

- Where bandedge spectrum is too rough to find precise edge point, larger RBW i.e. 1MHz, 3MHz shall be applied as severer condition.
- See test configuration figure 4.2.

5.7.2 Minimum Standard

In any 100kHz bandwidth outside the frequency band in which the transmitter is operating, emissions shall be at least 20 dB below the fundamental emission or shall not exceed the following field strength limits. Emissions falling in the restricted bands of 15.205 shall not exceed the following field strength limits:

Frequency of Emission (MHz)	Limit of the band edge spurious emission (dBμV)	
Below 2,390.0	Peak	Average
Above 2,483.5	74	54

5.7.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 2.6 dB
Temperature, Humidity : 26˚C, 39%

5.7.4 Measured Data

The band edge emissions are calculated as following;

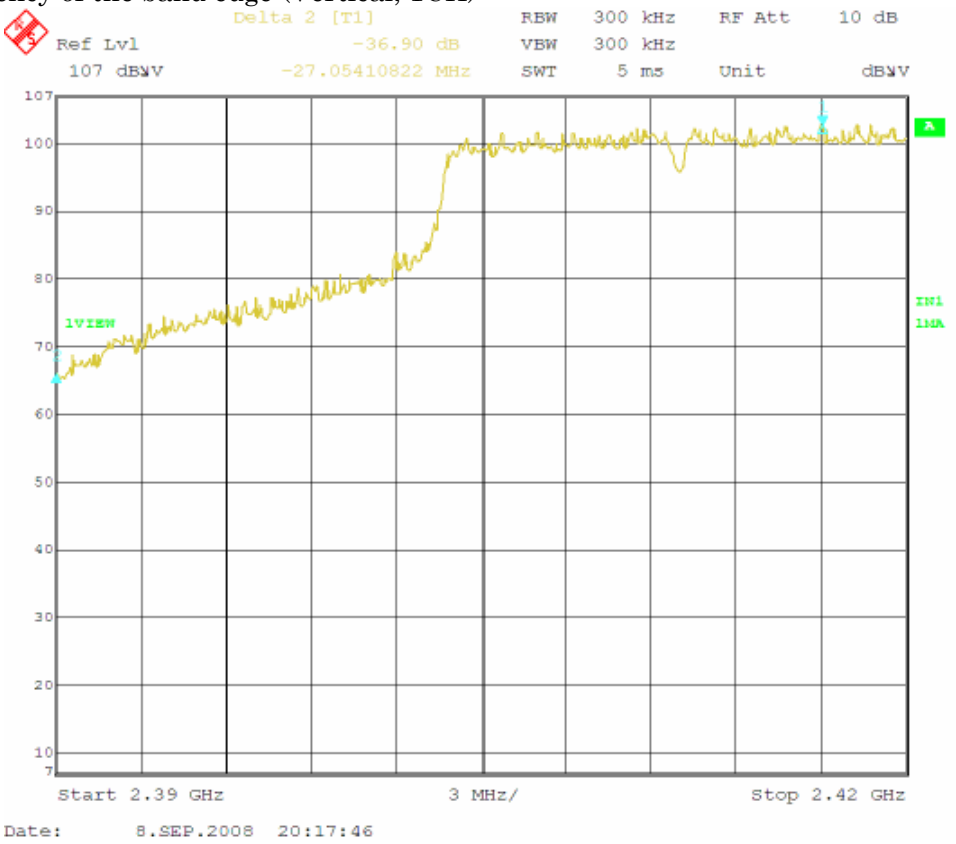
Vertical

CH	Pmax	Pav	Pdev	c.f.	Ebe	Eav	Limit(Ebe)	Limit(Eav)	Margin(Ebe)	Margin(Eav)
1	101.05	87.04	36.90	−3.1	61.1	47.0	74.0	54.0	13.0	7.0
11	102.01	82.28	34.19	−3.1	64.7	45.0	74.0	54.0	9.3	9.0

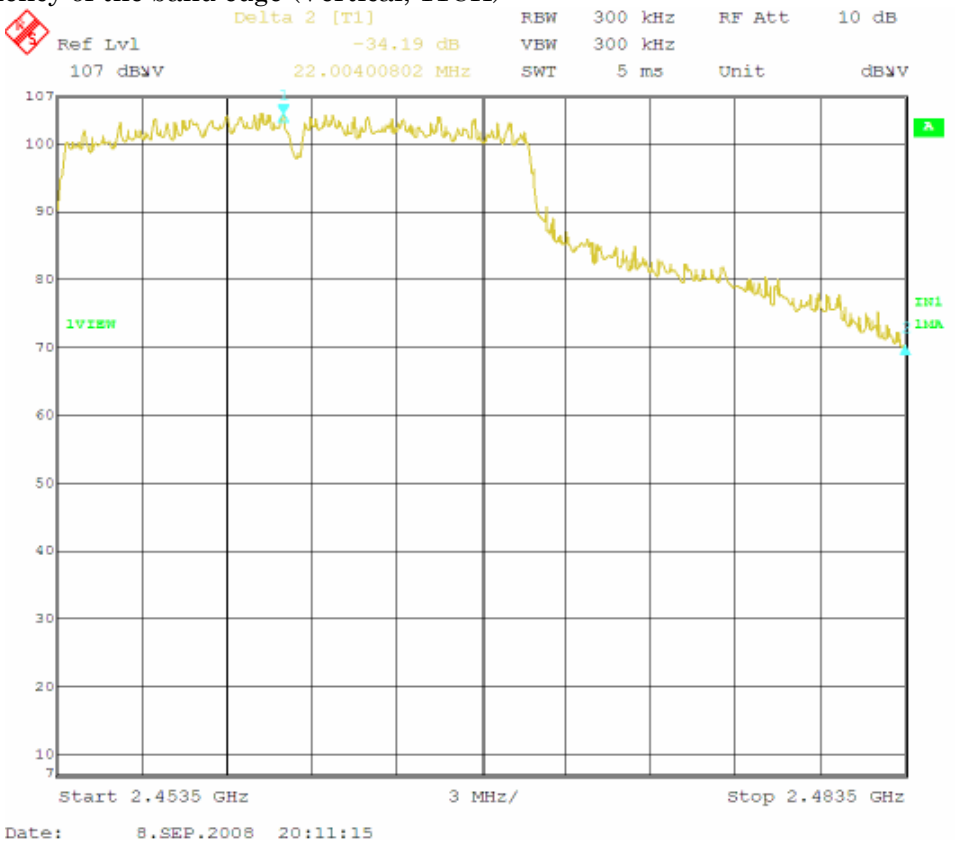
Note Vertical and Horizontal were measured and vertical was confirmed as the worst.

P_{max} : Maximum peak power of the fundamental.
P_{av} : Average of the fundamental.
P_{dev} : The amplitude delta between the peak power and the band edge emission.
E_{be} : Band edge emission.
E_{av} : Average of the band edge emission.

Lower frequency of the band edge (Vertical, 1CH)



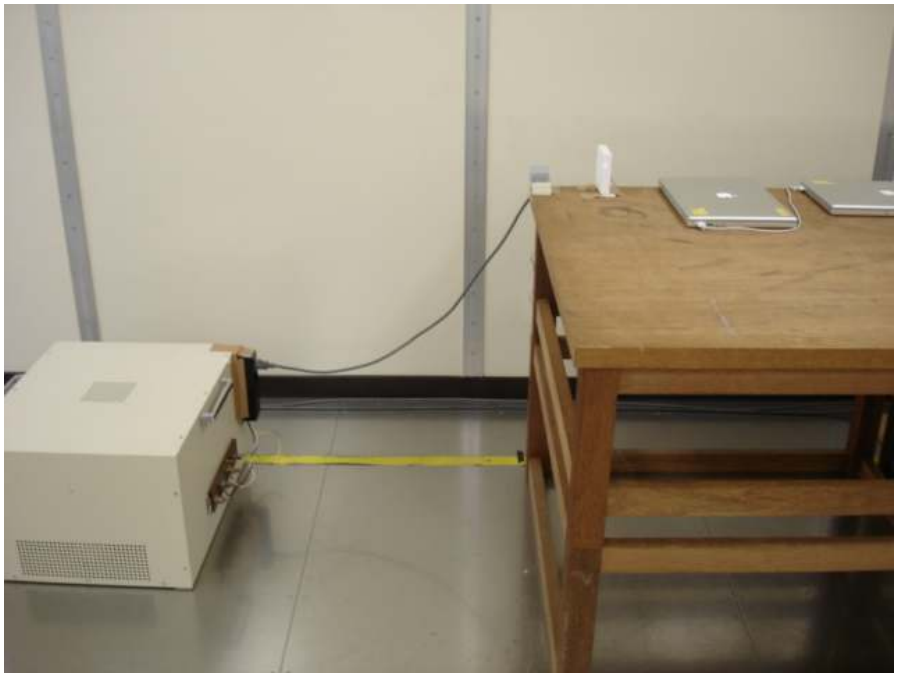
Higher frequency of the band edge (Vertical, 11CH)



6. Photos

6.1 Setup Photo (Conducted Emission)

Front View



Side View

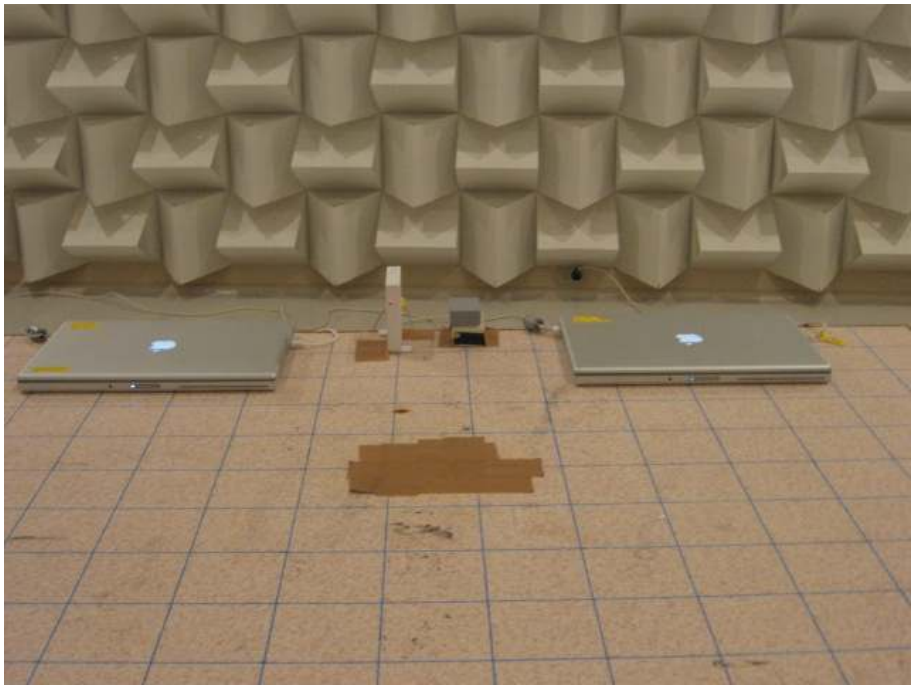
6.2 Setup Photo (Radiated Emission)

Front View

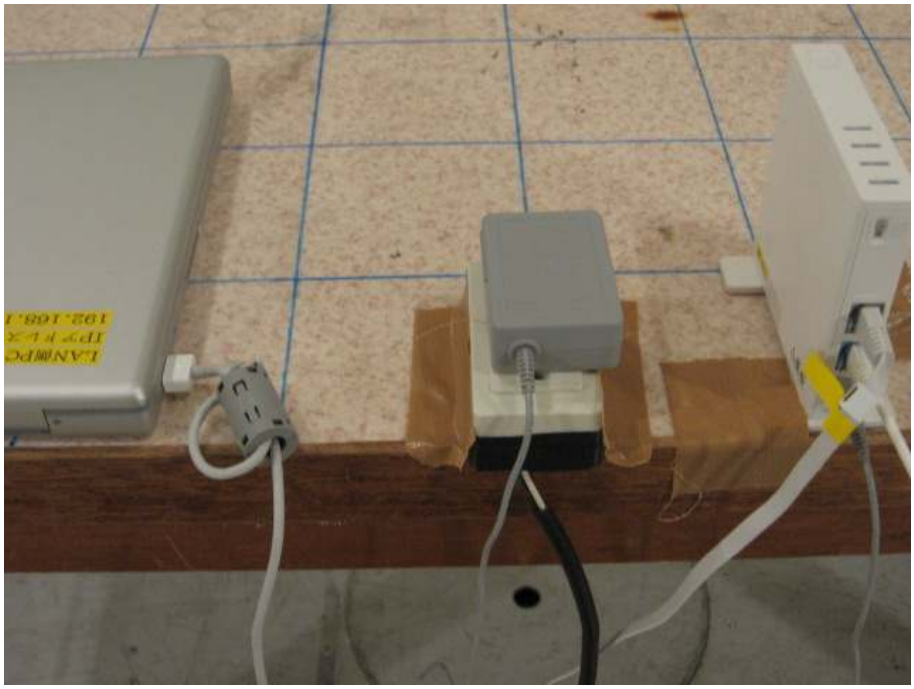
Rear View

6.2 Setup Photo (Radiated Emission) (Continued)

Close up 1

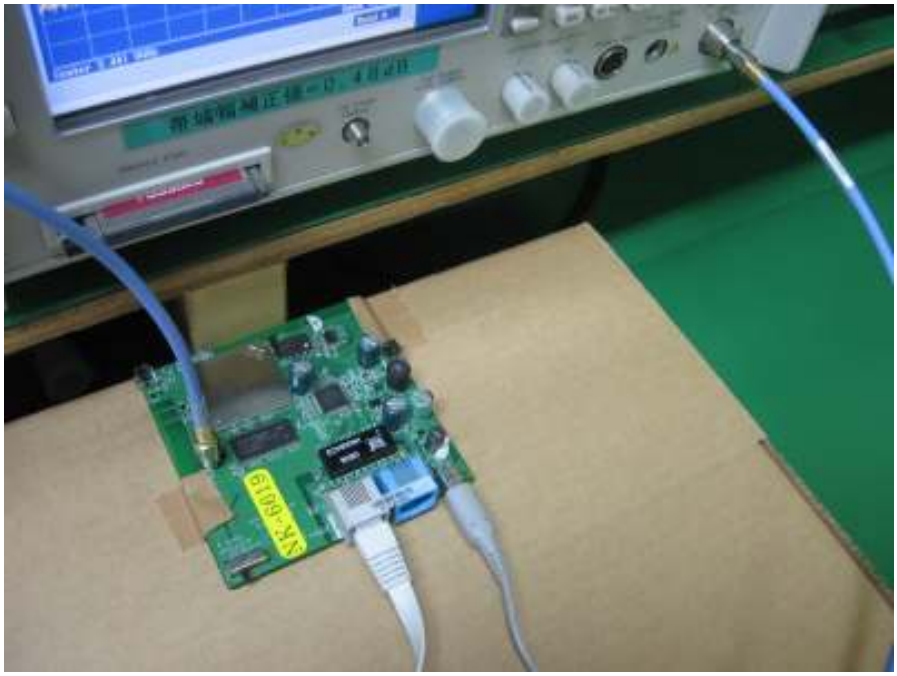


Close up 2

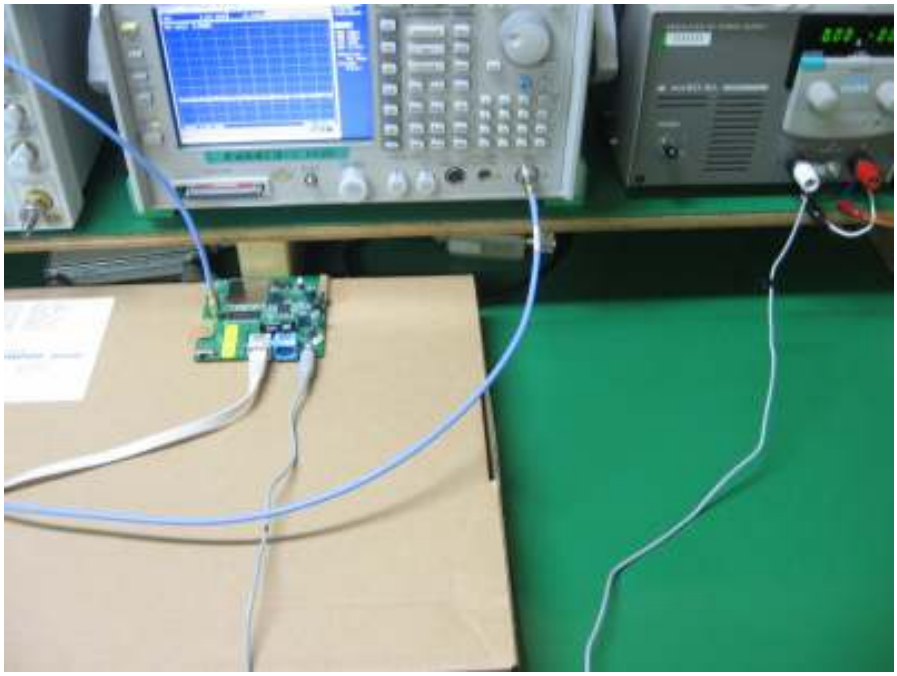


6.3 Setup Photo (All Other Test Items)

View 1

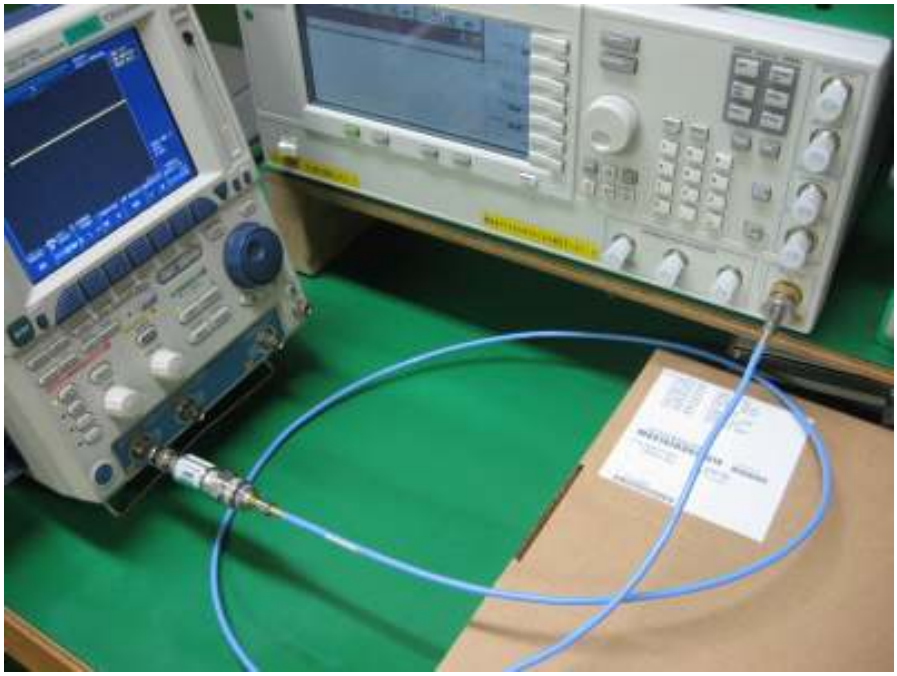


View 2

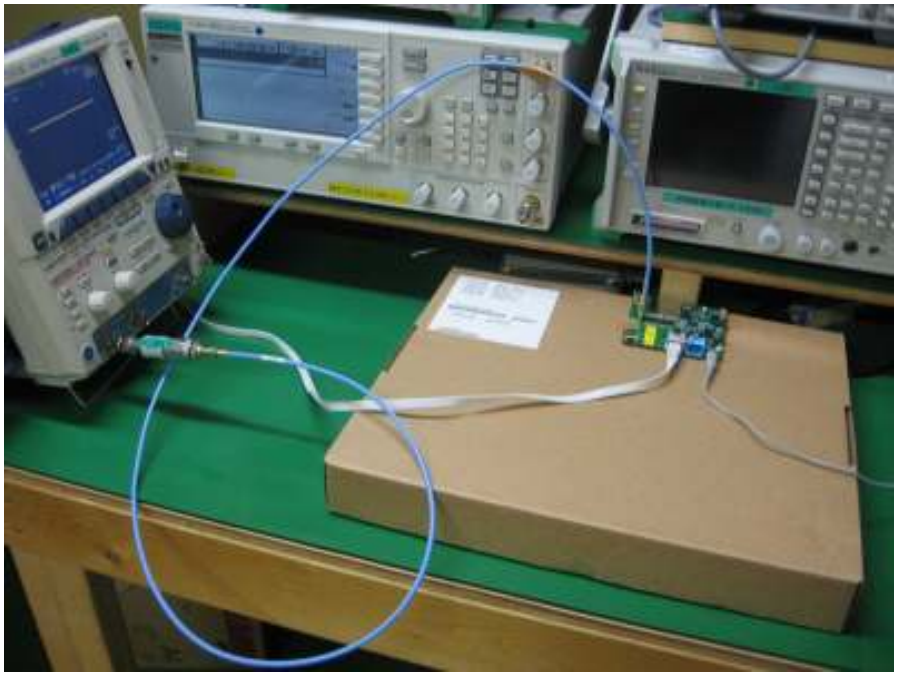


6.4 Setup Photo (Maximum Peak Output Power)

View 1



View 2



7. List of Test Measurement Instruments

7.1 Conducted Emission

Instruments	Manufacturer	Model / Type	Serial No.	Calibration Date Next Calibration
Spectrum Analyzer	ADVANTEST CORPORATION	R3132	140501174	July, 2008 July, 2010
EMI Test Receiver	ROHDE & SCHWARZ	ESCS30	100335	August, 2008 August, 2009
Artificial-Mains Network	KYORITSU CORPORATION	KNW-341C(F) (for EUT)	8-1659-1	July, 2008 July, 2009
Artificial-Mains Network	KYORITSU CORPORATION	KNW-244C (for Peripheral)	8-1657-1	July, 2008 July, 2009
Transient Limiter	AGILENT TECHNOLOGIES	11947A	3107A03745	October, 2007 October, 2008
RF Selector	Techno Science Japan Corp.	RFM-E221	3148	Confirmed before Test

7.2 Radiated Emission Measurement

Instruments	Manufacturer	Model / Type	Serial No.	Calibration Date Next Calibration
Programmable AC/DC Power Source	NF Corporation	ES18000W	425779	---
EMI Test Receiver	ROHDE & SCHWARZ	ESIB40	100211	April, 2008 April, 2009
Biconical Antenna (30 to 300MHz)	SCHWARZBECK	VHBB9124(Balun) BBA9106(Elements)	311	September, 2007 September, 2009
Log.-Periodic Antenna (300 MHz to 1 GHz)	SCHWARZBECK	UHALP 9108 A	645	September, 2007 September, 2009
Horn Antenna	SCHWARZBECK	BBHA 9120 D	443	September, 2008 September, 2009
Horn Antenna	ETS LINDGREN	3160-08	00033782	September, 2008 September, 2009
Horn Antenna	ETS LINDGREN	3160-09	00034723	September, 2008 September, 2009

7.3 Conducted Radio Measurement

Instruments	Manufacturer	Model / Type	Serial No.	Calibration Date Next Calibration
DC Power Source	KIKUSUI	PAN60-6A	JK002503	---
Spectrum Analyzer	Anritsu	MS2687B	620016270 6	April, 2008 April, 2009
Signal Generator	Agilent Technology	E8254A	US411401 86	June, 2008 June, 2009
Oscilloscope	Tektronix	TDS794D	B031832	June, 2008 June, 2009
Diode Detector	Agilent Technology	423B	MY422418 36	March, 2008 March, 2009