


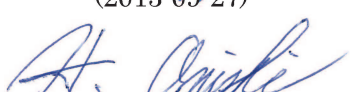


MEASUREMENT/TECHNICAL REPORT FCC Part 15 Subpart C

Issued: September 27, 2013

Name and Address of the Applicant:	Buffalo Inc. AKAMONDORI Bldg., 30-20, Ohsu 3-chome, Naka-ku, Nagoya, 460-8315, Japan
Test Item:	USB 2.0 Wireless/Wired Print Server
Identification:	LPV4-U2-300S
Serial No.:	00809201308B
FCC ID:	FDI000000019 (Grantee Code + Product Code)
Sample Receipt Date:	July 23, 2013
Test Specification:	FCC Part 15 Subpart C
Date of Testing:	August 9, 17, 19, 20, 21, 22, 23 and 26, 2013
Test Result:	PASS

Report Prepared by:	Cosmos Corporation 3571-2 Oonoki Watarai-cho Watarai-gun, Mie-ken 516-2102 Japan Phone: +81-596-63-0707 Fax: +81-596-63-0777
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Representative Test Engineer:	 _____ (2013-09-27)	K. Miyaji iNARTE : EMC-003627-NE
Reviewed by:	 _____ (2013-09-27)	H. Onishi, EMC Manager iNARTE : EMC-003318-NT

Note:	<ol style="list-style-type: none">1. This Test Report should not be reproduced except in full, without the written approval of Cosmos Corporation.2. All measurement data contained in this Test Report may have uncertainty. A judgment for the limitation should be taken into the count.3. The test result of this Test Report is based on the tests made for sample provided, and it is not applicable to individual product identical to the sample or similar product.4. The judgment of this Test Report validates the test item only specified in "4. Summary of Test Results".
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1. Description of Equipment under Test

1.1 Product Description

Manufacturer	Buffalo Inc.
Model (referred to as the EUT)	LPV4-U2-300S
Transmitter Type	<input checked="" type="checkbox"/> WLAN (MIMO) <input type="checkbox"/> Bluetooth <input type="checkbox"/> ZigBee <input type="checkbox"/> RFID <input type="checkbox"/> Other ()
Nominal Voltage	5 V
Type of Modulation	DSSS, OFDM
Mode of Operation	<input type="checkbox"/> duplex <input type="checkbox"/> 1/2 duplex <input checked="" type="checkbox"/> simplex <input type="checkbox"/> other
Type of Equipment	<input checked="" type="checkbox"/> Stand-alone <input type="checkbox"/> Combined Equipment <input type="checkbox"/> Plug-in Card <input type="checkbox"/> Other (Module Unit)
Type of Antenna	<input checked="" type="checkbox"/> Integral (Antenna A and B) <input type="checkbox"/> External <input type="checkbox"/> Other
Type of Power Source	<input type="checkbox"/> AC Mains <input checked="" type="checkbox"/> Dedicated AC Adaptor (AC 100-240 V) <input type="checkbox"/> DC Voltage <input type="checkbox"/> Battery
Type of Battery (if applicable)	N/A
Type of Operation	<input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Burst <input type="checkbox"/> Intermittent
Frequency Band Lower limit Upper limit	2400 MHz 2483.5 MHz
Frequency of Operating	2412 MHz to 2462 MHz [IEEE 802.11b/g/n(20MHz)] 2422 MHz to 2452 MHz [IEEE 802.11n(40MHz)]
Thermal Limitation	0-40°C

1.2 Antenna Description

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT.

The user can not replace the antenna easily.

Therefore, the equipment complies with the antenna requirement of Section 15.203.

No.	Antenna Type	Gain	Remarks
1	PIFA Antenna	2.0 dBi	Integral Antenna (Antenna A)
2	PIFA Antenna	2.0 dBi	Integral Antenna (Antenna B)

1.3 Accompanied Peripherals Description

No.	Equipment Name	Manufacturer	Type Name	Serial Number	FCC ID	Rating
1	USB 2.0 Wireless/Wired Print Server (EUT1)	Buffalo	LPV4-U2-300S	00809201308B	---	DC 5 V, 2 A
2	AC Adaptor (EUT2)	APD	WA-10H05FU	Y57061350 7000534600	---	AC 100-240 V, 50/60 Hz, 0.3 A
3	Personal Computer	HP	GT578PA#ABJ	CNU7351HLN	Doc	DC 19 V, 4.74 A
4	AC Adaptor	HP	384021-001	7811652509	Doc	AC 100-240 V, 50/60 Hz, 2.4 A

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

The measurement was carried out at the following facility.

Cosmos Corporation EMC Lab. Oonoki
3571-2 Oonoki, Watarai-cho, Watarai-gun, Mie-ken 516-2102, Japan
Semi anechoic chamber 3 m
Shielded room

Cosmos Corporation EMC Lab. Oonoki is accredited in accordance with the International Standard ISO/IEC 17025 by the following accreditation bodies and the test facility is registered by the following bodies.

Accreditation: A2LA Accredited Laboratory. No. 2900.01
Nemko Laboratory Authorisation. No. ELA 621

Registration: FCC Registration No. 604492
Industry Canada Registration No. 3958B

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. Test Condition (Manufacturer's Specification)

3.1 Mode of Operation

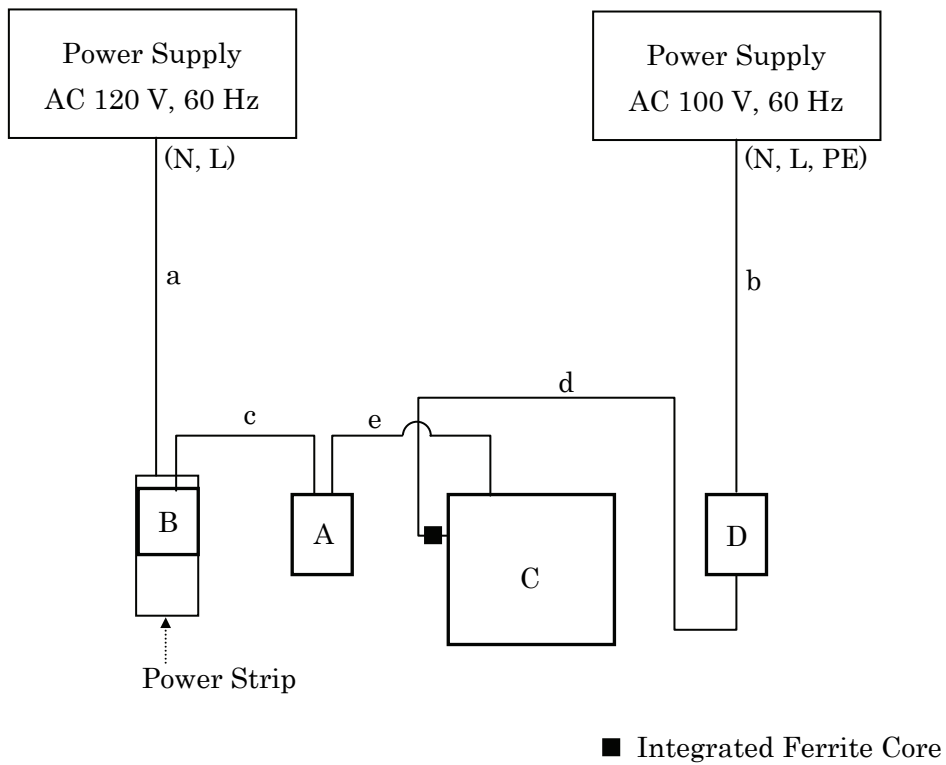
Mode of operation: Continuous Transmitting mode

Note: The measurement was performed at the transmission rate of minimum and maximum of each wireless standard in the Maximum Peak Conducted Output Power and the worst condition was selected.

3.2 Test Configuration

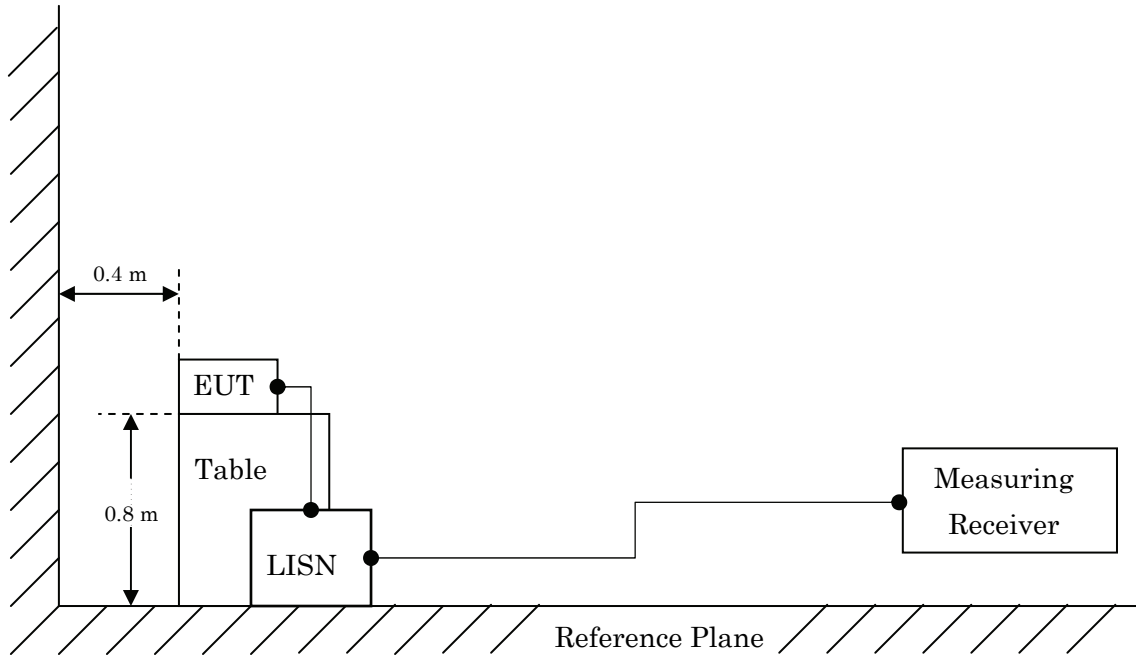
	Instrument	Model		Cable	Length	Shield
A	EUT1	LPV4-U2-300S	a	AC Power Cord	1.0 m	×
B	EUT2	WA-10H05FU	b	AC Power Cord	1.8 m	×
C	Personal Computer	GT578PA#ABJ	c	DC Power Cord	1.5 m	×
D	AC Adaptor	384021-001	d	DC Power Cord	1.8 m	×
			e	LAN Cable (Cat. 6)	5.0 m	×

Figure 1 - Setup Diagram of Tested System



3.2 Test Configuration (Continued)

Figure 2 - AC Power Line Conducted Emission



3.2 Test Configuration (Continued)

Figure 3 - Radiated Emission

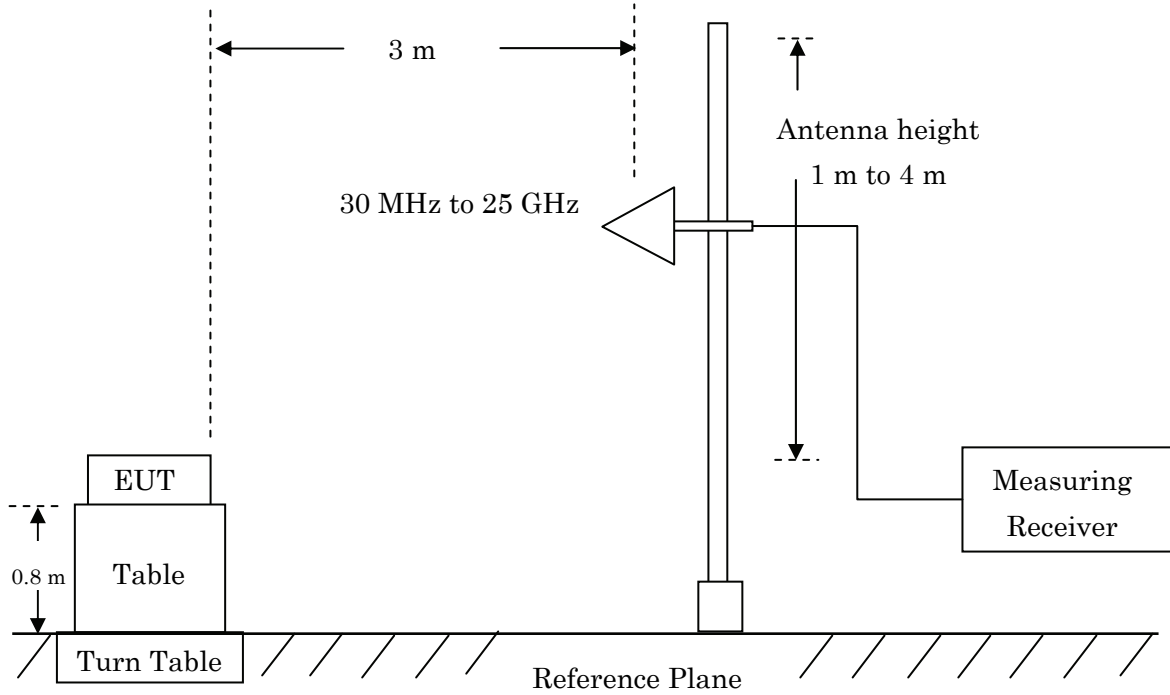
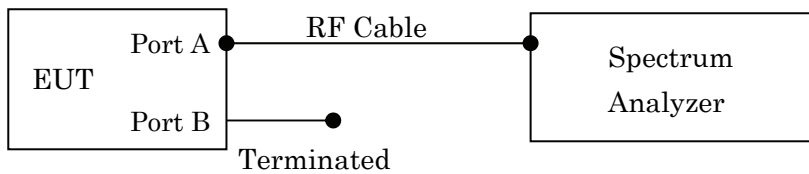


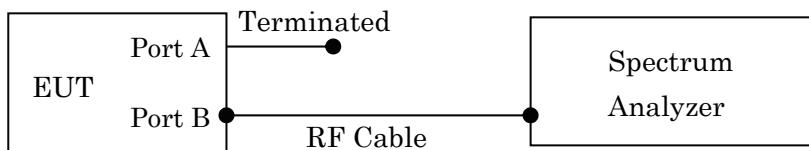
Figure 4 - Antenna Port Conducted Emission

Maximum Peak Conducted Output Power / 6 dB Bandwidth
 Transmitter Spurious Emission / Power Spectral Density

[Antenna A]

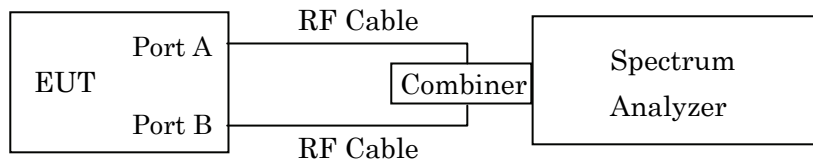


[Antenna B]

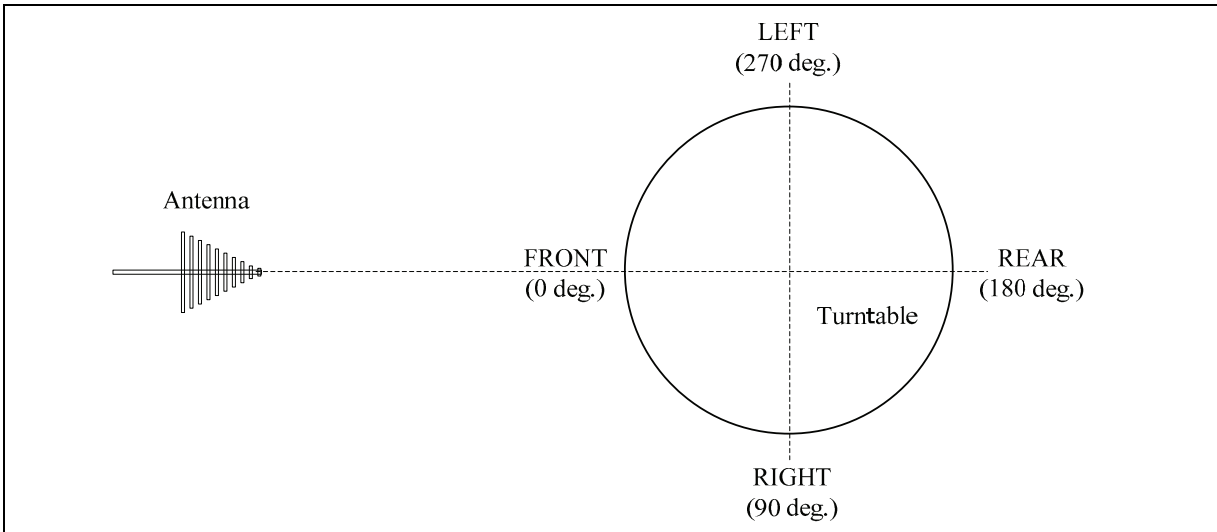


3.2 Test Configuration (Continued)

Figure 4 - Antenna Port Conducted Emission
6 dB Bandwidth (MIMO Configuration)

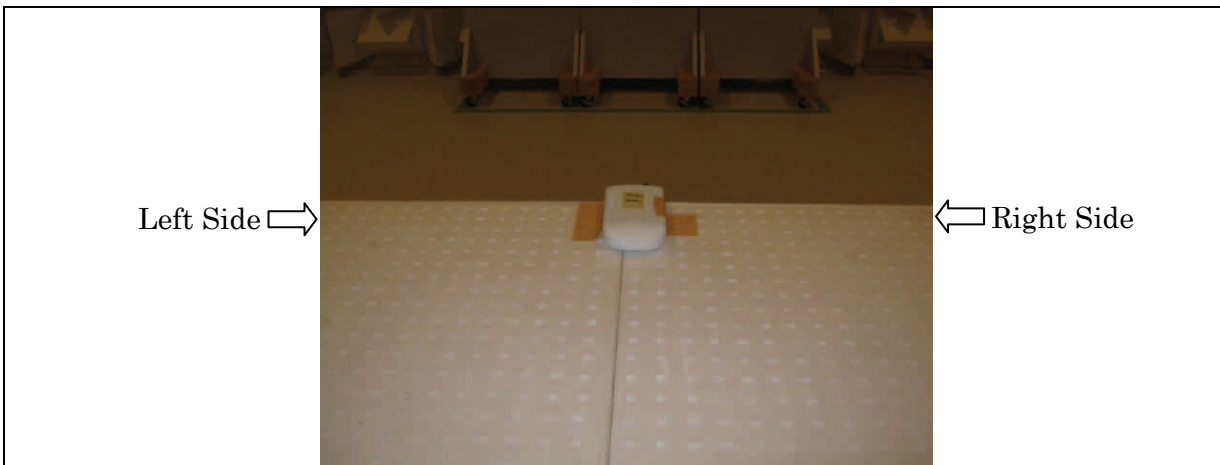


3.3 EUT Angle

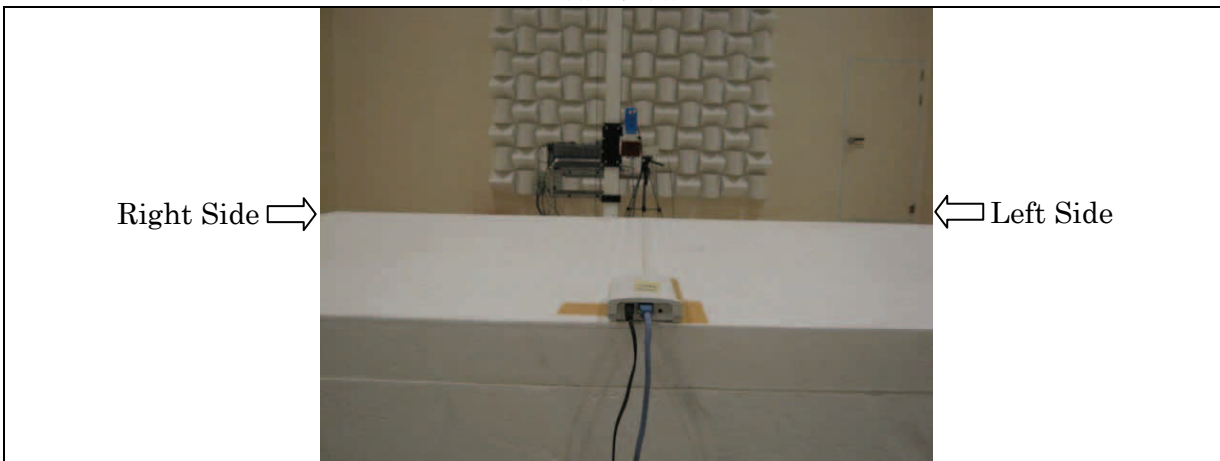


3.4 Photograph of EUT

Front View



Rear View



3.5 Test Mode

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

15.247(b) 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.

4. Summary of Test Results

Section	Test Item	Limit	Result
15. 207	AC Power Line Conducted Emission	See 5.1.2	PASS
15. 247(b)	Maximum Peak Conducted Output Power	< 1 W	PASS
15. 247(a)	6 dB Bandwidth	\geq 500 kHz	PASS
15. 247(d)	Transmitter Spurious Emission (Conducted)	See 5.4.2	PASS
15. 209	Transmitter Spurious Emission (Radiated)	See 5.5.2	PASS
15. 247(d)	Band Edge Measurement	See 5.6.2	PASS
15. 247(e)	Power Spectral Density	< 8 dBm	PASS

These test results are the test results of the condition specified with “3. Test Condition”.

5. Measurement Result

5.1 15. 207 AC Power Line Conducted Emission

5.1.1 Setting Remarks

- Configure the EUT System in accordance with ANSI C63.4:2003.
- EUT was placed on the non-conductive table in 0.8 m distance from the horizontal ground plane.
- 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 50 Ω .
- Activate the EUT System and run the software prepared for the test, if necessary.
- See 3.2 Test Configuration, Figure 2.

5.1.2 Minimum Standard

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 μ H/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 to 0.5	66 to 56 *	56 to 46 *
0.5 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

5.1.3 Result

EUT complies with the requirement.

Uncertainty of measurement result : ± 2.26 dB

Date of testing : August 22, 2013

Room temperature : 25°C

Relative humidity : 46%

5.1.4 Measured Data

DSSS 11 Mbps 6 ch

<<Conducted Emission>>

Cosmos Corporation Oonoki Lab.
Date : 2013/08/22 17:02:24

Model Name : LPV4-U2-300S / WA-10H05FU Job No : CJ13-118102E
Serial No. : 00809201308B / Y570613507000534600 Temp/Humi : 25°C/46%
Operator : J.Takashiba Condition : 11Mbps 6ch
Power Supply : DC 5V / AC 120V, 60Hz Remark :

Memo : RBW:9kHz

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

<< QP/AV DATA >>

No	Freq. [MHz]	Reading Level		C. Fac [dB]	Results		Limit		Margin		Phase
		QP	AV		QP	AV	QP	AV	QP	AV	
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
1	0.39815	30.4	20.7	10.5	40.9	31.2	57.9	47.9	17.0	16.7	L1
2	0.62300	20.9	8.1	10.5	31.4	18.6	56.0	46.0	24.6	27.4	L1
3	1.73880	15.2	4.4	10.4	25.6	14.8	56.0	46.0	30.4	31.2	L1
4	4.15660	14.8	6.2	10.6	25.4	16.8	56.0	46.0	30.6	29.2	L1
5	10.39628	20.2	9.7	10.8	31.0	20.5	60.0	50.0	29.0	29.5	L1
6	17.69319	17.5	10.7	11.1	28.6	21.8	60.0	50.0	31.4	28.2	L1
7	0.40620	30.7	23.5	10.5	41.2	34.0	57.7	47.7	16.5	13.7	L2
8	0.86900	17.5	9.9	10.6	28.1	20.5	56.0	46.0	27.9	25.5	L2
9	1.35650	15.7	7.8	10.4	26.1	18.2	56.0	46.0	29.9	27.8	L2
10	4.17600	12.7	5.1	10.6	23.3	15.7	56.0	46.0	32.7	30.3	L2
11	10.05885	30.2	12.1	10.7	40.9	22.8	60.0	50.0	19.1	27.2	L2
12	17.63890	18.3	12.6	11.0	29.3	23.6	60.0	50.0	30.7	26.4	L2

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5.1.4 Measured Data (Continued)

DSSS 11 Mbps 6 ch

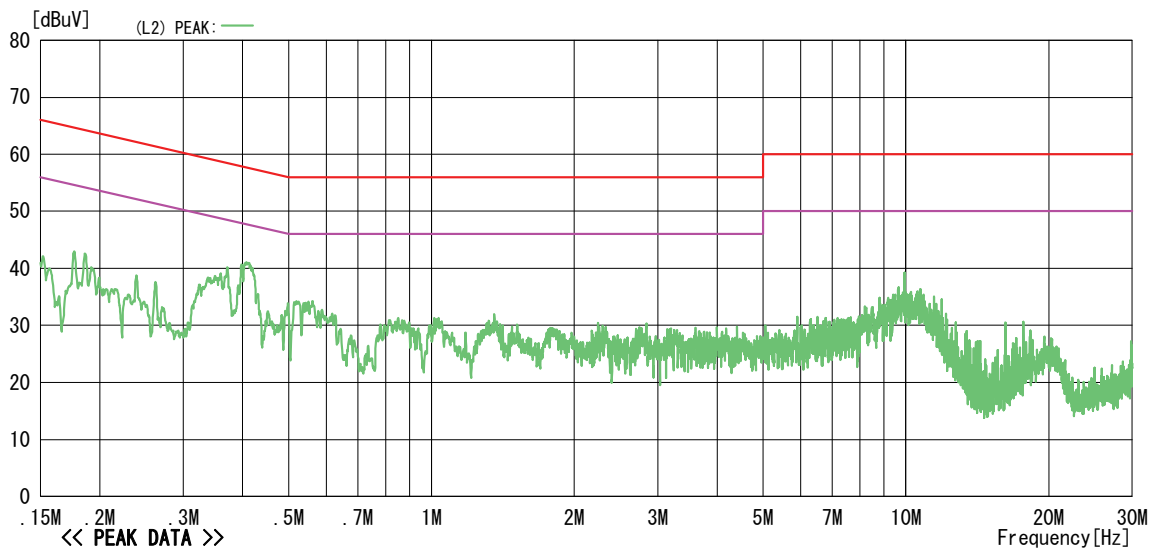
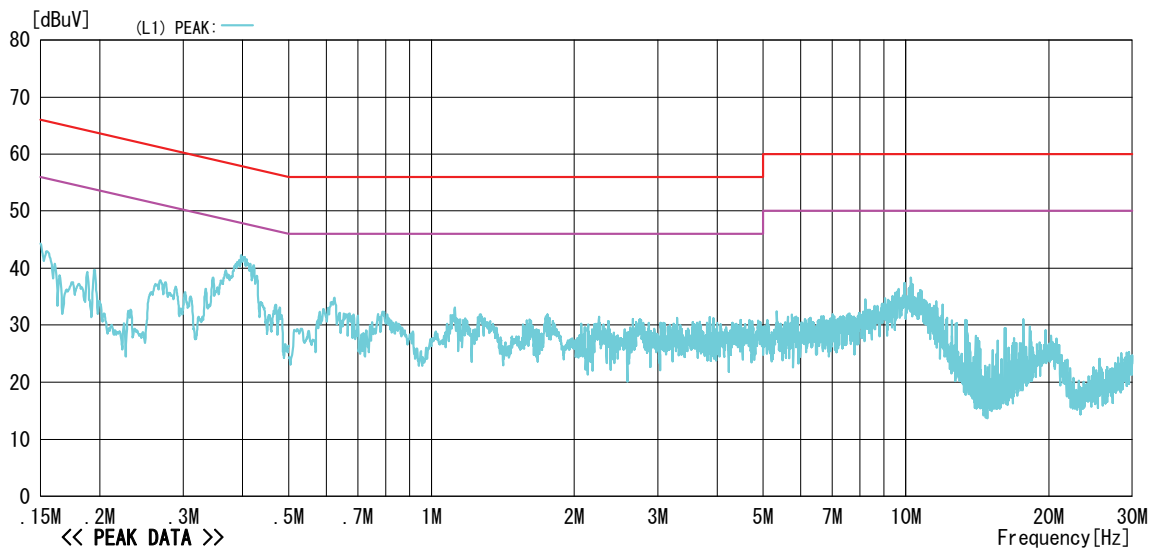
<<Conducted Emission>>

Cosmos Corporation Oonoki Lab.
Date : 2013/08/22 17:02:24

Model Name	: LPV4-U2-300S / WA-10H05FU	Job No	: CJ13-118102E
Serial No.	: 00809201308B / Y570613507000534600	Temp/Humi	: 25°C/46%
Operator	: J. Takashiba	Condition	: 11Mbps 6ch
Power Supply	: DC 5V / AC 120V, 60Hz	Remark	:

Memo : RBW:9kHz

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



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5.1.4 Measured Data (Continued)

OFDM 54 Mbps 6 ch

<<Conducted Emission>>

Cosmos Corporation Onoki Lab.
Date : 2013/08/22 17:24:32

Model Name : LPV4-U2-300S / WA-10H05FU Job No : CJ13-118102E
 Serial No. : 00809201308B / Y570613507000534600 Temp/Humi : 25°C/46%
 Operator : J. Takashiba Condition : 54Mbps 6ch
 Power Supply : DC 5V / AC 120V, 60Hz Remark :

Memo : RBW:9kHz

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

<< QP/AV DATA >>

No	Freq. [MHz]	Reading Level		C. Fac [dB]	Results		Limit		Margin		Phase
		QP	AV		QP	AV	QP	AV	QP	AV	
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
1	0.15541	31.5	12.5	10.7	42.2	23.2	65.7	55.7	23.5	32.5	L1
2	0.39883	30.7	19.9	10.5	41.2	30.4	57.9	47.9	16.7	17.5	L1
3	0.84650	17.6	9.4	10.5	28.1	19.9	56.0	46.0	27.9	26.1	L1
4	1.83497	16.9	8.8	10.4	27.3	19.2	56.0	46.0	28.7	26.8	L1
5	10.60141	19.2	11.2	10.8	30.0	22.0	60.0	50.0	30.0	28.0	L1
6	20.37855	8.9	2.4	11.2	20.1	13.6	60.0	50.0	39.9	36.4	L1
7	0.15650	31.2	18.5	10.6	41.8	29.1	65.6	55.6	23.8	26.5	L2
8	0.39960	30.4	21.5	10.5	40.9	32.0	57.9	47.9	17.0	15.9	L2
9	0.84730	17.5	8.7	10.5	28.0	19.2	56.0	46.0	28.0	26.8	L2
10	1.83131	16.2	8.1	10.4	26.6	18.5	56.0	46.0	29.4	27.5	L2
11	10.60222	15.2	8.7	10.7	25.9	19.4	60.0	50.0	34.1	30.6	L2
12	20.37894	12.4	4.8	11.2	23.6	16.0	60.0	50.0	36.4	34.0	L2

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5.1.4 Measured Data (Continued)

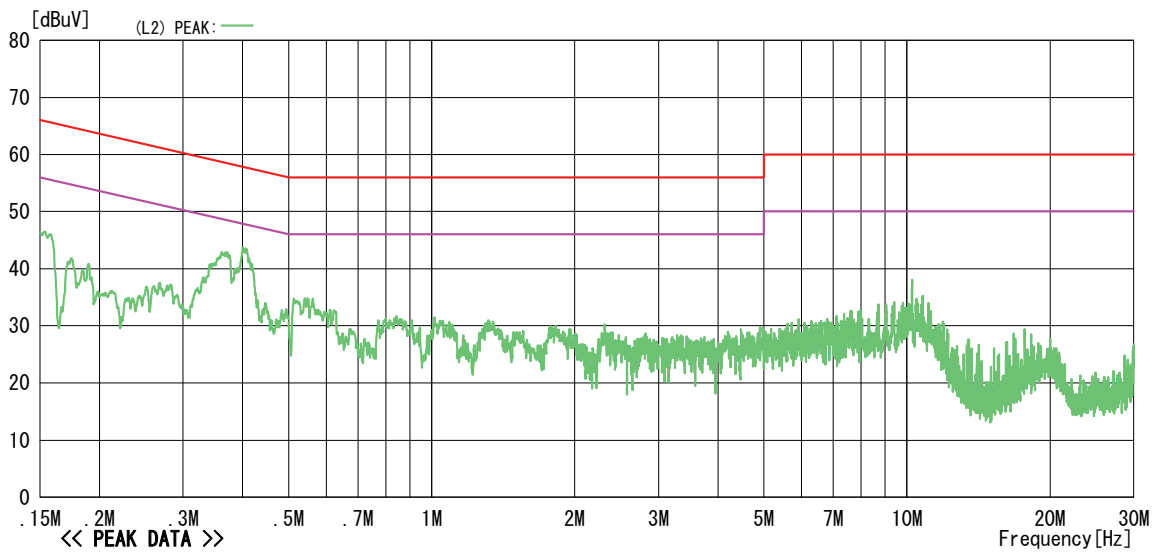
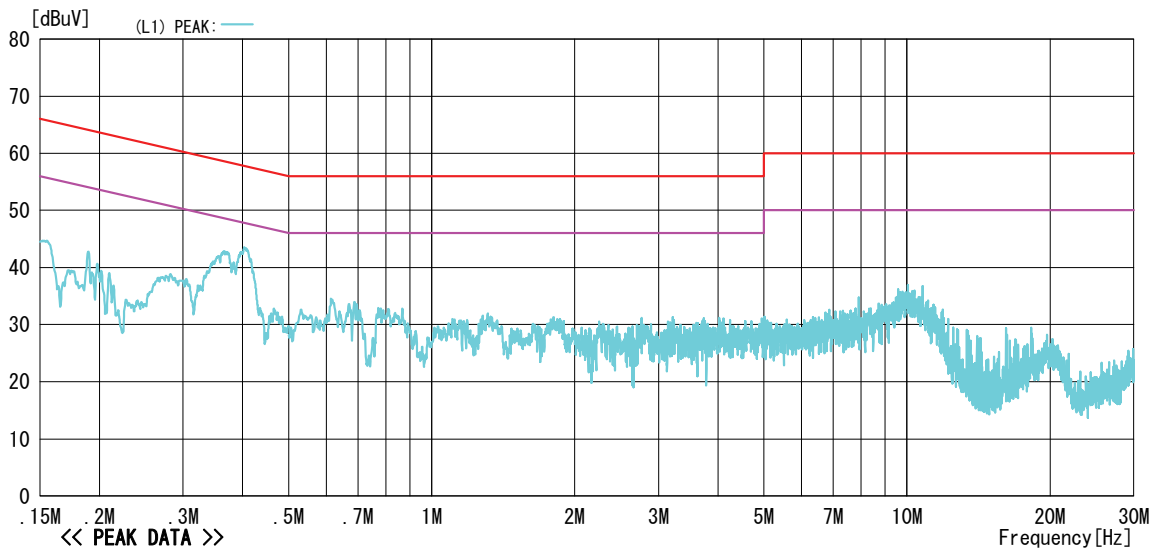
OFDM 54 Mbps 6 ch

<<Conducted Emission>>

Cosmos Corporation Oonoki Lab.
Date : 2013/08/22 17:24:32

Model Name	: LPV4-U2-300S / WA-10H05FU	Job No	: CJ13-118102E
Serial No.	: 00809201308B / Y570613507000534600	Temp/Humi	: 25°C/46%
Operator	: J.Takashiba	Condition	: 54Mbps 6ch
Power Supply	: DC 5V / AC 120V, 60Hz	Remark	:
Memo	: RBW:9kHz		

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



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5.1.4 Measured Data (Continued)

OFDM MCS7 20 MHz 6 ch

<<Conducted Emission>>

Cosmos Corporation Onoki Lab.
Date : 2013/08/22 17:52:44Model Name : LPV4-U2-300S / WA-10H05FU
Serial No. : 00809201308B / Y570613507000534600
Operator : J. Takashiba
Power Supply : DC 5V / AC 120V, 60HzJob No : CJ13-118102E
Temp/Humi : 25°C/46%
Condition : MCS7 20MHz 6ch
Remark :

Memo : RBW:9kHz

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

<< QP/AV DATA >>

No	Freq. [MHz]	Reading Level		C. Fac [dB]	Results		Limit		Margin		Phase
		QP	AV		QP	AV	QP	AV	QP	AV	
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
1	0.15525	31.7	15.2	10.7	42.4	25.9	65.7	55.7	23.3	29.8	L1
2	0.40565	30.9	22.9	10.5	41.4	33.4	57.7	47.7	16.3	14.3	L1
3	0.85301	17.2	8.5	10.6	27.8	19.1	56.0	46.0	28.2	26.9	L1
4	2.82800	15.8	7.2	10.5	26.3	17.7	56.0	46.0	29.7	28.3	L1
5	10.05750	21.8	14.3	10.8	32.6	25.1	60.0	50.0	27.4	24.9	L1
6	20.26050	13.5	5.9	11.3	24.8	17.2	60.0	50.0	35.2	32.8	L1
7	0.15160	31.9	19.5	10.7	42.6	30.2	65.9	55.9	23.3	25.7	L2
8	0.40088	31.0	22.6	10.5	41.5	33.1	57.8	47.8	16.3	14.7	L2
9	0.90737	15.8	7.1	10.6	26.4	17.7	56.0	46.0	29.6	28.3	L2
10	2.82375	14.5	5.8	10.5	25.0	16.3	56.0	46.0	31.0	29.7	L2
11	10.06260	22.1	11.5	10.7	32.8	22.2	60.0	50.0	27.2	27.8	L2
12	20.25961	13.5	5.1	11.2	24.7	16.3	60.0	50.0	35.3	33.7	L2

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5.1.4 Measured Data (Continued)

OFDM MCS7 20 MHz 6 ch

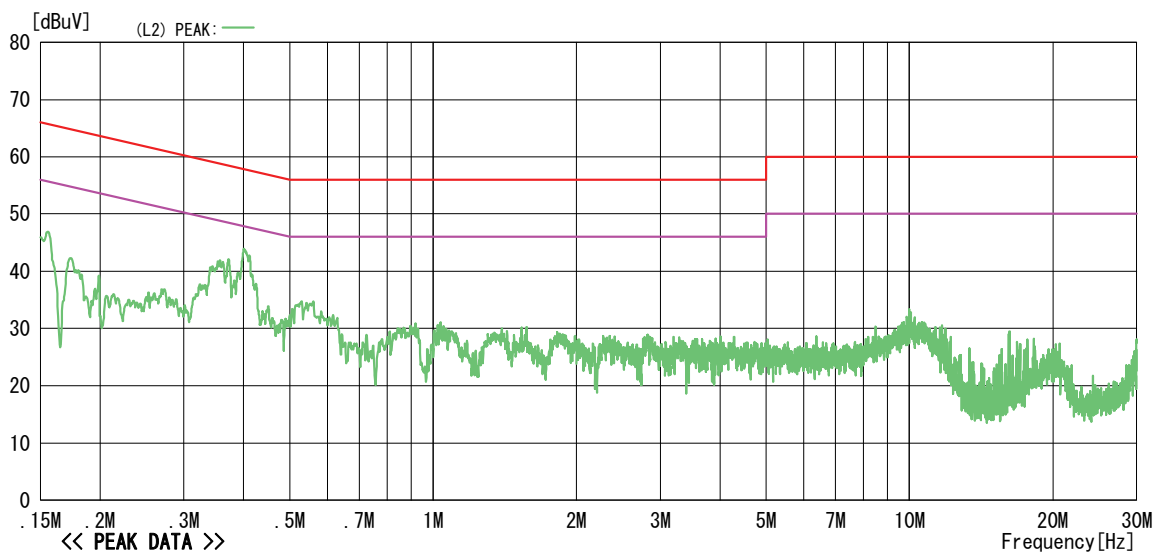
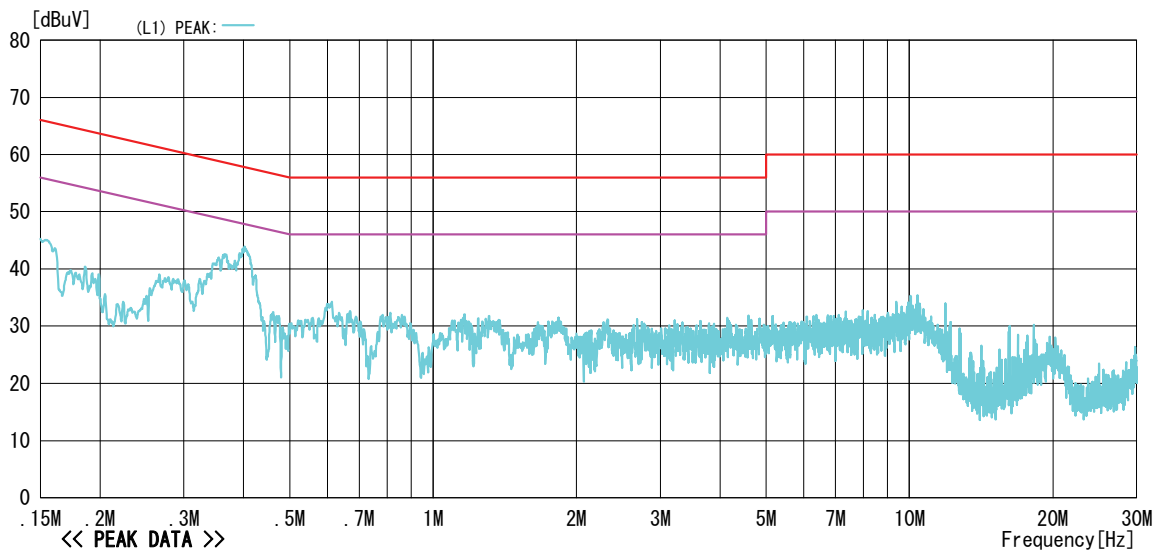
<<Conducted Emission>>

Cosmos Corporation Oonoki Lab.
Date : 2013/08/22 17:52:44

Model Name	: LPV4-U2-300S / WA-10H05FU	Job No	: CJ13-118102E
Serial No.	: 00809201308B / Y570613507000534600	Temp/Humi	: 25°C/46%
Operator	: J.Takashiba	Condition	: MCS7 20MHz 6ch
Power Supply	: DC 5V / AC 120V, 60Hz	Remark	:

Memo : RBW:9kHz

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



-TEPT0-DV/CE Ver1. 90. 0048

5.1.4 Measured Data (Continued)

OFDM MCS15 20 MHz 6 ch

<<Conducted Emission>>

Cosmos Corporation Onoki Lab.
Date : 2013/08/22 18:14:01

Model Name : LPV4-U2-300S / WA-10H05FU Job No : CJ13-118102E
Serial No. : 00809201308B / Y570613507000534600 Temp/Humi : 25°C/46%
Operator : J.Takashiba Condition : MCS15 20MHz 6ch
Power Supply : DC 5V / AC 120V, 60Hz Remark :

Memo : RBW:9kHz

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

<< QP/AV DATA >>

No	Freq. [MHz]	Reading Level		C. Fac [dB]	Results		Limit		Margin		Phase
		QP	AV		QP	AV	QP	AV	QP	AV	
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
1	0.15626	30.5	19.8	10.6	41.1	30.4	65.7	55.7	24.6	25.3	L1
2	0.40101	30.7	22.3	10.5	41.2	32.8	57.8	47.8	16.6	15.0	L1
3	0.76214	20.2	9.8	10.5	30.7	20.3	56.0	46.0	25.3	25.7	L1
4	1.24601	18.2	8.1	10.5	28.7	18.6	56.0	46.0	27.3	27.4	L1
5	10.43700	19.5	11.5	10.8	30.3	22.3	60.0	50.0	29.7	27.7	L1
6	20.31888	10.2	3.0	11.2	21.4	14.2	60.0	50.0	38.6	35.8	L1
7	0.15814	29.6	17.4	10.6	40.2	28.0	65.6	55.6	25.4	27.6	L2
8	0.40095	30.8	21.0	10.5	41.3	31.5	57.8	47.8	16.5	16.3	L2
9	0.75580	17.6	8.2	10.5	28.1	18.7	56.0	46.0	27.9	27.3	L2
10	1.23188	15.2	7.1	10.5	25.7	17.6	56.0	46.0	30.3	28.4	L2
11	10.43600	16.2	11.4	10.7	26.9	22.1	60.0	50.0	33.1	27.9	L2
12	20.32002	13.1	4.8	11.2	24.3	16.0	60.0	50.0	35.7	34.0	L2

-TEPT0-DV/CE Ver1.90.0048

5.1.4 Measured Data (Continued)

OFDM MCS15 20 MHz 6 ch

<<Conducted Emission>>

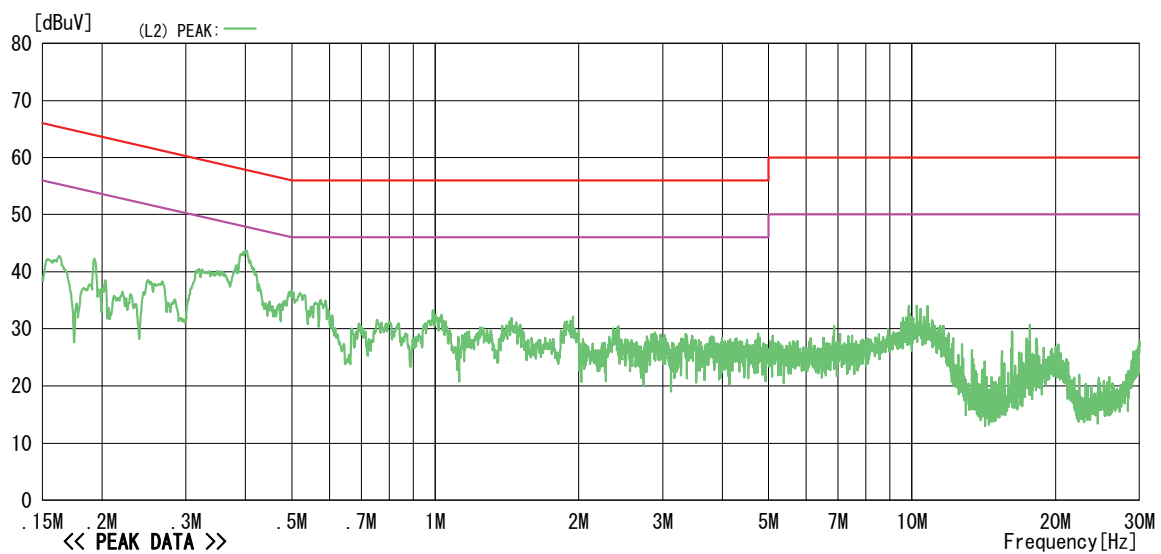
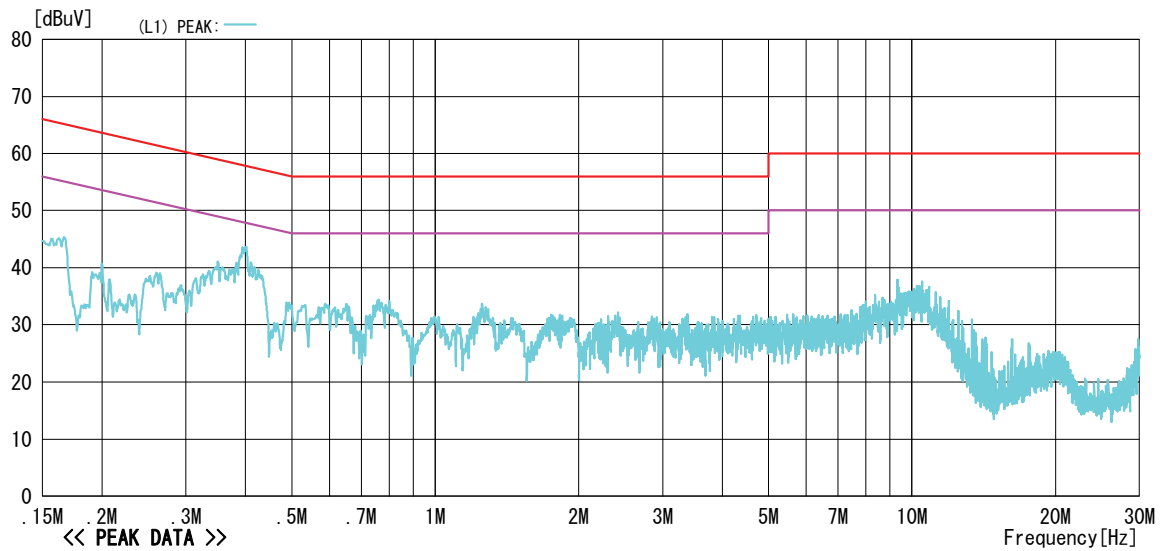
Cosmos Corporation Oonoki Lab.
Date : 2013/08/22 18:14:01

Model Name : LPV4-U2-300S / WA-10H05FU
Serial No. : 00809201308B / Y570613507000534600
Operator : J. Takashiba
Power Supply : DC 5V / AC 120V, 60Hz

Job No : CJ13-118102E
Temp/Humi : 25°C/46%
Condition : MCS15 20MHz 6ch
Remark :

Memo : RBW:9kHz

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



-TEPT0-DV/CE Ver1.90.0048

5.1.4 Measured Data (Continued)

OFDM MCS7 40 MHz 6 ch

<<Conducted Emission>>

Cosmos Corporation Onoki Lab.
Date : 2013/08/22 18:32:42

Model Name : LPV4-U2-300S / WA-10H05FU
Serial No. : 00809201308B / Y570613507000534600
Operator : J.Takashiba
Power Supply : DC 5V / AC 120V, 60Hz

Job No : CJ13-118102E
Temp/Humi : 25°C/46%
Condition : MCS7 40MHz 6ch
Remark :

Memo : RBW:9kHz

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

<< QP/AV DATA >>

No	Freq. [MHz]	Reading Level		C. Fac [dB]	Results		Limit		Margin		Phase
		QP	AV		QP	AV	QP	AV	QP	AV	
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
1	0.15030	32.3	21.4	10.7	43.0	32.1	66.0	56.0	23.0	23.9	L1
2	0.40563	30.9	22.5	10.5	41.4	33.0	57.7	47.7	16.3	14.7	L1
3	0.62450	20.3	10.9	10.5	30.8	21.4	56.0	46.0	25.2	24.6	L1
4	1.30997	17.2	9.1	10.5	27.7	19.6	56.0	46.0	28.3	26.4	L1
5	10.16658	18.8	10.8	10.8	29.6	21.6	60.0	50.0	30.4	28.4	L1
6	20.91110	9.6	2.9	11.2	20.8	14.1	60.0	50.0	39.2	35.9	L1
7	0.15516	31.8	18.5	10.7	42.5	29.2	65.7	55.7	23.2	26.5	L2
8	0.40086	28.4	21.8	10.5	38.9	32.3	57.8	47.8	18.9	15.5	L2
9	0.62457	17.7	7.8	10.5	28.2	18.3	56.0	46.0	27.8	27.7	L2
10	1.30259	15.1	6.9	10.5	25.6	17.4	56.0	46.0	30.4	28.6	L2
11	10.17000	15.3	8.7	10.7	26.0	19.4	60.0	50.0	34.0	30.6	L2
12	20.91003	8.7	0.2	11.2	19.9	11.4	60.0	50.0	40.1	38.6	L2

-TEPT0-DV/CE Ver1.90.0048

5.1.4 Measured Data (Continued)

OFDM MCS7 40 MHz 6 ch

<<Conducted Emission>>

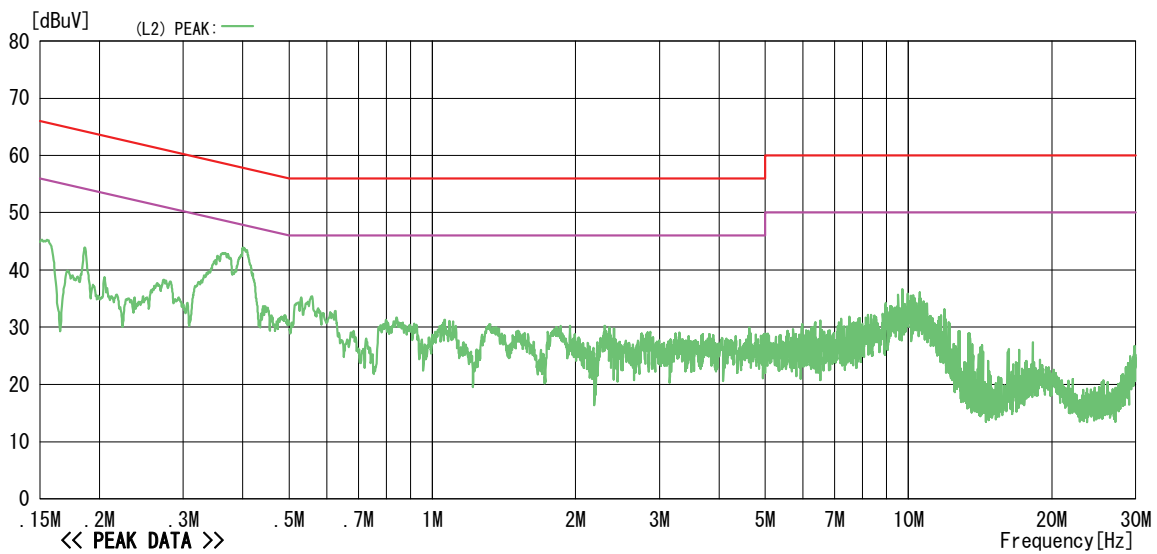
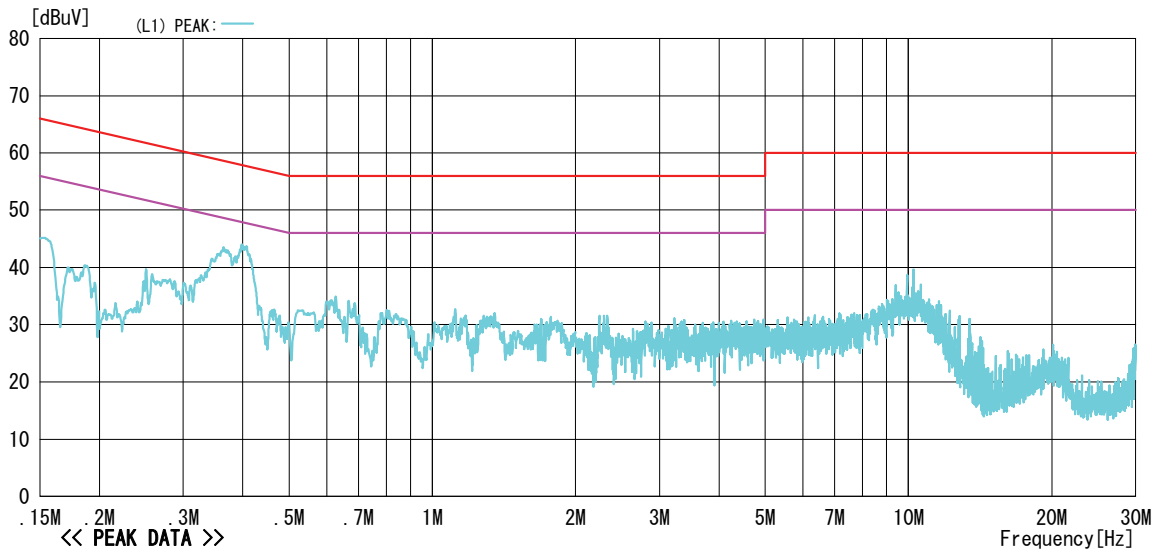
Cosmos Corporation Oonoki Lab.
Date : 2013/08/22 18:32:42

Model Name : LPV4-U2-300S / WA-10H05FU
Serial No. : 00809201308B / Y570613507000534600
Operator : J. Takashiba
Power Supply : DC 5V / AC 120V, 60Hz

Job No : CJ13-118102E
Temp/Humi : 25°C/46%
Condition : MCS7 40MHz 6ch
Remark :

Memo : RBW:9kHz

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



-TEPTO-DV/CE Ver1. 90. 0048

5.1.4 Measured Data (Continued)

OFDM MCS15 40 MHz 6 ch

<<Conducted Emission>>

Cosmos Corporation Ononoki Lab.
Date : 2013/08/22 18:48:22

Model Name : LPV4-U2-300S / WA-10H05FU Job No : CJ13-118102E
 Serial No. : 00809201308B / Y570613507000534600 Temp/Humi : 25°C/46%
 Operator : J. Takashiba Condition : MCS15 40MHz 6ch
 Power Supply : DC 5V / AC 120V, 60Hz Remark :
 Memo : RBW:9kHz

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

<< QP/AV DATA >>

No	Freq. [MHz]	Reading Level		C. Fac [dB]	Results		Limit		Margin		Phase
		QP	AV		QP	AV	QP	AV	QP	AV	
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
1	0.15212	28.4	15.5	10.7	39.1	26.2	65.9	55.9	26.8	29.7	L1
2	0.39789	31.3	22.7	10.5	41.8	33.2	57.9	47.9	16.1	14.7	L1
3	1.26293	18.6	8.9	10.5	29.1	19.4	56.0	46.0	26.9	26.6	L1
4	2.44607	16.4	6.5	10.5	26.9	17.0	56.0	46.0	29.1	29.0	L1
5	10.10085	19.8	11.0	10.8	30.6	21.8	60.0	50.0	29.4	28.2	L1
6	20.37951	12.7	3.5	11.2	23.9	14.7	60.0	50.0	36.1	35.3	L1
7	0.15611	31.3	15.9	10.6	41.9	26.5	65.7	55.7	23.8	29.2	L2
8	0.40080	31.0	21.8	10.5	41.5	32.3	57.8	47.8	16.3	15.5	L2
9	1.25765	15.1	7.5	10.5	25.6	18.0	56.0	46.0	30.4	28.0	L2
10	2.45018	15.4	6.3	10.5	25.9	16.8	56.0	46.0	30.1	29.2	L2
11	10.09002	19.6	10.2	10.7	30.3	20.9	60.0	50.0	29.7	29.1	L2
12	20.39853	10.4	3.2	11.2	21.6	14.4	60.0	50.0	38.4	35.6	L2

-TEPT0-DV/CE Ver1.90.0048

5.1.4 Measured Data (Continued)

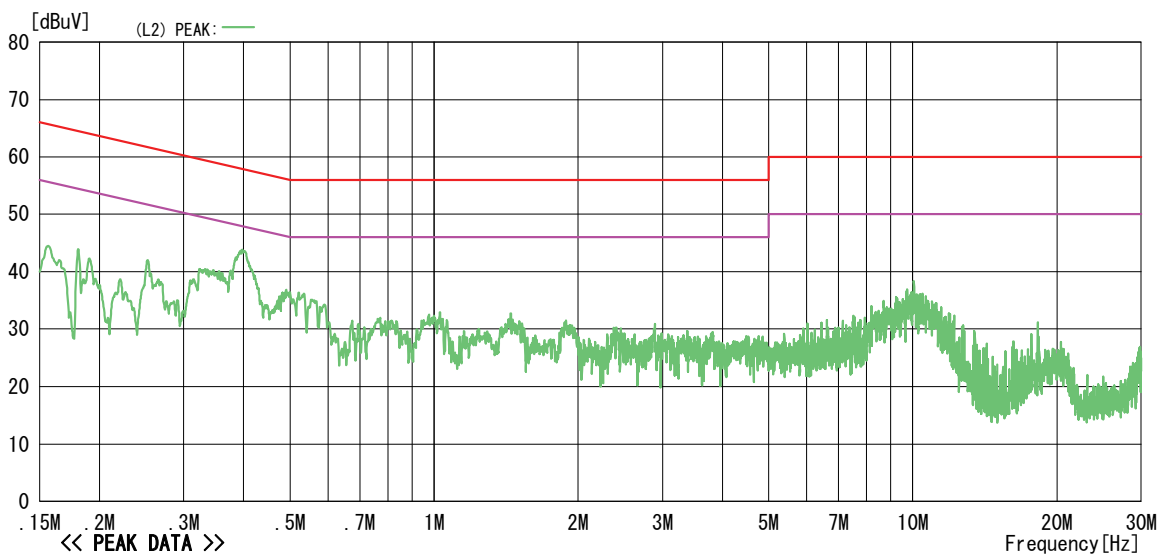
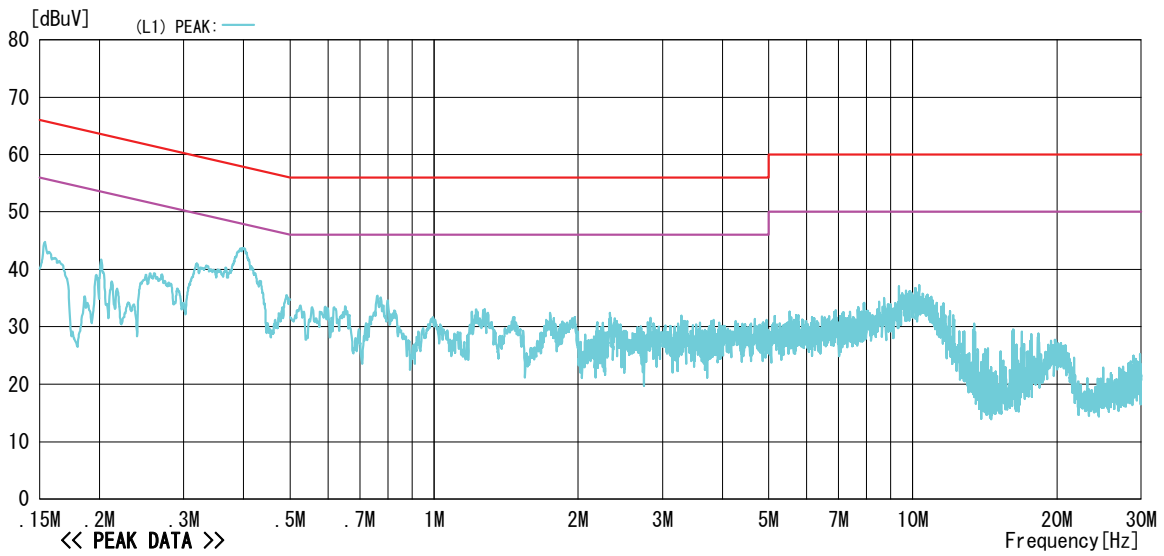
OFDM MCS15 40 MHz 6 ch

<<Conducted Emission>>

Cosmos Corporation Onoki Lab.
Date : 2013/08/22 18:48:22

Model Name	: LPV4-U2-300S / WA-10H05FU	Job No	: CJ13-118102E
Serial No.	: 00809201308B / Y570613507000534600	Temp/Humi	: 25°C/46%
Operator	: J. Takashiba	Condition	: MCS15 40MHz 6ch
Power Supply	: DC 5V / AC 120V, 60Hz	Remark	:
Memo	: RBW:9kHz		

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



-TEPTO-DV/CE Ver1. 90. 0048

5.2 15. 247(b) Maximum Peak Conducted Output Power

5.2.1 Setting Remarks

- The spectrum analyzer is set as following;
 - ✓ Frequency Span : 30 MHz or 60 MHz
 - ✓ Resolution Bandwidth : 1 MHz
 - ✓ Video Bandwidth : 3 MHz
 - ✓ Detector Mode : Peak
 - ✓ Trace Mode : Max Hold
- See 3.2 Test Configuration, Figure 4.

Note: The test result of MCS15 mode added the measurement value of each antenna to the test result. When the -15% of rated voltage was inputted, the power was not supplied enough and RF was not outputted. Therefore, the measurement was performed with 4.4 V DC.

5.2.2 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.

5.2.3 Result

EUT complies with the requirement.

Uncertainty of measurement result	: ±0.5 dB
Date of testing	: August 9, 2013
Room temperature	: 22°C
Relative humidity	: 43%
Date of testing	: August 17, 2013
Room temperature	: 24°C
Relative humidity	: 53%
Date of testing	: August 22, 2013
Room temperature	: 24°C
Relative humidity	: 53%
Date of testing	: August 23, 2013
Room temperature	: 28°C
Relative humidity	: 58%
Date of testing	: August 26, 2013
Room temperature	: 28°C
Relative humidity	: 57%

5.2.4 Measured Data

Antenna A

Voltage -15%

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
DSSS 11Mbps			
2412 (1ch)	18.65	30	11.35
2437 (6ch)	18.95	30	11.05
2462 (11ch)	18.98	30	11.02
OFDM 54Mbps			
2412 (1ch)	21.62	30	8.38
2437 (6ch)	21.87	30	8.13
2462 (11ch)	21.43	30	8.57
OFDM MCS7 (20MHz)			
2412 (1ch)	20.34	30	9.66
2437 (6ch)	20.73	30	9.27
2462 (11ch)	20.28	30	9.72
OFDM MCS7 (40MHz)			
2422 (3ch)	19.36	30	10.64
2437 (6ch)	19.02	30	10.98
2452 (9ch)	19.47	30	10.53

Voltage +15%

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
DSSS 11Mbps			
2412 (1ch)	18.58	30	11.42
2437 (6ch)	19.10	30	10.90
2462 (11ch)	19.21	30	10.79
OFDM 54Mbps			
2412 (1ch)	21.31	30	8.69
2437 (6ch)	21.95	30	8.05
2462 (11ch)	21.23	30	8.77
OFDM MCS7 (20MHz)			
2412 (1ch)	20.11	30	9.89
2437 (6ch)	19.91	30	10.09
2462 (11ch)	20.00	30	10.00
OFDM MCS7 (40MHz)			
2422 (3ch)	19.09	30	10.91
2437 (6ch)	19.61	30	10.39
2452 (9ch)	19.30	30	10.70

Voltage Normal

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
DSSS 11Mbps			
2412 (1ch)	18.99	30	11.01
2437 (6ch)	19.40	30	10.60
2462 (11ch)	19.87	30	10.13
OFDM 54Mbps			
2412 (1ch)	21.48	30	8.52
2437 (6ch)	22.58	30	7.42
2462 (11ch)	22.32	30	7.68
OFDM MCS7 (20MHz)			
2412 (1ch)	20.31	30	9.69
2437 (6ch)	21.44	30	8.56
2462 (11ch)	21.02	30	8.98
OFDM MCS7 (40MHz)			
2422 (3ch)	19.51	30	10.49
2437 (6ch)	20.58	30	9.42
2452 (9ch)	20.51	30	9.49

5.2.4 Measured Data (Continued)

Antenna B

Voltage -15%

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
DSSS 11Mbps			
2412 (1ch)	18.08	30	11.92
2437 (6ch)	18.29	30	11.71
2462 (11ch)	18.37	30	11.63
OFDM 54Mbps			
2412 (1ch)	21.26	30	8.74
2437 (6ch)	21.60	30	8.40
2462 (11ch)	21.43	30	8.57
OFDM MCS7 (20MHz)			
2412 (1ch)	20.19	30	9.81
2437 (6ch)	20.18	30	9.82
2462 (11ch)	20.01	30	9.99
OFDM MCS7 (40MHz)			
2422 (3ch)	18.69	30	11.31
2437 (6ch)	18.96	30	11.04
2452 (9ch)	19.16	30	10.84

Voltage +15%

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
DSSS 11Mbps			
2412 (1ch)	18.56	30	11.44
2437 (6ch)	18.45	30	11.55
2462 (11ch)	18.46	30	11.54
OFDM 54Mbps			
2412 (1ch)	21.16	30	8.84
2437 (6ch)	21.47	30	8.53
2462 (11ch)	21.22	30	8.78
OFDM MCS7 (20MHz)			
2412 (1ch)	19.29	30	10.71
2437 (6ch)	20.12	30	9.88
2462 (11ch)	19.67	30	10.33
OFDM MCS7 (40MHz)			
2422 (3ch)	19.00	30	11.00
2437 (6ch)	19.64	30	10.36
2452 (9ch)	19.38	30	10.62

Voltage Normal

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
DSSS 11Mbps			
2412 (1ch)	18.98	30	11.02
2437 (6ch)	18.76	30	11.24
2462 (11ch)	18.48	30	11.52
OFDM 54Mbps			
2412 (1ch)	21.20	30	8.80
2437 (6ch)	21.89	30	8.11
2462 (11ch)	21.69	30	8.31
OFDM MCS7 (20MHz)			
2412 (1ch)	19.81	30	10.19
2437 (6ch)	20.42	30	9.58
2462 (11ch)	20.4	30	9.60
OFDM MCS7 (40MHz)			
2422 (3ch)	19.14	30	10.86
2437 (6ch)	19.68	30	10.32
2452 (9ch)	19.27	30	10.73

5.2.4 Measured Data (Continued)

Antenna A and B

Voltage -15%

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
OFDM MCS15 (20MHz)			
2412 (1ch)	22.39	30	7.61
2437 (6ch)	22.58	30	7.42
2462 (11ch)	22.79	30	7.21
OFDM MCS15 (40MHz)			
2422 (3ch)	21.49	30	8.51
2437 (6ch)	21.76	30	8.24
2452 (9ch)	21.23	30	8.77

Voltage +15%

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
OFDM MCS15 (20MHz)			
2412 (1ch)	22.31	30	7.69
2437 (6ch)	21.75	30	8.25
2462 (11ch)	22.59	30	7.41
OFDM MCS15 (40MHz)			
2422 (3ch)	21.00	30	9.00
2437 (6ch)	22.50	30	7.50
2452 (9ch)	21.70	30	8.30

Voltage Normal

Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
OFDM MCS15 (20MHz)			
2412 (1ch)	22.83	30	7.17
2437 (6ch)	23.74	30	6.26
2462 (11ch)	23.39	30	6.61
OFDM MCS15 (40MHz)			
2422 (3ch)	22.09	30	7.91
2437 (6ch)	22.66	30	7.34
2452 (9ch)	22.63	30	7.37

Note: Worst data in above data

802.11b (Antenna A): 19.87 dBm (97.1 mW)

802.11g (Antenna A): 22.58 dBm (181.1 mW)

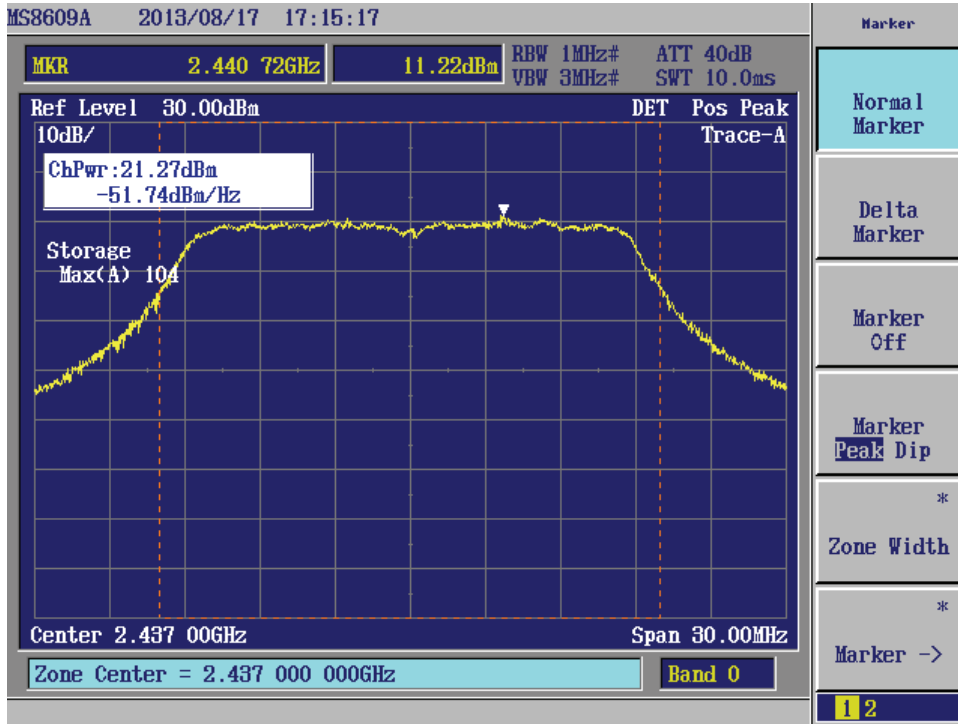
802.11n (Antenna A and B): [20 MHz] 23.74 dBm (236.6 mW)

[40 MHz] 22.66 dBm (184.5 mW)

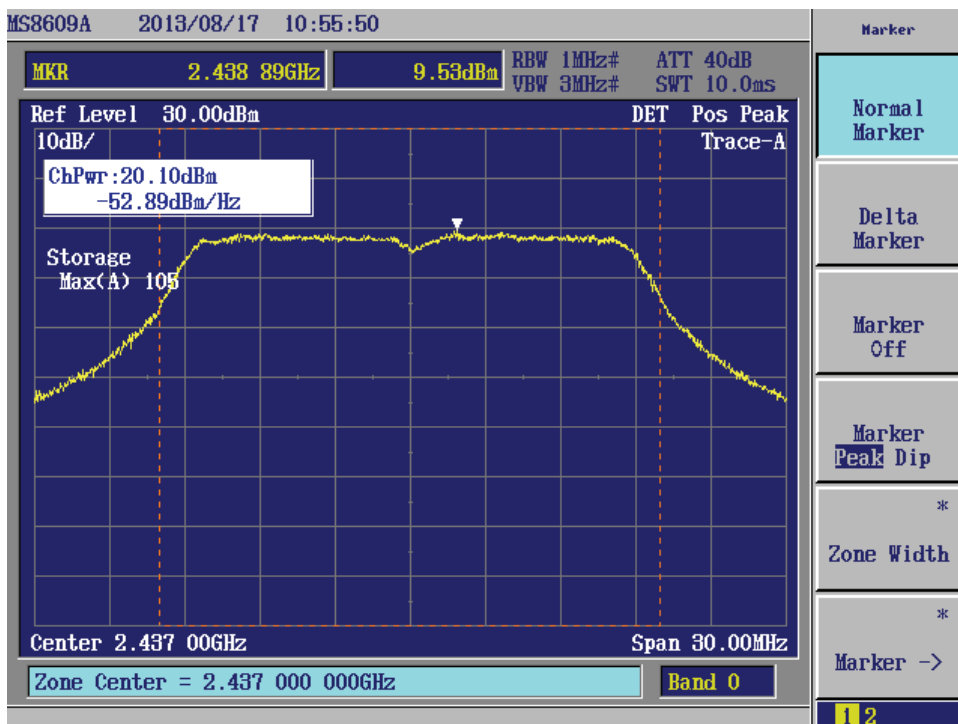
* Conversion formula
 dBm = 10 log (mW)

5.2.4 Measured Data (Continued)

Antenna A (OFDM MCS15 20 MHz 6 ch)



Antenna B (OFDM MCS15 20 MHz 6 ch)



5.3 15. 247(a) 6 dB Bandwidth

5.3.1 Setting Remarks

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

✓ Frequency Span	: 30 MHz or 50 MHz
✓ Resolution Bandwidth	: 100 kHz
✓ Video Bandwidth	: 300 kHz
✓ Detector Mode	: Peak
✓ Trace Mode	: Max Hold

- See 3.2 Test Configuration, Figure 4.

5.3.2 Minimum Standard

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

5.3.3 Result

EUT complies with the requirement.

Uncertainty of measurement result : ±0.8 dB

Date of testing : August 9, 2013

Room temperature : 22°C

Relative humidity : 43%

Date of testing : August 17, 2013

Room temperature : 24°C

Relative humidity : 53%

Date of testing : August 22, 2013

Room temperature : 26°C

Relative humidity : 41%

5.3.4 Measured Data

Antenna A

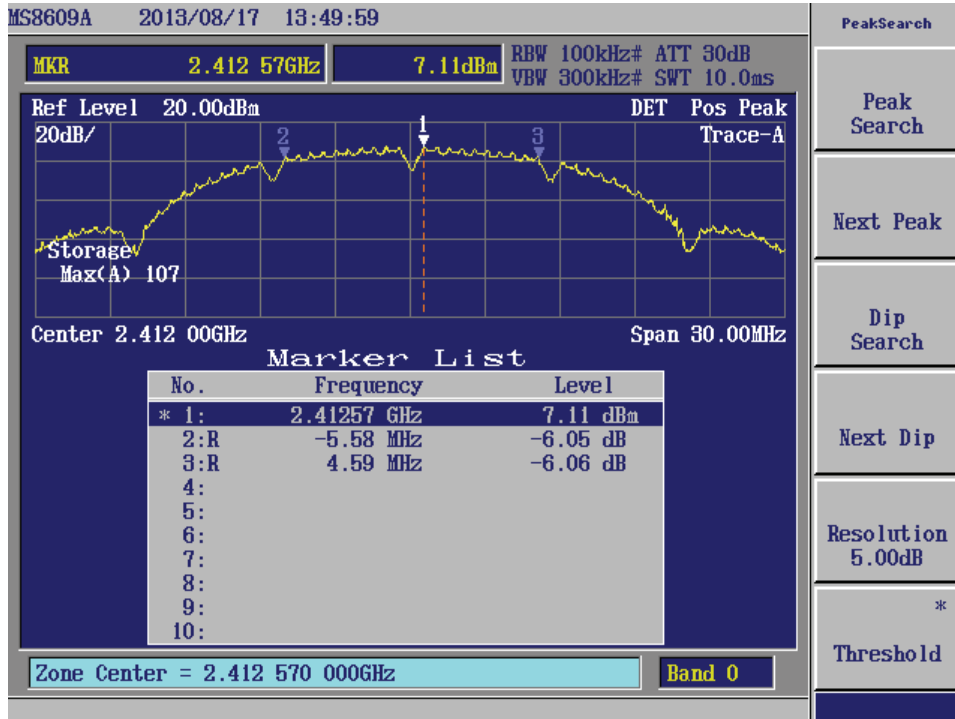
Frequency (MHz)	Measured Bandwidth (kHz)	Limit (kHz)
DSSS 11Mbps		
2412 (1ch)	10260	> 500
2437 (6ch)	10230	> 500
2462 (11ch)	10230	> 500
OFDM 54Mbps		
2412 (1ch)	16710	> 500
2437 (6ch)	16740	> 500
2462 (11ch)	16740	> 500
OFDM MCS7 (20MHz)		
2412 (1ch)	17940	> 500
2437 (6ch)	17970	> 500
2462 (11ch)	18000	> 500
OFDM MCS7 (40MHz)		
2422 (3ch)	36700	> 500
2437 (6ch)	36750	> 500
2452 (9ch)	36750	> 500

Antenna B

Frequency (MHz)	Measured Bandwidth (kHz)	Limit (kHz)
DSSS 11Mbps		
2412 (1ch)	10170	> 500
2437 (6ch)	10260	> 500
2462 (11ch)	10290	> 500
OFDM 54Mbps		
2412 (1ch)	16740	> 500
2437 (6ch)	16710	> 500
2462 (11ch)	16770	> 500
OFDM MCS7 (20MHz)		
2412 (1ch)	18030	> 500
2437 (6ch)	18030	> 500
2462 (11ch)	18030	> 500
OFDM MCS7 (40MHz)		
2422 (3ch)	36750	> 500
2437 (6ch)	36700	> 500
2452 (9ch)	36750	> 500

5.3.4 Measured Data (Continued)

Antenna B (DSSS 11 Mbps 1 ch)



5.4 15. 247(d) Transmitter Spurious Emission (Conducted)

5.4.1 Setting Remarks

- 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 as following:

- ✓ Resolution Bandwidth : 100 kHz
- ✓ Video Bandwidth : 300 kHz
- ✓ Detector Mode : Peak
- ✓ Trace Mode : Max Hold

- See 3.2 Test Configuration, Figure 4.

Note: In conducted measurement, fundamental and spurious of each antenna were measured and evaluated separately.

5.4.2 Minimum Standard

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.

5.4.3 Result

EUT complies with the requirement.

Uncertainty of measurement result : ± 0.8 dB

Date of testing : August 19, 2013

Room temperature : 27°C

Relative humidity : 56%

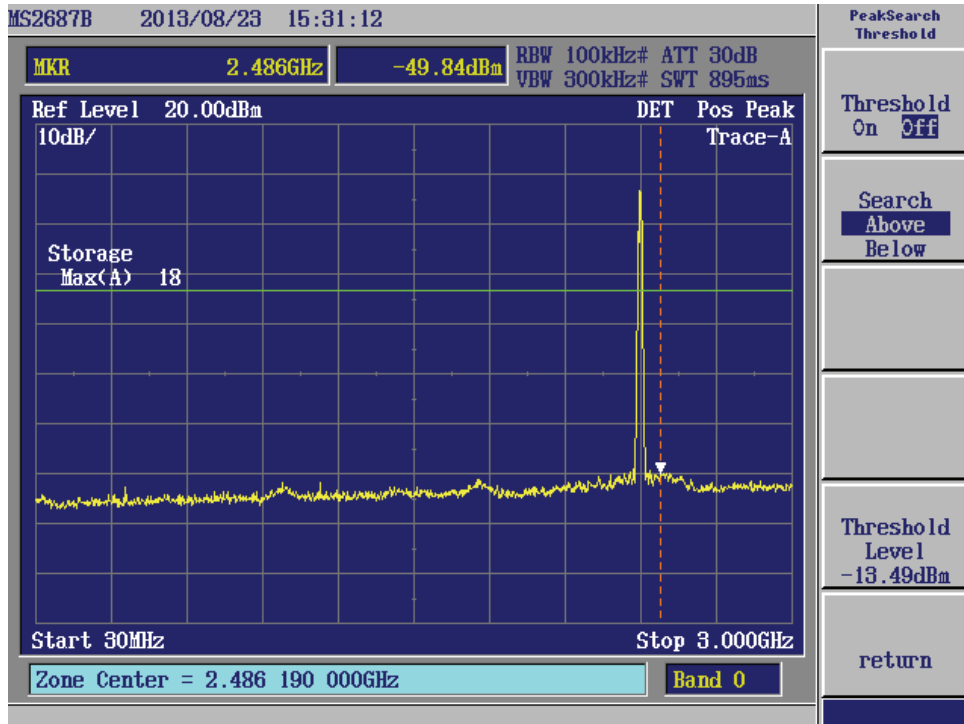
Date of testing : August 23, 2013

Room temperature : 28°C

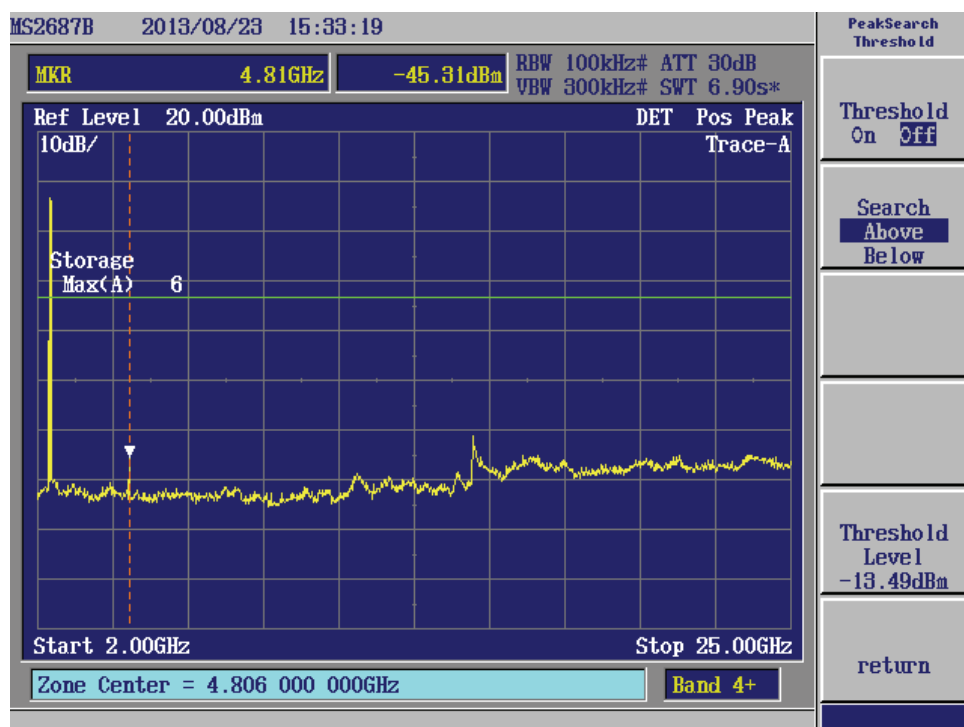
Relative humidity : 58%

5.4.4 Measured Data

Antenna A (DSSS 11 Mbps 1 ch) 30 MHz - 3 GHz

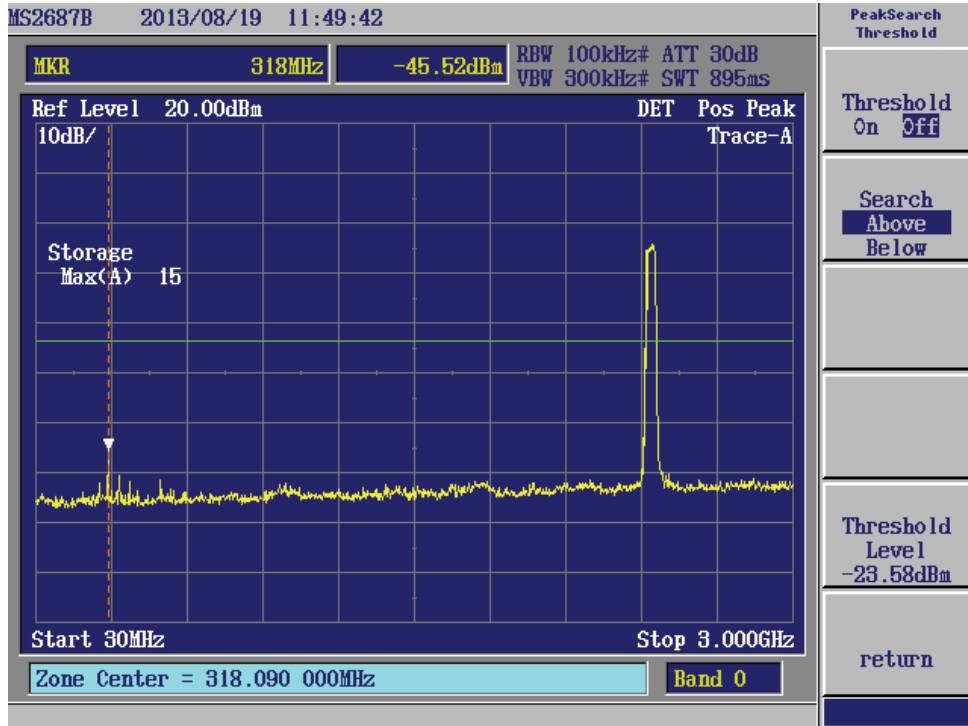


Antenna A (DSSS 11 Mbps 1 ch) 2 GHz - 25 GHz

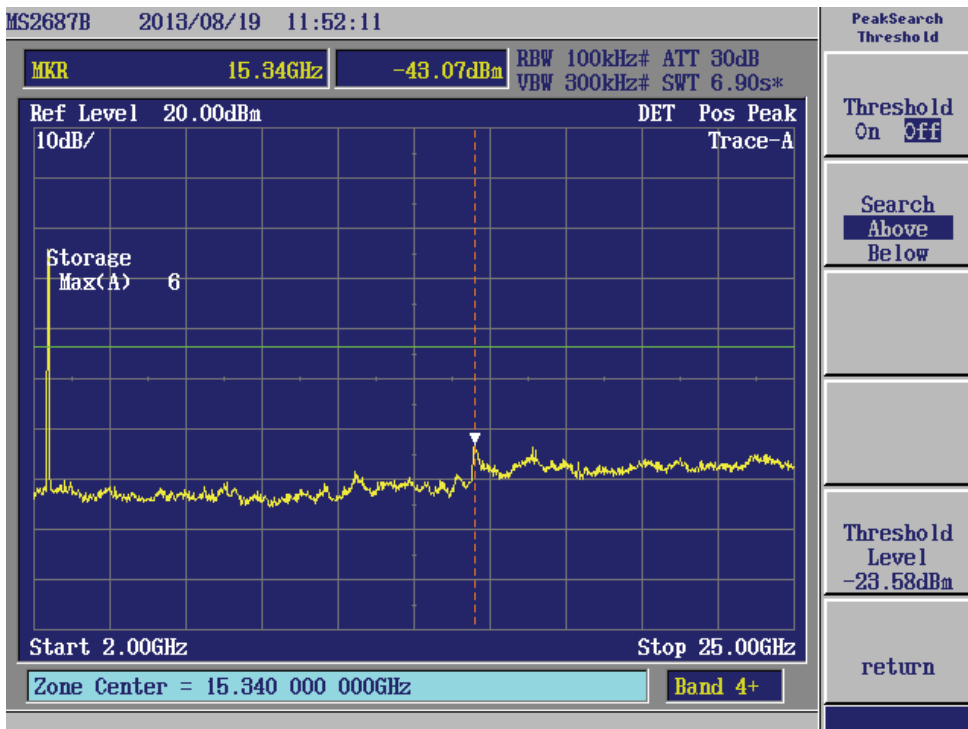


5.4.4 Measured Data (Continued)

Antenna B (OFDM MCS7 40 MHz 9 ch) 30 MHz - 3 GHz



Antenna B (OFDM MCS7 40 MHz 9 ch) 2 GHz - 25 GHz



5.5 15. 209 Transmitter Spurious Emission (Radiated)

5.5.1 Setting Remarks

- In the frequency range between 30 MHz to 25 GHz (as 10th harmonics), the Electric Field Strength is measured in accordance with ANSI C63.4:2003.
- The test setup is made in accordance with ANSI C63.4:2003.
- The antenna is measured at 1 m to 4 m height.
- The EUT is placed on the non-conductive table in the center of turntable. The height of this table is 0.8 m.
- The measurement is carried out with both horizontal and vertical antenna polarization.
- The highest radiation from the equipment is recorded.
- The carrier level (or,noise levels) is (or are) measured at each position of all three axes X,Y and Z,and the position that has the maximum noise is determined.
- With the position,the noise levels of all the frequencies is measured.
- EMI Test Receiver analyzer is set as following;
 - ✓ IF Bandwidth : 120 kHz (Quasi-Peak Detector)
 - ✓ IF Bandwidth : 1 MHz (Peak Detector, Average Detector)
- See 3.2 Test Configuration, Figure 3.

Note: In radiated measurement, it was measured and evaluated in the situation both antenna were operated.

5.5.2 Minimum Standard

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)).

Frequency (MHz)	Field strength ($\mu\text{V}/\text{m}$)	Measurement distance (m)
0.009 to 0.490	2400/F (kHz)	300
0.490 to 1.705	24000/F (kHz)	30
1.705 to 30.0	30	30
30 to 88	100**	3
88 to 216	150**	3
216 to 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54 MHz to 72 MHz, 76 MHz to 88 MHz, 174 MHz to 216 MHz or 470 MHz to 806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., Section 15.231 and 15.241.

5.5.3 Result

EUT complies with the requirement.

Uncertainty of measurement result : ± 3.28 dB

Date of testing : August 20, 2013

Room temperature : 23°C

Relative humidity : 33%

Date of testing : August 21, 2013

Room temperature : 23°C

Relative humidity : 33%

Date of testing : August 22, 2013

Room temperature : 25°C

Relative humidity : 31%

5.5.4 Measured Data

No spurious emission for RF module was found in 30 MHz to 1 GHz and 18 GHz to 25 GHz.

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 1 ch: PK)

RADIATED EMISSION

Cosmos Corporation Onoki Lab.
Date : 2013/08/20 14:15:53

Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5V

Job No. : CJ13-118102E
Temp/Humi : 23°C/33%
Condition : 11Mbps 1ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz 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	4824.065	50.1	-1.2	48.9	73.9	25.0	Hori.	123	320	HRN
2	4824.031	51.3	-1.2	50.1	73.9	23.8	Vert.	102	178	HRN

-TEPT0-DV/RE Ver1.90.0048

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 1 ch: PK)

RADIATED EMISSION

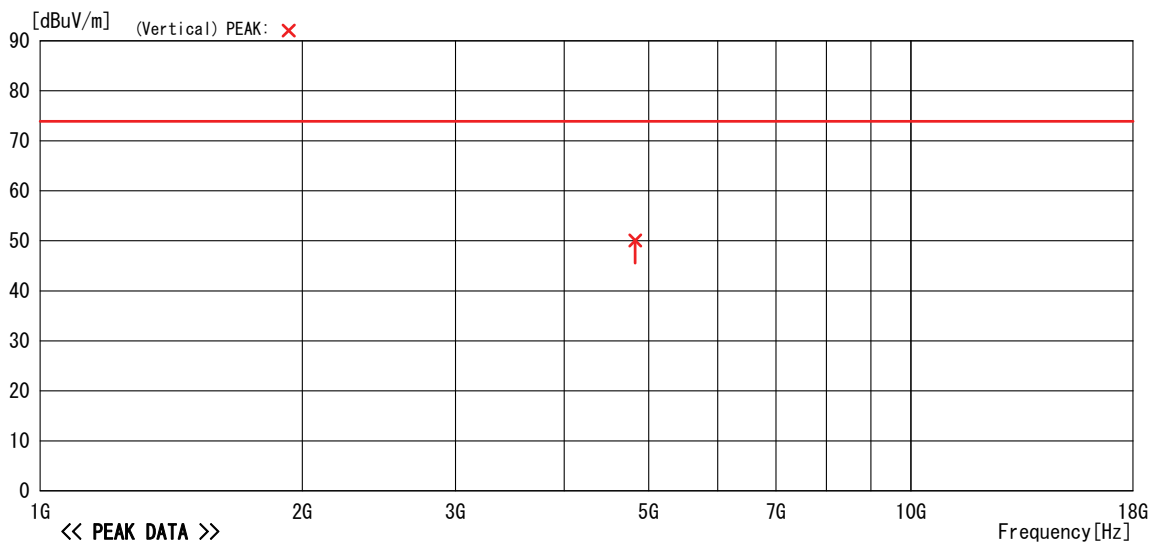
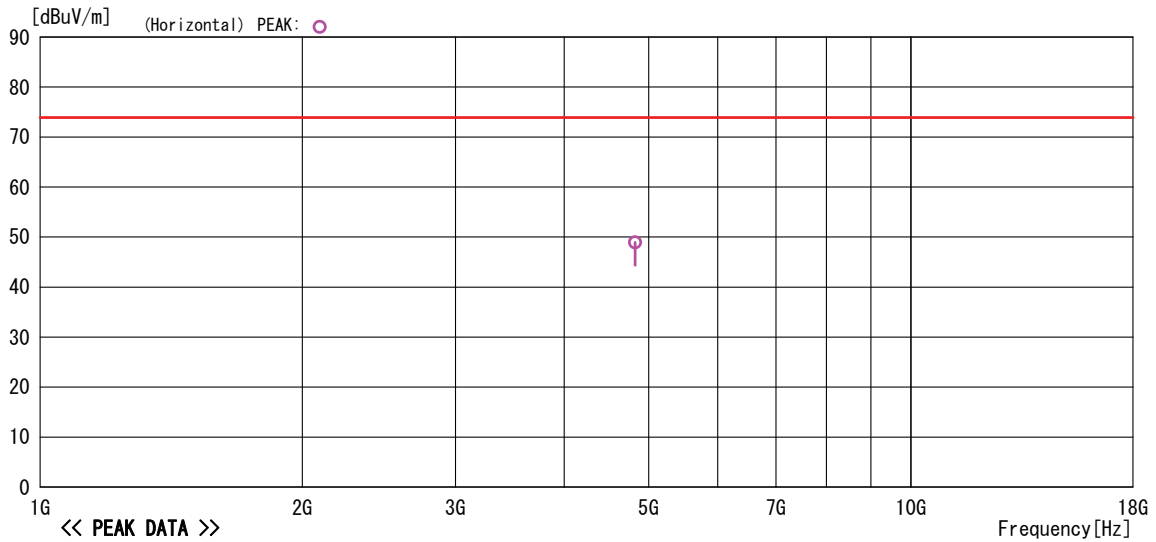
Cosmos Corporation Oonoki Lab.
Date : 2013/08/20 14:15:53

Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5V

Job No. : CJ13-118102E
Temp/Humi : 23°C/33%
Condition : 11Mbps 1ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz PK



-TEPT0-DV/RE Ver1. 90. 0048

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 1 ch: AV)

RADIATED EMISSIONCosmos Corporation Onoki Lab.
Date : 2013/08/20 14:15:53Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5VJob No. : CJ13-118102E
Temp/Humi : 23°C/33%
Condition : 11Mbps 1ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz 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	4824.065	45.8	-1.2	44.6	53.9	9.3	Hori.	123	320	HRN
2	4824.031	47.5	-1.2	46.3	53.9	7.6	Vert.	102	178	HRN

-TEPTO-DV/RE Ver1.90.0048

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 1 ch: AV)

RADIATED EMISSION

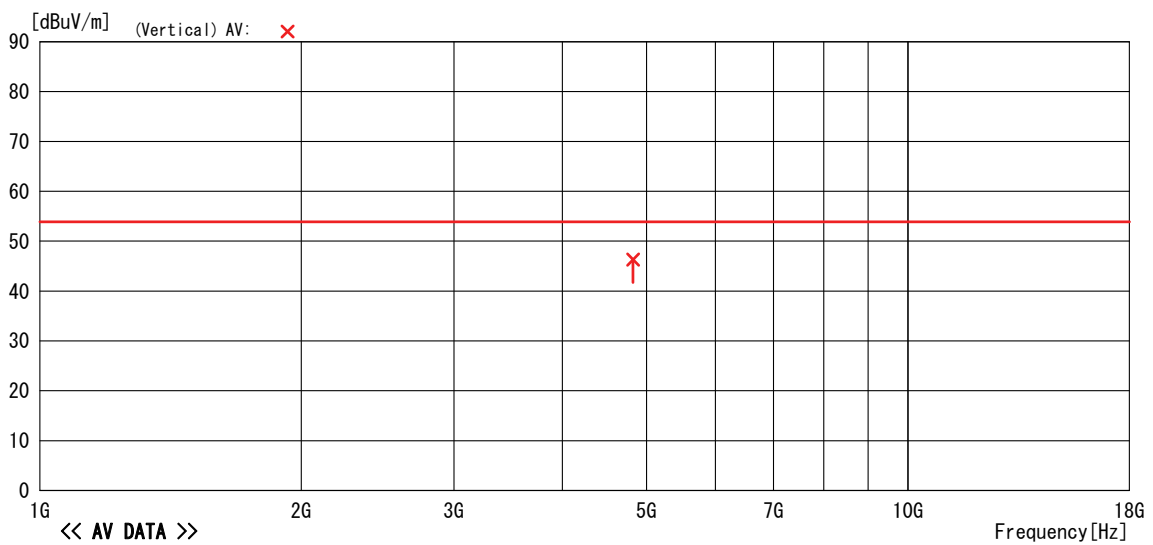
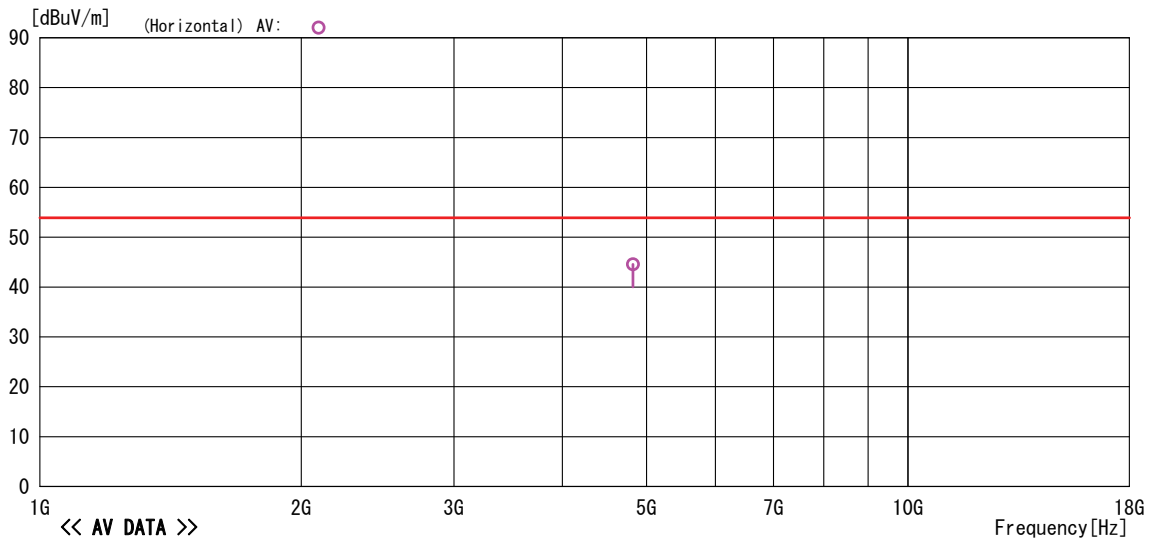
Cosmos Corporation Onoki Lab.
Date : 2013/08/20 14:15:53

Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5V

Job No. : CJ13-118102E
Temp/Humi : 23°C/33%
Condition : 11Mbps 1ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz AV



-TEPT0-DV/RE Ver1. 90. 0048

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 6 ch: PK)

RADIATED EMISSIONCosmos Corporation Onoki Lab.
Date : 2013/08/21 18:31:56Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5VJob No. : CJ13-118102E
Temp/Humi : 23°C/33%
Condition : 11Mbps 6ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz 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	2238.051	51.9	-5.9	46.0	73.9	27.9	Hori.	100	193	HRN
2	4874.071	53.2	-1.1	52.1	73.9	21.8	Hori.	104	223	HRN
3	4874.048	57.2	-1.1	56.1	73.9	17.8	Vert.	102	178	HRN

-TEPTO-DV/RE Ver1.90.0048

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 6 ch: PK)

RADIATED EMISSION

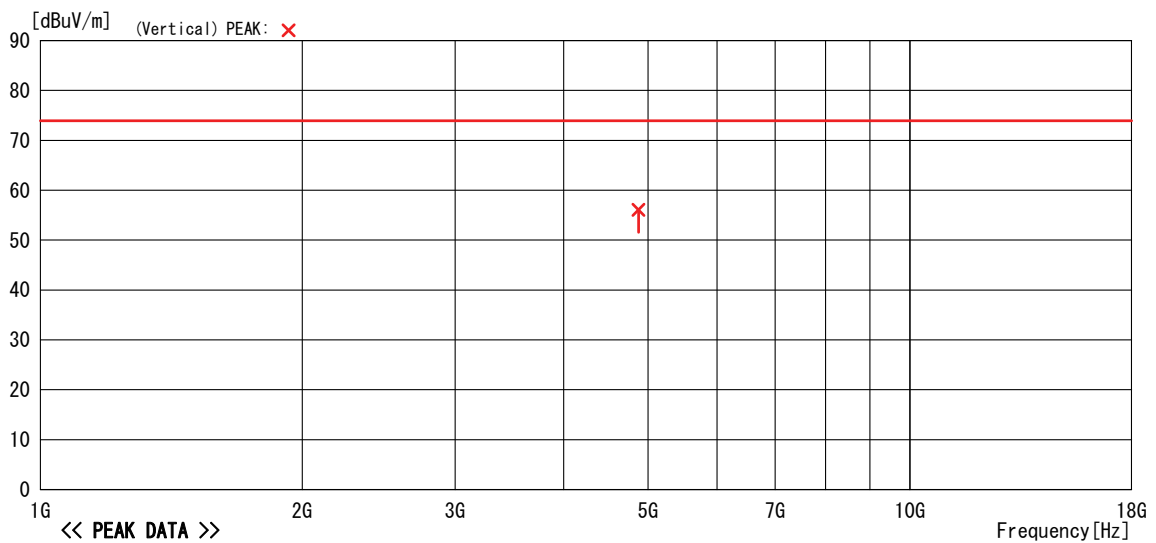
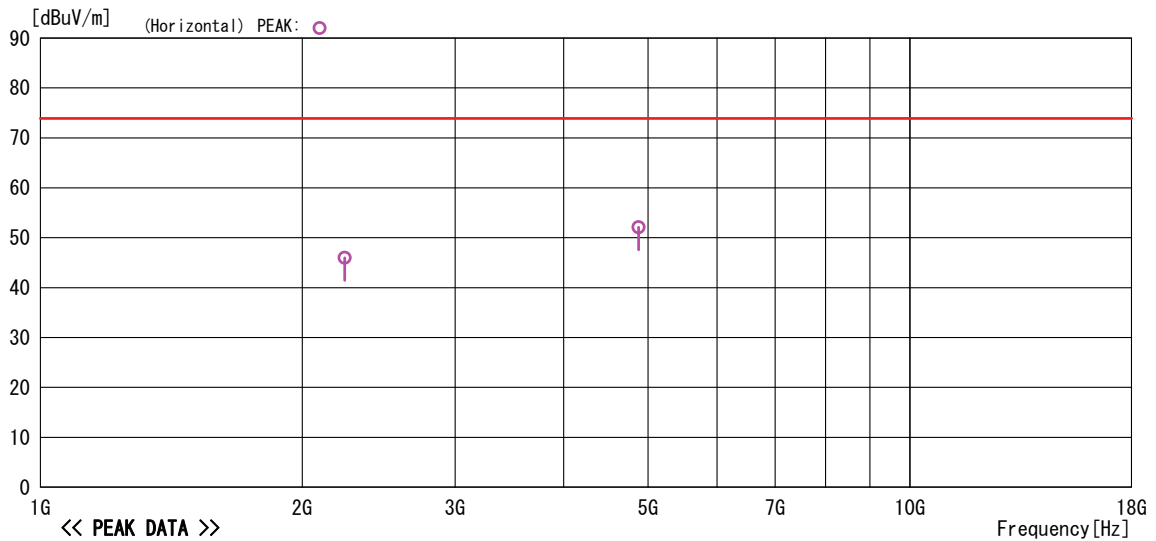
Cosmos Corporation Onoki Lab.
Date : 2013/08/21 18:31:56

Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5V

Job No. : CJ13-118102E
Temp/Humi : 23°C/33%
Condition : 11Mbps 6ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz PK



-TEPT0-DV/RE Ver1.90.0048

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 6 ch: AV)

RADIATED EMISSIONCosmos Corporation Oonoki Lab.
Date : 2013/08/21 18:31:56Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5VJob No. : CJ13-118102E
Temp/Humi : 23°C/33%
Condition : 11Mbps 6ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz 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	2238.051	44.9	-5.9	39.0	53.9	14.9	Hori.	100	193	HRN
2	4874.071	50.7	-1.1	49.6	53.9	4.3	Hori.	104	223	HRN
3	4874.048	54.9	-1.1	53.8	53.9	0.1	Vert.	102	178	HRN

-TEPTO-DV/RE Ver1.90.0048

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 6 ch: AV)

RADIATED EMISSION

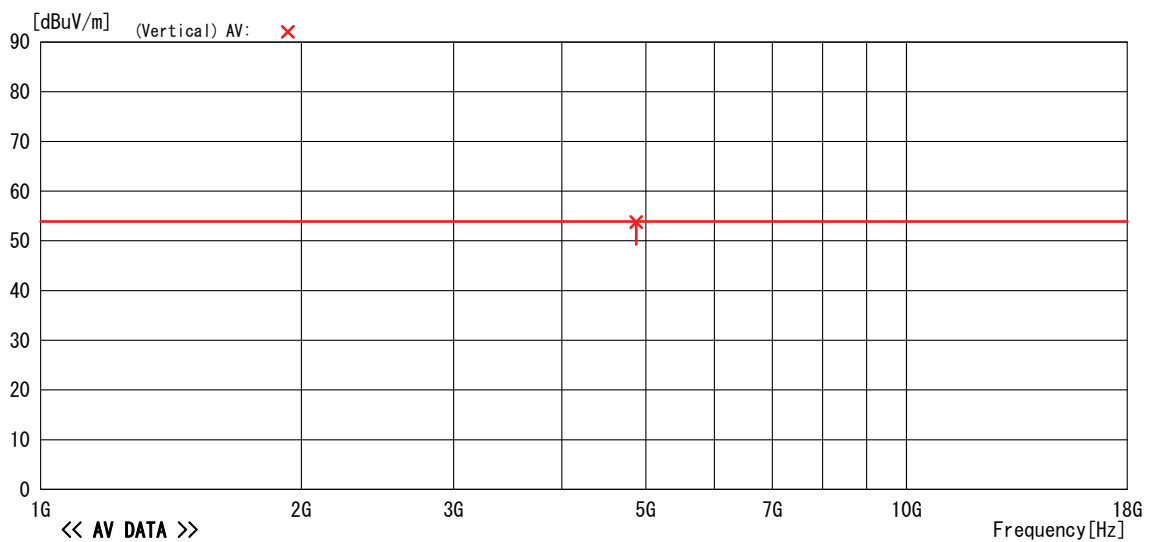
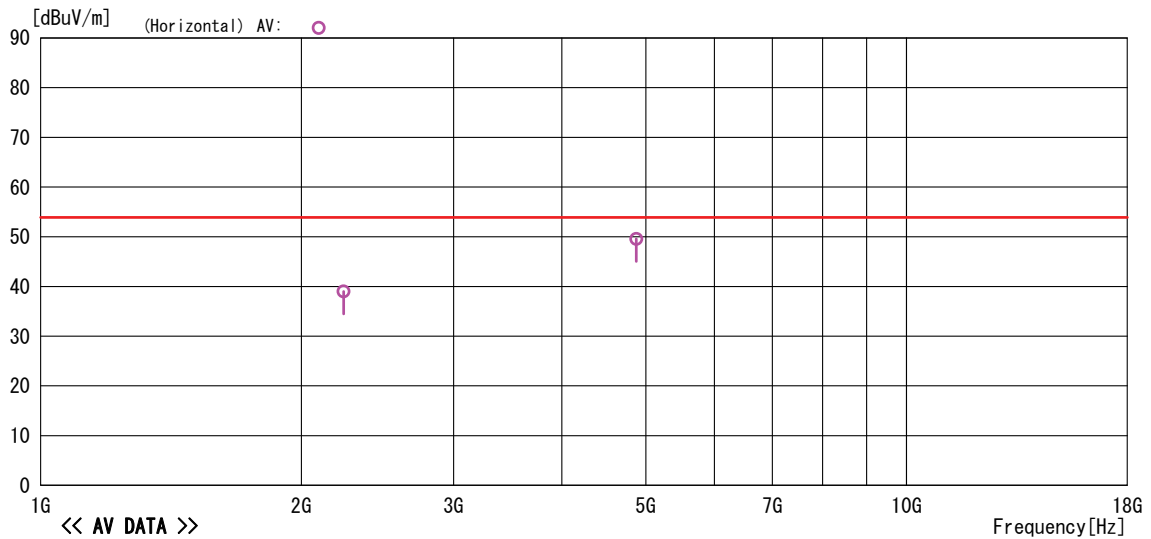
Cosmos Corporation Oonoki Lab.
Date : 2013/08/21 18:31:56

Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5V

Job No. : CJ13-118102E
Temp/Humi : 23°C/33%
Condition : 11Mbps 6ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz AV



-TEPTO-DV/RE Ver1. 90. 0048

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 11 ch: PK)

RADIATED EMISSIONCosmos Corporation Oonoki Lab.
Date : 2013/08/22 22:03:33Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5VJob No. : CJ13-118102E
Temp/Humi : 25°C/31%
Condition : 11Mbps 11ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz 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	2261.450	48.9	-5.8	43.1	73.9	30.8	Hori.	100	17	HRN
2	4923.972	51.4	-0.9	50.5	73.9	23.4	Hori.	140	1	HRN
3	4923.972	50.7	-0.9	49.8	73.9	24.1	Vert.	134	38	HRN

-TEPTO-DV/RE Ver1.90.0048

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 11 ch: PK)

RADIATED EMISSION

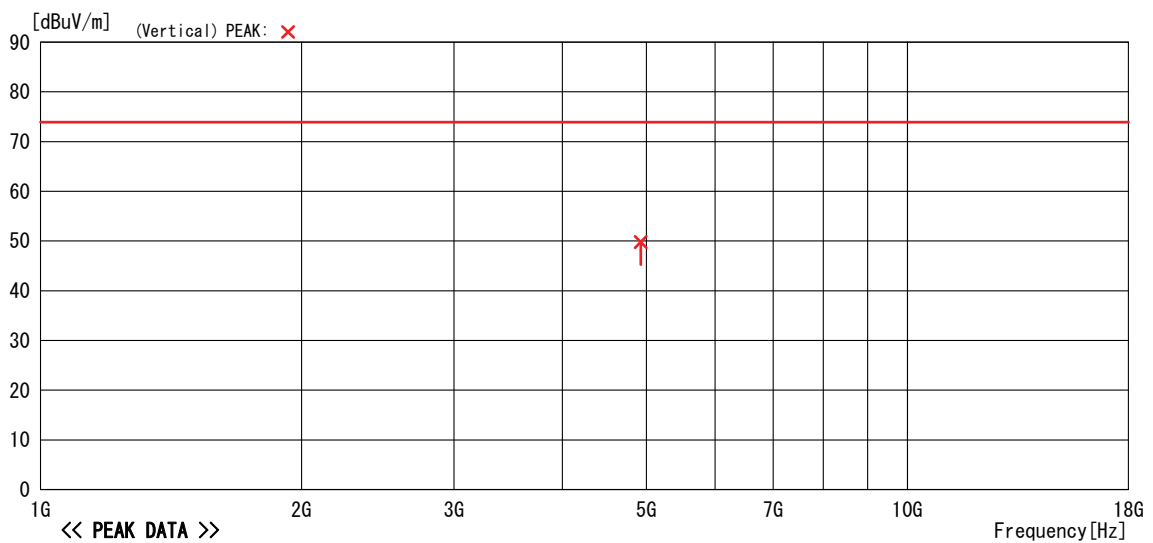
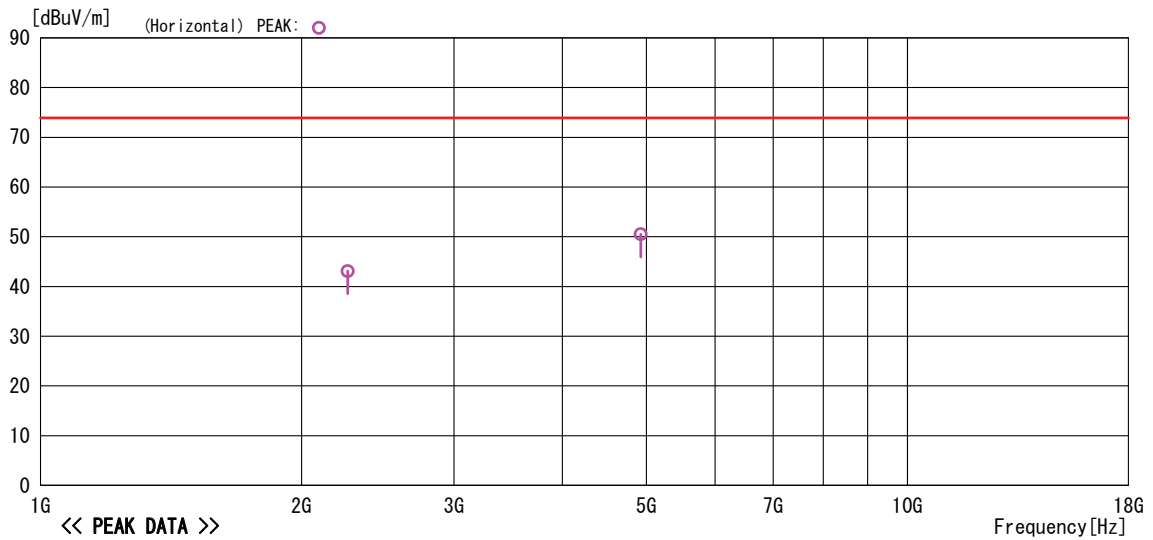
Cosmos Corporation Onoki Lab.
Date : 2013/08/22 22:03:33

Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5V

Job No. : GJ13-118102E
Temp/Humi : 25°C/31%
Condition : 11Mbps 11ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz PK



-TEPT0-DV/RE Ver1. 90. 0048

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 11 ch: AV)

RADIATED EMISSION

Cosmos Corporation Oonoki Lab.
Date : 2013/08/22 22:03:33

Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5V

Job No. : CJ13-118102E
Temp/Humi : 25°C/31%
Condition : 11Mbps 11ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz 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	2261.450	39.8	-5.8	34.0	53.9	19.9	Hori.	100	17	HRN
2	4923.972	47.4	-0.9	46.5	53.9	7.4	Hori.	140	1	HRN
3	4923.972	46.5	-0.9	45.6	53.9	8.3	Vert.	134	38	HRN

-TEPTO-DV/RE Ver1.90.0048

5.5.4 Measured Data (Continued)

1 GHz to 18 GHz (DSSS 11 Mbps 11 ch: AV)

RADIATED EMISSION

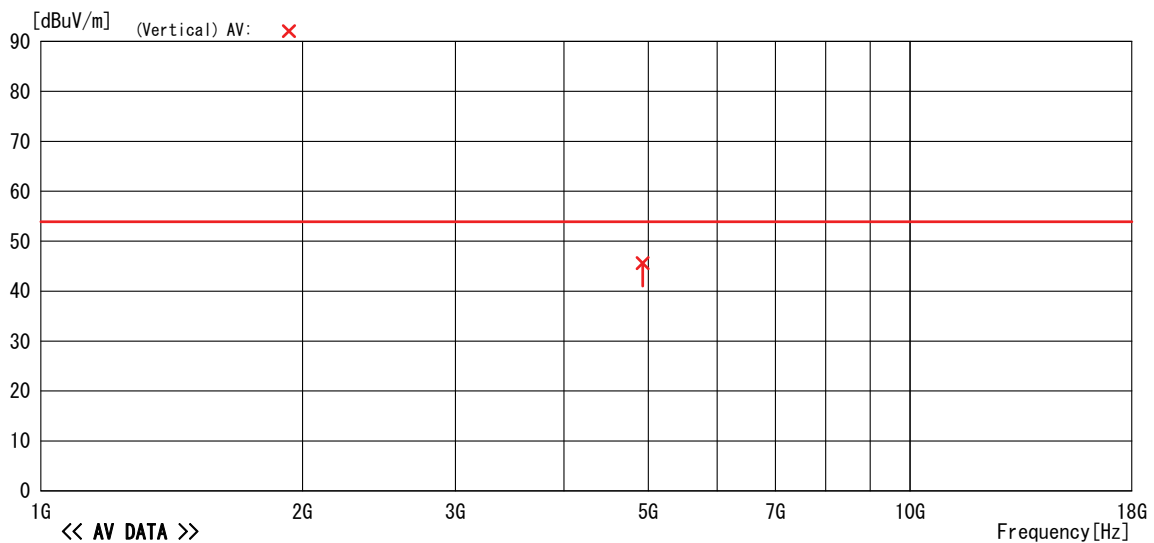
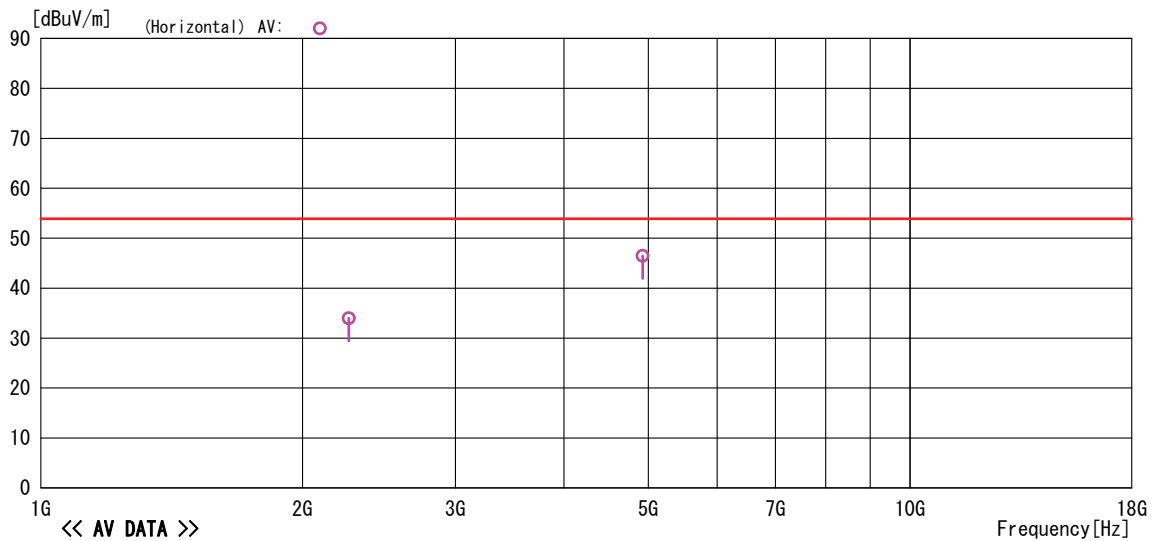
Cosmos Corporation Oonoki Lab.
Date : 2013/08/22 22:03:33

Model Name : LPV4-U2-300S
Serial No. : 00809201308B
Operator : J. Takashiba
Power Supply : DC 5V

Job No. : CJ13-118102E
Temp/Humi : 25°C/31%
Condition : 11Mbps 11ch
Remark :

Memo : RBW:1MHz

LIMIT : FCC Part15 SubpartC 3m GHz AV



-TEPTO-DV/RE Ver1.90.0048

5.6 15. 247(d) Band Edge Measurement

5.6.1 Setting Remarks

- This measurement is repeated in both side of the spectrum.
- Where band edge spectrum is too rough to find precise edge point, larger RBW i.e. 1 MHz, 3 MHz shall be applied as severer condition.
- The spectrum analyzer is set as following;

✓ Frequency Span	: 50 MHz
✓ Resolution Bandwidth	: 1 MHz
✓ Video Bandwidth	: 3 MHz / 10 Hz
✓ Detector Mode	: Peak / sample

- See 3.2 Test Configuration, Figure 3.

5.6.2 Minimum Standard

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 (dB μ V)	
	Peak	Average
Below 2400	73.9	53.9
Above 2483.5		

5.6.3 Result

EUT complies with the requirement.

Uncertainty of measurement result : ± 2.26 dB

Date of testing : August 21, 2013

Room temperature : 24°C

Relative humidity : 32%

Note: It was measured and evaluated in the situation both antennas were operated.
(MIMO Configuration)

5.6.4 Measured Data

DSSS 11 Mbps

Frequency	CH	Reading PK dB μ V	Reading AV dB μ V	c.f. dB/m	Result PK dB μ V/m	Result AV dB μ V/m	Limit PK dB μ V/m	Limit AV dB μ V/m	Margin PK dB	Margin AV dB
Below 2390 MHz	1ch	50.66	37.12	4.79	55.5	42.0	73.9	53.9	18.4	11.9
Above 2483.5 MHz	11ch	55.63	37.97	5.02	60.7	43.0	73.9	53.9	13.2	10.9

OFDM 54 Mbps

Frequency	CH	Reading PK dB μ V	Reading AV dB μ V	c.f. dB/m	Result PK dB μ V/m	Result AV dB μ V/m	Limit PK dB μ V/m	Limit AV dB μ V/m	Margin PK dB	Margin AV dB
Below 2390 MHz	1ch	53.70	37.37	4.79	58.5	42.2	73.9	53.9	15.4	11.7
Above 2483.5 MHz	11ch	58.00	37.61	5.02	63.1	42.7	73.9	53.9	10.8	11.2

OFDM MCS7 (20 MHz)

Frequency	CH	Reading PK dB μ V	Reading AV dB μ V	c.f. dB/m	Result PK dB μ V/m	Result AV dB μ V/m	Limit PK dB μ V/m	Limit AV dB μ V/m	Margin PK dB	Margin AV dB
Below 2390 MHz	1ch	55.06	39.35	4.79	59.9	44.2	73.9	53.9	14.0	9.7
Above 2483.5 MHz	11ch	51.16	35.36	5.02	56.2	40.4	73.9	53.9	17.7	13.5

OFDM MCS15 (20 MHz)

Frequency	CH	Reading PK dB μ V	Reading AV dB μ V	c.f. dB/m	Result PK dB μ V/m	Result AV dB μ V/m	Limit PK dB μ V/m	Limit AV dB μ V/m	Margin PK dB	Margin AV dB
Below 2390 MHz	1ch	54.37	38.68	4.79	59.2	43.5	73.9	53.9	14.7	10.4
Above 2483.5 MHz	11ch	50.73	34.60	5.02	55.8	39.7	73.9	53.9	18.1	14.2

OFDM MCS7 (40 MHz)

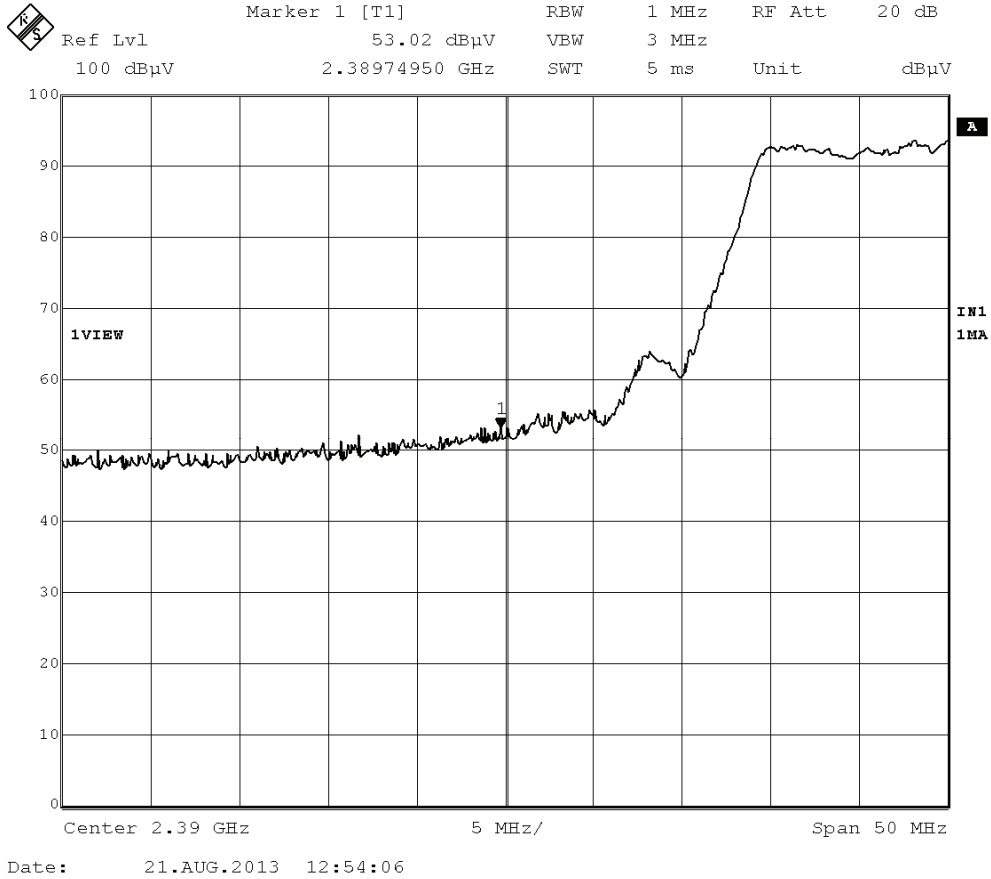
Frequency	CH	Reading PK dB μ V	Reading AV dB μ V	c.f. dB/m	Result PK dB μ V/m	Result AV dB μ V/m	Limit PK dB μ V/m	Limit AV dB μ V/m	Margin PK dB	Margin AV dB
Below 2390 MHz	3ch	53.02	39.40	4.79	57.9	44.2	73.9	53.9	16.0	9.7
Above 2483.5 MHz	9ch	52.37	37.10	5.02	57.4	42.2	73.9	53.9	16.5	11.7

OFDM MCS15 (40 MHz)

Frequency	CH	Reading PK dB μ V	Reading AV dB μ V	c.f. dB/m	Result PK dB μ V/m	Result AV dB μ V/m	Limit PK dB μ V/m	Limit AV dB μ V/m	Margin PK dB	Margin AV dB
Below 2390 MHz	3ch	49.84	35.68	4.79	54.7	40.5	73.9	53.9	19.2	13.4
Above 2483.5 MHz	9ch	49.68	36.40	5.02	54.7	41.5	73.9	53.9	19.2	12.4

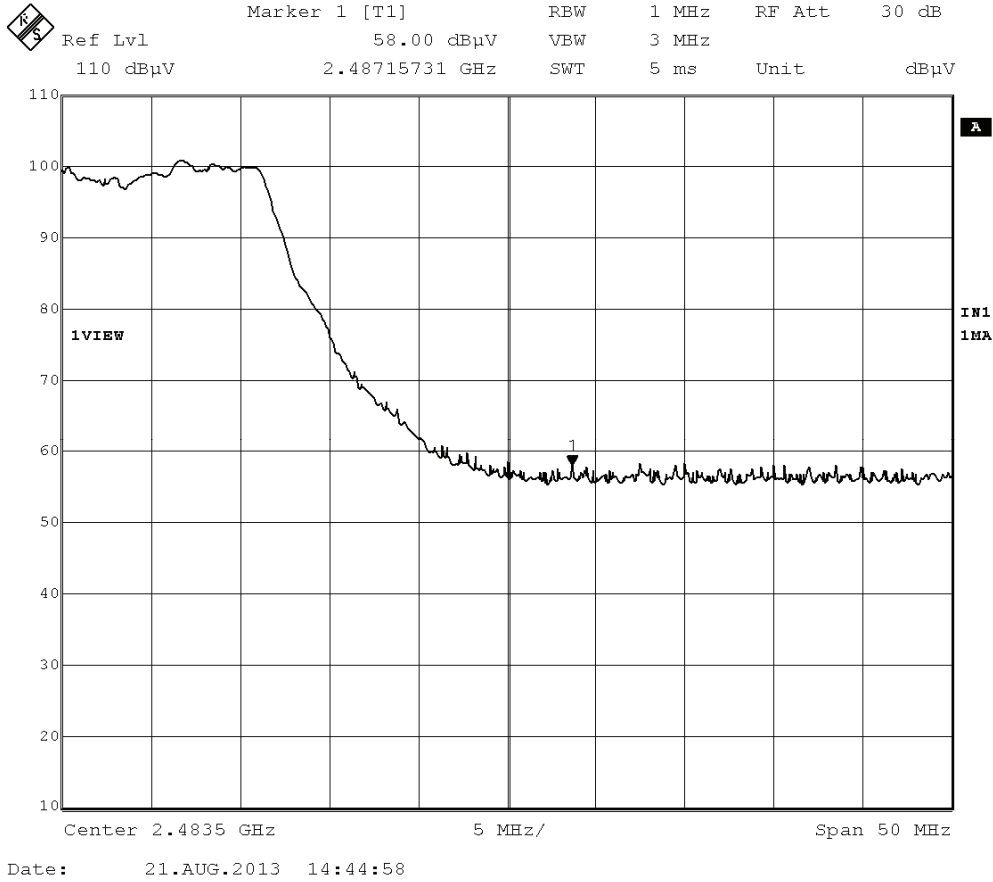
5.6.4 Measured Data (Continued)

OFDM MCS7 40 MHz 3 ch



5.6.4 Measured Data (Continued)

OFDM 54 Mbps 11 ch



5.7 15. 247(e) Power Spectral Density

5.7.1 Setting Remarks

- The peak output power is determined by using spectrum analyzer.
- The spectrum analyzer is set as following:

✓	Frequency Span	: 25 MHz or 50 MHz
✓	Resolution Bandwidth	: 3 kHz
✓	Video Bandwidth	: 10 kHz
✓	Detector Mode	: Peak
✓	Trace Mode	: Max Hold

- See 3.2 Test Configuration, Figure 4.

Note: The test result of MCS15 mode added the measurement value of each antenna to the test result.

5.7.2 Minimum Standard

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.

5.7.3 Result

EUT complies with the requirement.

Uncertainty of measurement : ± 0.8 dB

Date of testing : August 17, 2013

Room temperature : 24°C

Relative humidity : 53%

Date of testing : August 22, 2013

Room temperature : 26°C

Relative humidity : 41%

5.7.4 Measured Data

Antenna A

Frequency (MHz)	Spectral Density (dBm)	Limit (dBm)	Margin (dB)
DSSS 11Mbps			
2412 (1ch)	-11.79	8.00	19.79
2437 (6ch)	-11.32	8.00	19.32
2462 (11ch)	-11.37	8.00	19.37
OFDM 54Mbps			
2412 (1ch)	-12.01	8.00	20.01
2437 (6ch)	-11.39	8.00	19.39
2462 (11ch)	-11.62	8.00	19.62
OFDM MCS7 (20MHz)			
2412 (1ch)	-12.57	8.00	20.57
2437 (6ch)	-12.83	8.00	20.83
2462 (11ch)	-12.68	8.00	20.68
OFDM MCS7 (40MHz)			
2422 (3ch)	-15.31	8.00	23.31
2437 (6ch)	-14.98	8.00	22.98
2452 (9ch)	-14.56	8.00	22.56

Antenna B

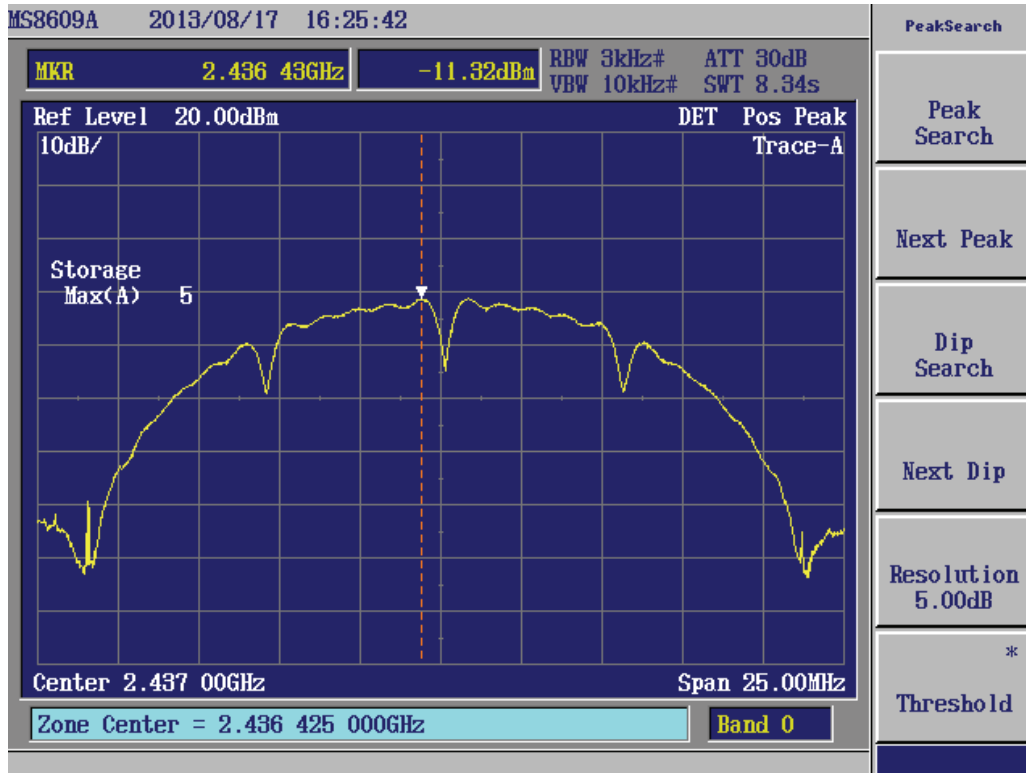
Frequency (MHz)	Spectral Density (dBm)	Limit (dBm)	Margin (dB)
DSSS 11Mbps			
2412 (1ch)	-12.41	8.00	20.41
2437 (6ch)	-12.08	8.00	20.08
2462 (11ch)	-12.40	8.00	20.40
OFDM 54Mbps			
2412 (1ch)	-12.63	8.00	20.63
2437 (6ch)	-12.14	8.00	20.14
2462 (11ch)	-12.28	8.00	20.28
OFDM MCS7 (20MHz)			
2412 (1ch)	-13.41	8.00	21.41
2437 (6ch)	-12.94	8.00	20.94
2462 (11ch)	-13.27	8.00	21.27
OFDM MCS7 (40MHz)			
2422 (3ch)	-16.14	8.00	24.14
2437 (6ch)	-15.76	8.00	23.76
2452 (9ch)	-15.92	8.00	23.92

Antenna A and B

Frequency (MHz)	Spectral Density (dBm)	Spectral Density (mW)	Limit (dBm)	Margin (dB)
OFDM MCS15 (20MHz)				
2412 (1ch)	-10.46	0.090	8.00	18.46
2437 (6ch)	-10.41	0.091	8.00	18.41
2462 (11ch)	-10.87	0.082	8.00	18.87
OFDM MCS15 (40MHz)				
2422 (3ch)	-13.35	0.047	8.00	21.35
2437 (6ch)	-13.11	0.049	8.00	21.11
2452 (9ch)	-12.76	0.053	8.00	20.76

5.7.4 Measured Data (Continued)

DSSS 11 Mbps 6 ch



6. Photos

6.1 External Photo of EUT

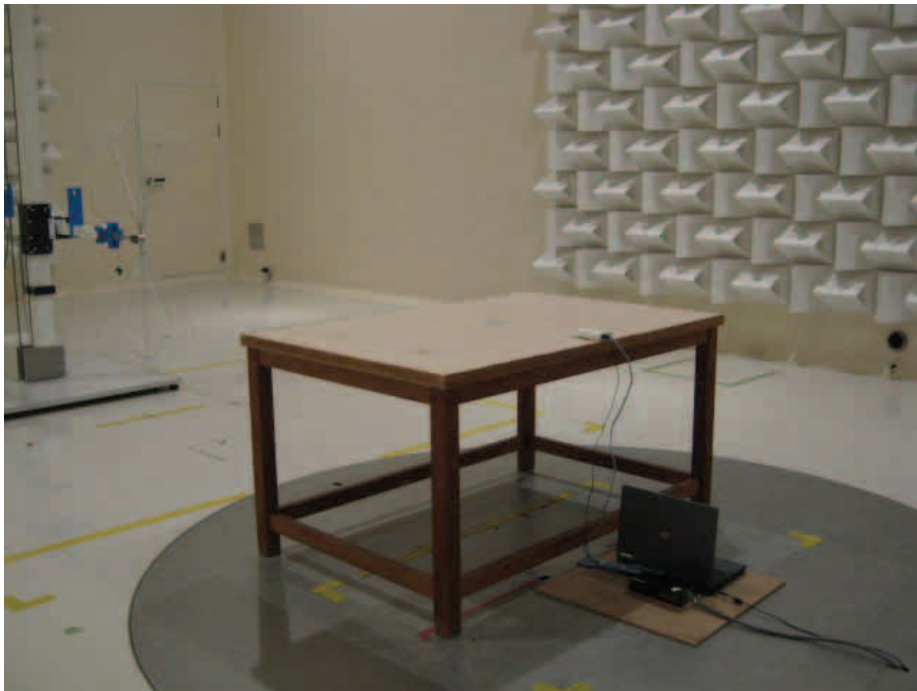
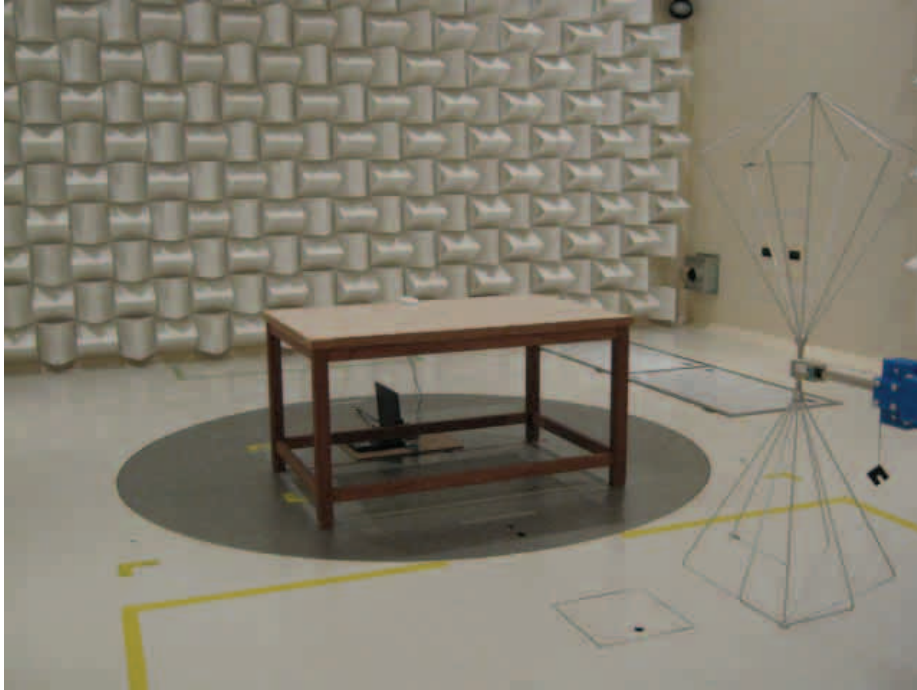


6.2 Setup Photo of AC Power Line Conducted Emission



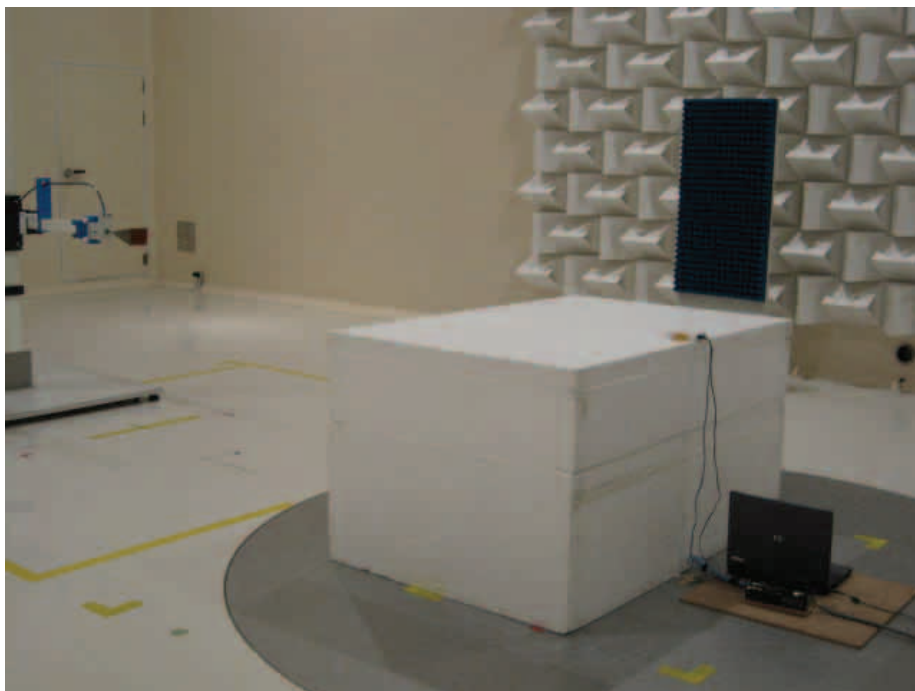
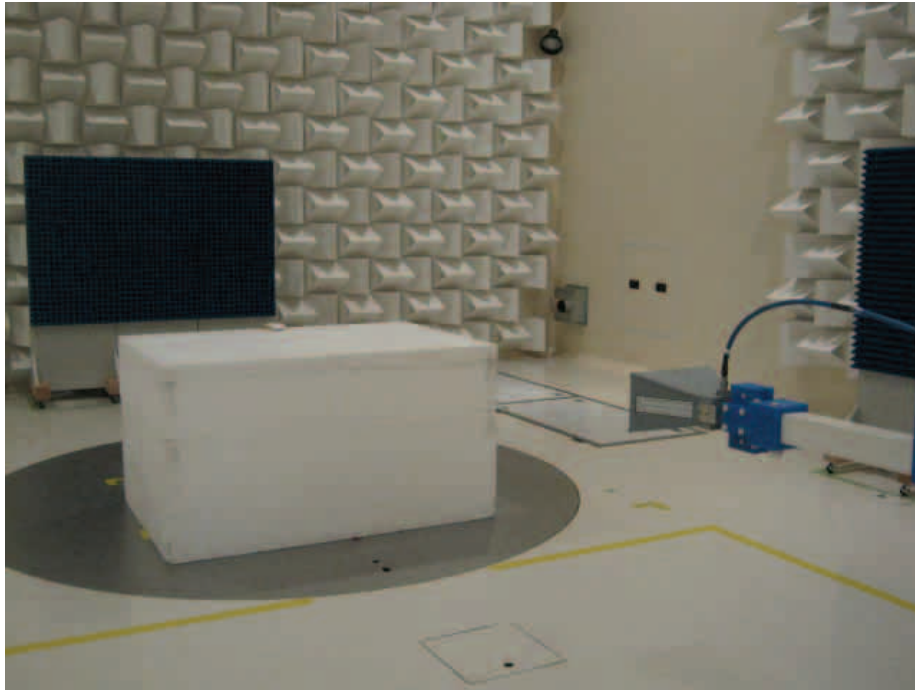
6.3 Setup Photo of Radiated Emission

Below 1 GHz

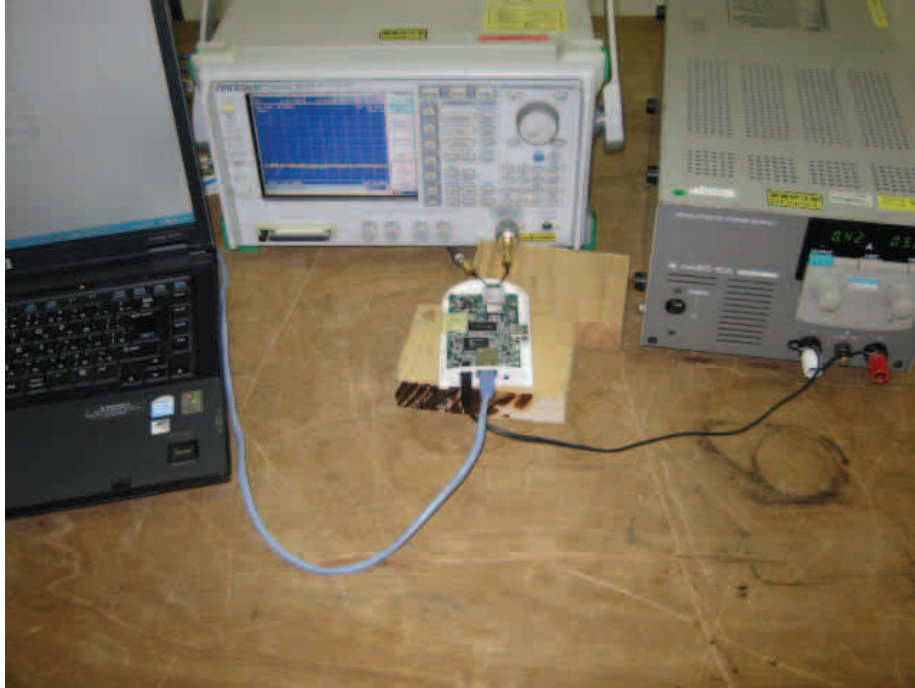


6.3 Setup Photo of Radiated Emission (Continued)

Above 1 GHz



6.4 Setup Photo of Antenna Port Conducted Emission



7. List of Test Measurement Instruments

AC Power Line Conducted Emission

Instruments	Manufacturer	Model	Serial No.	Calibrated Date/Until	Control Code
EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100413	2012/12/22 2013/12/21	E1N013L
Artificial-Mains Network (for EUT)	Kyoritsu	KNW-341C (F)	8-1659-1	2013/01/18 2014/01/17	E3C302S
Artificial-Mains Network (for Peripheral)	Kyoritsu	KNW-244C (F)	8-1657-1	2013/06/25 2014/06/24	E3C301S
RF Cable	Fujikura	3D-2W	OC01	2013/05/10 2014/05/09	
RF Cable	SUHNER	RG223/U	OC02/OC04	2013/05/10 2014/05/09	
RF Selector	TSJ	RFM-E221	3148	2013/05/10 2014/05/09	E7A305S

Antenna Port Conducted Emission

Instruments	Manufacturer	Model	Serial No.	Calibrated Date/Until	Control Code
Spectrum Analyzer	Anritsu	MS2687B	6200162706	2012/11/30 2013/11/30	E1N401L
Spectrum Analyzer	Anritsu	MS8609A	6200140303	2013/04/15 2014/04/30	1P015
Regulated DC Power Supply	KIKUSUI	PAN60-10A	HC000143	Confirmed before Test	E2A026S
Power Divider	Anritsu	K240B	019487	Confirmed before Test	OR00028S

7. List of Test Measurement Instruments (Continued)

Radiated Emission

Instruments	Manufacturer	Model	Serial No.	Calibrated Date/Until	Control Code
EMI Test Receiver	ROHDE & SCHWARZ	ESIB40	100211	2013/03/30 2014/03/29	E1N303S
Pre-Amplifier (30 MHz to 1 GHz)	HEWLETT PACKARD	8447D OPT 010	2944A078 91	2013/04/15 2014/04/14	E2D301S
Pre-Amplifier (1 GHz to 18 GHz)	TSJ	MLA-0120AML -34	---	2013/05/29 2014/05/28	E2D306S
Pre-Amplifier (18 GHz to 26.5 GHz)	MITEQ	AMF-5F-18026 5-25-10-1	850831	2013/05/30 2014/05/29	E2D014S
Biconical Antenna (30 MHz to 300 MHz)	SCHWARZBECK	VHBB9124	311	2012/11/24 2013/11/23	E1M313S
Log-Periodic Antenna (300 MHz to 1 GHz)	SCHWARZBECK	UHALP 9108 A	645	2012/11/24 2013/11/23	E1M315S
Horn Antenna	SCHWARZBECK	BBHA9120 D	443	2013/01/12 2014/01/11	E1M318S
Standard Gain Horn Antenna	MI TECHNOLOGIES	12A-18 115300	22858NL	2012/10/19 2013/10/18	E1M205S
RF Cable (30 MHz to 1 GHz)	SUHNER	RG223/U	OC11	2013/04/23 2014/04/22	
RF Cable (30 MHz to 1 GHz)	Fujikura	8D-2W	OC14	2013/04/23 2014/04/22	
RF Cable (30 MHz to 1 GHz)	SUHNER	RG214/U	OC15/OC16	2013/04/23 2014/04/22	
RF Cable (30 MHz to 1 GHz)	SUHNER	RG400/U	OC17	2013/04/23 2014/04/22	
RF Cable (1 GHz to 18 GHz)	STORM	TRUE BLUE 290	OC18/OC19 /OC20	2013/06/11 2014/06/10	
RF Cable (18 GHz to 26.5 GHz)	SUHNER	SUCOFLEX 104A	C24	2013/02/08 2014/02/07	
RF Selector	TSJ	RFM-E121	03149	2013/04/23 2014/04/22	E7A302S