



RADIO TEST REPORT

Test Report No.: 10430016S-B
(Original report: 32KE0045-SH-04-B)

Applicant : RICOH COMPANY, LTD.
Type of Equipment : Wireless LAN Module
Model No. : LBWB1ZZWU6
FCC ID : BBP-WLALT01
Test regulation : FCC Part15 Subpart E: 2014
Test item : Conducted emission
Radiated Spurious emission
Test result : Complied

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3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
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6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.

Date of test:

October 2 to 9, 2014

Representative test engineer:



Yasumasa Owaki

Engineer

Consumer Technology Division

Approved by :



Toyokazu Imamura

Leader

Consumer Technology Division



JAB

Testing

RTL02610

The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.

There is no testing item of "Non-accreditation".

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13-EM-F0429

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SECTION 1: Customer information

Company Name : RICOH COMPANY, LTD.
Address : 810, Shimo-imaizumi, Ebina-shi, Kanagawa, 243-0460 Japan
Telephone Number : +81-46-249-8490
Facsimile Number : +81-3-6673-4366
Contact Person : Yoshiaki Nishikawa

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

2.1 Identification of E.U.T.

Type of Equipment : Wireless LAN Module
Model Number : LBWB1ZZWU6
Serial Number : 784B879B3786
Rating : DC 3.6V
Country of Mass-production : China
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Receipt Date of Sample : September 29, 2014
Modification of EUT : No modification by the test lab.

2.2 Product description

Model: LBWB1ZZWU6 (referred to as the EUT in this report) is a Wireless LAN Module.

Clock frequency(ies) in the system : 37.4MHz

<Radio part>

Equipment type : Transceiver
Frequency of operation *1) : 2.4GHz: 2412-2462MHz (IEEE 802.11b, 11g, 11n-HT20)
W52: 5180-5240MHz (IEEE 802.11a, 11n-HT20)
5190-5230MHz (IEEE 802.11n-HT40)
W53: 5260-5320MHz (IEEE 802.11a, 11n-HT20)
5270-5310MHz (IEEE 802.11n-HT40)
W56: 5500-5700MHz (IEEE 802.11a, 11n-HT20)
5510-5670MHz (except 5600-5650MHz) (IEEE 802.11n-HT40)
W58: 5745-5825MHz (IEEE 802.11a, 11n-HT20)
5755-5795MHz (IEEE 802.11n-HT40)
Bandwidth : 20MHz
Channel spacing : 5MHz (2.4GHz), 20MHz/40MHz (5GHz)
Type of modulation : DSSS (IEEE 802.11b), OFDM (IEEE 802.11a/g/n)
Antenna type : Printed PCB
Antenna connector type : JSC
Antenna gain : 2.4GHz: -1.1dBi, W52/53: 2.3dBi, W56: 4.5dBi, W58: 2.7dBi
ITU code : D1D, G1D
Operation temperature range : 0 to +80 deg.C

*1) Refer to the test reports: 10430016S-A for FCC 15.247.

FCC 15.31 (e) / 212

The host device provides stable voltage (DC3.6V) constantly to the EUT regardless of input voltage. Therefore, the EUT complies with the requirement.

FCC 15.203 / 212

The EUT has a unique coupling/antenna connector. Therefore the equipment complies with the requirement.

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SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart E: 2014, final revised on August 15, 2014 and effective October 14, 2014
Title : FCC 47CFR Part15 Radio Frequency Device
Subpart E Unlicensed National Information Infrastructure Devices
Section 15.207 Conducted limits
Section 15.209 Radiated emission limits, general requirements
Section 15.407 General technical requirements

* The revision on August 15, 2014 does not affect the test specification applied to the EUT.

3.2 Procedures & Results

Item	Test Procedure *1)	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.4:2009 7. AC powerline conducted emission measurements	FCC 15.407 (b)(6) & 15.207	-	N/A	14.1dB Freq.: 0.42609MHz Detection: Average Phase: L1 Mode: Tx 5670MHz, IEEE 802.11n HT40	Complied
26dB & 20dB emission bandwidth	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)(3) FCC 15.215 (c)	Conducted	*2)	-	-
Maximum conducted output power	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)(3)	Conducted	*2)		-
Peak power spectral density	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)(3)	Conducted	*2)		-
Spurious emission & Restricted band edges	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (b), 15.205 & 15.209	Radiated	N/A	4.4dB Freq.: 66.045MHz Mode: Tx 5670MHz, Polarization: Vertical Detection: Quasi-Peak IEEE 802.11n HT40 Freq.: 371.244MHz Polarization: Vertical Detection: Quasi-Peak Mode: Tx 5670MHz, IEEE 802.11n HT40	Complied
Dynamic frequency selection	FCC 06-96 APPENDIX	FCC 15.407 (h)	Conducted	*3)	N/A	N/A

*1) These tests were also referred to KDB 789033 (FCC), "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E".

*2) Refer to the original test report: 32KE0045-SH-04-B.

*3) Refer to the test report 32KE0045-SH-04-C.

Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422

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3.3 Addition to standard

Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Item	Frequency range	No.1 SAC ^{*1} /SR ^{*2} (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Conducted emission (AC Mains) LISN	150kHz-30MHz	3.6 dB	3.6 dB	3.5 dB
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.8 dB	5.0 dB	4.8 dB
	300MHz-1GHz	5.0 dB	5.0 dB	4.8 dB
	1GHz-15GHz	4.9 dB	4.9 dB	4.9 dB
Radiated emission (Measurement distance: 1m)	15GHz-18GHz	5.7 dB	5.6 dB	5.6 dB
	18GHz-40GHz	5.2 dB	4.3 dB	4.3 dB

*1: SAC=Semi-Anechoic Chamber

*2: SR= Shielded Room is applied besides radiated emission

Conducted emission test

The data listed in this test report has enough margin, more than site margin.

Radiated emission test

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

3.5 Test location

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JAB Accreditation No. : RTL02610

	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
<input type="checkbox"/> No.1 semi-anechoic chamber	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
<input type="checkbox"/> No.2 semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
<input checked="" type="checkbox"/> No.3 semi-anechoic chamber	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
<input type="checkbox"/> No.4 semi-anechoic chamber	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
<input type="checkbox"/> No.1 shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
<input type="checkbox"/> No.2 shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
<input checked="" type="checkbox"/> No.3 shielded room	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
<input type="checkbox"/> No.4 shielded room	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
<input type="checkbox"/> No.5 shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
<input type="checkbox"/> No.6 shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
<input type="checkbox"/> No.1 measurement room	-	2.55 x 4.1 x 2.5	-	-

3.6 Test setup, Test data & Test instruments

Refer to APPENDIX 1 to 3.

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

4.1 Operating mode

Test item	Mode	Tested frequency	Power setting *1)	Worst data rate *2)
Conducted emission Radiated emission (below 1GHz) *3)	Transmitting IEEE 802.11n HT40	5670MHz	13dBm	MCS0, PN9
Radiated emission (above 1GHz)	Transmitting IEEE 802.11a	5180MHz, 5240MHz	13dBm	6Mbps, PN9
		5320MHz		
		5500MHz, 5580MHz, 5700MHz		
	Transmitting IEEE 802.11n HT20	5180MHz, 5240MHz	13dBm	MCS0, PN9
		5320MHz		
		5500MHz, 5580MHz, 5700MHz		
	Transmitting IEEE 802.11n HT40	5190MHz, 5230MHz	13dBm	MCS0, PN9
		5310MHz		
		5510MHz, 5550MHz, 5670MHz		
*1) Software: Tera Term ver: 4.71, Wl.exe ver:1.0				
*2) The worst condition was determined based on the original test report.				
*3) Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing- Managing Complex Regulatory Approvals - "of TCB Council Workshop October 2009.				

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

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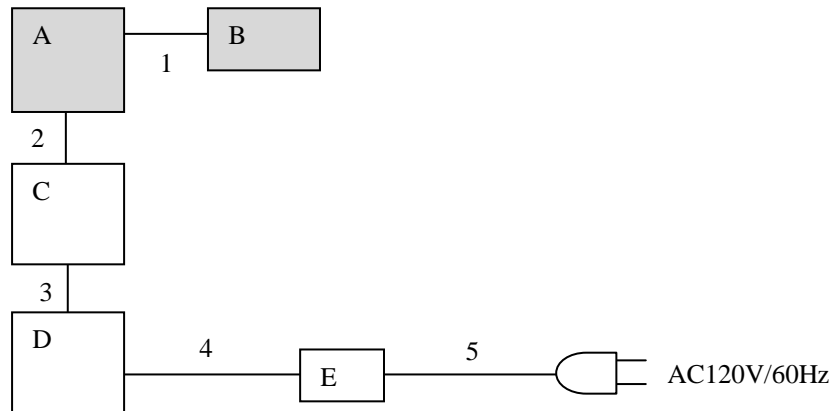
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4.2 Configuration and peripherals



* Test data was taken under worst case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Wireless LAN Module	LBWB1ZZWU6	784B879B3786	RICOH	EUT
B	Antenna	Y0515780	406S0078	RICOH	EUT
C	Network Board	NETWORK: ALT-2	#40	RICOH	-
D	Power Supply Board	EXCHANGE: NW2	WBJ181301	RICOH	-
E	AC Adapter	GFP451DA-1530	13D8-0001806	Li Tone Electronics	-

List of cables used

No.	Cable Name	Length (m)	Shield		Remark
			Cable	Connector	
1	Antenna	0.05	Shielded	Shielded	-
2	Flat	0.10	Unshielded	Unshielded	-
3	Flat	0.05	Unshielded	Unshielded	-
4	DC	1.8	Unshielded	Unshielded	-
5	AC	1.8	Unshielded	Unshielded	-

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SECTION 5: Conducted emission

5.1 Operating environment

Test place : See test data (APPENDIX 1)
Temperature : See test data (APPENDIX 1)
Humidity : See test data (APPENDIX 1)

5.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 0.8m above the conducting ground plane.

The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.

The rear of tabletop was located 40cm to the vertical conducting plane. The rear of peripheral was aligned and was flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from LISN.

Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. All unused 50ohm connectors of the LISN were resistively terminated in 50ohm when not connected to the measuring equipment.

Photographs of the set up are shown in APPENDIX 3.

5.3 Test conditions

Frequency range : 0.15 - 30MHz
EUT position : Table top

5.4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT within a Shielded room.

The EUT was connected to a Line Impedance Stabilization Network (LISN).

An overview sweep with peak detection has been performed.

The measurements had been performed with a quasi-peak detector and if required, a CISPR average detector.

The conducted emission measurements were made with the following detection of the test receiver.

Detection Type : Quasi-Peak/ CISPR Average
IF Bandwidth : 9kHz

5.5 Results

Summary of the test results : Pass

Refer to APPENDIX 1

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SECTION 6: Radiated emission

6.1 Operating environment

Test place : See test data (APPENDIX 1)
Temperature : See test data (APPENDIX 1)
Humidity : See test data (APPENDIX 1)

6.2 Test configuration

EUT was placed on a polystyrene platform of nominal size, 0.5m by 0.5m, raised 0.8m above the conducting ground plane. Photographs of the set up are shown in APPENDIX 3.

6.3 Test conditions

Frequency range : 30MHz to 40GHz
EUT position : Table top

6.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m (below 15GHz) / 1m (above 15GHz). Measurements were performed with quasi-peak, peak and average detector. The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization. Drawing of the antenna direction is shown in Figure 1.

The radiated emission measurements were made with the following detection.

Frequency	30-1000MHz	1-40GHz	
Detection type	Quasi-Peak	Peak	Average *1)
IF Bandwidth	120kHz	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: *2

*1) The test method was referred to Section H) 6) d) Method VB (Averaging using reduced video bandwidth) of FCC KDB 789033 D01 "Guidelines for Compliance Testing of unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E"

*2) When duty cycle > 98 percent, VBW was set at 10Hz.

When duty cycle < 98 percent, VBW (Average) calculation sheet in APPENDIX 1.

Detector and averaging type set for linear voltage averaging.

Below 1GHz

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

Above 1GHz

Inside of restricted bands (FCC 15.205): Limit in FCC 15.209 (a)

Outside of the restricted bands:

Limit 68.2dBuV/m(-27dBm e.i.r.p.*) in the Section 15.407(b).

Restricted band edge: Limit in FCC 15.209(a)

Since this limit is severer than the limit of the inside of restricted bands.

*Electric Field Strength to e.i.r.p. conversion

$P [dBm] = E [dBuV/m] - 95.2 [dB]$

$P [dBm] = 10 \times \text{LOG} ((\{ 10 ^ (E [dBuV/m] / 20) * 10 ^ (-6) * (\text{Distance} = 3[m]) ^ 2 \} / 30) \times 10 ^ 3) (uV/m):$

P is the e.i.r.p. (Watts)

* Distance Factor for the measurement at 1m: $20 \times \log (3.0m/1.0m) = 9.5dB$

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

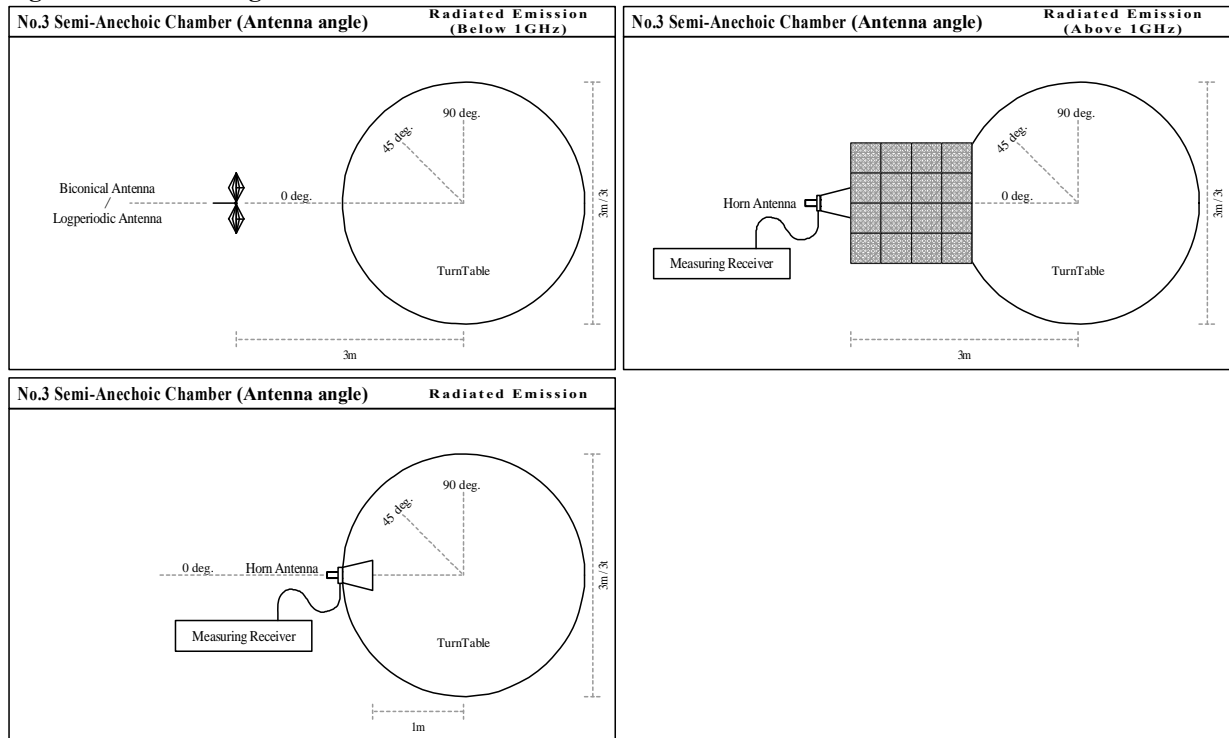
W52/W53

	Antenna polarization	Carrier (Band edge)	Spurious			
			Below 1GHz	1-15GHz	15-18GHz	18-40GHz
Module	Horizontal	X	X	X	Z	X
Antenna		X	X	X	Z	X
Module	Vertical	X	X	X	X	X
Antenna		Z	X	Z	Z	X

W56

	Antenna polarization	Carrier (Band edge)	Spurious			
			Below 1GHz	1-15GHz	15-18GHz	18-40GHz
Module	Horizontal	X	X	X	Z	X
Antenna		X	X	X	Z	X
Module	Vertical	X	X	X	X	X
Antenna		Z	X	Z	Z	X

Figure 1. Antenna angle



6.5 Band edge

Band edge level at 5150MHz, 5350MHz and 5460MHz is below the limits of FCC 15.209.
Band edge level at 5470MHz and 5725MHz is below the limits of FCC 15.407(b).

6.6 Results

Summary of the test results : Pass
* No noise was detected other than listed points.

Refer to APPENDIX 1

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Conducted emission
Radiated emission

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Conducted emission
Radiated emission
Pre-check of the worst position

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DATA OF CONDUCTED EMISSION TEST

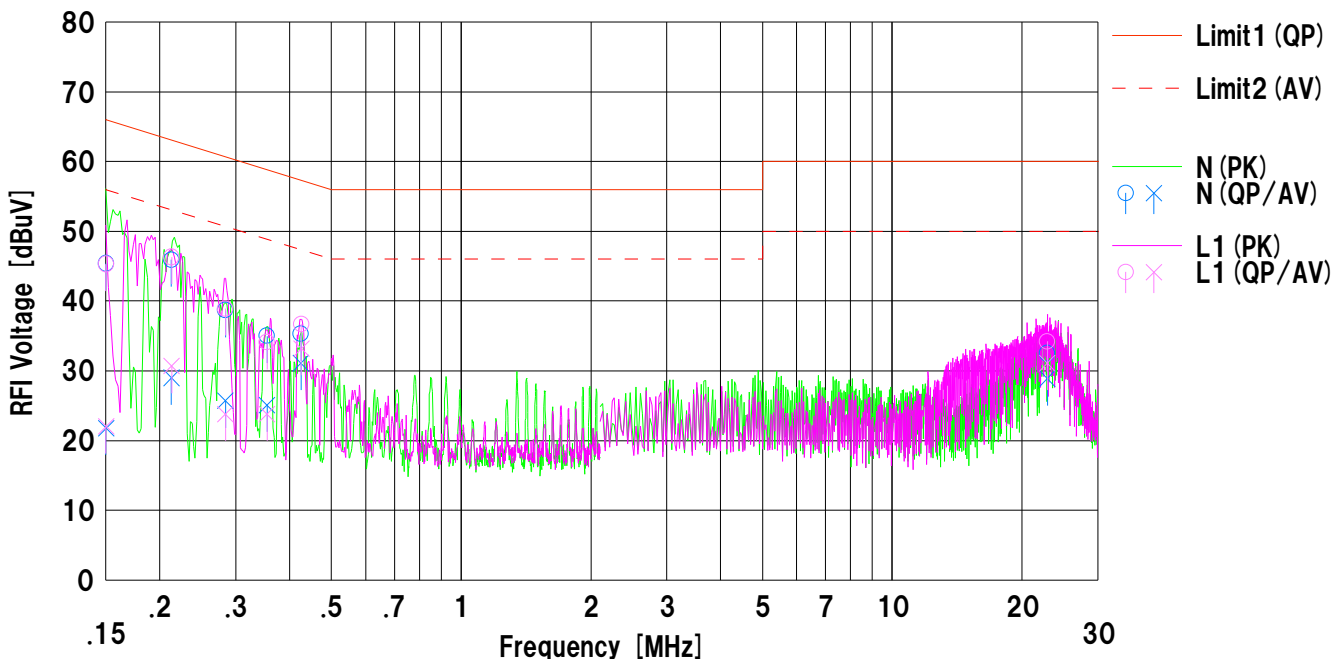
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2014/10/02

Company : RICOH COMPANY,LTD.
Kind of EUT : Wireless Module
Model No. : LBWB1ZZWU6, Y0515780
Serial No. : 784B879B3786, 406S0078
Remarks : -

Mode : Tx 11n-40HT 5670MHz
Report No. : 10430016S
Power : AC 120V / 60Hz
Temp./Humi. : 24deg.C. / 56%RH

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Yasumasa Owaki



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	32.9	9.3	12.5	45.4	21.8	66.0	56.0	20.6	34.2	N	
2	0.21272	33.4	16.5	12.5	45.9	29.0	63.0	53.0	17.1	24.0	N	
3	0.28382	26.2	13.2	12.5	38.7	25.7	60.7	50.7	22.0	25.0	N	
4	0.35473	22.5	12.6	12.5	35.0	25.1	58.8	48.8	23.8	23.7	N	
5	0.42530	22.8	18.6	12.5	35.3	31.1	57.3	47.3	22.0	16.2	N	
6	22.90460	19.0	15.4	13.5	32.5	28.9	60.0	50.0	27.5	21.1	N	
7	0.15000	32.8	9.5	12.5	45.3	22.0	66.0	56.0	20.7	34.0	L1	
8	0.21291	33.8	18.2	12.5	46.3	30.7	63.0	53.0	16.7	22.3	L1	
9	0.28391	26.4	11.3	12.5	38.9	23.8	60.7	50.7	21.8	26.9	L1	
10	0.35448	21.6	11.3	12.5	34.1	23.8	58.8	48.8	24.7	25.0	L1	
11	0.42609	24.2	20.7	12.5	36.7	33.2	57.3	47.3	20.6	14.1	L1	
12	22.90490	20.7	17.6	13.5	34.2	31.1	60.0	50.0	25.8	18.9	L1	

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber		
Date	October 2, 2014	October 3, 2014	October 4, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 63%RH	26deg.C , 54%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Takahiro Suzuki	Akio Hayashi
Mode	Tx, 5180 MHz			
	Tx, IEEE802.11a, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1138.334	PK	55.4	24.0	12.3	40.8	50.9	73.9	23.0	100	123	
Hori.	1336.595	PK	54.2	24.5	12.5	40.9	50.3	73.9	23.6	138	5	
Hori.	5150.000	PK	52.4	31.5	15.1	39.3	59.7	73.9	14.2	100	53	
Hori.	15540.000	PK	46.0	39.2	2.1	40.1	47.2	73.9	26.7	100	91	
Hori.	1138.334	AV	48.8	24.0	12.3	40.8	44.3	53.9	9.6	100	123	VBW10Hz
Hori.	1336.595	AV	47.1	24.5	12.5	40.9	43.2	53.9	10.7	138	5	VBW10Hz
Hori.	5150.000	AV	35.4	31.5	15.1	39.3	42.7	53.9	11.2	100	53	VBW10Hz
Hori.	15540.000	AV	33.3	39.2	2.1	40.1	34.5	53.9	19.4	100	91	VBW10Hz
Vert.	1138.034	PK	52.3	24.0	12.3	40.8	47.8	73.9	26.1	100	341	
Vert.	1336.487	PK	52.5	24.5	12.5	40.9	48.6	73.9	25.3	100	327	
Vert.	5150.000	PK	49.2	31.5	15.1	39.3	56.5	73.9	17.4	100	359	
Vert.	15540.000	PK	46.7	39.2	2.1	40.1	47.9	73.9	26.0	102	120	
Vert.	1138.034	AV	47.0	24.0	12.3	40.8	42.5	53.9	11.4	100	341	VBW10Hz
Vert.	1336.487	AV	46.8	24.5	12.5	40.9	42.9	53.9	11.0	100	327	VBW10Hz
Vert.	5150.000	AV	34.7	31.5	15.1	39.3	42.0	53.9	11.9	100	359	VBW10Hz
Vert.	15540.000	AV	34.4	39.2	2.1	40.1	35.6	53.9	18.3	102	120	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	6906.667	PK	48.2	36.0	6.6	39.9	50.9	-44.33	-27.00	17.33	102	102	329
Hori.	10360.000	PK	47.4	39.3	7.9	39.5	55.1	-40.13	-27.00	13.13	119	119	130
Vert.	6906.667	PK	47.6	36.0	6.6	39.9	50.3	-44.93	-27.00	17.93	182	182	94
Vert.	10360.000	PK	47.1	39.3	7.9	39.5	54.8	-40.43	-27.00	13.43	120	120	203

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Telephone : +81 463 50 6400

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber		
Date	October 2, 2014	October 3, 2014	October 4, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 63%RH	26deg.C , 54%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Takahiro Suzuki	Akio Hayashi
Mode	Tx, 5240 MHz			
	Tx, IEEE802.11a, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1138.482	PK	53.7	24.0	12.3	40.8	49.2	73.9	24.7	100	124	
Hori.	1336.472	PK	52.4	24.5	12.5	40.9	48.5	73.9	25.4	140	9	
Hori.	15720.000	PK	45.3	38.6	2.1	40.3	45.7	73.9	28.2	100	80	
Hori.	1138.482	AV	46.4	24.0	12.3	40.8	41.9	53.9	12.0	100	124	VBW10Hz
Hori.	1336.472	AV	47.3	24.5	12.5	40.9	43.4	53.9	10.5	140	9	VBW10Hz
Hori.	15720.000	AV	33.1	38.6	2.1	40.3	33.5	53.9	20.4	100	80	VBW10Hz
Vert.	1138.047	PK	52.3	24.0	12.3	40.8	47.8	73.9	26.1	100	333	
Vert.	1336.499	PK	52.2	24.5	12.5	40.9	48.3	73.9	25.6	100	337	
Vert.	15720.000	PK	45.4	38.6	2.1	40.3	45.8	73.9	28.1	100	113	
Vert.	1138.047	AV	46.4	24.0	12.3	40.8	41.9	53.9	12.0	100	333	VBW10Hz
Vert.	1336.499	AV	46.9	24.5	12.5	40.9	43.0	53.9	10.9	100	337	VBW10Hz
Vert.	15720.000	AV	33.7	38.6	2.1	40.3	34.1	53.9	19.8	100	113	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	6986.667	PK	51.2	36.3	6.7	40.0	54.2	-41.03	-27.00	14.03	101	324	
Hori.	10480.000	PK	47.4	39.5	8.0	39.4	55.5	-39.73	-27.00	12.73	123	130	
Vert.	6986.667	PK	50.8	36.3	6.7	40.0	53.8	-41.43	-27.00	14.43	188	97	
Vert.	10480.000	PK	46.9	39.5	8.0	39.4	55.0	-40.23	-27.00	13.23	133	207	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.1 and 3 Semi Anechoic Chamber	
Date	October 2, 2014	October 3, 2014	October 4, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 63%RH	26deg.C , 54%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Takahiro Suzuki	Akio Hayashi
Mode	Tx, 5320 MHz			
	Tx, IEEE802.11a, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1137.249	PK	53.6	24.0	12.3	40.8	49.1	73.9	24.8	100	125	
Hori.	1336.212	PK	52.7	24.5	12.5	40.9	48.8	73.9	25.1	138	5	
Hori.	5350.000	PK	48.7	31.6	15.2	39.0	56.5	73.9	17.4	100	51	
Hori.	10640.000	PK	48.3	39.7	8.1	39.4	56.7	73.9	17.2	108	153	
Hori.	15960.000	PK	44.8	37.8	2.1	40.6	44.1	73.9	29.8	100	12	
Hori.	1137.249	AV	48.5	24.0	12.3	40.8	44.0	53.9	9.9	100	125	VBW10Hz
Hori.	1336.212	AV	46.8	24.5	12.5	40.9	42.9	53.9	11.0	138	5	VBW10Hz
Hori.	5350.000	AV	35.1	31.6	15.2	39.0	42.9	53.9	11.0	100	51	VBW10Hz
Hori.	10640.000	AV	34.5	39.7	8.1	39.4	42.9	53.9	11.0	108	153	VBW10Hz
Hori.	15960.000	AV	32.5	37.8	2.1	40.6	31.8	53.9	22.1	100	12	VBW10Hz
Vert.	1138.655	PK	52.2	24.0	12.3	40.8	47.7	73.9	26.2	100	333	
Vert.	1336.485	PK	52.5	24.5	12.5	40.9	48.6	73.9	25.3	100	331	
Vert.	5350.000	PK	46.6	31.6	15.2	39.0	54.4	73.9	19.5	100	359	
Vert.	10640.000	PK	49.4	39.7	8.1	39.4	57.8	73.9	16.1	118	196	
Vert.	15960.000	PK	46.1	37.8	2.1	40.6	45.4	73.9	28.5	100	110	
Vert.	1138.655	AV	47.0	24.0	12.3	40.8	42.5	53.9	11.4	100	333	VBW10Hz
Vert.	1336.485	AV	46.7	24.5	12.5	40.9	42.8	53.9	11.1	100	331	VBW10Hz
Vert.	5350.000	AV	33.5	31.6	15.2	39.0	41.3	53.9	12.6	100	359	VBW10Hz
Vert.	10640.000	AV	36.1	39.7	8.1	39.4	44.5	53.9	9.4	118	196	VBW10Hz
Vert.	15960.000	AV	32.8	37.8	2.1	40.6	32.1	53.9	21.8	100	110	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7093.346	PK	53.0	36.5	6.7	40.1	56.1	-39.13	-27.00	12.13	128	352	
Vert.	7093.314	PK	52.1	36.5	6.7	40.1	55.2	-40.03	-27.00	13.03	180	97	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.1 and 3 Semi Anechoic Chamber	
Date	October 2, 2014	October 3, 2014	October 4, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 63%RH	26deg.C , 54%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Takahiro Suzuki	Akio Hayashi
Mode	Tx, 5500 MHz Tx, IEEE802.11a, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1138.293	PK	53.1	24.0	12.3	40.8	48.6	73.9	25.3	100	121	
Hori.	1335.790	PK	52.6	24.5	12.5	40.9	48.7	73.9	25.2	142	1	
Hori.	5460.000	PK	48.6	31.6	15.3	38.9	56.6	73.9	17.3	100	147	
Hori.	7333.333	PK	51.7	36.8	6.8	40.3	55.0	73.9	18.9	125	358	
Hori.	11000.000	PK	47.4	40.2	8.2	39.4	56.4	73.9	17.5	108	165	
Hori.	1138.293	AV	48.8	24.0	12.3	40.8	44.3	53.9	9.6	100	121	VBW10Hz
Hori.	1335.790	AV	47.3	24.5	12.5	40.9	43.4	53.9	10.5	142	1	VBW10Hz
Hori.	5460.000	AV	36.3	31.6	15.3	38.9	44.3	53.9	9.6	100	147	VBW10Hz
Hori.	7333.333	AV	44.9	36.8	6.8	40.3	48.2	53.9	5.7	125	358	VBW10Hz
Hori.	11000.000	AV	33.7	40.2	8.2	39.4	42.7	53.9	11.2	108	165	VBW10Hz
Vert.	1138.034	PK	53.1	24.0	12.3	40.8	48.6	73.9	25.3	100	333	
Vert.	1336.490	PK	52.5	24.5	12.5	40.9	48.6	73.9	25.3	100	350	
Vert.	5460.000	PK	48.7	31.6	15.3	38.9	56.7	73.9	17.2	100	111	
Vert.	7333.333	PK	51.8	36.8	6.8	40.3	55.1	73.9	18.8	163	74	
Vert.	11000.000	PK	52.4	40.2	8.2	39.4	61.4	73.9	12.5	108	193	
Vert.	1138.034	AV	47.4	24.0	12.3	40.8	42.9	53.9	11.0	100	333	VBW10Hz
Vert.	1336.490	AV	46.9	24.5	12.5	40.9	43.0	53.9	10.9	100	350	VBW10Hz
Vert.	5460.000	AV	35.5	31.6	15.3	38.9	43.5	53.9	10.4	100	111	VBW10Hz
Vert.	7333.333	AV	45.5	36.8	6.8	40.3	48.8	53.9	5.1	163	74	VBW10Hz
Vert.	11000.000	AV	37.7	40.2	8.2	39.4	46.7	53.9	7.2	108	193	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5470.000	PK	51.9	31.6	15.3	38.8	60.0	-35.23	-27.00	8.23	100	147	
Hori.	16500.000	PK	47.2	39.0	2.5	40.8	47.9	-47.33	-27.00	20.33	100	120	
Vert.	5470.000	PK	51.3	31.6	15.3	38.8	59.4	-35.83	-27.00	8.83	100	111	
Vert.	16500.000	PK	46.4	39.0	2.5	40.8	47.10	-48.13	-27.00	21.13	116	141	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) * 10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber		
Date	October 2, 2014	October 3, 2014	October 4, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 63%RH	25deg.C , 55%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Takahiro Suzuki	Wataru Kojima
Mode	Tx, 5580 MHz			
	Tx, IEEE802.11a, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1138.139	PK	53.4	24.0	12.3	40.8	48.9	73.9	25.0	100	134	
Hori.	1335.956	PK	51.9	24.5	12.5	40.9	48.0	73.9	25.9	139	6	
Hori.	7440.000	PK	50.0	37.0	6.8	40.4	53.4	73.9	20.5	117	347	
Hori.	11160.000	PK	47.2	40.1	8.2	39.3	56.2	73.9	17.7	132	75	
Hori.	1138.139	AV	49.1	24.0	12.3	40.8	44.6	53.9	9.3	100	134	VBW10Hz
Hori.	1335.956	AV	46.1	24.5	12.5	40.9	42.2	53.9	11.7	139	6	VBW10Hz
Hori.	7440.000	AV	41.9	37.0	6.8	40.4	45.3	53.9	8.6	117	347	VBW10Hz
Hori.	11160.000	AV	33.9	40.1	8.2	39.3	42.9	53.9	11.0	132	75	VBW10Hz
Vert.	1138.294	PK	52.5	24.0	12.3	40.8	48.0	73.9	25.9	100	334	
Vert.	1336.493	PK	52.7	24.5	12.5	40.9	48.8	73.9	25.1	100	330	
Vert.	7440.000	PK	50.1	37.0	6.8	40.4	53.5	73.9	20.4	154	73	
Vert.	11160.000	PK	52.5	40.1	8.2	39.3	61.5	73.9	12.4	124	188	
Vert.	1138.294	AV	47.2	24.0	12.3	40.8	42.7	53.9	11.2	100	334	VBW10Hz
Vert.	1336.493	AV	46.6	24.5	12.5	40.9	42.7	53.9	11.2	100	330	VBW10Hz
Vert.	7440.000	AV	42.5	37.0	6.8	40.4	45.9	53.9	8.0	154	73	VBW10Hz
Vert.	11160.000	AV	38.6	40.1	8.2	39.3	47.6	53.9	6.3	124	188	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	16740.000	PK	47.4	39.9	1.0	40.2	48.1	-47.13	-27.00	20.13	100	291	
Vert.	16740.000	PK	47.1	39.9	1.0	40.2	47.8	-47.43	-27.00	20.43	100	151	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

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Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber	
Date	October 2, 2014	October 3, 2014	October 4, 2014 October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 63%RH 25deg.C , 55%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Takahiro Suzuki Wataru Kojima
Mode	Tx, 5700 MHz		
	Tx, IEEE802.11a, PN9		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1138.480	PK	53.0	24.0	12.3	40.8	48.5	73.9	25.4	100	124	
Hori.	1336.492	PK	52.6	24.5	12.5	40.9	48.7	73.9	25.2	138	6	
Hori.	7600.000	PK	49.7	37.2	6.9	40.5	53.3	73.9	20.6	129	358	
Hori.	11400.000	PK	48.3	39.9	8.3	39.2	57.3	73.9	16.6	100	154	
Hori.	1138.480	AV	48.0	24.0	12.3	40.8	43.5	53.9	10.4	100	124	VBW10Hz
Hori.	1336.492	AV	46.9	24.5	12.5	40.9	43.0	53.9	10.9	138	6	VBW10Hz
Hori.	7600.000	AV	41.3	37.2	6.9	40.5	44.9	53.9	9.0	129	358	VBW10Hz
Hori.	11400.000	AV	35.3	39.9	8.3	39.2	44.3	53.9	9.6	100	154	VBW10Hz
Vert.	1137.916	PK	52.3	24.0	12.3	40.8	47.8	73.9	26.1	100	340	
Vert.	1336.271	PK	51.7	24.5	12.5	40.9	47.8	73.9	26.1	100	329	
Vert.	7600.000	PK	48.7	37.2	6.9	40.5	52.3	73.9	21.6	100	136	
Vert.	11400.000	PK	53.5	39.9	8.3	39.2	62.5	73.9	11.4	170	186	
Vert.	1137.916	AV	46.8	24.0	12.3	40.8	42.3	53.9	11.6	100	340	VBW10Hz
Vert.	1336.271	AV	46.2	24.5	12.5	40.9	42.3	53.9	11.6	100	329	VBW10Hz
Vert.	7600.000	AV	39.4	37.2	6.9	40.5	43.0	53.9	10.9	100	136	VBW10Hz
Vert.	11400.000	AV	40.2	39.9	8.3	39.2	49.2	53.9	4.7	170	186	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5725.000	PK	52.7	32.2	15.5	38.9	61.5	-33.73	-27.00	6.73	100	53	
Hori.	17100.000	PK	49.9	41.3	1.1	39.7	52.6	-42.63	-27.00	15.63	100	290	
Vert.	5725.000	PK	48.8	32.2	15.5	38.9	57.6	-37.63	-27.00	10.63	100	359	
Vert.	17100.000	PK	49.9	41.3	1.1	39.7	52.6	-42.63	-27.00	15.63	100	162	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber
Date	October 2, 2014 October 3, 2014	October 5, 2014 October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH 26 deg.C, 56 %RH	26deg.C , 54%RH 25deg.C , 55%RH
Engineer	Yasumasa Owaki Yasumasa Owaki	Kenichi Adachi Wataru Kojima
Mode	Tx, 5180 MHz	
	Tx, IEEE802.11n HT20, PN9	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5131.370	PK	49.2	31.5	15.1	39.4	56.4	73.9	17.5	100	48	
Hori.	5150.000	PK	47.8	31.5	15.1	39.3	55.1	73.9	18.8	100	48	
Hori.	6906.664	PK	48.9	36.0	6.6	39.9	51.6	73.9	22.3	100	317	
Hori.	15540.000	PK	47.6	39.6	0.6	40.6	47.2	73.9	26.7	100	345	
Hori.	5131.370	AV	37.8	31.5	15.1	39.4	45.0	53.9	8.9	100	48	VBW10Hz
Hori.	5150.000	AV	36.6	31.5	15.1	39.3	43.9	53.9	10.0	100	48	VBW10Hz
Hori.	6906.664	AV	39.4	36.0	6.6	39.9	42.1	53.9	11.8	100	317	VBW10Hz
Hori.	15540.000	AV	34.7	39.6	0.6	40.6	34.3	53.9	19.6	100	345	VBW10Hz
Vert.	5131.370	PK	48.5	31.5	15.1	39.4	55.7	73.9	18.2	100	145	
Vert.	5150.000	PK	45.0	31.5	15.1	39.3	52.3	73.9	21.6	100	145	
Vert.	6906.664	PK	48.5	36.0	6.6	39.9	51.2	73.9	22.7	100	79	
Vert.	15540.000	PK	48.4	39.6	0.6	40.6	48.0	73.9	25.9	100	165	
Vert.	5131.370	AV	36.5	31.5	15.1	39.4	43.7	53.9	10.2	100	145	VBW10Hz
Vert.	5150.000	AV	35.3	31.5	15.1	39.3	42.6	53.9	11.3	100	145	VBW10Hz
Vert.	6906.664	AV	39.1	36.0	6.6	39.9	41.8	53.9	12.1	100	79	VBW10Hz
Vert.	15540.000	AV	36.5	39.6	0.6	40.6	36.1	53.9	17.8	100	165	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	6906.664	PK	48.90	36.00	6.60	39.90	51.60	-43.63	-27.00	16.63	100	317	
Hori.	10360.000	PK	45.60	39.30	7.90	39.50	53.30	-95.23	-27.00	68.23	100	0	
Vert.	6906.664	PK	48.50	36.00	6.60	39.90	51.20	-95.23	-27.00	68.23	100	79	
Vert.	10360.000	PK	45.90	39.30	7.90	39.50	53.60	-95.23	-27.00	68.23	100	0	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) * 10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber		
Date	October 2, 2014	October 3, 2014	October 5, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 54%RH	25deg.C , 55%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Kenichi Adachi	Wataru Kojima
Mode	Tx, 5240 MHz			
	Tx, IEEE802.11n HT20, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	6986.633	PK	50.5	36.3	6.7	40.0	53.5	73.9	20.4	100	312	
Hori.	15720.000	PK	48.2	38.9	0.6	40.6	47.1	73.9	26.8	100	139	
Hori.	6986.633	AV	44.2	36.3	6.7	40.0	47.2	53.9	6.7	100	312	VBW10Hz
Hori.	15720.000	AV	35.5	38.9	0.6	40.6	34.4	53.9	19.5	100	139	VBW10Hz
Vert.	6986.633	PK	50.2	36.3	6.7	40.0	53.2	73.9	20.7	100	82	
Vert.	15720.000	PK	47.8	38.9	0.6	40.6	46.7	73.9	27.2	100	162	
Vert.	6986.633	AV	43.9	36.3	6.7	40.0	46.9	53.9	7.0	100	82	VBW10Hz
Vert.	15720.000	AV	35.4	38.9	0.6	40.6	34.3	53.9	19.6	100	162	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	6986.633	PK	50.50	36.30	6.70	40.00	53.50	-41.73	-27.00	14.73	100	312	
Hori.	10480.000	PK	45.00	39.50	8.00	39.40	53.10	-42.13	-27.00	15.13	100	131	
Vert.	6986.633	PK	50.20	36.30	6.70	40.00	53.20	-42.03	-27.00	15.03	100	82	
Vert.	10480.000	PK	45.20	39.50	8.00	39.40	53.30	-41.93	-27.00	14.93	100	199	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber		
Date	October 2, 2014	October 3, 2014	October 5, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 54%RH	25deg.C , 55%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Kenichi Adachi	Wataru Kojima
Mode	Tx, 5320 MHz			
	Tx, IEEE802.11n HT20, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5350.000	PK	45.7	31.6	15.2	39.0	53.5	73.9	20.4	100	46	
Hori.	5352.150	PK	47.5	31.6	15.2	39.0	55.3	73.9	18.6	100	46	
Hori.	10640.000	PK	46.0	39.7	8.1	39.4	54.4	73.9	19.5	100	129	
Hori.	15960.000	PK	48.8	38.0	0.8	40.7	46.9	73.9	27.0	100	161	
Hori.	5350.000	AV	34.8	31.6	15.2	39.0	42.6	53.9	11.3	100	46	VBW10Hz
Hori.	5352.150	AV	36.1	31.6	15.2	39.0	43.9	53.9	10.0	100	46	VBW10Hz
Hori.	10640.000	AV	34.6	39.7	8.1	39.4	43.0	53.9	10.9	100	129	VBW10Hz
Hori.	15960.000	AV	34.6	38.0	0.8	40.7	32.7	53.9	21.2	100	161	VBW10Hz
Vert.	5350.000	PK	45.6	31.6	15.2	39.0	53.4	73.9	20.5	100	148	
Vert.	5352.150	PK	47.3	31.6	15.2	39.0	55.1	73.9	18.8	100	148	
Vert.	10640.000	PK	46.6	39.7	8.1	39.4	55.0	73.9	18.9	100	192	
Vert.	15960.000	PK	47.4	38.0	0.8	40.7	45.5	73.9	28.4	100	157	
Vert.	5350.000	AV	35.0	31.6	15.2	39.0	42.8	53.9	11.1	100	148	VBW10Hz
Vert.	5352.150	AV	35.9	31.6	15.2	39.0	43.7	53.9	10.2	100	148	VBW10Hz
Vert.	10640.000	AV	34.9	39.7	8.1	39.4	43.3	53.9	10.6	100	192	VBW10Hz
Vert.	15960.000	AV	34.3	38.0	0.8	40.7	32.4	53.9	21.5	100	157	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7093.301	PK	51.70	36.50	6.70	40.10	54.80	-40.43	-27.00	13.43	100	309	
Vert.	7093.301	PK	51.40	36.50	6.70	40.10	54.50	-40.73	-27.00	13.73	100	118	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber
Date	October 2, 2014 October 3, 2014	October 5, 2014 October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH 26 deg.C, 56 %RH	26deg.C , 54%RH 25deg.C , 55%RH
Engineer	Yasumasa Owaki Yasumasa Owaki	Kenichi Adachi Wataru Kojima
Mode	Tx, 5500 MHz	
	Tx, IEEE802.11n HT20, PN9	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5451.590	PK	46.9	31.6	15.3	38.9	54.9	73.9	19.0	100	49	
Hori.	5460.000	PK	46.0	31.6	15.3	38.9	54.0	73.9	19.9	100	49	
Hori.	7333.302	PK	51.1	36.8	6.8	40.3	54.4	73.9	19.5	100	308	
Hori.	11000.000	PK	47.4	40.2	8.2	39.4	56.4	73.9	17.5	100	128	
Hori.	5451.590	AV	36.0	31.6	15.3	38.9	44.0	53.9	9.9	100	49	VBW10Hz
Hori.	5460.000	AV	35.2	31.6	15.3	38.9	43.2	53.9	10.7	100	49	VBW10Hz
Hori.	7333.302	AV	44.6	36.8	6.8	40.3	47.9	53.9	6.0	100	308	VBW10Hz
Hori.	11000.000	AV	38.0	40.2	8.2	39.4	47.0	53.9	6.9	100	128	VBW10Hz
Vert.	5451.590	PK	46.6	31.6	15.3	38.9	54.6	73.9	19.3	100	142	
Vert.	5460.000	PK	45.9	31.6	15.3	38.9	53.9	73.9	20.0	100	142	
Vert.	7333.302	PK	51.0	36.8	6.8	40.3	54.3	73.9	19.6	100	111	
Vert.	11000.000	PK	47.1	40.2	8.2	39.4	56.1	73.9	17.8	100	192	
Vert.	5451.590	AV	35.8	31.6	15.3	38.9	43.8	53.9	10.1	100	142	VBW10Hz
Vert.	5460.000	AV	35.1	31.6	15.3	38.9	43.1	53.9	10.8	100	142	VBW10Hz
Vert.	7333.302	AV	44.4	36.8	6.8	40.3	47.7	53.9	6.2	100	111	VBW10Hz
Vert.	11000.000	AV	37.6	40.2	8.2	39.4	46.6	53.9	7.3	100	192	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5468.250	PK	46.50	31.60	15.30	38.80	54.60	-40.63	-27.00	13.63	100	49	
Hori.	5470.000	PK	44.90	31.60	15.30	38.80	53.00	-42.23	-27.00	15.23	100	49	
Hori.	16500.000	PK	49.4	39.2	1.0	40.5	49.1	-46.13	-27.00	19.13	100	161	
Vert.	5468.250	PK	46.20	31.60	15.30	38.80	54.30	-40.93	-27.00	13.93	100	142	
Vert.	5470.000	PK	44.80	31.60	15.30	38.80	52.90	-42.33	-27.00	15.33	100	142	
Vert.	16500.000	PK	47.4	39.2	1.0	40.5	47.1	-48.13	-27.00	21.13	100	210	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber		
Date	October 2, 2014	October 3, 2014	October 5, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 54%RH	25deg.C , 55%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Kenichi Adachi	Wataru Kojima
Mode	Tx, 5580 MHz			
	Tx, IEEE802.11n HT20, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7439.962	PK	49.8	37.0	6.8	40.4	53.2	73.9	20.7	100	312	
Hori.	11160.000	PK	48.7	40.1	8.2	39.3	57.7	73.9	16.2	100	133	
Hori.	7439.962	AV	43.0	37.0	6.8	40.4	46.4	53.9	7.5	100	312	VBW10Hz
Hori.	11160.000	AV	37.3	40.1	8.2	39.3	46.3	53.9	7.6	100	133	VBW10Hz
Vert.	7439.962	PK	49.5	37.0	6.8	40.4	52.9	73.9	21.0	100	99	
Vert.	11160.000	PK	49.1	40.1	8.2	39.3	58.1	73.9	15.8	100	194	
Vert.	7439.962	AV	42.7	37.0	6.8	40.4	46.1	53.9	7.8	100	99	VBW10Hz
Vert.	11160.000	AV	37.8	40.1	8.2	39.3	46.8	53.9	7.1	100	194	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	16740.000	PK	49.4	39.9	1.0	40.2	50.1	-45.13	-27.00	18.13	100	210	
Vert.	16740.000	PK	48.2	39.9	1.0	40.2	48.9	-46.33	-27.00	19.33	100	199	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber
Date	October 2, 2014 October 3, 2014	October 5, 2014 October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH 26 deg.C, 56 %RH	26deg.C , 54%RH 25deg.C , 55%RH
Engineer	Yasumasa Owaki Yasumasa Owaki	Kenichi Adachi Wataru Kojima
Mode	Tx, 5700 MHz	
	Tx, IEEE802.11n HT20, PN9	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7599.961	PK	47.9	37.2	6.9	40.5	51.5	73.9	22.4	100	311	
Hori.	11400.000	PK	47.9	39.9	8.3	39.2	56.9	73.9	17.0	100	148	
Hori.	7599.961	AV	40.0	37.2	6.9	40.5	43.6	53.9	10.3	100	311	VBW10Hz
Hori.	11400.000	AV	35.8	39.9	8.3	39.2	44.8	53.9	9.1	100	148	VBW10Hz
Vert.	7599.961	PK	49.3	37.2	6.9	40.5	52.9	73.9	21.0	100	112	
Vert.	11400.000	PK	48.6	39.9	8.3	39.2	57.6	73.9	16.3	100	171	
Vert.	7599.961	AV	42.4	37.2	6.9	40.5	46.0	53.9	7.9	100	112	VBW10Hz
Vert.	11400.000	AV	38.3	39.9	8.3	39.2	47.3	53.9	6.6	100	171	VBW10Hz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5725.000	PK	46.90	32.20	15.50	38.90	55.70	-39.53	-27.00	12.53	100	47	
Hori.	5732.105	PK	47.20	32.20	15.50	38.90	56.00	-39.23	-27.00	12.23	100	47	
Hori.	17100.000	PK	54.40	41.30	1.10	39.70	57.10	-38.13	-27.00	11.13	100	102	
Vert.	5725.000	PK	46.00	32.20	15.50	38.90	54.80	-40.43	-27.00	13.43	100	132	
Vert.	5732.105	PK	45.80	32.20	15.50	38.90	54.60	-40.63	-27.00	13.63	100	132	
Vert.	17100.000	PK	48.20	41.30	1.10	39.70	50.90	-44.33	-27.00	17.33	100	194	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber		
Date	October 2, 2014	October 3, 2014	October 6, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 65%RH	25deg.C , 55%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Wataru Kojima	Wataru Kojima
Mode	Tx, 5190 MHz			
	Tx, IEEE802.11n HT40, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1137.527	PK	53.7	24.0	12.3	40.8	49.2	73.9	24.7	100	124	
Hori.	1336.489	PK	51.9	24.5	12.5	40.9	48.0	73.9	25.9	100	359	
Hori.	5150.000	PK	55.7	31.5	15.1	39.3	63.0	73.9	10.9	100	34	
Hori.	6920.000	PK	49.6	36.1	6.7	39.9	52.5	73.9	21.4	104	307	
Hori.	10380.000	PK	46.2	39.3	7.9	39.5	53.9	73.9	20.0	100	152	
Hori.	15570.000	PK	48.1	39.5	0.6	40.6	47.6	73.9	26.3	100	144	
Hori.	1137.527	AV	50.0	24.0	12.3	40.8	45.5	53.9	8.4	100	124	VBW1.6kHz
Hori.	1336.489	AV	46.8	24.5	12.5	40.9	42.9	53.9	11.0	100	359	VBW1.6kHz
Hori.	5150.000	AV	38.8	31.5	15.1	39.3	46.1	53.9	7.8	100	34	VBW1.6kHz
Hori.	6920.000	AV	42.6	36.1	6.7	39.9	45.5	53.9	8.4	104	307	VBW1.6kHz
Hori.	10380.000	AV	34.6	39.3	7.9	39.5	42.3	53.9	11.6	100	152	VBW1.6kHz
Hori.	15570.000	AV	36.0	39.5	0.6	40.6	35.5	53.9	18.4	100	144	VBW1.6kHz
Vert.	1138.543	PK	51.5	24.0	12.3	40.8	47.0	73.9	26.9	238	83	
Vert.	1336.504	PK	52.1	24.5	12.5	40.9	48.2	73.9	25.7	100	341	
Vert.	5150.000	PK	53.3	31.5	15.1	39.3	60.6	73.9	13.3	100	160	
Vert.	6920.000	PK	50.0	36.1	6.7	39.9	52.9	73.9	21.0	184	71	
Vert.	10380.000	PK	46.4	39.3	7.9	39.5	54.1	73.9	19.8	164	192	
Vert.	15570.000	PK	47.5	39.5	0.6	40.6	47.0	73.9	26.9	100	160	
Vert.	1138.543	AV	45.7	24.0	12.3	40.8	41.2	53.9	12.7	238	83	VBW1.6kHz
Vert.	1336.504	AV	46.4	24.5	12.5	40.9	42.5	53.9	11.4	100	341	VBW1.6kHz
Vert.	5150.000	AV	37.3	31.5	15.1	39.3	44.6	53.9	9.3	100	160	VBW1.6kHz
Vert.	6920.000	AV	43.9	36.1	6.7	39.9	46.8	53.9	7.1	184	71	VBW1.6kHz
Vert.	10380.000	AV	35.0	39.3	7.9	39.5	42.7	53.9	11.2	164	192	VBW1.6kHz
Vert.	15570.000	AV	35.5	39.5	0.6	40.6	35.0	53.9	18.9	100	160	VBW1.6kHz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	10380.000	PK	46.2	39.3	7.9	39.5	53.9	-41.33	-27.00	14.33	100	152	
Vert.	10380.000	PK	46.4	39.3	7.9	39.5	54.1	-41.13	-27.00	14.13	164	192	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber
Date	October 2, 2014 October 3, 2014	October 6, 2014 October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH 26 deg.C, 56 %RH	26deg.C , 65%RH 25deg.C , 55%RH
Engineer	Yasumasa Owaki Yasumasa Owaki	Wataru Kojima Wataru Kojima
Mode	Tx, 5230 MHz	
	Tx, IEEE802.11n HT40, PN9	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1138.334	PK	54.0	24.0	12.3	40.8	49.5	73.9	24.4	100	137	
Hori.	1336.501	PK	52.0	24.5	12.5	40.9	48.1	73.9	25.8	100	359	
Hori.	6973.333	PK	50.8	36.2	6.7	40.0	53.7	73.9	20.2	113	314	
Hori.	15690.000	PK	47.9	39.0	0.6	40.6	46.9	73.9	27.0	100	169	
Hori.	1138.334	AV	50.2	24.0	12.3	40.8	45.7	53.9	8.2	100	137	VBW1.6kHz
Hori.	1336.501	AV	46.8	24.5	12.5	40.9	42.9	53.9	11.0	100	359	VBW1.6kHz
Hori.	6973.333	AV	44.4	36.2	6.7	40.0	47.3	53.9	6.6	113	314	VBW1.6kHz
Hori.	15690.000	AV	35.3	39.0	0.6	40.6	34.3	53.9	19.6	100	169	VBW1.6kHz
Vert.	1138.223	PK	51.8	24.0	12.3	40.8	47.3	73.9	26.6	243	81	
Vert.	1336.368	PK	51.4	24.5	12.5	40.9	47.5	73.9	26.4	100	343	
Vert.	6973.333	PK	50.8	36.2	6.7	40.0	53.7	73.9	20.2	180	76	
Vert.	15690.000	PK	47.0	39.0	0.6	40.6	46.0	73.9	27.9	100	160	
Vert.	1138.223	AV	45.5	24.0	12.3	40.8	41.0	53.9	12.9	243	81	VBW1.6kHz
Vert.	1336.368	AV	46.3	24.5	12.5	40.9	42.4	53.9	11.5	100	343	VBW1.6kHz
Vert.	6973.333	AV	45.4	36.2	6.7	40.0	48.3	53.9	5.6	180	76	VBW1.6kHz
Vert.	15690.000	AV	35.2	39.0	0.6	40.6	34.2	53.9	19.7	100	160	VBW1.6kHz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	10460.000	PK	46.8	39.5	8.0	39.4	54.9	-40.33	-27.00	13.33	100	156	
Vert.	10460.000	PK	46.7	39.5	8.0	39.4	54.8	-40.43	-27.00	13.43	126	130	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber		
Date	October 2, 2014	October 3, 2014	October 6, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 65%RH	25deg.C , 55%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Wataru Kojima	Wataru Kojima
Mode	Tx, 5310 MHz			
	Tx, IEEE802.11n HT40, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1138.542	PK	54.5	24.0	12.3	40.8	50.0	73.9	23.9	100	133	
Hori.	1336.449	PK	52.4	24.5	12.5	40.9	48.5	73.9	25.4	100	359	
Hori.	5350.000	PK	56.1	31.6	15.2	39.0	63.9	73.9	10.0	100	24	
Hori.	7080.000	PK	51.0	36.5	6.7	40.1	54.1	73.9	19.8	119	330	
Hori.	10620.000	PK	47.8	39.7	8.0	39.4	56.1	73.9	17.8	100	161	
Hori.	15930.000	PK	46.6	38.1	0.8	40.7	44.8	73.9	29.1	100	55	
Hori.	1138.542	AV	50.8	24.0	12.3	40.8	46.3	53.9	7.6	100	133	VBW1.6kHz
Hori.	1336.449	AV	47.9	24.5	12.5	40.9	44.0	53.9	9.9	100	359	VBW1.6kHz
Hori.	5350.000	AV	37.6	31.6	15.2	39.0	45.4	53.9	8.5	100	24	VBW1.6kHz
Hori.	7080.000	AV	45.1	36.5	6.7	40.1	48.2	53.9	5.7	119	330	VBW1.6kHz
Hori.	10620.000	AV	35.5	39.7	8.0	39.4	43.8	53.9	10.1	100	161	VBW1.6kHz
Hori.	15930.000	AV	34.7	38.1	0.8	40.7	32.9	53.9	21.0	100	55	VBW1.6kHz
Vert.	1138.286	PK	51.2	24.0	12.3	40.8	46.7	73.9	27.2	259	102	
Vert.	1336.391	PK	51.6	24.5	12.5	40.9	47.7	73.9	26.2	100	359	
Vert.	5350.000	PK	52.0	31.6	15.2	39.0	59.8	73.9	14.1	100	98	
Vert.	7080.000	PK	51.0	36.5	6.7	40.1	54.1	73.9	19.8	156	100	
Vert.	10620.000	PK	47.5	39.7	8.0	39.4	55.8	73.9	18.1	128	131	
Vert.	15930.000	PK	47.0	38.1	0.8	40.7	45.2	73.9	28.7	100	130	
Vert.	1138.286	AV	45.3	24.0	12.3	40.8	40.8	53.9	13.1	259	102	VBW1.6kHz
Vert.	1336.391	AV	46.2	24.5	12.5	40.9	42.3	53.9	11.6	100	359	VBW1.6kHz
Vert.	5350.000	AV	35.2	31.6	15.2	39.0	43.0	53.9	10.9	100	98	VBW1.6kHz
Vert.	7080.000	AV	45.7	36.5	6.7	40.1	48.8	53.9	5.1	156	100	VBW1.6kHz
Vert.	10620.000	AV	35.5	39.7	8.0	39.4	43.8	53.9	10.1	128	131	VBW1.6kHz
Vert.	15930.000	AV	33.1	38.1	0.8	40.7	31.3	53.9	22.6	100	130	VBW1.6kHz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber		
Date	October 2, 2014	October 3, 2014	October 6, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 65%RH	25deg.C , 55%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Wataru Kojima	Wataru Kojima
Mode	Tx, 5510 MHz			
	Tx, IEEE802.11n HT40, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1138.688	PK	54.1	24.0	12.3	40.8	49.6	73.9	24.3	100	129	
Hori.	1336.100	PK	52.1	24.5	12.5	40.9	48.2	73.9	25.7	100	359	
Hori.	5460.000	PK	51.6	31.6	15.3	38.9	59.6	73.9	14.3	100	22	
Hori.	7346.667	PK	50.2	36.9	6.8	40.3	53.6	73.9	20.3	100	328	
Hori.	11020.000	PK	46.5	40.2	8.2	39.4	55.5	73.9	18.4	100	149	
Hori.	1138.688	AV	50.5	24.0	12.3	40.8	46.0	53.9	7.9	100	129	VBW1.6kHz
Hori.	1336.100	AV	47.3	24.5	12.5	40.9	43.4	53.9	10.5	100	359	VBW1.6kHz
Hori.	5460.000	AV	36.5	31.6	15.3	38.9	44.5	53.9	9.4	100	22	VBW1.6kHz
Hori.	7346.667	AV	43.3	36.9	6.8	40.3	46.7	53.9	7.2	100	328	VBW1.6kHz
Hori.	11020.000	AV	35.3	40.2	8.2	39.4	44.3	53.9	9.6	100	149	VBW1.6kHz
Vert.	1138.171	PK	51.2	24.0	12.3	40.8	46.7	73.9	27.2	260	80	
Vert.	1336.083	PK	52.4	24.5	12.5	40.9	48.5	73.9	25.4	100	346	
Vert.	5460.000	PK	45.9	31.6	15.3	38.9	53.9	73.9	20.0	100	161	
Vert.	7346.667	PK	50.1	36.9	6.8	40.3	53.5	73.9	20.4	157	92	
Vert.	11020.000	PK	49.5	40.2	8.2	39.4	58.5	73.9	15.4	154	185	
Vert.	1138.171	AV	45.1	24.0	12.3	40.8	40.6	53.9	13.3	260	80	VBW1.6kHz
Vert.	1336.083	AV	46.9	24.5	12.5	40.9	43.0	53.9	10.9	100	346	VBW1.6kHz
Vert.	5460.000	AV	33.3	31.6	15.3	38.9	41.3	53.9	12.6	100	161	VBW1.6kHz
Vert.	7346.667	AV	45.0	36.9	6.8	40.3	48.4	53.9	5.5	157	92	VBW1.6kHz
Vert.	11020.000	AV	38.4	40.2	8.2	39.4	47.4	53.9	6.5	154	185	VBW1.6kHz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5470.000	PK	54.5	31.6	15.3	38.8	62.6	-32.63	-27.00	5.63	100	22	
Hori.	16530.000	PK	48.0	39.3	1.0	40.5	47.8	-47.43	-27.00	20.43	100	87	
Vert.	5470.000	PK	51.4	31.6	15.3	38.8	59.5	-35.73	-27.00	8.73	100	161	
Vert.	16530.000	PK	46.8	39.3	1.0	40.5	46.6	-48.63	-27.00	21.63	100	144	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber		
Date	October 2, 2014	October 3, 2014	October 6, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 65%RH	25deg.C , 55%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Wataru Kojima	Wataru Kojima
Mode	Tx, 5550 MHz			
	Tx, IEEE802.11n HT40, PN9			

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1138.022	PK	53.8	24.0	12.3	40.8	49.3	73.9	24.6	100	130	
Hori.	1336.332	PK	52.7	24.5	12.5	40.9	48.8	73.9	25.1	100	359	
Hori.	7400.000	PK	49.4	36.9	6.8	40.4	52.7	73.9	21.2	115	328	
Hori.	11100.000	PK	46.3	40.1	8.2	39.4	55.2	73.9	18.7	100	155	
Hori.	1138.022	AV	50.2	24.0	12.3	40.8	45.7	53.9	8.2	100	130	VBW1.6kHz
Hori.	1336.332	AV	46.9	24.5	12.5	40.9	43.0	53.9	10.9	100	359	VBW1.6kHz
Hori.	7400.000	AV	43.1	36.9	6.8	40.4	46.4	53.9	7.5	115	328	VBW1.6kHz
Hori.	11100.000	AV	35.3	40.1	8.2	39.4	44.2	53.9	9.7	100	155	VBW1.6kHz
Vert.	1138.336	PK	51.0	24.0	12.3	40.8	46.5	73.9	27.4	254	81	
Vert.	1335.993	PK	51.8	24.5	12.5	40.9	47.9	73.9	26.0	100	338	
Vert.	7400.000	PK	49.5	36.9	6.8	40.4	52.8	73.9	21.1	155	83	
Vert.	11100.000	PK	50.2	40.1	8.2	39.4	59.1	73.9	14.8	133	178	
Vert.	1138.336	AV	45.0	24.0	12.3	40.8	40.5	53.9	13.4	254	81	VBW1.6kHz
Vert.	1335.993	AV	46.8	24.5	12.5	40.9	42.9	53.9	11.0	100	338	VBW1.6kHz
Vert.	7400.000	AV	43.5	36.9	6.8	40.4	46.8	53.9	7.1	155	83	VBW1.6kHz
Vert.	11100.000	AV	39.1	40.1	8.2	39.4	48.0	53.9	5.9	133	178	VBW1.6kHz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	16650.000	PK	47.1	39.7	1.0	40.3	47.5	-47.73	-27.00	20.73	100	88	
Vert.	16650.000	PK	48.2	39.7	1.0	40.3	48.6	-46.63	-27.00	19.63	100	208	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 and 3 Semi Anechoic Chamber		
Date	October 2, 2014	October 3, 2014	October 6, 2014	October 9, 2014
Temperature / Humidity	21 deg.C, 57 %RH	26 deg.C, 56 %RH	26deg.C , 65%RH	25deg.C , 55%RH
Engineer	Yasumasa Owaki	Yasumasa Owaki	Wataru Kojima	Wataru Kojima
Mode	Tx, 5670 MHz			
	Tx, IEEE802.11n HT40, PN9			

(below 1GHz and above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	371.241	QP	50.4	15.5	6.8	31.8	40.8	46.0	5.2	100	352	
Hori.	420.740	QP	46.8	16.4	7.1	31.9	38.3	46.0	7.7	100	305	
Hori.	519.738	QP	47.1	17.5	7.6	32.0	29.0	46.0	17.0	100	119	
Hori.	569.237	QP	44.9	18.2	7.9	32.0	40.5	46.0	5.5	225	280	
Hori.	1138.241	PK	53.6	24.0	12.3	40.8	49.1	73.9	24.8	100	131	
Hori.	1335.940	PK	52.2	24.5	12.5	40.9	48.3	73.9	25.6	100	359	
Hori.	7560.000	PK	49.6	37.1	6.9	40.5	53.1	73.9	20.8	106	331	
Hori.	11340.000	PK	47.6	40.0	8.3	39.3	56.6	73.9	17.3	100	153	
Hori.	1138.241	AV	49.9	24.0	12.3	40.8	45.4	53.9	8.5	100	131	VBW1.6kHz
Hori.	1335.940	AV	46.8	24.5	12.5	40.9	42.9	53.9	11.0	100	359	VBW1.6kHz
Hori.	7560.000	AV	43.0	37.1	6.9	40.5	46.5	53.9	7.4	106	331	VBW1.6kHz
Hori.	11340.000	AV	35.5	40.0	8.3	39.3	44.5	53.9	9.4	100	153	VBW1.6kHz
Vert.	47.520	QP	48.0	11.8	7.4	31.8	34.9	40.0	5.1	100	153	
Vert.	66.045	QP	50.9	7.1	7.7	31.8	35.6	40.0	4.4	100	160	
Vert.	86.618	QP	50.6	7.6	7.9	31.8	31.1	40.0	8.9	100	194	
Vert.	152.713	QP	40.3	15.0	8.6	31.8	33.3	43.5	10.2	100	193	
Vert.	371.244	QP	51.1	15.5	6.8	31.8	41.6	46.0	4.4	145	151	
Vert.	420.740	QP	45.0	16.4	7.1	31.9	36.3	46.0	9.7	124	150	
Vert.	428.742	QP	48.1	16.5	7.1	31.9	39.7	46.0	6.3	133	131	
Vert.	1138.389	PK	51.3	24.0	12.3	40.8	46.8	73.9	27.1	143	64	
Vert.	1335.802	PK	51.2	24.5	12.5	40.9	47.3	73.9	26.6	100	344	
Vert.	7560.000	PK	50.3	37.1	6.9	40.5	53.8	73.9	20.1	121	89	
Vert.	11340.000	PK	50.9	40.0	8.3	39.3	59.9	73.9	14.0	132	176	
Vert.	1138.389	AV	46.1	24.0	12.3	40.8	41.6	53.9	12.3	143	64	VBW1.6kHz
Vert.	1335.802	AV	46.1	24.5	12.5	40.9	42.2	53.9	11.7	100	344	VBW1.6kHz
Vert.	7560.000	AV	43.4	37.1	6.9	40.5	46.9	53.9	7.0	121	89	VBW1.6kHz
Vert.	11340.000	AV	40.1	40.0	8.3	39.3	49.1	53.9	4.8	132	176	VBW1.6kHz

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5725.000	PK	48.5	32.2	15.5	38.9	57.3	-37.93	-27.00	10.93	100	22	
Hori.	17010.000	PK	52.3	40.7	1.1	39.8	54.3	-40.93	-27.00	13.93	100	107	
Vert.	5725.000	PK	45.9	32.2	15.5	38.9	54.7	-40.53	-27.00	13.53	100	128	
Vert.	17010.000	PK	49.2	40.7	1.1	39.8	51.2	-44.03	-27.00	17.03	100	198	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor: 15GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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APPENDIX 2 Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2014/07/14 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2014/05/23 * 12
SCC-G04	Coaxial Cable	Junkosha	J12J102207-00	JUN-12-14-018	RE	2014/06/24 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2014/05/15 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2014/08/12 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2014/02/21 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2014/03/17 * 12
SJM-15	Measure	ASKUL	-	-	RE/CE	-
COTS-SEMI-1	EMI Software	TJSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE/CE	-
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	RE	2013/11/22 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2013/11/22 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2014/03/15 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2014/03/14 * 12
SCC-G15	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	RE	2014/03/13 * 12
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/N S4906	-/0901-271(RF Selector)	CE	2014/04/25 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2014/02/26 * 12
SAT3-07	Attenuator	JFW	50HF-003N	-	CE	2014/09/02 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2014/03/07 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	CE	2014/03/04 * 12
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	2014/02/17 * 12
KAT6-04	Attenuator	INMET	18N-6dB	-	RE	2013/12/26 * 12
KAT3-09	Attenuator	JFW IND. INC.	50HF-003N	-	RE	2014/08/27 * 12
SBA-01	Biconical Antenna	Schwarzbeck	BBA9106	91032664	RE	2013/10/13 * 12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2014/04/25 * 12
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2014/04/25 * 12
SLA-01	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0888	RE	2013/10/26 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2014/02/21 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE	2013/11/20 * 12
SJM-13	Measure	ASKUL	-	-	RE	-
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2014/07/09 * 12

The expiration date of the calibration is the end of the expired month .

As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations .

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards .

Test Item :

CE: Conducted emission ,
RE: Radiated emission ,

APPENDIX 2

Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	RE	2014/03/14 * 12
SCC-G01	Coaxial Cable	Suhner	SUCOFLEX 104A	46497/4A	RE	2014/04/22 * 12
SCC-G21	Coaxial Cable	Suhner	SUCOFLEX 104	296169/4	RE	2014/05/15 * 12
SHA-01	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	RE	2014/08/12 * 12
SFL-03	Highpass Filter	MICRO-TRONICS	HPM50112	028	RE	2013/11/22 * 12

The expiration date of the calibration is the end of the expired month .
 As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations .

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards .

Test Item :

- CE: Conducted emission ,
- RE: Radiated emission ,