



Test report No. : 10024497S-A
Page : 1 of 27
Issued date : July 11, 2013
FCC ID : ANSBP3591
Revised date : July 24, 2013

RADIO TEST REPORT

Test Report No.: 10024497S-A

Applicant : ROHM Co., Ltd.
Type of Equipment : Wireless LAN Module
Model No. : BP3591
FCC ID : ANSBP3591
Test regulation : FCC Part15 Subpart C: 2013
Test Item : Conducted emission
Spurious Emission and Restricted Band Edges
Test result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
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.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by any agency of the Federal Government.
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: June 24 to 28, 2013

**Representative
Test engineer:**


Akio Hayashi

Engineer of WiSE Japan,
UL Verification Service

Approved by :


Toyokazu Imamura

Leader of WiSE Japan,
UL Verification Service



- ☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.
☒ There is no testing item of "Non-accreditation".

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

13-EM-F0429

REVISION HISTORY

Original Test Report No.: 10024497S-A

[illegible]

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Contents

	<u>Page</u>
SECTION 1: Customer information.....	4
SECTION 2: Equipment under test (E.U.T.)	4
SECTION 3: Test specification, procedures & results.....	5
SECTION 4: Operation of E.U.T. during testing.....	7
SECTION 5: Conducted emission	9
SECTION 6: Radiated emission	10
Contents of APPENDIXES.....	13
APPENDIX 1: Data of Radio tests.....	14
APPENDIX 2: Test instruments	24
APPENDIX 3: Photographs of test setup	25

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

SECTION 1: Customer information

Company Name : ROHM Co., Ltd.
Address : 21 Saiin Mizosaki-cho, Ukyo-ku Kyoto 615-8585 Japan
Telephone Number : +81-75-311-7068
Facsimile Number : +81-75-321-0447
Contact Person : YUSAKU KAWABATA

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

2.1 Identification of E.U.T.

Type of Equipment : Wireless LAN Module
Model Number : BP3591
Serial Number : See Section 4.
Rating : DC3.3V
Country of Mass-production : Japan
Condition of EUT : Production model
Receipt Date of Sample : June 24, 2013
Modification of EUT : No modification by the test lab.

2.2 Product description

Model: BP3591 (referred to as the EUT in this report) is a Wireless LAN Module.

The antenna has been added from the model tested previously. (Original test report No.: 32EE0095-HO-01-A-R1)

Clock frequency(ies) in the system : Xtal: 40MHz / CPU: 60MHz

<Radio part>

Radio Type : Transceiver
Frequency of Operation : 2412-2462MHz
Modulation : DSSS / OFDM
Power Supply (radio part input) : DC3.3V, DC2.8V
Antenna type : Sleeve Antenna
Antenna connector type : U.FL(Connection Board and Sleeve Antenna)
MS-156C(Wireless LAN module)
Antenna Gain : 2.14dBi

FCC 15.31 (e) / 212

This EUT provides stable voltage (DC2.8V) constantly to RF Module regardless of input voltage.
The stable voltage (DC3.3V) is constantly to RF Module from the Host device regardless of input voltage.
Therefore, this EUT complies with the requirement.

FCC 15.203 / 212

The antenna connector is a unique type and not used by end user.
Therefore, the equipment complies with the antenna requirement.

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart C: 2013, final revised on June 11, 2013 and effective July 11, 2013
 Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
 Section 15.207 Conducted limits
 Section 15.209 Radiated emission limits, general requirements
 Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz,
 and 5725-5850MHz

* The revision on June 11, 2013 does not affect the test specification applied to the EUT.

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.10:2009	FCC 15.207	-	N/A	22.4dB Freq.: 0.42695MHz Detector: AV Phase: N and L1 Mode: Tx 2412MHz, IEEE 802.11g	Complied
6dB bandwidth	*2)	FCC 15.247 (a)(2)	Conducted	N/A	N/A	N/A *3)
Maximum peak output power	*2)	FCC 15.247 (b)(3)	Conducted	N/A		N/A *3)
Spurious emission and Restricted band edges	*2)	FCC 15.109, 15.247 (d) & 15.209	Conducted	N/A		N/A *3)
Spurious emission and Restricted band Edges	ANSI C63.10:2009 *1)	FCC 15.109, 15.247 (d) & 15.209	Radiated	N/A	0.8dB Freq.: 4824.000MHz Polarization: Horizontal Detection: Average Mode: Tx 2412MHz / 11b	Complied
Power density	*2)	FCC 15.247 (e)	Conducted	N/A	N/A	N/A *3)

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

*1) These tests were also referred to KDB 558074 v03r01 (FCC), "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

*2) "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247".

The differences with KDB 558074 v03r01 do not have an impact on the test result.

*3) Refer to the test report: 32EE0095-HO-01-A-R1.

3.3 Addition to standard

Item	Test Procedure	Specification	Remarks	Worst Margin	Results
Occupied bandwidth (99%)	RSS-Gen 4.6.1	-	Conducted	-	*4)

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

*4) Refer to the test report: 32EE0095-HO-01-A-R1.

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

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

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)	30MHz-300MHz	4.9 dB	5.1 dB	4.9 dB
	300MHz-1GHz	5.0 dB	5.2 dB	4.9 dB
	1GHz-15GHz	4.8 dB	4.8 dB	4.9 dB
Radiated emission (Measurement distance: 1m)	15GHz-18GHz	5.6 dB	5.6 dB	5.6 dB
	18GHz-40GHz	4.6 dB	4.3 dB	4.4 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 the 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

UL Japan, Inc. Shonan EMC Lab.

1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN

Telephone number : +81 463 50 6400

Facsimile number : +81 463 50 6401

JAB Accreditation No. : RTL02610

	FCC Registration No.	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
☒ No.1 semi-anechoic chamber	697847	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☒ No.2 semi-anechoic chamber	697847	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☒ No.3 semi-anechoic chamber	697847	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
☐ No.4 semi-anechoic chamber	-	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
☒ No.1 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.2 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.3 shielded room	-	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
☐ No.4 shielded room	-	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
☐ No.5 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
☐ No.6 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-

3.6 Test setup, Data of test & Test instruments

Refer to APPENDIX 1 to 3.

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

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

4.1 Operating mode

Mode	Remarks *4)
IEEE 802.11b (11b)	11Mbps, PN9 *1) 1Mbps, PN9 *2)
IEEE 802.11g (11g)	24Mbps, PN9 *3)
IEEE 802.11n SISO 20MHz BW (11n-20)	MCS 6 (Long GI), PN9 *3)
*Transmitting duty was 100% on all tests. *1) In the case of other than Radiated spurious emission, the worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel). *2) The worst condition was determined based on the test result of secondary harmonics. *3) The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel) *4) Power of the EUT was set by the software as follows; Power settings: 11b: 15dBm 11g: 13dBm 11n-20: 12dBm Software: RADITS_11n Ver. 1.4.08 *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.	

*The details of Operating mode(s)

Test Item	Operating Mode	Tested frequency
Conducted Emission *5)	11g Tx 24Mbps	2412MHz
Spurious Emission	11b Tx 1Mbps 11g Tx 24Mbps 11n-20 Tx MCS 6 (Long GI)	2412MHz 2437MHz 2462MHz
Band Edge	11b Tx 11Mbps 11g Tx 24Mbps 11n-20 Tx MCS 6 (Long GI)	2412MHz 2462MHz

*5) 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."

UL Japan, Inc.

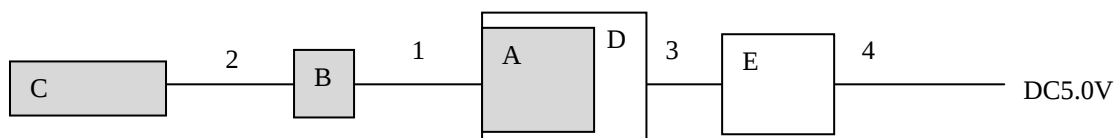
Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

4.2 Configuration and peripherals



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Wireless LAN module	BP3591	001D12CF8103	ROHM	EUT
B	Connection Board	2130533510	1	TOPCON	EUT
C	Sleeve Antenna	1029-C17856	1	TOPCON	EUT
D	Jig board	BP359D	-	ROHM	-
E	Jig board	BP359C	-	ROHM	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna Cable	0.04	Unshielded	Unshielded	-
2	Antenna Cable	0.15	Unshielded	Unshielded	-
3	DC and Signal Cable	0.12	Unshielded	Unshielded	-
4	DC Cable	1.95	Unshielded	Unshielded	-

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

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 EUT, including peripherals 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. 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 via DC power supply 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, an average detector. The conducted emission measurements were made with the following detection of the test receiver.

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

5.5 Results

Summary of the test results : Pass
Refer to APPENDIX 1

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

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 25GHz
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 2.

The radiated emission measurements were made with the following detection.

Frequency	30-1000MHz	1-25GHz		20dBc
Detection type	Quasi-Peak	Peak	Average *1)	Peak
IF Bandwidth	120kHz	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 3MHz Detector: RMS	RBW: 100kHz VBW: 300kHz

*1) Average Power Measurement was measured based on 12.2.5.1 of KDB 558074 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

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.

Worst case:

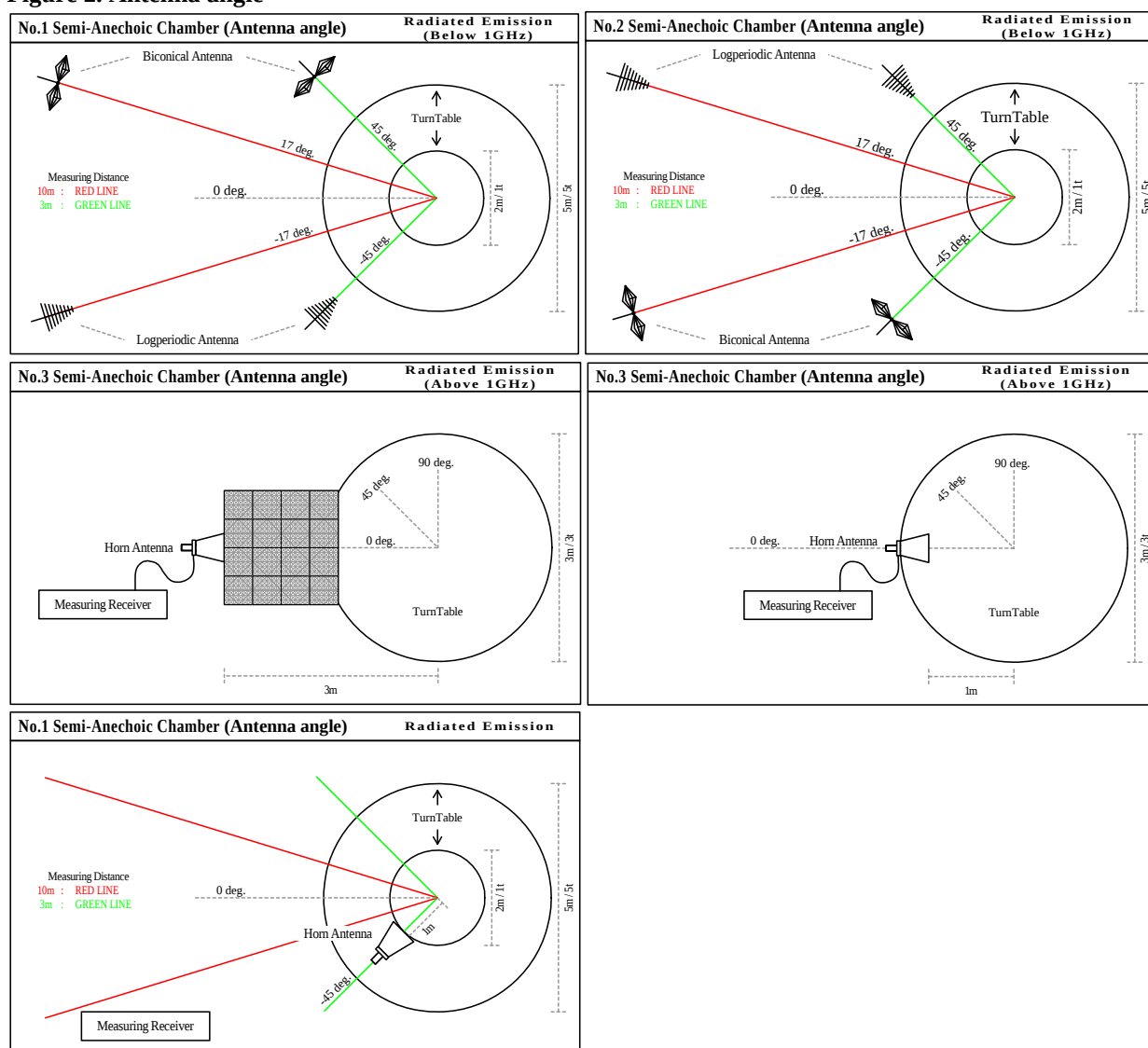
[Module]

Antenna polarization	Carrier (Band edge)	Spurious	
		Below 1GHz	Above 1GHz
Horizontal	X	X	Y
Vertical	X	Z	Y

[Antenna]

Antenna polarization	Carrier (Band edge)	Spurious	
		Below 1GHz	Above 1GHz
Horizontal	X	X	X
Vertical	Y	Y	X

Figure 2. Antenna angle



UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

6.5 Band edge

Band edge level at 2390MHz and 2483.5MHz is below the limits of FCC 15.209 and from 2390MHz to 2400MHz are below the 20dBc. Refer to the data.

6.6 Results

Summary of the test results : Pass
* No noise was detected above the 4th order harmonics.

Refer to APPENDIX 1

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Contents of APPENDIXES

APPENDIX 1: Data of Radio tests

Conducted emission
Radiated emission

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Conducted emission
Radiated emission
Pre-check of worst position

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

APPENDIX 1 : Data of Radio tests

Test Report No. : 10024497S-A

DATA OF CONDUCTED EMISSION TEST

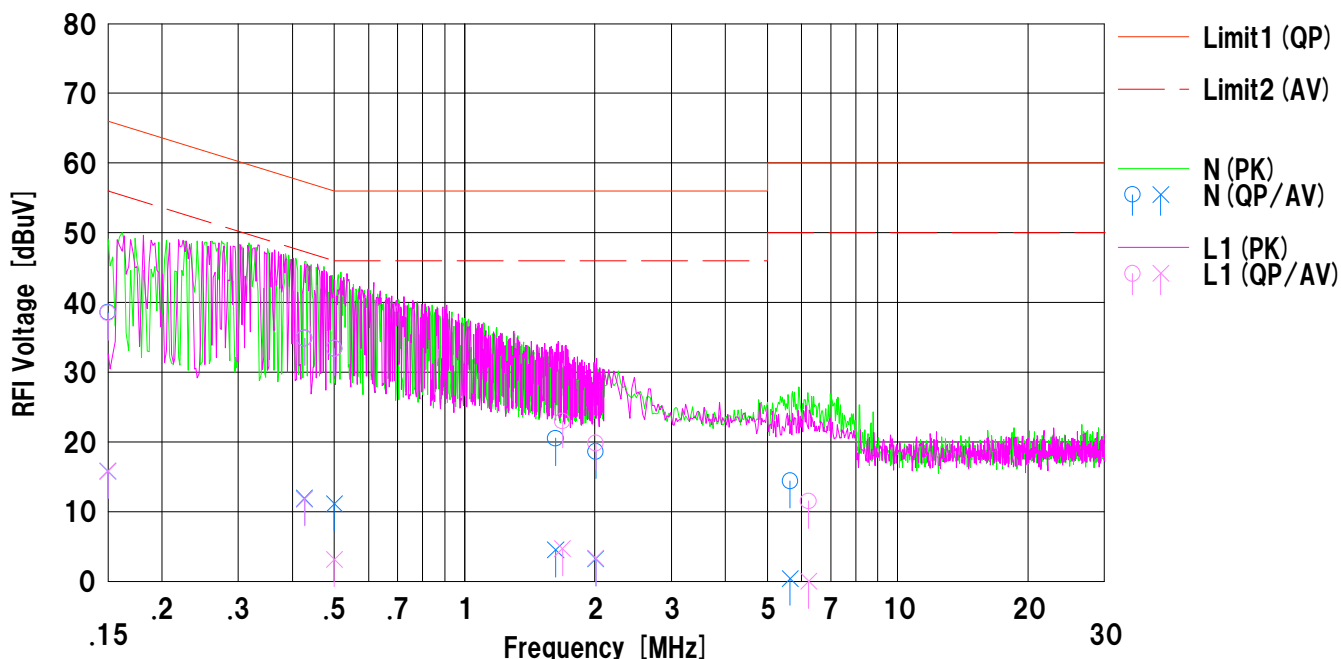
UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date : 2013/06/26

Company : ROHM CO., LTD.
Kind of EUT : Wireless LAN Module
Model No. : BP3591
Serial No. : 001D12CF8103
Remarks :

Mode : IEEE802.11g, Tx 2412MHz
Order No. : 10024497S
Power : DC 5V (DC supply input AC120V/60Hz)
Temp./Humi. : 26deg.C / 53%RH

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

Engineer : Kenichi Adachi



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	25.9	3.1	12.7	38.6	15.8	66.0	56.0	27.4	40.2	N	
2	0.42695	22.3	-0.7	12.6	34.9	11.9	57.3	47.3	22.4	35.4	N	
3	0.50001	20.8	-1.5	12.6	33.4	11.1	56.0	46.0	22.6	34.9	N	
4	1.62351	7.7	-8.3	12.8	20.5	4.5	56.0	46.0	35.5	41.5	N	
5	2.00814	5.8	-9.6	12.8	18.6	3.2	56.0	46.0	37.4	42.8	N	
6	5.64858	1.4	-12.6	13.0	14.4	0.4	60.0	50.0	45.6	49.6	N	
7	0.15000	25.8	3.1	12.7	38.5	15.8	66.0	56.0	27.5	40.2	L1	
8	0.42695	22.3	-0.8	12.6	34.9	11.8	57.3	47.3	22.4	35.5	L1	
9	0.50001	20.8	-9.5	12.6	33.4	3.1	56.0	46.0	22.6	42.9	L1	
10	1.68181	10.2	-8.1	12.8	23.0	4.7	56.0	46.0	33.0	41.3	L1	
11	2.00814	7.0	-9.5	12.8	19.8	3.3	56.0	46.0	36.2	42.7	L1	
12	6.22854	-1.5	-13.0	13.0	11.5	0.0	60.0	50.0	48.5	50.0	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-01

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.2 Semi Anechoic Chamber
Date	June 24, 2013	June 24, 2013	June 28, 2013
Temperature / Humidity	24deg.C / 54%RH	25deg.C / 49%RH	24deg.C / 60%RH
Engineer	Akio Hayashi	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2412 MHz Tx, IEEE802.11b, PN9, spurious: 1Mbps (worst), bandedge: 11Mbps (worst)		

(* 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.	160.000	QP	44.9	15.4	9.0	31.8	37.5	43.5	6.0	192	22	
Hori.	200.000	QP	28.6	16.9	9.3	31.8	23.0	43.5	20.5	170	82	
Hori.	320.000	QP	41.3	14.5	7.5	31.7	31.6	46.0	14.4	100	194	
Hori.	720.000	QP	31.1	20.7	9.4	31.5	29.7	46.0	16.3	148	17	
Hori.	2363.530	PK	45.7	27.4	14.7	41.4	46.4	73.9	27.5	100	17	
Hori.	2390.000	PK	51.1	27.4	14.7	41.4	51.8	73.9	22.1	100	17	
Hori.	2487.316	PK	45.3	27.5	14.8	41.4	46.2	73.9	27.7	100	17	
Hori.	4824.000	PK	57.9	31.1	7.5	41.2	55.3	73.9	18.6	110	256	
Hori.	7236.000	PK	46.5	36.6	9.0	41.4	50.7	73.9	23.2	100	0	
Hori.	9648.000	PK	45.9	38.6	10.2	38.9	55.8	73.9	18.1	109	207	
Hori.	12060.000	PK	44.2	39.5	11.5	39.4	55.8	73.9	18.1	100	0	
Hori.	24120.000	PK	46.7	39.8	-1.9	46.5	38.1	73.9	35.8	100	0	noise floor level
Hori.	2363.530	AV	37.0	27.4	14.7	41.4	37.7	53.9	16.2	100	17	
Hori.	2390.000	AV	43.2	27.4	14.7	41.4	43.9	53.9	10.0	100	17	
Hori.	2487.316	AV	36.4	27.5	14.8	41.4	37.3	53.9	16.6	100	17	
Hori.	4824.000	AV	55.7	31.1	7.5	41.2	53.1	53.9	0.8	110	256	
Hori.	7236.000	AV	35.0	36.6	9.0	41.4	39.2	53.9	14.7	100	0	
Hori.	9648.000	AV	38.8	38.6	10.2	38.9	48.7	53.9	5.2	109	207	
Hori.	12060.000	AV	32.6	39.5	11.5	39.4	44.2	53.9	9.7	100	0	
Hori.	24120.000	AV	37.5	39.8	-1.9	46.5	28.9	53.9	25.0	100	0	noise floor level
Vert.	80.000	QP	35.5	6.8	8.3	31.9	18.7	40.0	21.3	100	286	
Vert.	160.000	QP	42.3	15.4	9.0	31.8	34.9	43.5	8.6	100	0	
Vert.	200.000	QP	31.6	16.9	9.3	31.8	26.0	43.5	17.5	100	190	
Vert.	600.000	QP	31.3	19.1	8.9	31.6	27.7	46.0	18.3	100	106	
Vert.	2363.530	PK	48.2	27.4	14.7	41.4	48.9	73.9	25.0	100	129	
Vert.	2390.000	PK	49.4	27.4	14.7	41.4	50.1	73.9	23.8	100	129	
Vert.	2487.316	PK	46.3	27.5	14.8	41.4	47.2	73.9	26.7	100	129	
Vert.	4824.000	PK	57.0	31.1	7.5	41.2	54.4	73.9	19.5	100	294	
Vert.	7236.000	PK	47.2	36.6	9.0	41.4	51.4	73.9	22.5	100	0	
Vert.	9648.000	PK	45.3	38.6	10.2	38.9	55.2	73.9	18.7	175	313	
Vert.	12060.000	PK	44.4	39.5	11.5	39.4	56.0	73.9	17.9	100	0	
Vert.	24120.000	PK	46.8	39.8	-1.9	46.5	38.2	73.9	35.7	100	0	noise floor level
Vert.	2363.530	AV	39.6	27.4	14.7	41.4	40.3	53.9	13.6	100	129	
Vert.	2390.000	AV	43.7	27.4	14.7	41.4	44.4	53.9	9.5	100	129	
Vert.	2487.316	AV	37.8	27.5	14.8	41.4	38.7	53.9	15.2	100	129	
Vert.	4824.000	AV	54.8	31.1	7.5	41.2	52.2	53.9	1.7	100	294	
Vert.	7236.000	AV	34.9	36.6	9.0	41.4	39.1	53.9	14.8	100	0	
Vert.	9648.000	AV	38.3	38.6	10.2	38.9	48.2	53.9	5.7	175	313	
Vert.	12060.000	AV	32.6	39.5	11.5	39.4	44.2	53.9	9.7	100	0	
Vert.	24120.000	AV	37.6	39.8	-1.9	46.5	29.0	53.9	24.9	100	0	noise floor level

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

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

20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

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.	2412.000	PK	98.7	27.5	14.7	41.4	99.5	-	-	100	17	Carrier
Hori.	2397.500	PK	60.8	27.4	14.7	41.4	61.5	79.5	18.0	100	17	
Hori.	2400.000	PK	53.7	27.4	14.7	41.4	54.4	79.5	25.1	100	17	
Vert.	2412.000	PK	98.6	27.5	14.7	41.4	99.4	-	-	100	129	Carrier
Vert.	2397.500	PK	61.2	27.4	14.7	41.4	61.9	79.4	17.5	100	129	
Vert.	2400.000	PK	53.3	27.4	14.7	41.4	54.0	79.4	25.4	100	129	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

UL Japan, Inc.**Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

Radiated Emission

Test place	No.3 Semi Anechoic Chamber		No.1 Semi Anechoic Chamber		No.2 Semi Anechoic Chamber	
Date	June 24, 2013		June 24, 2013		June 25, 2013	
Temperature / Humidity	24deg.C / 54%RH		25deg.C / 49%RH		24deg.C / 66%RH	
Engineer	Akio Hayashi		Kenichi Adachi		Kenichi Adachi	
Mode	Tx, 2437 MHz		Tx, IEEE802.11b, PN9, spurious: 1Mbps (worst), bandedge: 11Mbps (worst)			

(* 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.	80.000	QP	29.0	6.8	8.3	31.9	12.2	40.0	27.8	272	212	
Hori.	160.000	QP	42.5	15.4	9.0	31.8	35.1	43.5	8.4	207	183	
Hori.	240.000	QP	34.2	17.5	10.2	31.7	30.2	46.0	15.8	193	329	
Hori.	600.000	QP	33.7	19.1	8.9	31.6	30.1	46.0	15.9	175	325	
Hori.	640.000	QP	35.5	19.7	9.1	31.7	32.6	46.0	13.4	167	359	
Hori.	879.999	QP	30.8	22.6	10.1	31.0	32.5	46.0	13.5	100	227	
Hori.	2275.650	PK	46.8	27.3	14.6	41.3	47.4	73.9	26.5	100	166	
Hori.	2483.500	PK	49.5	27.5	14.8	41.4	50.4	73.9	23.5	100	166	
Hori.	4874.000	PK	57.3	31.3	7.5	41.1	55.0	73.9	18.9	115	224	
Hori.	7311.000	PK	46.8	36.6	9.0	41.4	51.0	73.9	22.9	100	0	
Hori.	9748.000	PK	46.9	38.7	10.1	38.9	56.8	73.9	17.1	100	323	
Hori.	12185.000	PK	45.1	39.5	11.4	39.3	56.7	73.9	17.2	100	0	
Hori.	24370.000	PK	46.0	39.8	-1.8	46.6	37.4	73.9	36.5	100	0	noise floor level
Hori.	2275.650	AV	40.5	27.3	14.6	41.3	41.1	53.9	12.8	100	166	
Hori.	2483.500	AV	41.8	27.5	14.8	41.4	42.7	53.9	11.2	100	166	
Hori.	4874.000	AV	55.2	31.3	7.5	41.1	52.9	53.9	1.0	115	224	
Hori.	7311.000	AV	33.8	36.6	9.0	41.4	38.0	53.9	15.9	100	0	
Hori.	9748.000	AV	38.5	38.7	10.1	38.9	48.4	53.9	5.5	100	323	
Hori.	12185.000	AV	32.3	39.5	11.4	39.3	43.9	53.9	10.0	100	0	
Hori.	24370.000	AV	37.7	39.8	-1.8	46.6	29.1	53.9	24.8	100	0	noise floor level
Vert.	79.999	QP	41.3	6.8	8.2	31.9	24.4	40.0	15.6	100	139	
Vert.	160.000	QP	44.5	15.4	9.0	31.8	37.1	43.5	6.4	100	206	
Vert.	240.000	QP	29.6	17.5	10.2	31.7	25.6	46.0	20.4	100	215	
Vert.	600.000	QP	28.6	19.1	8.9	31.6	25.0	46.0	21.0	100	31	
Vert.	640.000	QP	29.3	19.7	9.1	31.7	26.4	46.0	19.6	100	332	
Vert.	879.999	QP	29.3	22.6	10.1	31.0	31.0	46.0	15.0	100	321	
Vert.	2275.650	PK	48.9	27.3	14.6	41.3	49.5	73.9	24.4	100	126	
Vert.	2483.500	PK	48.5	27.5	14.8	41.4	49.4	73.9	24.5	100	126	
Vert.	4874.000	PK	55.4	31.3	7.5	41.1	53.1	73.9	20.8	100	295	
Vert.	7311.000	PK	45.7	36.6	9.0	41.4	49.9	73.9	24.0	100	0	
Vert.	9748.000	PK	45.6	38.7	10.1	38.9	55.5	73.9	18.4	170	330	
Vert.	12185.000	PK	44.8	39.5	11.4	39.3	56.4	73.9	17.5	100	0	
Vert.	24370.000	PK	45.9	39.8	-1.8	46.6	37.3	73.9	36.6	100	0	noise floor level
Vert.	2275.650	AV	41.3	27.3	14.6	41.3	41.9	53.9	12.0	100	126	
Vert.	2483.500	AV	40.4	27.5	14.8	41.4	41.3	53.9	12.6	100	126	
Vert.	4874.000	AV	53.1	31.3	7.5	41.1	50.8	53.9	3.1	100	295	
Vert.	7311.000	AV	33.9	36.6	9.0	41.4	38.1	53.9	15.8	100	0	
Vert.	9748.000	AV	37.7	38.7	10.1	38.9	47.6	53.9	6.3	170	330	
Vert.	12185.000	AV	33.8	39.5	11.4	39.3	45.4	53.9	8.5	100	0	
Vert.	24370.000	AV	37.6	39.8	-1.8	46.6	29.0	53.9	24.9	100	0	noise floor level

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

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

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Emission

Test place	No.3 Semi Anechoic Chamber		No.1 Semi Anechoic Chamber	No.2 Semi Anechoic Chamber
Date	June 24, 2013	June 24, 2013	June 25, 2013	June 28, 2013
Temperature / Humidity	24deg.C / 54%RH	25deg.C / 49%RH	24deg.C / 66%RH	24deg.C / 60%RH
Engineer	Akio Hayashi	Kenichi Adachi	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2462 MHz			
	Tx, IEEE802.11b, PN9, spurious: 1Mbps (worst), bandedge: 11Mbps (worst)			

(* 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.	160.000	QP	44.3	15.4	9.0	31.8	36.9	43.5	6.6	199	194	
Hori.	200.000	QP	30.3	16.9	9.3	31.8	24.7	43.5	18.8	150	274	
Hori.	320.000	QP	39.1	14.5	7.5	31.7	29.4	46.0	16.6	100	191	
Hori.	640.000	QP	30.6	19.7	9.1	31.7	27.7	46.0	18.3	100	359	
Hori.	720.000	QP	29.6	20.7	9.4	31.5	28.2	46.0	17.8	135	211	
Hori.	780.000	QP	29.6	21.2	9.7	31.4	29.1	46.0	16.9	128	359	
Hori.	2386.300	PK	50.8	27.4	14.7	41.4	51.5	73.9	22.4	100	169	
Hori.	2483.500	PK	50.0	27.5	14.8	41.4	50.9	73.9	23.0	100	169	
Hori.	2506.600	PK	51.2	27.6	14.9	41.4	52.3	73.9	21.6	100	169	
Hori.	4924.000	PK	56.9	31.5	7.5	41.0	54.9	73.9	19.0	100	223	
Hori.	7386.000	PK	46.5	36.7	9.0	41.5	50.7	73.9	23.2	100	0	
Hori.	9848.000	PK	46.9	38.9	10.0	38.9	56.9	73.9	17.0	159	333	
Hori.	12310.000	PK	43.6	39.5	11.3	39.3	55.1	73.9	18.8	100	0	
Hori.	24620.000	PK	46.5	39.7	-1.7	46.7	37.8	73.9	36.1	100	0	noise floor level
Hori.	2386.300	AV	44.0	27.4	14.7	41.4	44.7	53.9	9.2	100	169	
Hori.	2483.500	AV	43.0	27.5	14.8	41.4	43.9	53.9	10.0	100	169	
Hori.	2506.600	AV	44.7	27.6	14.9	41.4	45.8	53.9	8.1	100	169	
Hori.	4924.000	AV	54.8	31.5	7.5	41.0	52.8	53.9	1.1	100	223	
Hori.	7386.000	AV	34.4	36.7	9.0	41.5	38.6	53.9	15.3	100	0	
Hori.	9848.000	AV	41.2	38.9	10.0	38.9	51.2	53.9	2.7	159	333	
Hori.	12310.000	AV	32.1	39.5	11.3	39.3	43.6	53.9	10.3	100	0	
Hori.	24620.000	AV	38.5	39.7	-1.7	46.7	29.8	53.9	24.1	100	0	noise floor level
Vert.	80.000	QP	35.2	6.8	8.3	31.9	18.4	40.0	21.6	100	113	
Vert.	160.000	QP	42.1	15.4	9.0	31.8	34.7	43.5	8.8	100	352	
Vert.	200.000	QP	31.3	16.9	9.3	31.8	25.7	43.5	17.8	100	204	
Vert.	2386.300	PK	49.4	27.4	14.7	41.4	50.1	73.9	23.8	100	61	
Vert.	2483.500	PK	50.2	27.5	14.8	41.4	51.1	73.9	22.8	100	61	
Vert.	2506.600	PK	50.6	27.6	14.9	41.4	51.7	73.9	22.2	100	61	
Vert.	4924.000	PK	55.3	31.5	7.5	41.0	53.3	73.9	20.6	100	290	
Vert.	7386.000	PK	46.5	36.7	9.0	41.5	50.7	73.9	23.2	100	0	
Vert.	9848.000	PK	46.4	38.9	10.0	38.9	56.4	73.9	17.5	153	42	
Vert.	12310.000	PK	43.9	39.5	11.3	39.3	55.4	73.9	18.5	100	0	
Vert.	24620.000	PK	46.6	39.7	-1.7	46.7	37.9	73.9	36.0	100	0	noise floor level
Vert.	2386.300	AV	42.7	27.4	14.7	41.4	43.4	53.9	10.5	100	61	
Vert.	2483.500	AV	41.7	27.5	14.8	41.4	42.6	53.9	11.3	100	61	
Vert.	2506.600	AV	43.4	27.6	14.9	41.4	44.5	53.9	9.4	100	61	
Vert.	4924.000	AV	52.2	31.5	7.5	41.0	50.2	53.9	3.7	100	290	
Vert.	7386.000	AV	34.4	36.7	9.0	41.5	38.6	53.9	15.3	100	0	
Vert.	9848.000	AV	39.6	38.9	10.0	38.9	49.6	53.9	4.3	153	42	
Vert.	12310.000	AV	32.1	39.5	11.3	39.3	43.6	53.9	10.3	100	0	
Vert.	24620.000	AV	38.6	39.7	-1.7	46.7	29.9	53.9	24.0	100	0	noise floor level

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

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

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	June 24, 2013	June 25, 2013
Temperature / Humidity	24deg.C / 54%RH	25deg.C / 49%RH
Engineer	Akio Hayashi	Kenichi Adachi
Mode	Tx, 2412 MHz	
	Tx, IEEE802.11g, PN9, 24Mbps (worst)	

(* 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.	80.000	QP	26.8	6.5	8.2	31.8	9.7	40.0	30.3	293	147	
Hori.	160.000	QP	32.0	15.4	8.8	31.8	24.4	43.5	19.1	202	137	
Hori.	200.000	QP	36.4	16.6	8.9	31.8	30.1	43.5	13.4	153	182	
Hori.	280.000	QP	35.7	18.6	10.1	31.8	32.6	46.0	13.4	118	195	
Hori.	600.000	QP	38.5	19.3	8.8	32.0	34.6	46.0	11.4	181	239	
Hori.	959.999	QP	31.9	23.2	10.2	30.9	34.4	46.0	11.6	100	289	
Hori.	2364.090	PK	50.7	27.4	14.7	41.4	51.4	73.9	22.5	100	185	
Hori.	2390.000	PK	60.9	27.4	14.7	41.4	61.6	73.9	12.3	100	185	
Hori.	2499.600	PK	49.2	27.6	14.8	41.4	50.2	73.9	23.7	100	185	
Hori.	4824.000	PK	50.9	31.1	7.5	41.2	48.3	73.9	25.6	100	209	
Hori.	7236.000	PK	44.3	36.6	9.0	41.4	48.5	73.9	25.4	100	0	
Hori.	9648.000	PK	42.5	38.6	10.2	38.9	52.4	73.9	21.5	100	0	
Hori.	12060.000	PK	44.6	39.5	11.5	39.4	56.2	73.9	17.7	100	0	
Hori.	24120.000	PK	46.7	39.8	-1.9	46.5	38.1	73.9	35.8	100	0	noise floor level
Hori.	2364.090	AV	42.2	27.4	14.7	41.4	42.9	53.9	11.0	100	185	
Hori.	2390.000	AV	48.6	27.4	14.7	41.4	49.3	53.9	4.6	100	185	
Hori.	2499.600	AV	39.7	27.6	14.8	41.4	40.7	53.9	13.2	100	185	
Hori.	4824.000	AV	43.3	31.1	7.5	41.2	40.7	53.9	13.2	100	209	
Hori.	7236.000	AV	34.5	36.6	9.0	41.4	38.7	53.9	15.2	100	0	
Hori.	9648.000	AV	31.2	38.6	10.2	38.9	41.1	53.9	12.8	100	0	
Hori.	12060.000	AV	32.2	39.5	11.5	39.4	43.8	53.9	10.1	100	0	
Hori.	24120.000	AV	37.5	39.8	-1.9	46.5	28.9	53.9	25.0	100	0	noise floor level
Vert.	80.000	QP	31.8	6.5	8.2	31.8	14.7	40.0	25.3	128	348	
Vert.	160.000	QP	37.9	15.4	8.8	31.8	30.3	43.5	13.2	100	352	
Vert.	200.000	QP	36.0	16.6	8.9	31.8	29.7	43.5	13.8	100	181	
Vert.	280.000	QP	29.1	18.6	10.1	31.8	26.0	46.0	20.0	100	188	
Vert.	600.000	QP	37.9	19.3	8.8	32.0	34.0	46.0	12.0	100	26	
Vert.	959.999	QP	27.7	23.2	10.2	30.9	30.2	46.0	15.8	100	62	
Vert.	2364.090	PK	51.5	27.4	14.7	41.4	52.2	73.9	21.7	100	111	
Vert.	2390.000	PK	59.2	27.4	14.7	41.4	59.9	73.9	14.0	100	111	
Vert.	2499.600	PK	48.1	27.6	14.8	41.4	49.1	73.9	24.8	100	111	
Vert.	4824.000	PK	50.9	31.1	7.5	41.2	48.3	73.9	25.6	100	178	
Vert.	7236.000	PK	43.3	36.6	9.0	41.4	47.5	73.9	26.4	100	0	
Vert.	9648.000	PK	42.5	38.6	10.2	38.9	52.4	73.9	21.5	100	0	
Vert.	12060.000	PK	43.8	39.5	11.5	39.4	55.4	73.9	18.5	100	0	
Vert.	24120.000	PK	46.8	39.8	-1.9	46.5	38.2	73.9	35.7	100	0	noise floor level
Vert.	2364.090	AV	43.1	27.4	14.7	41.4	43.8	53.9	10.1	100	111	
Vert.	2390.000	AV	46.7	27.4	14.7	41.4	47.4	53.9	6.5	100	111	
Vert.	2499.600	AV	40.4	27.6	14.8	41.4	41.4	53.9	12.5	100	111	
Vert.	4824.000	AV	42.6	31.1	7.5	41.2	40.0	53.9	13.9	100	178	
Vert.	7236.000	AV	34.8	36.6	9.0	41.4	39.0	53.9	14.9	100	0	
Vert.	9648.000	AV	31.2	38.6	10.2	38.9	41.1	53.9	12.8	100	0	
Vert.	12060.000	AV	32.4	39.5	11.5	39.4	44.0	53.9	9.9	100	0	
Vert.	24120.000	AV	37.6	39.8	-1.9	46.5	29.0	53.9	24.9	100	0	noise floor level

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

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

20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

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.	2412.000	PK	95.7	27.5	14.7	41.4	96.5	-	-	100	185	Carrier
Hori.	2399.832	PK	63.8	27.4	14.7	41.4	64.5	76.5	12.0	100	185	
Hori.	2400.000	PK	62.5	27.4	14.7	41.4	63.2	76.5	13.3	100	185	
Vert.	2412.000	PK	95.6	27.5	14.7	41.4	96.4	-	-	100	111	Carrier
Vert.	2399.832	PK	64.8	27.4	14.7	41.4	65.5	76.4	10.9	100	111	
Vert.	2400.000	PK	63.4	27.4	14.7	41.4	64.1	76.4	12.3	100	111	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

UL Japan, Inc.**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.2 Semi Anechoic Chamber
Date	June 24, 2013	June 25, 2013	June 28, 2013
Temperature / Humidity	25deg.C / 49%RH	24deg.C / 66%RH	24deg.C / 60%RH
Engineer	Kenichi Adachi	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2437 MHz Tx, IEEE802.11g, PN9, 24Mbps (worst)		

(* 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.	160.000	QP	37.3	15.4	9.0	31.8	29.9	43.5	13.6	217	358	
Hori.	600.000	QP	30.0	19.1	8.9	31.6	26.4	46.0	19.6	178	316	
Hori.	840.000	QP	31.2	21.9	9.9	31.2	31.8	46.0	14.2	110	186	
Hori.	920.000	QP	29.6	22.9	10.3	30.7	32.1	46.0	13.9	100	251	
Hori.	2389.280	PK	53.2	27.4	14.7	41.4	53.9	73.9	20.0	100	19	
Hori.	2484.835	PK	52.7	27.5	14.8	41.4	53.6	73.9	20.3	100	19	
Hori.	4874.000	PK	53.2	31.3	7.5	41.1	50.9	73.9	23.0	100	244	
Hori.	7311.000	PK	46.3	36.6	9.0	41.4	50.5	73.9	23.4	100	0	noise floor level
Hori.	9748.000	PK	43.6	38.7	10.1	38.9	53.5	73.9	20.4	100	268	noise floor level
Hori.	12185.000	PK	43.3	39.5	11.4	39.3	54.9	73.9	19.0	100	0	noise floor level
Hori.	24370.000	PK	46.2	39.8	-1.8	46.6	37.6	73.9	36.3	100	0	noise floor level
Hori.	2389.280	AV	45.5	27.4	14.7	41.4	46.2	53.9	7.7	100	19	
Hori.	2484.835	AV	45.1	27.5	14.8	41.4	46.0	53.9	7.9	100	19	
Hori.	4874.000	AV	45.4	31.3	7.5	41.1	43.1	53.9	10.8	100	244	
Hori.	7311.000	AV	37.5	36.6	9.0	41.4	41.7	53.9	12.2	100	0	noise floor level
Hori.	9748.000	AV	35.6	38.7	10.1	38.9	45.5	53.9	8.4	100	268	noise floor level
Hori.	12185.000	AV	35.5	39.5	11.4	39.3	47.1	53.9	6.8	100	0	noise floor level
Hori.	24370.000	AV	37.7	39.8	-1.8	46.6	29.1	53.9	24.8	100	0	noise floor level
Vert.	80.000	QP	30.4	6.8	8.3	31.9	13.6	40.0	26.4	100	124	
Vert.	160.000	QP	33.2	15.4	9.0	31.8	25.8	43.5	17.7	100	342	
Vert.	200.000	QP	35.1	16.9	9.3	31.8	29.5	43.5	14.0	100	204	
Vert.	600.000	QP	29.8	19.1	8.9	31.6	26.2	46.0	19.8	100	124	
Vert.	2389.280	PK	51.2	27.4	14.7	41.4	51.9	73.9	22.0	134	137	
Vert.	2484.835	PK	52.0	27.5	14.8	41.4	52.9	73.9	21.0	134	137	
Vert.	4874.000	PK	52.4	31.3	7.5	41.1	50.1	73.9	23.8	100	238	
Vert.	7311.000	PK	46.4	36.6	9.0	41.4	50.6	73.9	23.3	100	0	noise floor level
Vert.	9748.000	PK	43.5	38.7	10.1	38.9	53.4	73.9	20.5	131	341	noise floor level
Vert.	12185.000	PK	43.4	39.5	11.4	39.3	55.0	73.9	18.9	100	0	noise floor level
Vert.	24370.000	PK	46.3	39.8	-1.8	46.6	37.7	73.9	36.2	100	0	noise floor level
Vert.	2389.280	AV	43.3	27.4	14.7	41.4	44.0	53.9	9.9	134	137	
Vert.	2484.835	AV	43.6	27.5	14.8	41.4	44.5	53.9	9.4	134	137	
Vert.	4874.000	AV	45.2	31.3	7.5	41.1	42.9	53.9	11.0	100	238	
Vert.	7311.000	AV	37.6	36.6	9.0	41.4	41.8	53.9	12.1	100	0	noise floor level
Vert.	9748.000	AV	35.5	38.7	10.1	38.9	45.4	53.9	8.5	131	341	noise floor level
Vert.	12185.000	AV	35.6	39.5	11.4	39.3	47.2	53.9	6.7	100	0	noise floor level
Vert.	24370.000	AV	37.8	39.8	-1.8	46.6	29.2	53.9	24.7	100	0	noise floor level

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

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

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Emission

Test place	No.3 Semi Anechoic Chamber		No.1 Semi Anechoic Chamber	No.2 Semi Anechoic Chamber
Date	June 24, 2013	June 24, 2013	June 25, 2013	June 28, 2013
Temperature / Humidity	24deg.C / 54%RH	25deg.C / 49%RH	24deg.C / 66%RH	24deg.C / 60%RH
Engineer	Akio Hayashi	Kenichi Adachi	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2462 MHz			
	Tx, IEEE802.11g, PN9, 24Mbps (worst)			

(* 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.	160.000	QP	41.2	15.4	9.0	31.8	33.8	43.5	9.7	220	168	
Hori.	600.000	QP	30.6	19.1	8.9	31.6	27.0	46.0	19.0	178	319	
Hori.	720.000	QP	31.1	20.7	9.4	31.5	29.7	46.0	16.3	141	30	
Hori.	920.000	QP	30.0	22.9	10.3	30.7	32.5	46.0	13.5	100	34	
Hori.	2389.000	PK	52.6	27.4	14.7	41.4	53.3	73.9	20.6	100	18	
Hori.	2484.820	PK	53.0	27.5	14.8	41.4	53.9	73.9	20.0	100	18	
Hori.	4874.000	PK	51.2	31.3	7.5	41.1	48.9	73.9	25.0	100	162	
Hori.	7311.000	PK	45.5	36.6	9.0	41.4	49.7	73.9	24.2	100	0	
Hori.	9748.000	PK	42.2	38.7	10.1	38.9	52.1	73.9	21.8	100	0	
Hori.	12185.000	PK	43.2	39.5	11.4	39.3	54.8	73.9	19.1	100	0	
Hori.	24620.000	PK	46.7	39.7	-1.7	46.7	38.0	73.9	35.9	100	0	noise floor level
Hori.	2389.000	AV	44.4	27.4	14.7	41.4	45.1	53.9	8.8	100	18	
Hori.	2484.820	AV	45.0	27.5	14.8	41.4	45.9	53.9	8.0	100	18	
Hori.	4874.000	AV	43.6	31.3	7.5	41.1	41.3	53.9	12.6	100	162	
Hori.	7311.000	AV	34.0	36.6	9.0	41.4	38.2	53.9	15.7	100	0	
Hori.	9748.000	AV	31.0	38.7	10.1	38.9	40.9	53.9	13.0	100	0	
Hori.	12185.000	AV	32.3	39.5	11.4	39.3	43.9	53.9	10.0	100	0	
Hori.	24620.000	AV	38.5	39.7	-1.7	46.7	29.8	53.9	24.1	100	0	noise floor level
Vert.	80.000	QP	36.5	6.8	8.3	31.9	19.7	40.0	20.3	100	274	
Vert.	160.000	QP	37.0	15.4	9.0	31.8	29.6	43.5	13.9	100	200	
Vert.	200.000	QP	30.0	16.9	9.3	31.8	24.4	43.5	19.1	100	223	
Vert.	600.000	QP	29.6	19.1	8.9	31.6	26.0	46.0	20.0	100	120	
Vert.	2389.000	PK	50.6	27.4	14.7	41.4	51.3	73.9	22.6	100	144	
Vert.	2484.820	PK	51.4	27.5	14.8	41.4	52.3	73.9	21.6	100	144	
Vert.	4874.000	PK	51.3	31.3	7.5	41.1	49.0	73.9	24.9	100	225	
Vert.	7311.000	PK	45.7	36.6	9.0	41.4	49.9	73.9	24.0	100	0	
Vert.	9748.000	PK	42.6	38.7	10.1	38.9	52.5	73.9	21.4	100	0	
Vert.	12185.000	PK	44.1	39.5	11.4	39.3	55.7	73.9	18.2	100	0	
Vert.	24620.000	PK	46.8	39.7	-1.7	46.7	38.1	73.9	35.8	100	0	noise floor level
Vert.	2389.000	AV	42.4	27.4	14.7	41.4	43.1	53.9	10.8	100	144	
Vert.	2484.820	AV	42.9	27.5	14.8	41.4	43.8	53.9	10.1	100	144	
Vert.	4874.000	AV	44.0	31.3	7.5	41.1	41.7	53.9	12.2	100	225	
Vert.	7311.000	AV	34.0	36.6	9.0	41.4	38.2	53.9	15.7	100	0	
Vert.	9748.000	AV	30.8	38.7	10.1	38.9	40.7	53.9	13.2	100	0	
Vert.	12185.000	AV	32.3	39.5	11.4	39.3	43.9	53.9	10.0	100	0	
Vert.	24620.000	AV	38.6	39.7	-1.7	46.7	29.9	53.9	24.0	100	0	noise floor level

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

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

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.2 Semi Anechoic Chamber
Date	June 24, 2013	June 25, 2013	June 28, 2013
Temperature / Humidity	25deg.C / 49%RH	24deg.C / 66%RH	24deg.C / 60%RH
Engineer	Kenichi Adachi	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11n-20, PN9, MCS6 (Long) (worst)		

(* 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.	160.000	QP	42.1	15.4	9.0	31.8	34.7	43.5	8.8	216	19	
Hori.	600.000	QP	32.3	19.1	8.9	31.6	28.7	46.0	17.3	171	323	
Hori.	720.000	QP	32.2	20.7	9.4	31.5	30.8	46.0	15.2	137	319	
Hori.	920.000	QP	30.0	22.9	10.3	30.7	32.5	46.0	13.5	100	196	
Hori.	2363.680	PK	51.1	27.4	14.7	41.4	51.8	73.9	22.1	100	20	
Hori.	2382.000	PK	53.3	27.4	14.7	41.4	54.0	73.9	19.9	100	20	
Hori.	2390.000	PK	60.2	27.4	14.7	41.4	60.9	73.9	13.0	100	20	
Hori.	2483.950	PK	51.2	27.5	14.8	41.4	52.1	73.9	21.8	100	20	
Hori.	4824.000	PK	50.8	31.1	7.5	41.2	48.2	73.9	25.7	100	227	
Hori.	7236.000	PK	46.7	36.6	9.0	41.4	50.9	73.9	23.0	100	0	noise floor level
Hori.	9648.000	PK	43.3	38.6	10.2	38.9	53.2	73.9	20.7	100	261	
Hori.	24120.000	PK	46.7	39.8	-1.9	46.5	38.1	73.9	35.8	100	0	noise floor level
Hori.	2363.680	AV	43.6	27.4	14.7	41.4	44.3	53.9	9.6	100	20	
Hori.	2382.000	AV	37.0	27.4	14.7	41.4	37.7	53.9	16.2	100	20	
Hori.	2390.000	AV	48.5	27.4	14.7	41.4	49.2	53.9	4.7	100	20	
Hori.	2483.950	AV	44.6	27.5	14.8	41.4	45.5	53.9	8.4	100	20	
Hori.	4824.000	AV	44.4	31.1	7.5	41.2	41.8	53.9	12.1	100	227	
Hori.	7236.000	AV	38.4	36.6	9.0	41.4	42.6	53.9	11.3	100	0	noise floor level
Hori.	9648.000	AV	35.5	38.6	10.2	38.9	45.4	53.9	8.5	100	261	
Hori.	24120.000	AV	37.6	39.8	-1.9	46.5	29.0	53.9	24.9	100	0	noise floor level
Vert.	80.000	QP	36.5	6.8	8.3	31.9	19.7	40.0	20.3	100	118	
Vert.	160.000	QP	37.0	15.4	9.0	31.8	29.6	43.5	13.9	100	194	
Vert.	200.000	QP	32.1	16.9	9.3	31.8	26.5	43.5	17.0	100	227	
Vert.	600.000	QP	30.5	19.1	8.9	31.6	26.9	46.0	19.1	100	359	
Vert.	2363.680	PK	52.1	27.4	14.7	41.4	52.8	73.9	21.1	132	145	
Vert.	2382.000	PK	53.0	27.4	14.7	41.4	53.7	73.9	20.2	132	145	
Vert.	2390.000	PK	59.5	27.4	14.7	41.4	60.2	73.9	13.7	132	145	
Vert.	2483.950	PK	49.9	27.5	14.8	41.4	50.8	73.9	23.1	132	145	
Vert.	4824.000	PK	50.3	31.1	7.5	41.2	47.7	73.9	26.2	100	231	
Vert.	7236.000	PK	46.6	36.6	9.0	41.4	50.8	73.9	23.1	100	0	noise floor level
Vert.	9648.000	PK	43.2	38.6	10.2	38.9	53.1	73.9	20.8	135	346	
Vert.	24120.000	PK	46.8	39.8	-1.9	46.5	38.2	73.9	35.7	100	0	noise floor level
Vert.	2363.680	AV	43.5	27.4	14.7	41.4	44.2	53.9	9.7	132	145	
Vert.	2382.000	AV	39.5	27.4	14.7	41.4	40.2	53.9	13.7	132	145	
Vert.	2390.000	AV	48.0	27.4	14.7	41.4	48.7	53.9	5.2	132	145	
Vert.	2483.950	AV	41.4	27.5	14.8	41.4	42.3	53.9	11.6	132	145	
Vert.	4824.000	AV	44.5	31.1	7.5	41.2	41.9	53.9	12.0	100	231	
Vert.	7236.000	AV	38.3	36.6	9.0	41.4	42.5	53.9	11.4	100	0	noise floor level
Vert.	9648.000	AV	35.3	38.6	10.2	38.9	45.2	53.9	8.7	135	346	
Vert.	24120.000	AV	37.7	39.8	-1.9	46.5	29.1	53.9	24.8	100	0	noise floor level

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

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

20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

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.	2412.000	PK	94.8	27.5	14.7	41.4	95.6	-	-	100	20	Carrier
Hori.	2399.920	PK	64.6	27.4	14.7	41.4	65.3	75.6	10.3	100	20	
Hori.	2400.000	PK	66.2	27.4	14.7	41.4	66.9	75.6	8.7	100	20	
Vert.	2412.000	PK	94.1	27.5	14.7	41.4	94.9	-	-	132	145	Carrier
Vert.	2399.920	PK	63.5	27.4	14.7	41.4	64.2	74.9	10.7	132	145	
Vert.	2400.000	PK	65.6	27.4	14.7	41.4	66.3	74.9	8.6	132	145	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

UL Japan, Inc.**Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.2 Semi Anechoic Chamber
Date	June 24, 2013	June 25, 2013	June 28, 2013
Temperature / Humidity	25deg.C / 49%RH	24deg.C / 66%RH	24deg.C / 60%RH
Engineer	Kenichi Adachi	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n-20, PN9, MCS6 (Long) (worst)		

(* 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.	160.000	QP	38.6	15.4	9.0	31.8	31.2	43.5	12.3	177	359	
Hori.	600.000	QP	30.0	19.1	8.9	31.6	26.4	46.0	19.6	175	163	
Hori.	920.000	QP	30.1	22.9	10.3	30.7	32.6	46.0	13.4	100	257	
Hori.	2388.770	PK	52.2	27.4	14.7	41.4	52.9	73.9	21.0	100	17	
Hori.	2485.240	PK	52.4	27.5	14.8	41.4	53.3	73.9	20.6	100	17	
Hori.	4874.000	PK	50.9	31.3	7.5	41.1	48.6	73.9	25.3	100	229	
Hori.	7311.000	PK	46.5	36.6	9.0	41.4	50.7	73.9	23.2	100	0	noise floor level
Hori.	9748.000	PK	43.5	38.7	10.1	38.9	53.4	73.9	20.5	100	271	noise floor level
Hori.	24370.000	PK	46.5	39.8	-1.8	46.6	37.9	73.9	36.0	100	0	noise floor level
Hori.	2388.770	AV	44.4	27.4	14.7	41.4	45.1	53.9	8.8	100	17	
Hori.	2485.240	AV	44.5	27.5	14.8	41.4	45.4	53.9	8.5	100	17	
Hori.	4874.000	AV	45.2	31.3	7.5	41.1	42.9	53.9	11.0	100	229	
Hori.	7311.000	AV	37.6	36.6	9.0	41.4	41.8	53.9	12.1	100	0	noise floor level
Hori.	9748.000	AV	35.5	38.7	10.1	38.9	45.4	53.9	8.5	100	271	noise floor level
Hori.	24370.000	AV	37.8	39.8	-1.8	46.6	29.2	53.9	24.7	100	0	noise floor level
Vert.	80.000	QP	33.4	6.8	8.3	31.9	16.6	40.0	23.4	100	107	
Vert.	160.000	QP	33.5	15.4	9.0	31.8	26.1	43.5	17.4	100	357	
Vert.	200.000	QP	31.8	16.9	9.3	31.8	26.2	43.5	17.3	100	190	
Vert.	600.000	QP	28.8	19.1	8.9	31.6	25.2	46.0	20.8	100	359	
Vert.	840.000	QP	28.4	21.9	9.9	31.2	29.0	46.0	17.0	100	294	
Vert.	2388.770	PK	50.7	27.4	14.7	41.4	51.4	73.9	22.5	136	139	
Vert.	2485.240	PK	50.5	27.5	14.8	41.4	51.4	73.9	22.5	136	139	
Vert.	4874.000	PK	50.8	31.3	7.5	41.1	48.5	73.9	25.4	100	238	
Vert.	7311.000	PK	46.6	36.6	9.0	41.4	50.8	73.9	23.1	100	0	noise floor level
Vert.	9748.000	PK	43.4	38.7	10.1	38.9	53.3	73.9	20.6	133	342	noise floor level
Vert.	24370.000	PK	46.4	39.8	-1.8	46.6	37.8	73.9	36.1	100	0	noise floor level
Vert.	2388.770	AV	42.5	27.4	14.7	41.4	43.2	53.9	10.7	136	139	
Vert.	2485.240	AV	42.3	27.5	14.8	41.4	43.2	53.9	10.7	136	139	
Vert.	4874.000	AV	45.0	31.3	7.5	41.1	42.7	53.9	11.2	100	238	
Vert.	7311.000	AV	37.5	36.6	9.0	41.4	41.7	53.9	12.2	100	0	noise floor level
Vert.	9748.000	AV	35.4	38.7	10.1	38.9	45.3	53.9	8.6	133	342	noise floor level
Vert.	24370.000	AV	37.7	39.8	-1.8	46.6	29.1	53.9	24.8	100	0	noise floor level

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

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

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.2 Semi Anechoic Chamber
Date	June 24, 2013	June 25, 2013	June 28, 2013
Temperature / Humidity	25deg.C / 49%RH	24deg.C / 66%RH	24deg.C / 60%RH
Engineer	Kenichi Adachi	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11n-20, PN9, MCS6 (Long) (worst)		

(* 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.	160.000	QP	38.5	15.4	9.0	31.8	31.1	43.5	12.4	206	359	
Hori.	600.000	QP	30.0	19.1	8.9	31.6	26.4	46.0	19.6	100	1	
Hori.	720.000	QP	32.3	20.7	9.4	31.5	30.9	46.0	15.1	136	330	
Hori.	880.000	QP	28.8	22.6	10.1	31.0	30.5	46.0	15.5	100	266	
Hori.	2388.790	PK	50.2	27.4	14.7	41.4	50.9	73.9	23.0	100	18	
Hori.	2483.500	PK	59.5	27.5	14.8	41.4	60.4	73.9	13.5	100	18	
Hori.	2483.920	PK	58.4	27.5	14.8	41.4	59.3	73.9	14.6	100	18	
Hori.	2510.054	PK	52.4	27.6	14.9	41.4	53.5	73.9	20.4	100	18	
Hori.	4924.000	PK	49.4	31.5	7.5	41.0	47.4	73.9	26.5	100	231	
Hori.	7386.000	PK	45.8	36.7	9.0	41.5	50.0	73.9	23.9	100	0	noise floor level
Hori.	9848.000	PK	44.8	38.9	10.0	38.9	54.8	73.9	19.1	100	265	noise floor level
Hori.	24620.000	PK	46.9	39.7	-1.7	46.7	38.2	73.9	35.7	100	0	noise floor level
Hori.	2388.790	AV	42.6	27.4	14.7	41.4	43.3	53.9	10.6	100	18	
Hori.	2483.500	AV	48.9	27.5	14.8	41.4	49.8	53.9	4.1	100	18	
Hori.	2483.920	AV	47.1	27.5	14.8	41.4	48.0	53.9	5.9	100	18	
Hori.	2510.054	AV	44.1	27.6	14.9	41.4	45.2	53.9	8.7	100	18	
Hori.	4924.000	AV	43.0	31.5	7.5	41.0	41.0	53.9	12.9	100	231	
Hori.	7386.000	AV	38.1	36.7	9.0	41.5	42.3	53.9	11.6	100	0	noise floor level
Hori.	9848.000	AV	35.4	38.9	10.0	38.9	45.4	53.9	8.5	100	265	noise floor level
Hori.	24620.000	AV	38.7	39.7	-1.7	46.7	30.0	53.9	23.9	100	0	noise floor level
Vert.	80.000	QP	34.8	6.8	8.3	31.9	18.0	40.0	22.0	100	110	
Vert.	160.000	QP	33.5	15.4	9.0	31.8	26.1	43.5	17.4	100	358	
Vert.	200.000	QP	31.8	16.9	9.3	31.8	26.2	43.5	17.3	100	47	
Vert.	600.000	QP	28.2	19.1	8.9	31.6	24.6	46.0	21.4	100	131	
Vert.	2388.790	PK	49.2	27.4	14.7	41.4	49.9	73.9	24.0	135	136	
Vert.	2483.500	PK	59.4	27.5	14.8	41.4	60.3	73.9	13.6	135	136	
Vert.	2483.920	PK	58.3	27.5	14.8	41.4	59.2	73.9	14.7	135	136	
Vert.	2510.054	PK	53.6	27.6	14.9	41.4	54.7	73.9	19.2	135	136	
Vert.	4924.738	PK	49.7	31.5	7.5	41.0	47.7	73.9	26.2	100	235	
Vert.	7386.000	PK	45.7	36.7	9.0	41.5	49.9	73.9	24.0	100	0	noise floor level
Vert.	9848.000	PK	44.9	38.9	10.0	38.9	54.9	73.9	19.0	132	340	noise floor level
Vert.	24620.000	PK	46.8	39.7	-1.7	46.7	38.1	73.9	35.8	100	0	noise floor level
Vert.	2388.790	AV	42.1	27.4	14.7	41.4	42.8	53.9	11.1	135	136	
Vert.	2483.500	AV	48.1	27.5	14.8	41.4	49.0	53.9	4.9	135	136	
Vert.	2483.920	AV	46.7	27.5	14.8	41.4	47.6	53.9	6.3	135	136	
Vert.	2510.054	AV	44.8	27.6	14.9	41.4	45.9	53.9	8.0	135	136	
Vert.	4924.738	AV	43.2	31.5	7.5	41.0	41.2	53.9	12.7	100	235	
Vert.	7386.000	AV	38.0	36.7	9.0	41.5	42.2	53.9	11.7	100	0	noise floor level
Vert.	9848.000	AV	35.5	38.9	10.0	38.9	45.5	53.9	8.4	132	340	noise floor level
Vert.	24620.000	AV	38.6	39.7	-1.7	46.7	29.9	53.9	24.0	100	0	noise floor level

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

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

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

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	2012/09/21 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2012/07/18 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2013/04/11 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2013/05/22 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2012/08/17 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2013/02/27 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2013/03/04 * 12
SJM-11	Measure	PROMART	SEN1935	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFLMF)	-	RE, CE	-
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	RE	2012/12/18 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2012/12/18 * 12
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2012/09/11 * 12
SHA-05	Horn Antenna	ETS LINDGREN	3160-09	LM4210	RE	2013/03/14 * 12
SAF-09	Pre Amplifier	TOYO Corporation	HAP18-26W	00000018	RE	2013/03/19 * 12
SCC-G18	Coaxial Cable	Suhner	SUCOFLEX 104A	46292/4A	RE	2013/03/16 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2013/02/27 * 12
SJM-08	Measure	PROMART	SEN1935	-	RE, CE	-
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	2013/02/12 * 12
SAT6-05	Attenuator	JFW	50HF-006N	-	RE	2013/02/12 * 12
SAT3-04	Attenuator	JFW	50HF-003N	-	RE	2013/02/12 * 12
SBA-01	Biconical Antenna	Schwarzbeck	BBA9106	91032664	RE	2012/10/08 * 12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2013/04/04 * 12
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2013/04/04 * 12
SLA-01	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0888	RE	2012/11/18 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE, CE	2012/10/04 * 12
SCC-A12/A13/SRSE-01	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-269(RF Selector)	CE	2013/04/04 * 12
SLS-01	LISN	Rohde & Schwarz	ENV216	100511	CE	2013/02/22 * 12
SAT3-03	Attenuator	JFW	50HF-003N	-	CE	2013/02/12 * 12
SOS-02	Humidity Indicator	A&D	AD-5681	4063343	CE	2013/03/07 * 12
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	2012/09/21 * 12
SBA-02	Biconical Antenna	Schwarzbeck	BBA9106	91032665	RE	2012/11/18 * 12
SAT6-02	Attenuator	JFW	50HF-006N	-	RE	2013/02/12 * 12
SCC-B1/B3/B5/B7/B8/B13/SRSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	RE	2013/04/03 * 12
SLA-02	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0893	RE	2012/11/18 * 12
KAT3-11	Attenuator	JFW IND. INC.	50HF-003N	-	RE	2012/08/07 * 12
SCC-B2/B4/B6/B7/B8/B13/SRSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	RE	2013/04/03 * 12
SAF-02	Pre Amplifier	SONOMA	310N	290212	RE	2013/02/12 * 12
STR-02	Test Receiver	Rohde & Schwarz	ESCI	100575	RE	2012/09/03 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2013/02/27 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-

The expiration data 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,

AT: Antenna terminal conducted tests,