RADIO TEST REPORT

Test Report No. : 11204559S-A-R1

Applicant	:	**Canon Inc.**
Type of Equipment	:	**Wireless Module**
Model No.	:	**WM237**
FCC ID	:	**AZD237**
Test regulation	:	**FCC Part 15 Subpart C: 2015**
Test Result	:	**Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. This report is a revised version of 11204559S-A. 11204559S-A is replaced with this report.

Date of test: August 19 to 30, 2014,
April 8 to 11, 2016

Representative test engineer:
W. Kojima
Wataru Kojima
Engineer
Consumer Technology Division

Approved by:
T. Imamura
Toyokazu Imamura
Leader
Consumer Technology Division

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

RTL02610

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REVISION HISTORY

Original Test Report No.: 11204559S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	11204559S-A-R1	April 28, 2016	-	-
1	11204559S-A-R1	May 12, 2016	1, 4, 5 8, 11	Update Addition of receipt date of sample Update of section 3 Deletion of *4) Update of section 6

CONTENTS **PAGE**

SECTION 1: Customer information

Company Name	:	Canon Inc.
Address	:	30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146-8501, Japan
Telephone Number	:	+81-3-3757-6798
Facsimile Number	:	+81-3-3757-8431
Contact Person	:	Ryoji Kon

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

2.1 Identification of E.U.T.

Type of Equipment	:	Wireless Module
Model No.	:	WM237
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.3 V, DC 1.8 V
Receipt Date of Sample	:	July 25, 2014, April 6, 2016
Country of Mass-production	:	Philippines
Condition of EUT	:	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

Model: WM237 (referred to as the EUT in this report) is a Wireless Module.

General Specification

Clock frequency(ies) in the system	:	38.4 MHz

Radio Specification

Radio Type	:	Transceiver
Frequency of Operation	:	2412 MHz - 2462 MHz
Modulation	:	DSSS (IEEE 802.11b), OFDM (IEEE 802.11g/n)
Power Supply (radio part input)	:	DC 3.3 V
Antenna type	:	Monopole type chip
Antenna Gain	:	-3.10 dBi (2442 MHz)

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2015, final revised on November 23, 2015 *Some parts are effective on and after December 17, 2015 or December 23, 2015. The revision does not affect the test specification applied to the EUT.
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators Section 15.207 Conducted limits Section 15.247 Operation within the bands 902 -928 MHz, 2400 -2483.5 MHz, and 5725 -5850 MHz

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.10-2013 6. Standard test methods **IC:** RSS-Gen 8.8	**FCC:** Section 15.207 **IC:** RSS-Gen 8.8	**QP** 20.7 dB **AV** 20.9 dB 0.17822 MHz, L1, Tx 11n20-HT 2437 MHz Power setting:10 dBm	Complied	-
6dB Bandwidth	**FCC:** KDB 558074 D01 DTS Meas Guidance v03r05 **IC:** -	**FCC:** Section 15.247(a)(2) **IC:** RSS-247 5.2(1)	See data.	Complied	Conducted
Maximum Peak Output Power	**FCC:** KDB 558074 D01 DTS Meas Guidance v03r05 **IC:** RSS-Gen 6.12	**FCC:** Section 15.247(b)(3) **IC:** RSS-247 5.4(4)		Complied	Conducted
Power Density	**FCC:** KDB 558074 D01 DTS Meas Guidance v03r05 **IC:** -	**FCC:** Section 15.247(e) **IC:** RSS-247 5.2(2)		Complied	Conducted
Spurious Emission Restricted Band Edges	**FCC:** KDB 558074 D01 DTS Meas Guidance v03r05 **IC:** RSS-Gen 6.13	**FCC:** Section15.247(d) **IC:** RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	3.5 dB 240.000 MHz, QP, Hori. Tx 11n-20HT 2437 MHz Power setting: 12 dBm	Complied	Conducted (below 30 MHz)/ Radiated (above 30 MHz) *1)

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.
*1) Radiated test was selected over 30 MHz based on section 15.247(d) and KDB 558074 D01 12.2.7.

* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.(ANSI C63.10:2013 is Non-accreditation)

The test procedures and specifications in this report have not changed in FCC Part 15 Subpart C for Digital Transmission Systems. Therefore, the test data obtained are still adequate to demonstrate compliance with current applicable FCC regulation.

FCC Part 15.31 (e)

This EUT provides stable voltage (DC 3.3 V and DC 1.8 V) constantly to RF Module regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Bandwidth	**IC:** RSS-Gen 6.6	**IC:** -	N/A	-	Conducted

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

3.4 Uncertainty

EMI

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

Shonan EMC Lab.

Item	Frequency range	Uncertainty (+/-)			
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR	No. 4 SAC / SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	2.1 dB	2.1 dB	2.6 dB	2.2 dB
Radiated emission (Measurement distance: 3 m)	9 kHz-30 MHz	2.7 dB	2.7 dB	3.1 dB	-
	30 MHz-300 MHz	4.4 dB	4.4 dB	4.6 dB	-
	300 MHz-1 GHz	5.6 dB	5.5 dB	5.3 dB	-
	1 GHz-13 GHz	5.2 dB	5.2 dB	5.2 dB	-
Radiated emission (Measurement distance: 1 m)	13 GHz-18 GHz	4.9 dB	4.9 dB	4.9 dB	-
	18 GHz-40 GHz	4.9 dB	4.9 dB	4.9 dB	-

SAC=Semi-Anechoic Chamber

SR= Shielded Room is applied besides radiated emission

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector)_SPM-06	0.76 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-06	0.79 dB
Power Measurement above 1 GHz (Average Detector)_SPM-07	0.74 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-07	1.08 dB
Spurious emission (Conducted) below 1GHz	1.5 dB
Spurious emission (Conducted) 1 GHz-3 GHz	1.7 dB
Spurious emission (Conducted) 3 GHz-18 GHz	2.4 dB
Spurious emission (Conducted) 18 GHz-26.5 GHz	2.5 dB
Spurious emission (Conducted) 26.5 GHz-40 GHz	2.5 dB
Bandwidth Measurement	0.66 %
Duty cycle and Time Measurement	0.012 %

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: +81 463 50 6400, Facsimile: +81 463 50 6401
JAB Accreditation No. RTL02610

Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
No.2 Semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
No.3 Semi-anechoic chamber	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	-
No.8 shielded room	-	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room	-	2.55 x 4.1 x 2.5	-	-

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

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

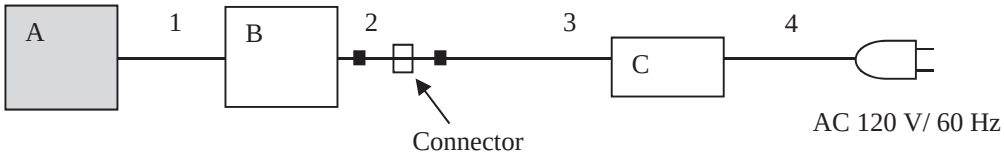
4.1 Operating Mode(s)

Test item	Mode	Tested frequency	Power setting *1)	Worst data rate *2)
Conducted emission Radiated emission (below 1 GHz) *3)	Transmitting IEEE 802.11n-20HT	2437 MHz	10 (10 dBm)	MCS6, PN9
			13 (12 dBm)	MCS6, PN9
Other items	Transmitting IEEE 802.11b	2412 MHz, 2437 MHz, 2462 MHz	10 (10 dBm)	2 Mbps, PN9
			13 (12dBm)	1 Mbps, PN9
	Transmitting IEEE 802.11g	2412 MHz, 2437 MHz, 2462 MHz	10 (10dBm)	48 Mbps, PN9
			13 (12dBm)	54 Mbps, PN9
	Transmitting IEEE 802.11n-20HT	2412 MHz, 2437 MHz, 2462 MHz	10 (10dBm)	MCS6, PN9
			13 (12dBm)	MCS6, PN9

*1) The actual output power differs from the setting value. Software used for the test: RFTEST ver. 14.1.36.p27
*2) The worst condition was determined based on the test result of Maximum Peak Conducted Output Power.
*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.

4.2 Configuration and peripherals

■: Ferrite core *3)



Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Wireless Module	WM237	*1)	Canon	EUT
B	Digital Camera	IXY630	861062002608	Canon	*2)
C	Compact Power Adapter	-	49576-28-01	Canon	-

*1) F48139F1C482: Conducted emission F48139F1C442: Antenna port conducted test, F48139F1C487: Radiated emission,
(Band Edge compliance), F48139F1C455: Antenna port conducted test (other tests)
*2) This item is not a host device of the EUT and it was used as a test jig.

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Jig	0.15	Unshielded	Unshielded	-
2	DC	0.15	Unshielded	Unshielded	-
3	DC	2.0	Unshielded	Unshielded	-
4	AC	2.0	Unshielded	Unshielded	-

*3) The core is a standard ferrite core attached to DC cable and not used to reduce the noise from the EUT. The core is equivalent to the one which is attached to the DC cable of host device the EUT is installed.

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The rear of tabletop was located 40 cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80 cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center. I/O cables that were connected to the peripherals were bundled in center. Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN / (AMN) to the input power source.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Shielded room.
The EUT was connected to a LISN (AMN).
An overview sweep with peak detection has been performed.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Detector	**: QP and CISPR AV**
Measurement range	**: 0.15 MHz – 30 MHz**
Test data	**: APPENDIX**
Test result	**: Pass**

SECTION 6: Radiated Spurious Emission

Test Procedure

It was measured based on "11.0 Emissions in non-restricted frequency bands" of "558074 D01 DTS Meas Guidance v03r05".

[For below 1 GHz]
EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

[For above 1 GHz]
EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

The height of the measuring antenna varied between 1 and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Test Antennas are used as below;

Frequency	30 MHz to 300 MHz	300 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

In any 100 kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

20 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9(IC) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (IC).

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV *3)	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	Average Power Method: 12.2.5.1 RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces	RBW: 100 kHz VBW: 300 kHz
Test Distance	3 m	3 m *1) (1 GHz – 13 GHz), 1 m *2) (13 GHz – 26.5 GHz)		3 m *1) (1 GHz – 13 GHz), 1 m *2) (13 GHz – 26.5 GHz)

*1) Distance Factor: 20 x log (4.5 m / 3.0 m) = 3.6 dB
*2) Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.5 dB
*3) Average Power Measurement was performed based on 4.5 & 12.2.5 of "KDB 558074 D01 DTS Meas Guidance v03r05"

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.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Measurement range : 30 MHz - 26.5 GHz
Test data : APPENDIX
Test result : Pass

SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port.

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used
6dB Bandwidth	50 MHz	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Sample	Max Hold	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak/ Average *1)	-	Power Meter (Sensor: 50 MHz BW)
Peak Power Density	1.5 times the 6dB Bandwidth	3 kHz	9.1 kHz	Auto	Peak	Max Hold	Spectrum Analyzer *2)
Conducted Spurious Emission *3)	9 kHz to 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz to 30 MHz	10 kHz	30 kHz				

*1) Reference data.
*2) Section 10.2 Method PKPSD (peak PSD) of "KDB 558074 D01 DTS Meas Guidance v03r05".
*3) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.
(9 kHz - 150 kHz: RBW = 200 Hz, 150 kHz - 30 MHz: RBW = 10 kHz)

The test results and limit are rounded off to two decimals place, so some differences might be observed.

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan.Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2014/08/30

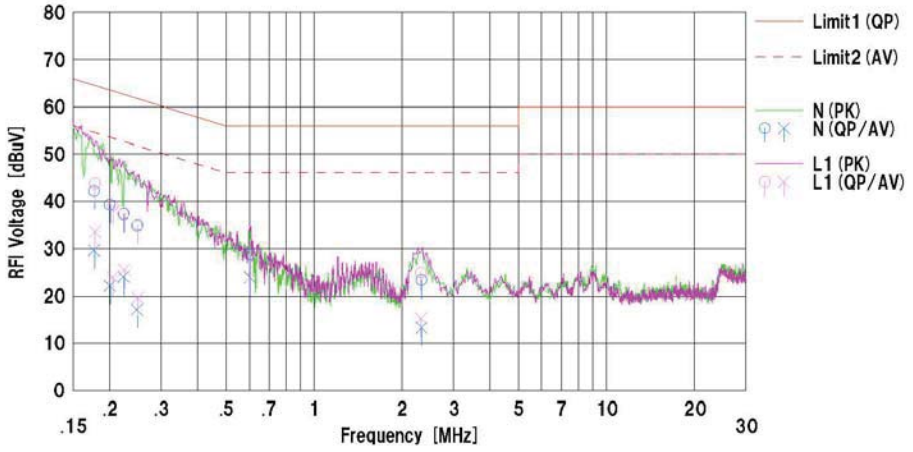
Mode : Tx 11n20-HT 2437MHz Power 10dBm

Temp./Humi. : 26deg.C. / 63%RH

Remarks : -

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

Engineer : Wataru Kojima



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.17711	29.6	17.0	12.6	42.2	29.6	64.6	54.6	22.4	25.0	N	
2	0.20032	26.7	9.5	12.6	39.3	22.1	63.5	53.5	24.2	31.4	N	
3	0.22372	24.7	11.5	12.6	37.3	24.1	62.6	52.6	25.3	28.5	N	
4	0.24852	22.3	4.5	12.6	34.9	17.1	61.8	51.8	26.9	34.7	N	
5	0.60385	16.2	11.4	12.6	28.8	24.0	56.0	46.0	27.2	22.0	N	
6	2.32967	10.6	0.6	12.7	23.3	13.3	56.0	46.0	32.7	32.7	N	
7	0.17822	31.2	21.0	12.6	43.8	33.6	64.5	54.5	20.7	20.9	L1	
8	0.20498	26.5	11.4	12.6	39.1	24.0	63.4	53.4	24.3	29.4	L1	
9	0.22430	24.8	12.9	12.6	37.4	25.5	62.6	52.6	25.2	27.1	L1	
10	0.24971	22.5	7.0	12.6	35.1	19.6	61.7	51.7	26.6	32.1	L1	
11	0.60433	16.0	11.3	12.6	28.6	23.9	56.0	46.0	27.4	22.1	L1	
12	2.32377	12.2	2.5	12.7	24.9	15.2	56.0	46.0	31.1	30.8	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan.Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2014/08/30

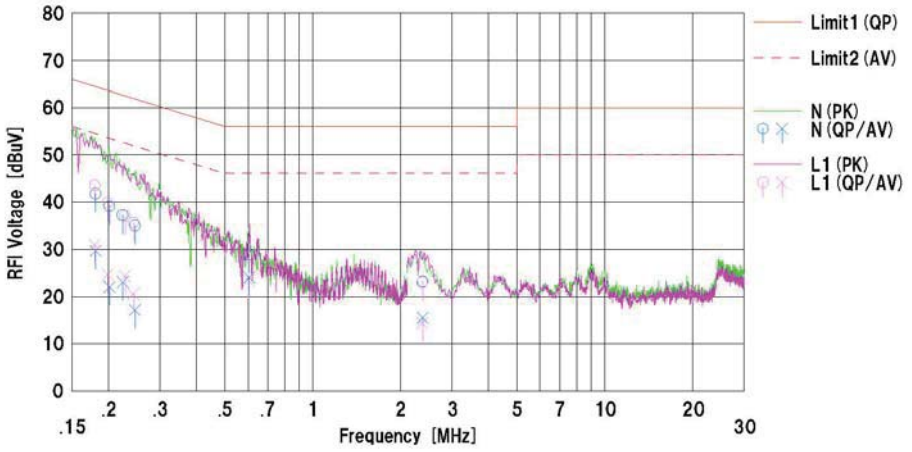
Mode : Tx 11n20-HT 2437MHz Power 12dBm

Temp./Humi. : 26deg.C. / 63%RH

Remarks : -

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

Engineer : Wataru Kojima



No.	Freq.	Reading <QP>	Reading <AV>	C.Fac	Results <QP>	Results <AV>	Limit <QP>	Limit <AV>	Margin <QP>	Margin <AV>	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.18056	29.2	17.1	12.6	41.8	29.7	64.4	54.4	22.6	24.7	N	
2	0.20179	26.5	9.4	12.6	39.1	22.0	63.5	53.5	24.4	31.5	N	
3	0.22383	24.6	10.5	12.6	37.2	23.1	62.6	52.6	25.4	29.5	N	
4	0.24641	22.4	4.5	12.6	35.0	17.1	61.8	51.8	26.8	34.7	N	
5	0.60527	16.2	11.5	12.6	28.8	24.1	56.0	46.0	27.2	21.9	N	
6	2.37823	10.5	2.8	12.7	23.2	15.5	56.0	46.0	32.8	30.5	N	
7	0.17972	30.9	18.4	12.6	43.5	31.0	64.4	54.4	20.9	23.4	L1	
8	0.19882	27.2	12.0	12.6	39.8	24.6	63.6	53.6	23.8	29.0	L1	
9	0.22827	24.4	11.7	12.6	37.0	24.3	62.5	52.5	25.5	28.2	L1	
10	0.24340	23.0	8.0	12.6	35.6	20.6	61.9	51.9	26.3	31.3	L1	
11	0.60394	15.7	10.9	12.6	28.3	23.5	56.0	46.0	27.7	22.5	L1	
12	2.37425	10.3	1.7	12.7	23.0	14.4	56.0	46.0	33.0	31.6	L1	

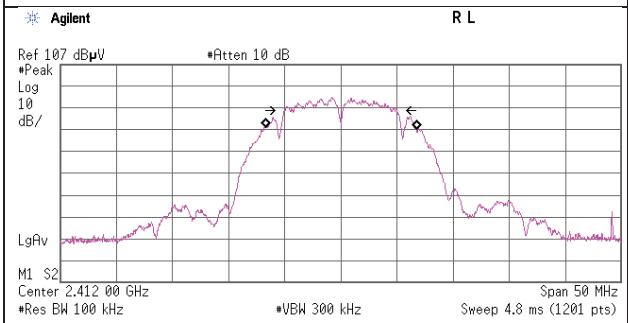
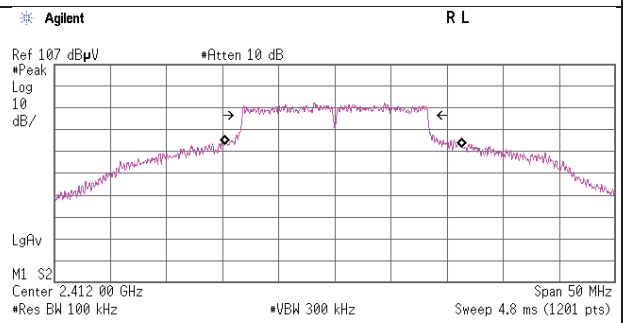
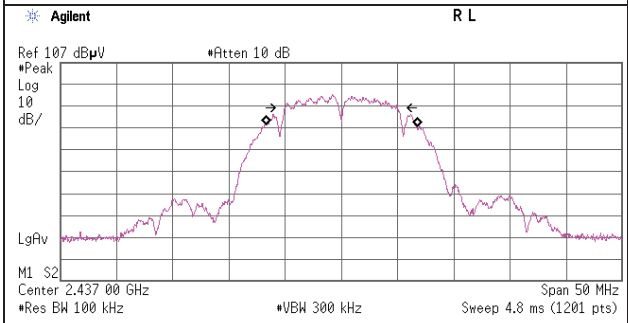
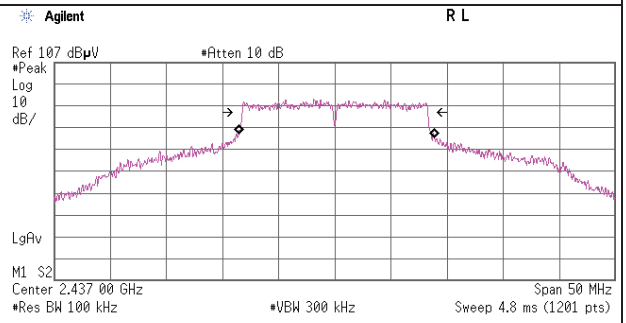
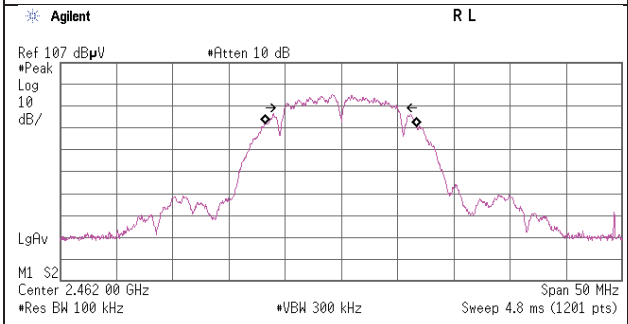
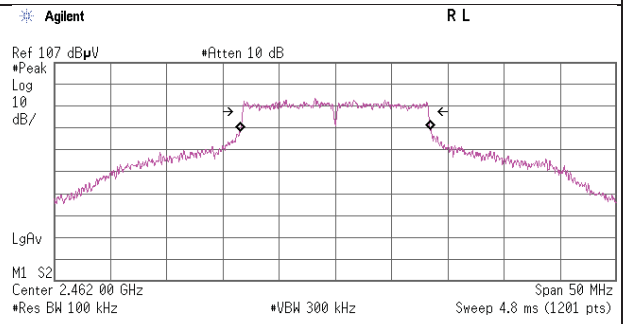
Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

6dB Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 22, 2014
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Tatsuya Arai
Mode	Tx 10dBm

Mode	Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
11b	2412	9.969	> 500
	2437	9.960	> 500
	2462	9.966	> 500
11g	2412	16.511	> 500
	2437	16.511	> 500
	2462	16.508	> 500
11n-20	2412	17.837	> 500
	2437	17.824	> 500
	2462	17.816	> 500

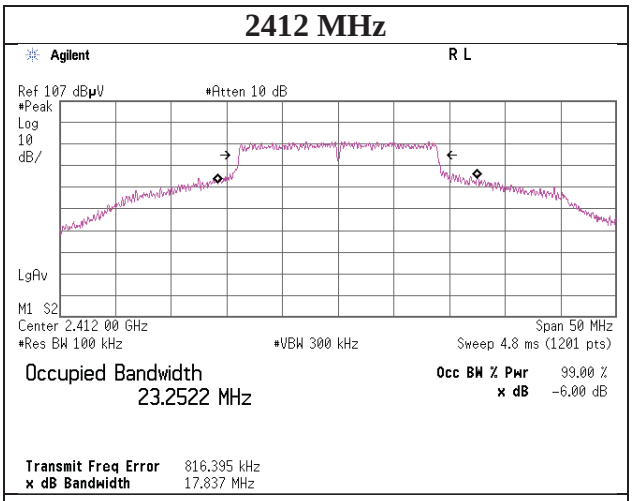
6dB Bandwidth

11b	11g
2412 MHz	**2412 MHz**
	
2437 MHz	**2437 MHz**
	
2462 MHz	**2462 MHz**
	

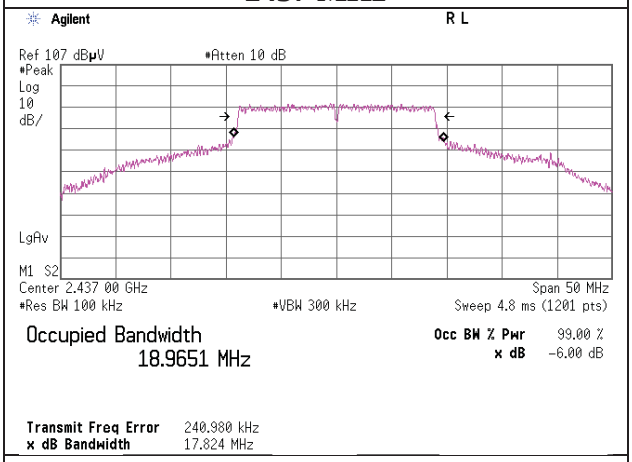
6dB Bandwidth

11n-20

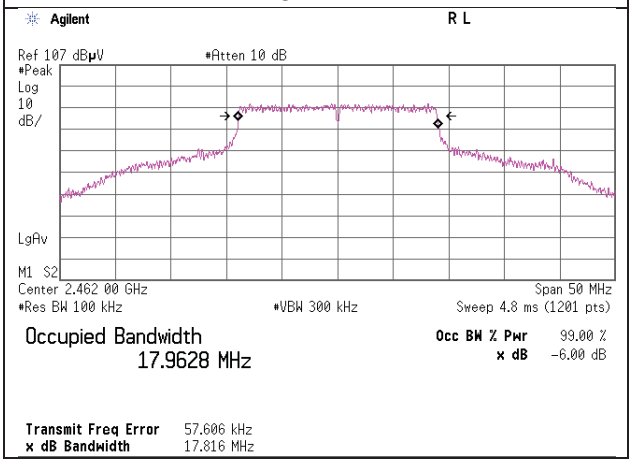
2412 MHz



2437 MHz



2462 MHz



6dB Bandwidth

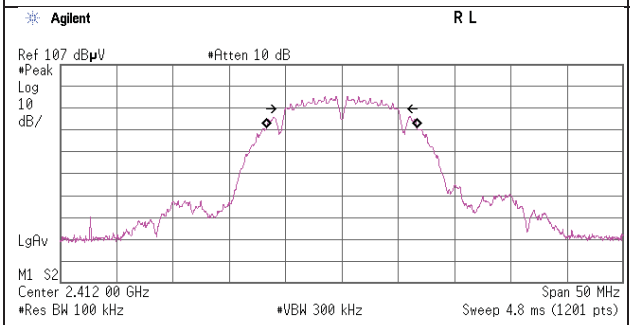
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 22, 2014
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Tatsuya Arai
Mode	Tx 12 dBm

Mode	Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
11b	2412	10.004	> 500
	2437	9.996	> 500
	2462	9.985	> 500
11g	2412	16.562	> 500
	2437	16.566	> 500
	2462	16.564	> 500
11n-20	2412	17.814	> 500
	2437	17.836	> 500
	2462	17.842	> 500

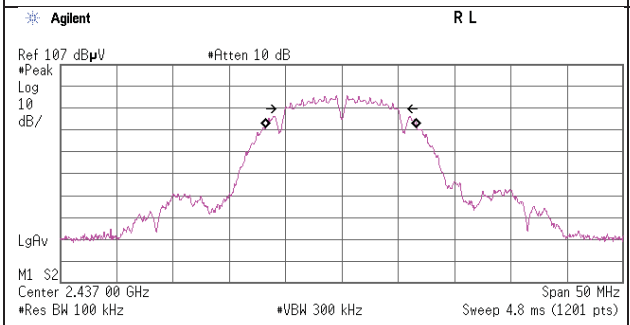
6dB Bandwidth

11b

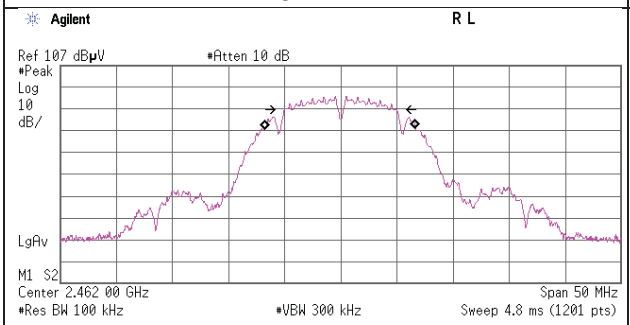
2412 MHz



2437 MHz

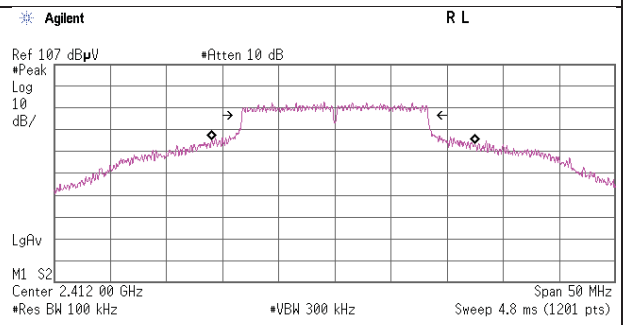


2462 MHz

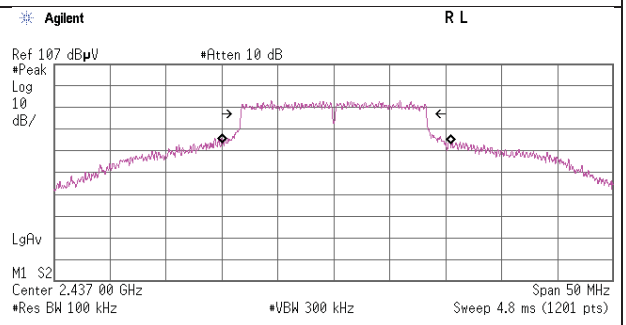


11g

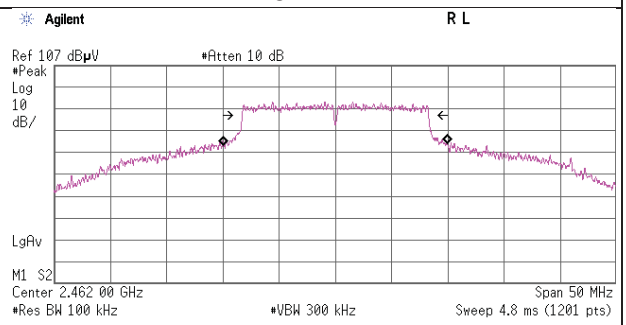
2412 MHz



2437 MHz



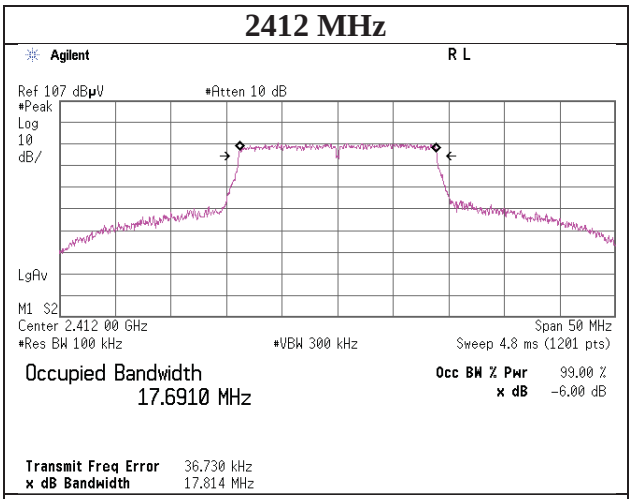
2462 MHz



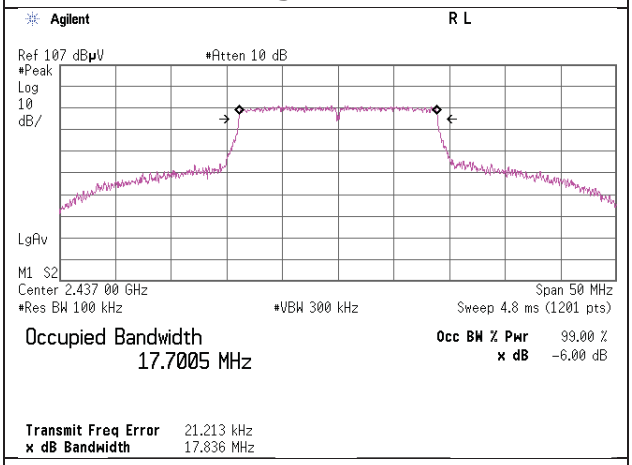
6dB Bandwidth

11n-20

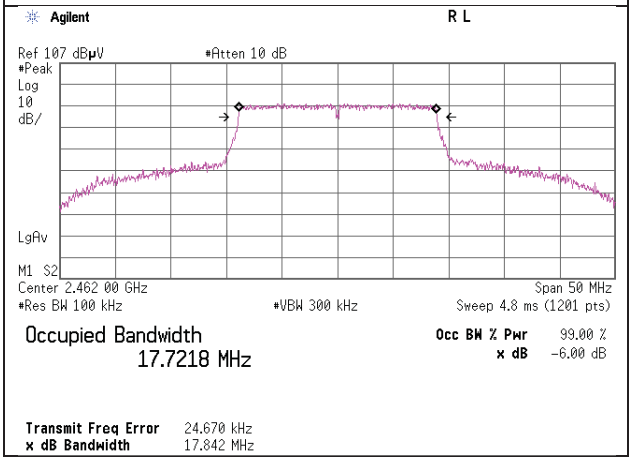
2412 MHz



2437 MHz



2462 MHz



Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 19, 2014
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Tatsuya Arai
Mode	Tx 11b 10 dBm

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	1.35	1.85	9.65	12.85	19.28	30.00	1000	17.15
2437	1.46	1.86	9.66	12.98	19.86	30.00	1000	17.02
2462	1.47	1.87	9.66	13.00	19.95	30.00	1000	17.00

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

*The equipment and cables were not used for factor 0 dB of the data sheets.

2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1	12.88	
2	12.98	*
5.5	12.14	
11	12.21	

*: Worst Rate
All comparison were carried out on same frequency and measurement factors.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 19, 2014
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Tatsuya Arai
Mode	Tx 11b 12 dBm

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	3.81	1.85	9.65	15.31	33.96	30.00	1000	14.69
2437	4.14	1.86	9.66	15.66	36.81	30.00	1000	14.34
2462	4.52	1.87	9.66	16.05	40.27	30.00	1000	13.95

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

*The equipment and cables were not used for factor 0 dB of the data sheets.

2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1	15.66	*
2	15.56	
5.5	15.62	
11	15.63	

*: Worst Rate
All comparison were carried out on same frequency and measurement factors.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 19, 2014
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Tatsuya Arai
Mode	Tx 11g 10 dBm

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	8.80	1.85	9.65	20.30	107.15	30.00	1000	9.70
2437	8.32	1.86	9.66	19.84	96.38	30.00	1000	10.16
2462	8.12	1.87	9.66	19.65	92.26	30.00	1000	10.35

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

*The equipment and cables were not used for factor 0 dB of the data sheets.

2437 MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
6	18.90	
9	18.19	
12	19.17	
18	17.72	
24	19.56	
36	18.72	
48	19.30	
54	19.84	*

*: Worst Rate
All comparison were carried out on same frequency and measurement factors.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 19, 2014
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Tatsuya Arai
Mode	Tx 11g 12 dBm

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	11.13	1.85	9.65	22.63	183.23	30.00	1000	7.37
2437	11.36	1.86	9.66	22.88	194.09	30.00	1000	7.12
2462	11.23	1.87	9.66	22.76	188.80	30.00	1000	7.24

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

*The equipment and cables were not used for factor 0 dB of the data sheets.

2437 MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
6	22.26	
9	21.68	
12	21.82	
18	21.47	
24	22.45	
36	21.73	
48	22.83	
54	22.88	*

*: Worst Rate
All comparison were carried out on same frequency and measurement factors.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 19, 2014
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Tatsuya Arai
Mode	Tx 11n-20 10 dBm

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	8.35	1.85	9.65	19.85	96.61	30.00	1000	10.15
2437	8.95	1.86	9.66	20.47	111.43	30.00	1000	9.53
2462	8.88	1.87	9.66	20.41	109.90	30.00	1000	9.59

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

*The equipment and cables were not used for factor 0 dB of the data sheets.

2437 MHz

Rate (MCS)	Reading [dBm]	Remark
0	18.98	
1	18.86	
2	18.87	
3	18.62	
4	18.64	
5	19.30	
6	20.40	*
7	19.14	

*: Worst Rate
All comparison were carried out on same frequency and measurement factors.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 19, 2014
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Tatsuya Arai
Mode	Tx 11n-20 12 dBm

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	11.51	1.85	9.65	23.01	199.99	30.00	1000	6.99
2437	11.66	1.86	9.66	23.18	207.97	30.00	1000	6.82
2462	11.12	1.87	9.66	22.65	184.08	30.00	1000	7.35

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

*The equipment and cables were not used for factor 0 dB of the data sheets.

2437 MHz

Rate (MCS)	Reading [dBm]	Remark
0	21.56	
1	21.93	
2	23.08	
3	21.85	
4	21.94	
5	22.64	
6	23.18	*
7	23.08	

*: Worst Rate
All comparison were carried out on same frequency and measurement factors.

Average Output Power
(Reference data for SAR testing)

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 19, 2014
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Tatsuya Arai
Mode	Tx 10 dBm

11b **5.5 Mbps**

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-1.50	1.85	9.65	10.00	10.00	0.00	10.00	10.00
2437	-1.40	1.86	9.66	10.12	10.28	0.00	10.12	10.28
2462	-1.37	1.87	9.66	10.16	10.38	0.00	10.16	10.38

11g **48 Mbps**

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-1.80	1.85	9.65	9.70	9.33	0.00	9.70	9.33
2437	-1.70	1.86	9.66	9.82	9.59	0.00	9.82	9.59
2462	-1.74	1.87	9.66	9.79	9.53	0.00	9.79	9.53

11n-20 **MCS 7**

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-2.03	1.85	9.65	9.47	8.85	0.00	9.47	8.85
2437	-1.93	1.86	9.66	9.59	9.10	0.00	9.59	9.10
2462	-1.78	1.87	9.66	9.75	9.44	0.00	9.75	9.44

Sample Calculation:
Result (Frame power) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator
Result (Burst power) = Frame power + Duty factor

*The equipment and cables were not used for factor 0 dB of the data sheets.

The test was performed with condition that obtained the maximum frame power in pre-check.

Average Output Power
(Reference data for SAR testing)

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 19, 2014
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Tatsuya Arai
Mode	Tx 10 dBm

2437 MHz

Mode	Rate Mbps	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11b	1	-1.15	0.00	10.37	
	2	-1.10	0.00	10.42	
	5.5	-1.09	0.00	10.43	*
	11	-1.73	0.00	9.79	
11g	6	-1.66	0.00	9.86	
	9	-1.94	0.00	9.58	
	12	-1.61	0.00	9.91	
	18	-1.83	0.00	9.69	
	24	-1.56	0.00	9.96	
	36	-1.62	0.00	9.90	
	48	-1.45	0.00	10.07	*
	54	-1.74	0.00	9.78	

* Worst rate

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

All comparison were carried out on same frequency and measurement factors.

2437 MHz

Mode	Rate MCS	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11n-20	0	-1.56	0.00	9.96	
	1	-1.85	0.00	9.67	
	2	-1.65	0.00	9.87	
	3	-1.97	0.00	9.55	
	4	-1.67	0.00	9.85	
	5	-1.65	0.00	9.87	
	6	-1.76	0.00	9.76	
	7	-1.49	0.00	10.03	*

* Worst rate

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

All comparison were carried out on same frequency and measurement factors.

Average Output Power
(Reference data for SAR testing)

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 19, 2014
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Tatsuya Arai
Mode	Tx 10 dBm

11b **5.5 Mbps**

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-1.50	1.85	9.65	10.00	10.00	0.00	10.00	10.00
2437	-1.40	1.86	9.66	10.12	10.28	0.00	10.12	10.28
2462	-1.37	1.87	9.66	10.16	10.38	0.00	10.16	10.38

11g **48 Mbps**

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-1.80	1.85	9.65	9.70	9.33	0.00	9.70	9.33
2437	-1.70	1.86	9.66	9.82	9.59	0.00	9.82	9.59
2462	-1.74	1.87	9.66	9.79	9.53	0.00	9.79	9.53

11n-20 **MCS 7**

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-2.03	1.85	9.65	9.47	8.85	0.00	9.47	8.85
2437	-1.93	1.86	9.66	9.59	9.10	0.00	9.59	9.10
2462	-1.78	1.87	9.66	9.75	9.44	0.00	9.75	9.44

Sample Calculation:
Result (Frame power) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator
Result (Burst power) = Frame power + Duty factor

*The equipment and cables were not used for factor 0 dB of the data sheets.

The test was performed with condition that obtained the maximum frame power in pre-check.

Average Output Power
(Reference data for SAR testing)

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 19, 2014
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Tatsuya Arai
Mode	Tx 12 dBm

2437 MHz

Mode	Rate Mbps	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11b	1	1.25	0.00	12.77	
	2	1.40	0.00	12.92	
	5.5	1.43	0.00	12.95	*
	11	1.31	0.00	12.83	
11g	6	0.89	0.00	12.41	
	9	0.80	0.00	12.32	
	12	0.67	0.00	12.19	
	18	1.08	0.00	12.60	
	24	0.76	0.00	12.28	
	36	0.53	0.00	12.05	
	48	1.07	0.00	12.59	*
	54	0.51	0.00	12.03	

* Worst rate

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

All comparison were carried out on same frequency and measurement factors.

2437 MHz

Mode	Rate MCS	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11n-20	0	1.21	0.00	12.73	
	1	1.15	0.00	12.67	
	2	1.20	0.00	12.72	
	3	0.97	0.00	12.49	
	4	1.04	0.00	12.56	
	5	0.95	0.00	12.47	
	6	1.10	0.00	12.62	
	7	1.05	0.00	12.57	*

* Worst rate

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

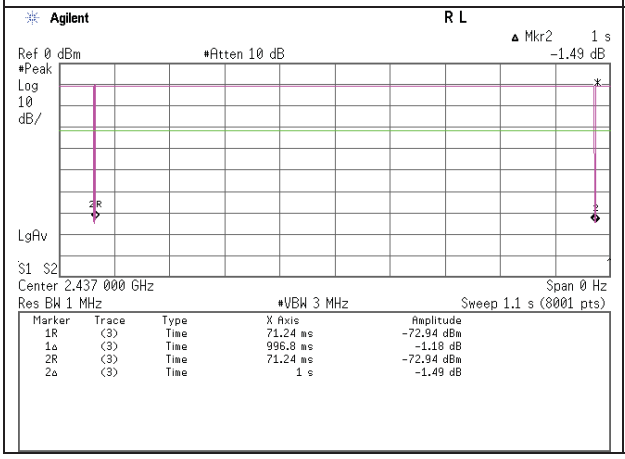
All comparison were carried out on same frequency and measurement factors.

Burst rate confirmation

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 22, 2014
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Tatsuya Arai
Mode	Tx 10 dBm

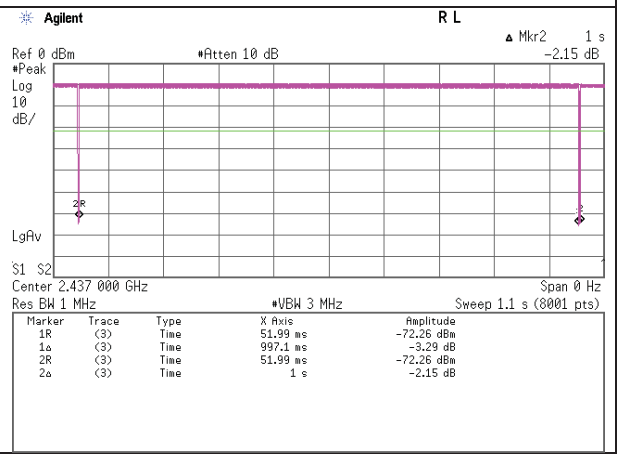
11b 2 Mbps

Tx on / (Tx on + Tx off) =	**0.997**
Tx on / (Tx on + Tx off) * 100 =	**99.7 %**
Duty factor = 20 * log (1 / 0.997) =	**0.00 dB**



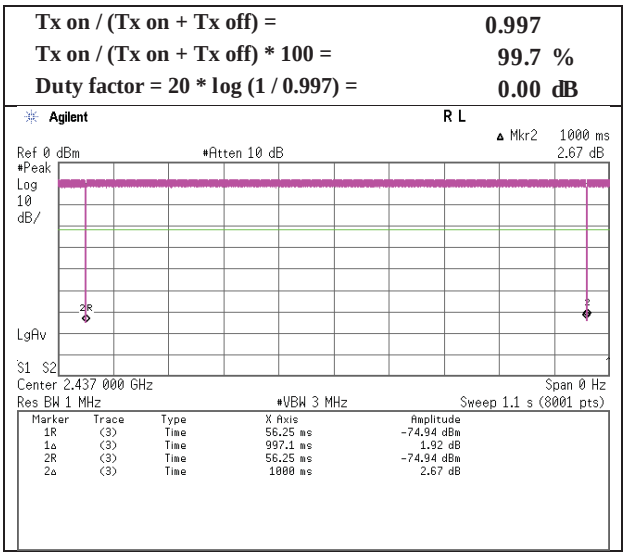
11g 54 Mbps

Tx on / (Tx on + Tx off) =	**0.997**
Tx on / (Tx on + Tx off) * 100 =	**99.7 %**
Duty factor = 20 * log (1 / 0.997) =	**0.00 dB**



11n-20 MCS 6

Tx on / (Tx on + Tx off) =	**0.997**
Tx on / (Tx on + Tx off) * 100 =	**99.7 %**
Duty factor = 20 * log (1 / 0.997) =	**0.00 dB**

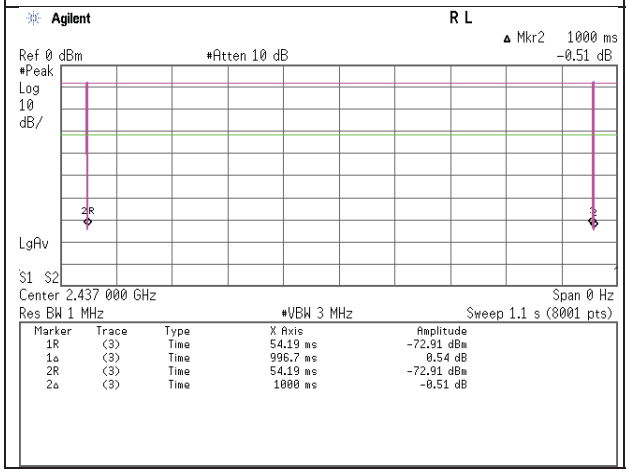


Burst rate confirmation

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 22, 2014
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Tatsuya Arai
Mode	Tx 12 dBm

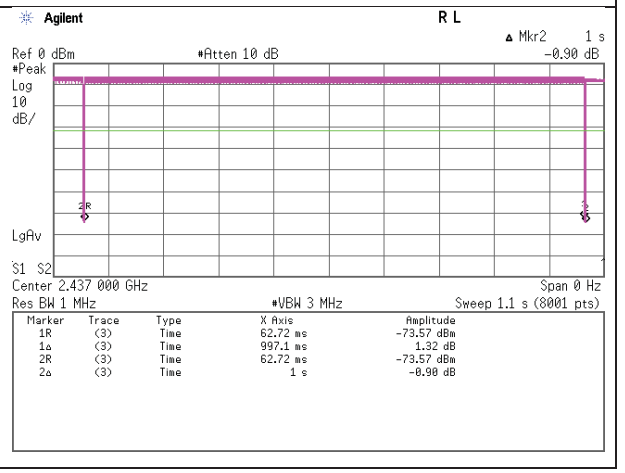
11b 1 Mbps

Tx on / (Tx on + Tx off) = 0.997
Tx on / (Tx on + Tx off) * 100 = 99.7 %
Duty factor = 20 * log (1 / 0.997) = 0.00 dB



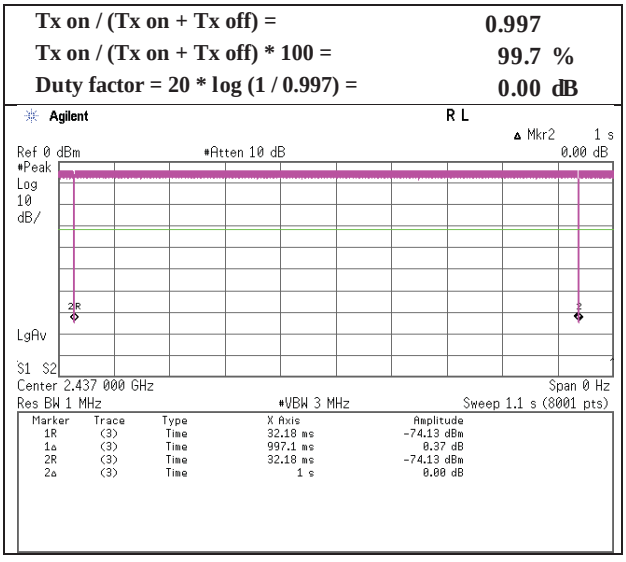
11g 54 Mbps

Tx on / (Tx on + Tx off) = 0.997
Tx on / (Tx on + Tx off) * 100 = 99.7 %
Duty factor = 20 * log (1 / 0.997) = 0.00 dB



11n-20 MCS 6

Tx on / (Tx on + Tx off) = 0.997
Tx on / (Tx on + Tx off) * 100 = 99.7 %
Duty factor = 20 * log (1 / 0.997) = 0.00 dB



Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11b 2412 MHz 10dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	46.4	27.8	13.7	41.0	3.6	50.5	73.9	23.4	182	112	
Hori.	4824.000	PK	44.0	31.5	5.8	39.5	3.6	45.4	73.9	28.5	100	0	
Hori.	7236.000	PK	44.7	36.9	7.2	40.1	3.6	52.3	73.9	21.6	100	0	
Hori.	9648.000	PK	44.7	38.5	8.3	39.6	3.6	55.5	73.9	18.4	100	0	
Hori.	2390.000	AV	34.3	27.8	13.7	41.0	3.6	38.4	53.9	15.5	182	112	
Hori.	4824.000	AV	33.4	31.5	5.8	39.5	3.6	34.8	53.9	19.1	100	0	
Hori.	7236.000	AV	34.2	36.9	7.2	40.1	3.6	41.8	53.9	12.1	100	0	
Hori.	9648.000	AV	34.2	38.5	8.3	39.6	3.6	45.0	53.9	8.9	100	0	
Vert.	2390.000	PK	46.6	27.8	13.7	41.0	3.6	50.7	73.9	23.2	100	183	
Vert.	4824.000	PK	43.3	31.5	5.8	39.5	3.6	44.7	73.9	29.2	100	0	
Vert.	7236.000	PK	44.7	36.9	7.2	40.1	3.6	52.3	73.9	21.6	100	0	
Vert.	9648.000	PK	44.6	38.5	8.3	39.6	3.6	55.4	73.9	18.5	100	0	
Vert.	2390.000	AV	34.7	27.8	13.7	41.0	3.6	38.8	53.9	15.1	100	183	
Vert.	4824.000	AV	33.8	31.5	5.8	39.5	3.6	35.2	53.9	18.7	100	0	
Vert.	7236.000	AV	33.9	36.9	7.2	40.1	3.6	41.5	53.9	12.4	100	0	
Vert.	9648.000	AV	34.8	38.5	8.3	39.6	3.6	45.6	53.9	**8.3**	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

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

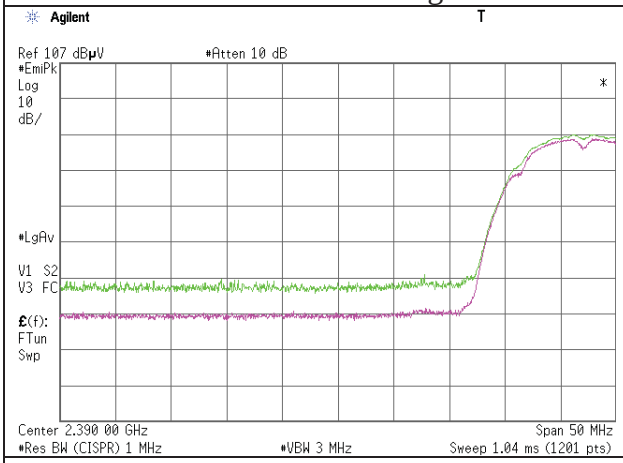
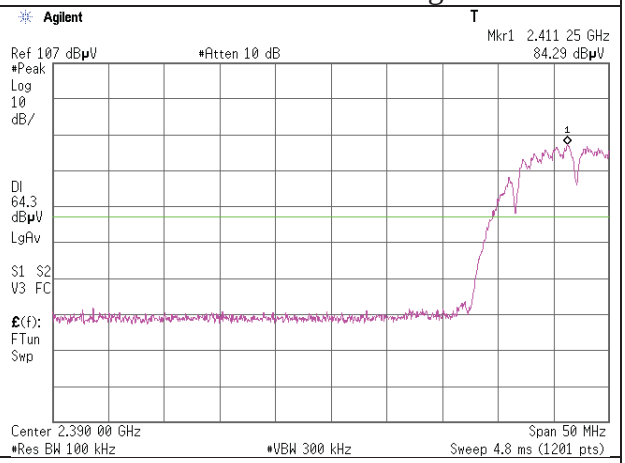
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	81.8	27.8	13.7	41.0	3.6	85.9	-	-	Carrier
Hori.	2400.000	PK	38.4	27.8	13.7	41.0	3.6	42.5	65.9	23.4	
Vert.	2412.000	PK	82.0	27.8	13.7	41.0	3.6	86.1	-	-	Carrier
Vert.	2400.000	PK	39.5	27.8	13.7	41.0	3.6	43.6	66.1	22.5	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

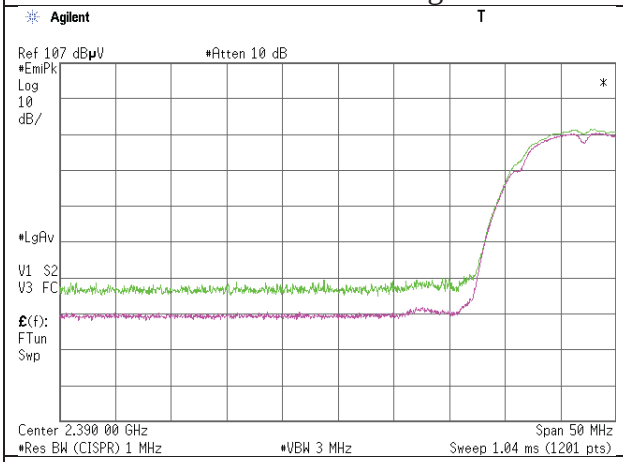
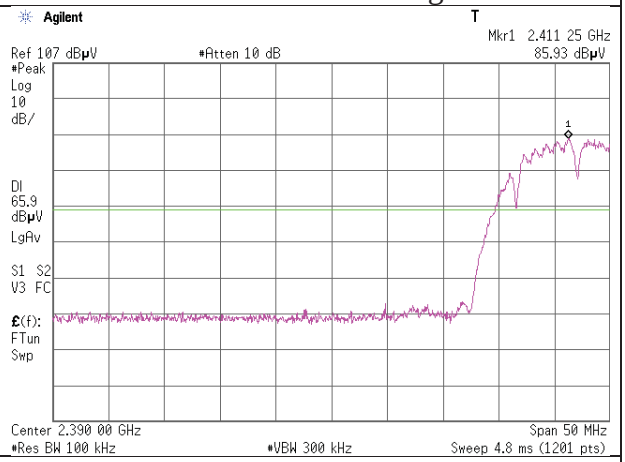
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11b 2412 MHz 10 dBm

Horizontal

Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical

Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11b 2437 MHz 10 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	44.4	31.7	5.9	39.5	3.6	46.1	73.9	27.8	100	0	
Hori.	7311.000	PK	46.7	36.9	7.3	40.2	3.6	54.3	73.9	19.6	100	0	
Hori.	9748.000	PK	44.4	38.5	8.3	39.5	3.6	55.3	73.9	18.6	100	0	
Hori.	4874.000	AV	34.0	31.7	5.9	39.5	3.6	35.7	53.9	18.2	100	0	
Hori.	7311.000	AV	34.7	36.9	7.3	40.2	3.6	42.3	53.9	11.6	100	0	
Hori.	9748.000	AV	34.0	38.5	8.3	39.5	3.6	44.9	53.9	9.0	100	0	
Vert.	4874.000	PK	45.2	31.7	5.9	39.5	3.6	46.9	73.9	27.0	100	0	
Vert.	7311.000	PK	45.2	36.9	7.3	40.2	3.6	52.8	73.9	21.1	100	0	
Vert.	9748.000	PK	45.3	38.5	8.3	39.5	3.6	56.2	73.9	17.7	100	0	
Vert.	4874.000	AV	34.5	31.7	5.9	39.5	3.6	36.2	53.9	17.7	100	0	
Vert.	7311.000	AV	34.8	36.9	7.3	40.2	3.6	42.4	53.9	11.5	100	0	
Vert.	9748.000	AV	34.5	38.5	8.3	39.5	3.6	45.4	53.9	**8.5**	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11b 2462 MHz 10 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	45.8	27.9	13.8	41.0	3.6	50.1	73.9	23.8	100	278	
Hori.	4924.000	PK	44.6	31.9	5.9	39.4	3.6	46.6	73.9	27.3	100	0	
Hori.	7386.000	PK	46.1	36.9	7.4	40.3	3.6	53.7	73.9	20.2	100	0	
Hori.	9848.000	PK	44.6	38.5	8.4	39.4	3.6	55.7	73.9	18.2	100	0	
Hori.	2483.500	AV	34.0	27.9	13.8	41.0	3.6	38.3	53.9	15.6	100	278	
Hori.	4924.000	AV	34.3	31.9	5.9	39.4	3.6	36.3	53.9	17.6	100	0	
Hori.	7386.000	AV	35.1	36.9	7.4	40.3	3.6	42.7	53.9	11.2	100	0	
Hori.	9848.000	AV	33.4	38.5	8.4	39.4	3.6	44.5	53.9	9.4	100	0	
Vert.	2483.500	PK	46.3	27.9	13.8	41.0	3.6	50.6	73.9	23.3	126	179	
Vert.	4924.000	PK	44.9	31.9	5.9	39.4	3.6	46.9	73.9	27.0	100	0	
Vert.	7386.000	PK	45.6	36.9	7.4	40.3	3.6	53.2	73.9	20.7	100	0	
Vert.	9848.000	PK	44.1	38.5	8.4	39.4	3.6	55.2	73.9	18.7	100	0	
Vert.	2483.500	AV	34.1	27.9	13.8	41.0	3.6	38.4	53.9	15.5	126	179	
Vert.	4924.000	AV	34.1	31.9	5.9	39.4	3.6	36.1	53.9	17.8	100	0	
Vert.	7386.000	AV	35.5	36.9	7.4	40.3	3.6	43.1	53.9	10.8	100	0	
Vert.	9848.000	AV	34.7	38.5	8.4	39.4	3.6	45.8	53.9	**8.1**	100	0	

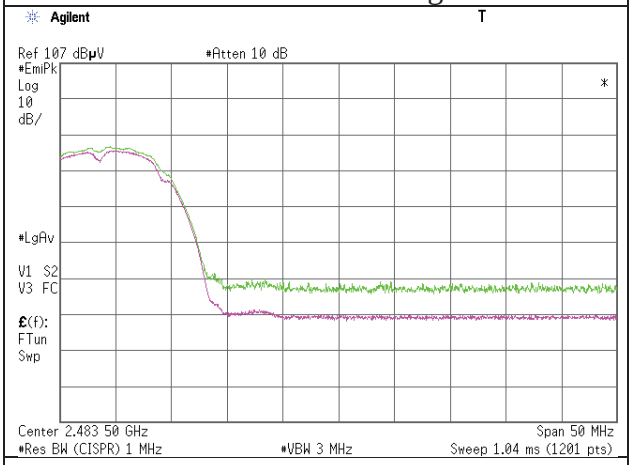
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11b 2462 MHz 10 dBm

Horizontal

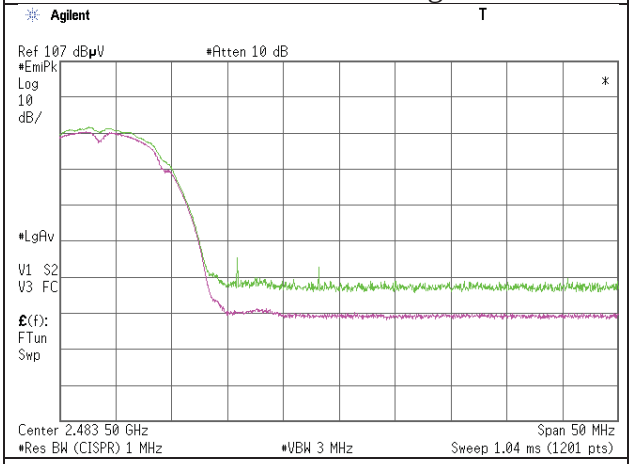
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11b 2412 MHz 12 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	47.2	27.8	13.7	41.0	3.6	51.3	73.9	22.6	100	78	
Hori.	2397.500	PK	46.6	27.8	13.7	41.0	3.6	50.7	73.9	23.2	100	78	
Hori.	4824.000	PK	43.8	31.5	5.8	39.5	3.6	45.2	73.9	28.7	100	0	
Hori.	7236.000	PK	44.4	36.9	7.2	40.1	3.6	52.0	73.9	21.9	100	0	
Hori.	9648.000	PK	44.2	38.5	8.3	39.6	3.6	55.0	73.9	18.9	100	0	
Hori.	2390.000	AV	34.5	27.8	13.7	41.0	3.6	38.6	53.9	15.3	100	78	
Hori.	2397.500	AV	35.6	27.8	13.7	41.0	3.6	39.7	53.9	14.2	100	78	
Hori.	4824.000	AV	35.0	31.5	5.8	39.5	3.6	36.4	53.9	17.5	100	0	
Hori.	7236.000	AV	35.4	36.9	7.2	40.1	3.6	43.0	53.9	10.9	100	0	
Hori.	9648.000	AV	35.1	38.5	8.3	39.6	3.6	45.9	53.9	8.0	100	0	
Vert.	2390.000	PK	46.5	27.8	13.7	41.0	3.6	50.6	73.9	23.3	100	174	
Vert.	2397.500	PK	48.9	27.8	13.7	41.0	3.6	53.0	73.9	20.9	100	174	
Vert.	4824.000	PK	43.9	31.5	5.8	39.5	3.6	45.3	73.9	28.6	100	0	
Vert.	7236.000	PK	44.7	36.9	7.2	40.1	3.6	52.3	73.9	21.6	100	0	
Vert.	9648.000	PK	44.1	38.5	8.3	39.6	3.6	54.9	73.9	19.0	100	0	
Vert.	2390.000	AV	34.1	27.8	13.7	41.0	3.6	38.2	53.9	15.7	100	174	
Vert.	2397.500	AV	38.7	27.8	13.7	41.0	3.6	42.8	53.9	11.1	100	174	
Vert.	4824.000	AV	34.9	31.5	5.8	39.5	3.6	36.3	53.9	17.6	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	83.1	27.8	13.7	41.0	3.6	87.2	-	-	Carrier
Hori.	2400.000	PK	36.8	27.8	13.7	41.0	3.6	40.9	67.2	26.3	
Vert.	2412.000	PK	88.7	27.8	13.7	41.0	3.6	92.8	-	-	Carrier
Vert.	2400.000	PK	37.8	27.8	13.7	41.0	3.6	41.9	72.8	30.9	

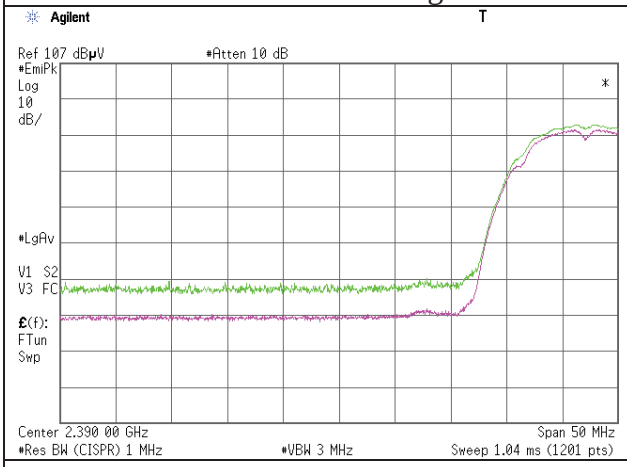
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11b 2412 MHz 12dBm

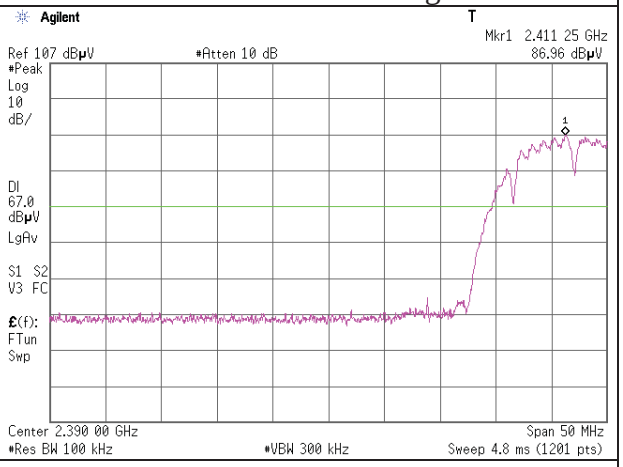
Horizontal

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

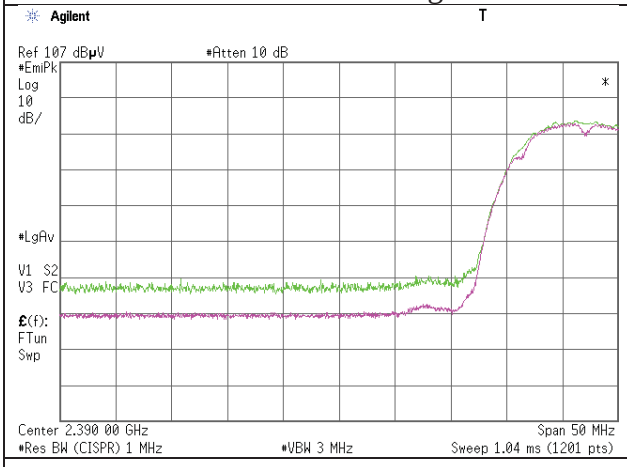
Authorized-band band-edge Plot



20dBc Plot

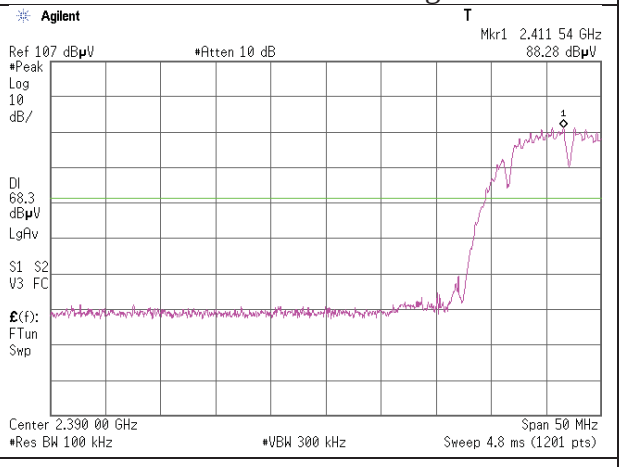
Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Authorized-band band-edge Plot



20dBc Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11b 2437 MHz 12dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	45.1	31.7	5.9	39.5	3.6	46.8	73.9	27.1	100	0	
Hori.	7311.000	PK	44.6	36.9	7.3	40.2	3.6	52.2	73.9	21.7	100	0	
Hori.	9748.000	PK	44.2	38.5	8.3	39.5	3.6	55.1	73.9	18.8	100	0	
Hori.	4874.000	AV	35.1	31.7	5.9	39.5	3.6	36.8	53.9	17.1	100	0	
Hori.	7311.000	AV	36.2	36.9	7.3	40.2	3.6	43.8	53.9	10.1	100	0	
Hori.	9748.000	AV	35.3	38.5	8.3	39.5	3.6	46.2	53.9	7.7	100	0	
Vert.	4874.000	PK	43.7	31.7	5.9	39.5	3.6	45.4	73.9	28.5	100	0	
Vert.	7311.000	PK	44.8	36.9	7.3	40.2	3.6	52.4	73.9	21.5	100	0	
Vert.	9748.000	PK	44.3	38.5	8.3	39.5	3.6	55.2	73.9	18.7	100	0	
Vert.	4874.000	AV	35.1	31.7	5.9	39.5	3.6	36.8	53.9	17.1	100	0	
Vert.	7311.000	AV	36.2	36.9	7.3	40.2	3.6	43.8	53.9	10.1	100	0	
Vert.	9748.000	AV	35.5	38.5	8.3	39.5	3.6	46.4	53.9	**7.5**	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11b 2462 MHz 12dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	46.0	27.9	13.8	41.0	3.6	50.3	73.9	23.6	102	276	
Hori.	4924.000	PK	44.7	31.9	5.9	39.4	3.6	46.7	73.9	27.2	100	0	
Hori.	7386.000	PK	45.6	36.9	7.4	40.3	3.6	53.2	73.9	20.7	100	0	
Hori.	9848.000	PK	43.9	38.5	8.4	39.4	3.6	55.0	73.9	18.9	100	0	
Hori.	2483.500	AV	34.0	27.9	13.8	41.0	3.6	38.3	53.9	15.6	102	276	
Hori.	4924.000	AV	35.5	31.9	5.9	39.4	3.6	37.5	53.9	16.4	100	0	
Hori.	7386.000	AV	36.1	36.9	7.4	40.3	3.6	43.7	53.9	10.2	100	0	
Hori.	9848.000	AV	36.0	38.5	8.4	39.4	3.6	47.1	53.9	**6.8**	100	0	
Vert.	2483.500	PK	46.2	27.9	13.8	41.0	3.6	50.5	73.9	23.4	100	179	
Vert.	4924.000	PK	45.7	31.9	5.9	39.4	3.6	47.7	73.9	26.2	100	0	
Vert.	7386.000	PK	45.3	36.9	7.4	40.3	3.6	52.9	73.9	21.0	100	0	
Vert.	9848.000	PK	44.6	38.5	8.4	39.4	3.6	55.7	73.9	18.2	100	0	
Vert.	2483.500	AV	34.0	27.9	13.8	41.0	3.6	38.3	53.9	15.6	100	179	
Vert.	4924.000	AV	35.4	31.9	5.9	39.4	3.6	37.4	53.9	16.5	100	0	
Vert.	7386.000	AV	36.3	36.9	7.4	40.3	3.6	43.9	53.9	10.0	100	0	
Vert.	9848.000	AV	35.7	38.5	8.4	39.4	3.6	46.8	53.9	7.1	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

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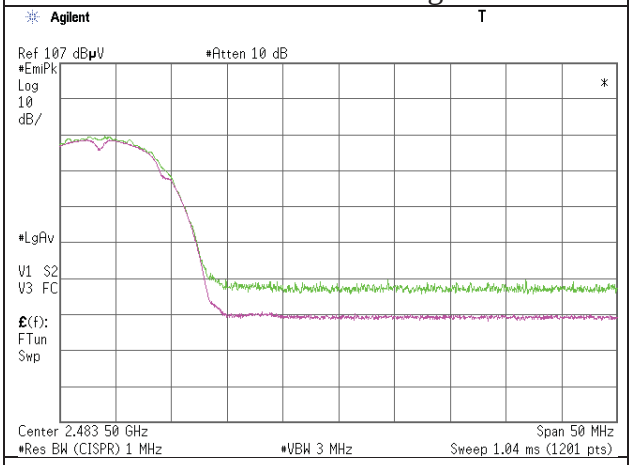
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11b 2462 MHz 12dBm

Horizontal

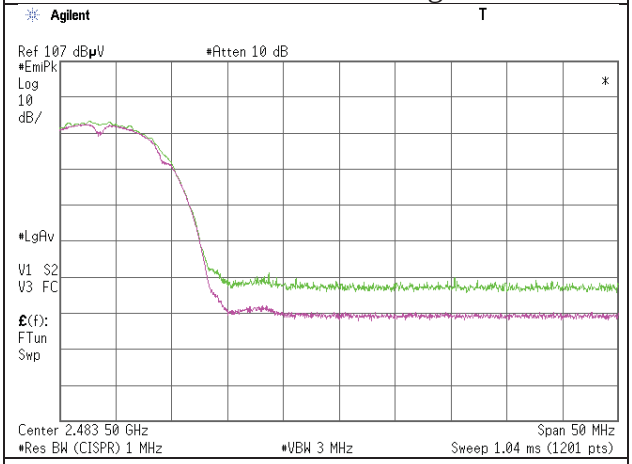
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11g 2412 MHz 10 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	46.2	27.8	13.7	41.0	3.6	50.3	73.9	23.6	114	81	
Hori.	4824.000	PK	43.9	31.5	5.8	39.5	3.6	45.3	73.9	28.6	100	0	
Hori.	7236.000	PK	43.7	36.9	7.2	40.1	3.6	51.3	73.9	22.6	100	0	
Hori.	9648.000	PK	44.6	38.5	8.3	39.6	3.6	55.4	73.9	18.5	100	0	
Hori.	2390.000	AV	34.1	27.8	13.7	41.0	3.6	38.2	53.9	15.7	114	81	
Hori.	4824.000	AV	33.7	31.5	5.8	39.5	3.6	35.1	53.9	18.8	100	0	
Hori.	7236.000	AV	34.1	36.9	7.2	40.1	3.6	41.7	53.9	12.2	100	0	
Hori.	9648.000	AV	34.0	38.5	8.3	39.6	3.6	44.8	53.9	**9.1**	100	0	
Vert.	2390.000	PK	46.5	27.8	13.7	41.0	3.6	50.6	73.9	23.3	102	175	
Vert.	4824.000	PK	44.7	31.5	5.8	39.5	3.6	46.1	73.9	27.8	100	0	
Vert.	7236.000	PK	44.6	36.9	7.2	40.1	3.6	52.2	73.9	21.7	100	0	
Vert.	9648.000	PK	45.1	38.5	8.3	39.6	3.6	55.9	73.9	18.0	100	0	
Vert.	2390.000	AV	34.5	27.8	13.7	41.0	3.6	38.6	53.9	15.3	102	175	
Vert.	4824.000	AV	34.4	31.5	5.8	39.5	3.6	35.8	53.9	18.1	100	0	
Vert.	7236.000	AV	33.4	36.9	7.2	40.1	3.6	41.0	53.9	12.9	100	0	
Vert.	9648.000	AV	33.9	38.5	8.3	39.6	3.6	44.7	53.9	9.2	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

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

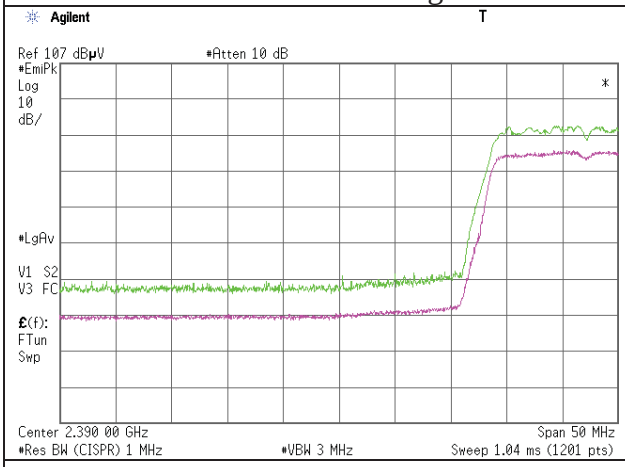
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	78.7	27.8	13.7	41.0	3.6	82.8	-	-	Carrier
Hori.	2400.000	PK	36.8	27.8	13.7	41.0	3.6	40.9	62.8	21.9	
Vert.	2412.000	PK	84.2	27.8	13.7	41.0	3.6	88.3	-	-	Carrier
Vert.	2400.000	PK	45.4	27.8	13.7	41.0	3.6	49.5	68.3	18.8	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

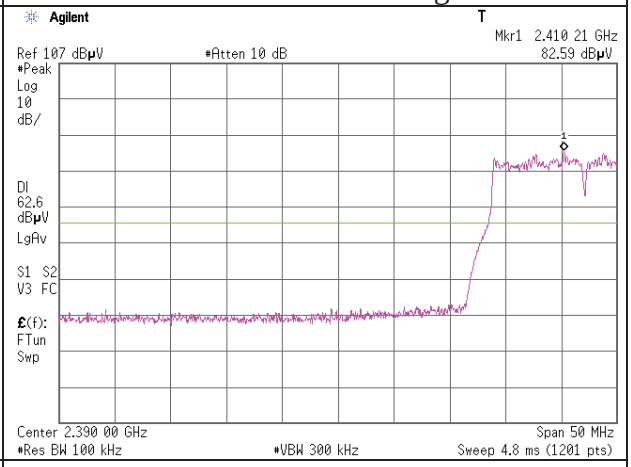
Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11g 2412 MHz 10 dBm

Horizontal



Restricted-band band-edge Plot

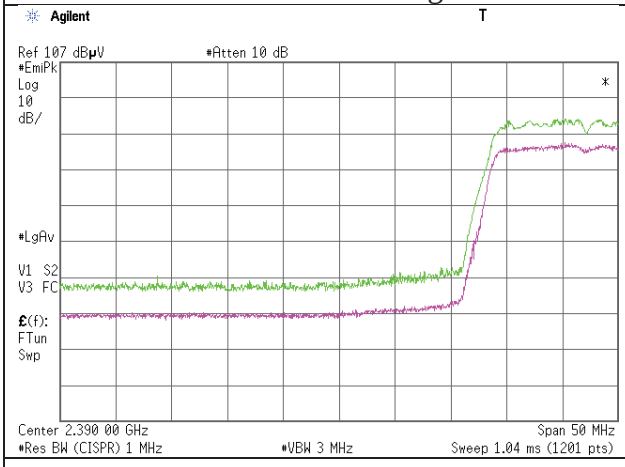
Trace Green : Peak Plot
Trace Purple : Average Plot



Authorized-band band-edge Plot

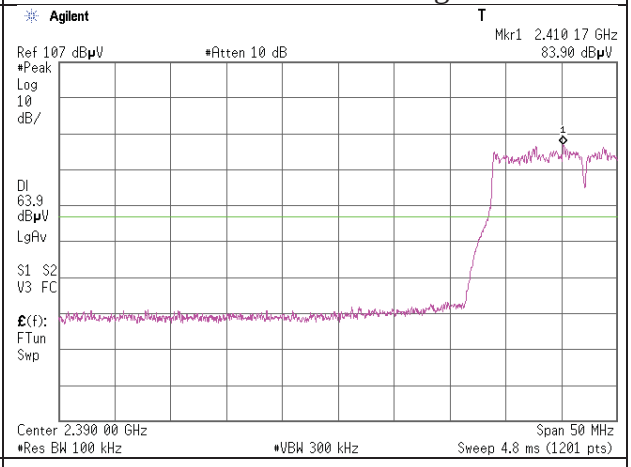
20dBc Plot

Vertical



Restricted-band band-edge Plot

Trace Green : Peak Plot
Trace Purple : Average Plot



Authorized-band band-edge Plot

20dBc Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11g 2437 MHz 10 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	44.2	31.7	5.9	39.5	3.6	45.9	73.9	28.0	100	0	
Hori.	7311.000	PK	46.0	36.9	7.3	40.2	3.6	53.6	73.9	20.3	100	0	
Hori.	9748.000	PK	44.9	38.5	8.3	39.5	3.6	55.8	73.9	18.1	100	0	
Hori.	4874.000	AV	34.3	31.7	5.9	39.5	3.6	36.0	53.9	17.9	100	0	
Hori.	7311.000	AV	35.1	36.9	7.3	40.2	3.6	42.7	53.9	11.2	100	0	
Hori.	9748.000	AV	33.3	38.5	8.3	39.5	3.6	44.2	53.9	9.7	100	0	
Vert.	4874.000	PK	44.1	31.7	5.9	39.5	3.6	45.8	73.9	28.1	100	0	
Vert.	7311.000	PK	45.0	36.9	7.3	40.2	3.6	52.6	73.9	21.3	100	0	
Vert.	9748.000	PK	44.6	38.5	8.3	39.5	3.6	55.5	73.9	18.4	100	0	
Vert.	4874.000	AV	33.6	31.7	5.9	39.5	3.6	35.3	53.9	18.6	100	0	
Vert.	7311.000	AV	34.3	36.9	7.3	40.2	3.6	41.9	53.9	12.0	100	0	
Vert.	9748.000	AV	34.5	38.5	8.3	39.5	3.6	45.4	53.9	**8.5**	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB
Duty factor refer to "Duty factor Calculation chart" sheet.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11g 2462 MHz 10 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	46.6	27.9	13.8	41.0	3.6	50.9	73.9	23.0	142	80	
Hori.	4924.000	PK	44.5	31.9	5.9	39.4	3.6	46.5	73.9	27.4	100	0	
Hori.	7386.000	PK	45.6	36.9	7.4	40.3	3.6	53.2	73.9	20.7	100	0	
Hori.	9848.000	PK	44.9	38.5	8.4	39.4	3.6	56.0	73.9	17.9	100	0	
Hori.	2483.500	AV	34.2	27.9	13.8	41.0	3.6	38.5	53.9	15.4	142	80	
Hori.	4924.000	AV	33.7	31.9	5.9	39.4	3.6	35.7	53.9	18.2	100	0	
Hori.	7386.000	AV	35.0	36.9	7.4	40.3	3.6	42.6	53.9	11.3	100	0	
Hori.	9848.000	AV	34.3	38.5	8.4	39.4	3.6	45.4	53.9	**8.5**	100	0	
Vert.	2483.500	PK	47.8	27.9	13.8	41.0	3.6	52.1	73.9	21.8	130	180	
Vert.	4924.000	PK	44.5	31.9	5.9	39.4	3.6	46.5	73.9	27.4	100	0	
Vert.	7386.000	PK	46.6	36.9	7.4	40.3	3.6	54.2	73.9	19.7	100	0	
Vert.	9848.000	PK	45.3	38.5	8.4	39.4	3.6	56.4	73.9	17.5	100	0	
Vert.	2483.500	AV	34.5	27.9	13.8	41.0	3.6	38.8	53.9	15.1	130	180	
Vert.	4924.000	AV	34.5	31.9	5.9	39.4	3.6	36.5	53.9	17.4	100	0	
Vert.	7386.000	AV	35.0	36.9	7.4	40.3	3.6	42.6	53.9	11.3	100	0	
Vert.	9848.000	AV	34.1	38.5	8.4	39.4	3.6	45.2	53.9	8.7	100	0	

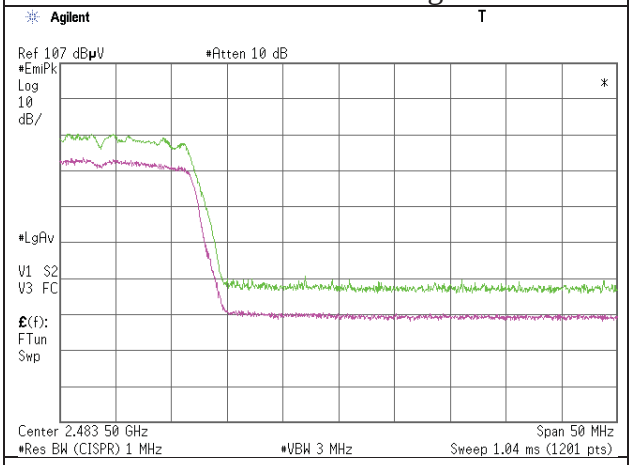
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11g 2462 MHz 10 dBm

Horizontal

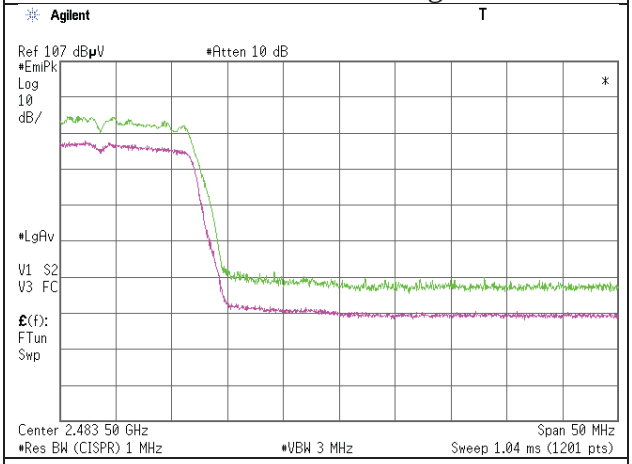
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11g 2412 MHz 12 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	46.1	27.8	13.7	41.0	3.6	50.2	73.9	23.7	114	268	
Hori.	4824.000	PK	43.8	31.5	5.8	39.5	3.6	45.2	73.9	28.7	100	0	
Hori.	7236.000	PK	44.3	36.9	7.2	40.1	3.6	51.9	73.9	22.0	100	0	
Hori.	9648.000	PK	44.6	38.5	8.3	39.6	3.6	55.4	73.9	18.5	100	0	
Hori.	2390.000	AV	34.2	27.8	13.7	41.0	3.6	38.3	53.9	15.6	114	268	
Hori.	4824.000	AV	35.2	31.5	5.8	39.5	3.6	36.6	53.9	17.3	100	0	
Hori.	7236.000	AV	35.4	36.9	7.2	40.1	3.6	43.0	53.9	10.9	100	0	
Hori.	9648.000	AV	35.4	38.5	8.3	39.6	3.6	46.2	53.9	7.7	100	0	
Vert.	2390.000	PK	47.6	27.8	13.7	41.0	3.6	51.7	73.9	22.2	100	170	
Vert.	4824.000	PK	43.5	31.5	5.8	39.5	3.6	44.9	73.9	29.0	100	0	
Vert.	7236.000	PK	44.7	36.9	7.2	40.1	3.6	52.3	73.9	21.6	100	0	
Vert.	9648.000	PK	44.4	38.5	8.3	39.6	3.6	55.2	73.9	18.7	100	0	
Vert.	2390.000	AV	34.7	27.8	13.7	41.0	3.6	38.8	53.9	15.1	100	170	
Vert.	4824.000	AV	35.4	31.5	5.8	39.5	3.6	36.8	53.9	17.1	100	0	
Vert.	7236.000	AV	35.5	36.9	7.2	40.1	3.6	43.1	53.9	10.8	100	0	
Vert.	9648.000	AV	35.7	38.5	8.3	39.6	3.6	46.5	53.9	**7.4**	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

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

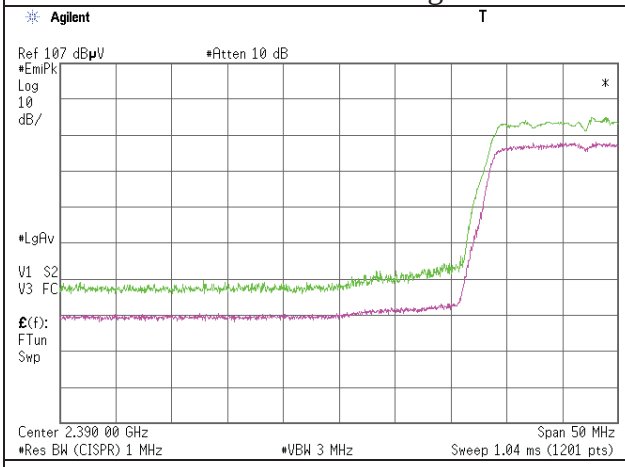
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	80.4	27.8	13.7	41.0	3.6	84.5	-	-	Carrier
Hori.	2400.000	PK	37.6	27.8	13.7	41.0	3.6	41.7	64.5	22.8	
Vert.	2412.000	PK	85.7	27.8	13.7	41.0	3.6	89.8	-	-	Carrier
Vert.	2400.000	PK	46.9	27.8	13.7	41.0	3.6	51.0	69.8	18.8	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

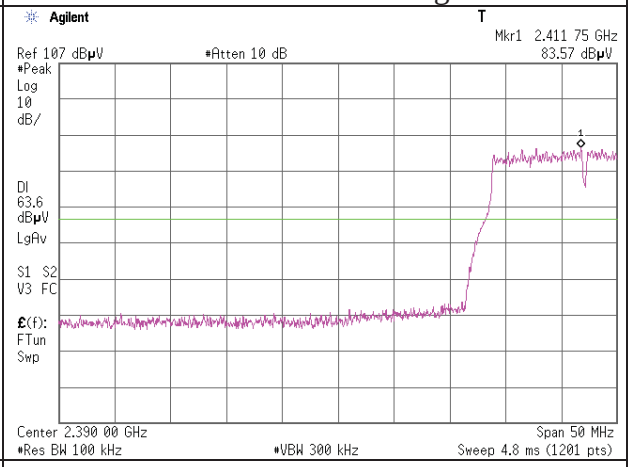
Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11g 2412 MHz 12 dBm

Horizontal



Restricted-band band-edge Plot

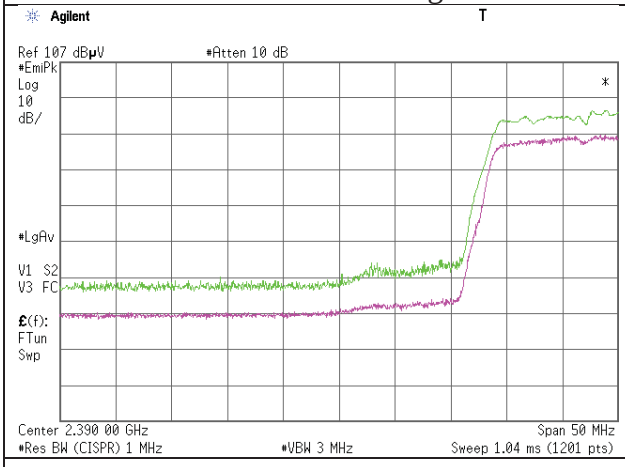
Trace Green : Peak Plot
Trace Purple : Average Plot



Authorized-band band-edge Plot

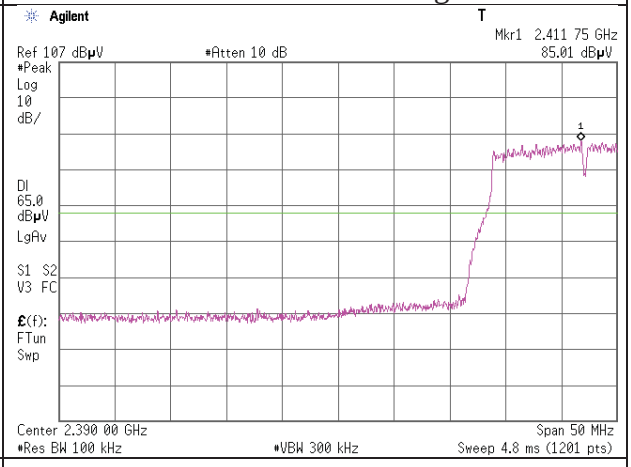
20dBc Plot

Vertical



Restricted-band band-edge Plot

Trace Green : Peak Plot
Trace Purple : Average Plot



Authorized-band band-edge Plot

20dBc Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11g 2437 MHz 12 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	44.2	31.7	5.9	39.5	3.6	45.9	73.9	28.0	100	0	
Hori.	7311.000	PK	44.6	36.9	7.3	40.2	3.6	52.2	73.9	21.7	100	0	
Hori.	9748.000	PK	43.9	38.5	8.3	39.5	3.6	54.8	73.9	19.1	100	0	
Hori.	4874.000	AV	35.4	31.7	5.9	39.5	3.6	37.1	53.9	16.8	100	0	
Hori.	7311.000	AV	36.0	36.9	7.3	40.2	3.6	43.6	53.9	10.3	100	0	
Hori.	9748.000	AV	35.3	38.5	8.3	39.5	3.6	46.2	53.9	7.7	100	0	
Vert.	4874.000	PK	44.4	31.7	5.9	39.5	3.6	46.1	73.9	27.8	100	0	
Vert.	7311.000	PK	45.8	36.9	7.3	40.2	3.6	53.4	73.9	20.5	100	0	
Vert.	9748.000	PK	44.5	38.5	8.3	39.5	3.6	55.4	73.9	18.5	100	0	
Vert.	4874.000	AV	35.4	31.7	5.9	39.5	3.6	37.1	53.9	16.8	100	0	
Vert.	7311.000	AV	36.1	36.9	7.3	40.2	3.6	43.7	53.9	10.2	100	0	
Vert.	9748.000	AV	35.4	38.5	8.3	39.5	3.6	46.3	53.9	**7.6**	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11g 2462 MHz 12 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	47.6	27.9	13.8	41.0	3.6	51.9	73.9	22.0	105	272	
Hori.	4924.000	PK	45.2	31.9	5.9	39.4	3.6	47.2	73.9	26.7	100	0	
Hori.	7386.000	PK	45.0	36.9	7.4	40.3	3.6	52.6	73.9	21.3	100	0	
Hori.	9848.000	PK	45.0	38.5	8.4	39.4	3.6	56.1	73.9	17.8	100	0	
Hori.	2483.500	AV	34.5	27.9	13.8	41.0	3.6	38.8	53.9	15.1	105	272	
Hori.	4924.000	AV	35.6	31.9	5.9	39.4	3.6	37.6	53.9	16.3	100	0	
Hori.	7386.000	AV	36.1	36.9	7.4	40.3	3.6	43.7	53.9	10.2	100	0	
Hori.	9848.000	AV	35.8	38.5	8.4	39.4	3.6	46.9	53.9	7.0	100	0	
Vert.	2483.500	PK	48.1	27.9	13.8	41.0	3.6	52.4	73.9	21.5	128	167	
Vert.	4924.000	PK	44.2	31.9	5.9	39.4	3.6	46.2	73.9	27.7	100	0	
Vert.	7386.000	PK	45.0	36.9	7.4	40.3	3.6	52.6	73.9	21.3	100	0	
Vert.	9848.000	PK	45.1	38.5	8.4	39.4	3.6	56.2	73.9	17.7	100	0	
Vert.	2483.500	AV	34.6	27.9	13.8	41.0	3.6	38.9	53.9	15.0	128	167	
Vert.	4924.000	AV	35.7	31.9	5.9	39.4	3.6	37.7	53.9	16.2	100	0	
Vert.	7386.000	AV	36.5	36.9	7.4	40.3	3.6	44.1	53.9	9.8	100	0	
Vert.	9848.000	AV	36.0	38.5	8.4	39.4	3.6	47.1	53.9	**6.8**	100	0	

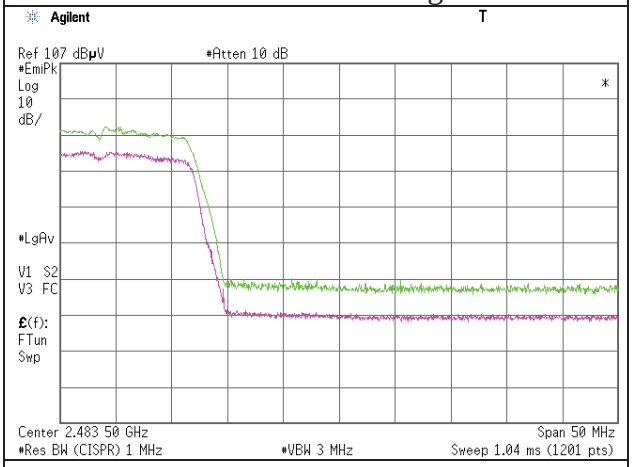
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11g 2462 MHz 12 dBm

Horizontal

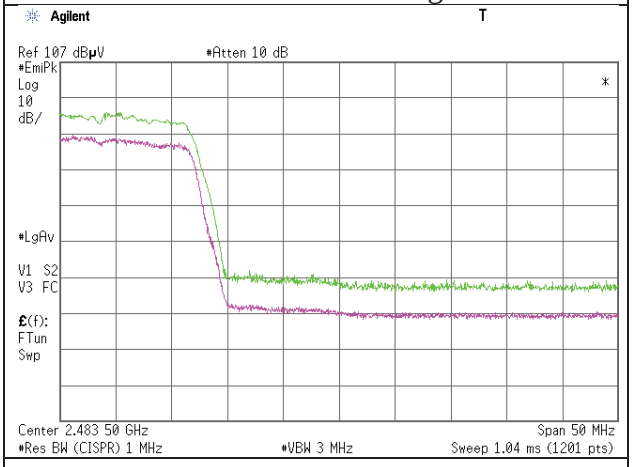
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11n-20 2412 MHz 10 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	46.8	27.8	13.7	41.0	3.6	50.9	73.9	23.0	112	267	
Hori.	4824.000	PK	43.9	31.5	5.8	39.5	3.6	45.3	73.9	28.6	100	0	
Hori.	7236.000	PK	44.7	36.9	7.2	40.1	3.6	52.3	73.9	21.6	100	0	
Hori.	9648.000	PK	43.9	38.5	8.3	39.6	3.6	54.7	73.9	19.2	100	0	
Hori.	2390.000	AV	34.2	27.8	13.7	41.0	3.6	38.3	53.9	15.6	112	267	
Hori.	4824.000	AV	34.2	31.5	5.8	39.5	3.6	35.6	53.9	18.3	100	0	
Hori.	7236.000	AV	33.9	36.9	7.2	40.1	3.6	41.5	53.9	12.4	100	0	
Hori.	9648.000	AV	33.9	38.5	8.3	39.6	3.6	44.7	53.9	**9.2**	100	0	
Vert.	2390.000	PK	47.2	27.8	13.7	41.0	3.6	51.3	73.9	22.6	100	169	
Vert.	4824.000	PK	44.4	31.5	5.8	39.5	3.6	45.8	73.9	28.1	100	0	
Vert.	7236.000	PK	43.6	36.9	7.2	40.1	3.6	51.2	73.9	22.7	100	0	
Vert.	9648.000	PK	44.4	38.5	8.3	39.6	3.6	55.2	73.9	18.7	100	0	
Vert.	2390.000	AV	34.9	27.8	13.7	41.0	3.6	39.0	53.9	14.9	100	169	
Vert.	4824.000	AV	34.5	31.5	5.8	39.5	3.6	35.9	53.9	18.0	100	0	
Vert.	7236.000	AV	33.9	36.9	7.2	40.1	3.6	41.5	53.9	12.4	100	0	
Vert.	9648.000	AV	33.7	38.5	8.3	39.6	3.6	44.5	53.9	9.4	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

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

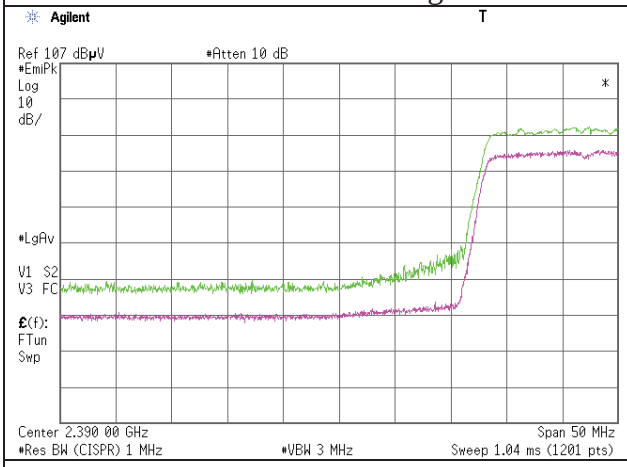
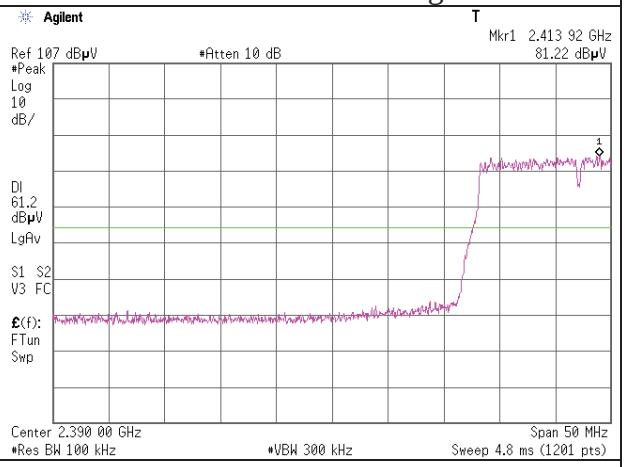
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	76.2	27.8	13.7	41.0	3.6	80.3	-	-	Carrier
Hori.	2400.000	PK	40.4	27.8	13.7	41.0	3.6	44.5	60.3	15.8	
Vert.	2412.000	PK	84.0	27.8	13.7	41.0	3.6	88.1	-	-	Carrier
Vert.	2400.000	PK	45.5	27.8	13.7	41.0	3.6	49.6	68.1	18.5	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

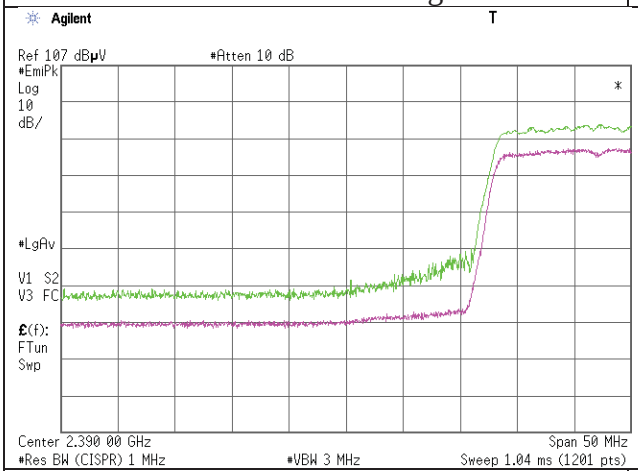
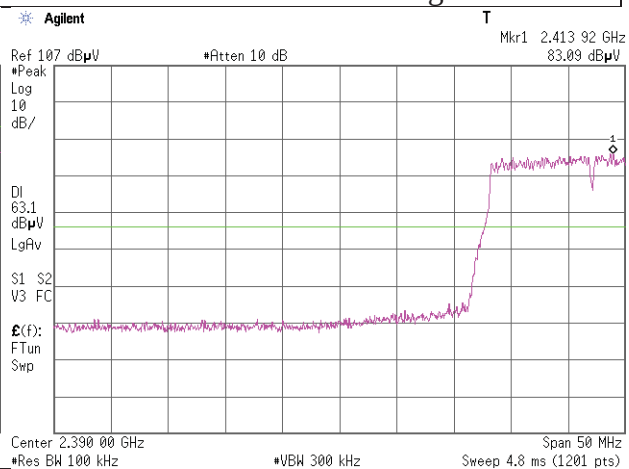
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11n-20 2412 MHz 10 dBm

Horizontal

Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical

Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and No.3 Semi Anechoic Chamber			
Report No.	11204559S-A-R1			
Date	April 8, 2016	April 9, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	24 deg.C, 44 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Makoto Hosaka	Wataru Kojima	Wataru Kojima

Mode Tx 11n-20 2437 MHz 10 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	144.001	QP	42.9	14.3	8.6	31.8	0.0	34.0	43.5	9.5	222	182	
Hori.	239.999	QP	47.6	16.9	9.5	31.7	0.0	42.3	46.0	**3.7**	139	187	
Hori.	306.003	QP	43.3	14.0	6.5	31.8	0.0	32.0	46.0	14.0	155	15	
Hori.	336.001	QP	48.6	14.7	6.7	31.8	0.0	38.2	46.0	7.8	102	87	
Hori.	425.887	QP	39.4	16.4	7.3	31.9	0.0	31.2	46.0	14.8	100	51	
Hori.	4874.000	PK	44.4	31.7	5.9	39.5	3.6	46.1	73.9	27.8	100	0	
Hori.	7311.000	PK	44.5	36.9	7.3	40.2	3.6	52.1	73.9	21.8	100	0	
Hori.	9748.000	PK	44.4	38.5	8.3	39.5	3.6	55.3	73.9	18.6	100	0	
Hori.	4874.000	AV	32.6	31.7	5.9	39.5	3.6	34.3	53.9	19.6	100	0	
Hori.	7311.000	AV	34.9	36.9	7.3	40.2	3.6	42.5	53.9	11.4	100	0	
Hori.	9748.000	AV	34.9	38.5	8.3	39.5	3.6	45.8	53.9	8.1	100	0	
Vert.	48.001	QP	48.1	11.1	7.4	31.8	0.0	34.8	40.0	5.2	100	214	
Vert.	143.997	QP	41.9	14.3	8.6	31.8	0.0	33.0	43.5	10.5	100	96	
Vert.	239.999	QP	38.6	16.9	9.5	31.7	0.0	33.3	46.0	12.7	100	254	
Vert.	252.003	QP	39.3	17.2	9.6	31.7	0.0	34.4	46.0	11.6	100	227	
Vert.	336.000	QP	40.5	14.7	6.7	31.8	0.0	30.1	46.0	15.9	139	97	
Vert.	528.001	QP	40.0	17.8	7.9	32.0	0.0	33.7	46.0	12.3	115	11	
Vert.	4874.000	PK	43.2	31.7	5.9	39.5	3.6	44.9	73.9	29.0	100	0	
Vert.	7311.000	PK	44.9	36.9	7.3	40.2	3.6	52.5	73.9	21.4	100	0	
Vert.	9748.000	PK	43.5	38.5	8.3	39.5	3.6	54.4	73.9	19.5	100	0	
Vert.	4874.000	AV	33.9	31.7	5.9	39.5	3.6	35.6	53.9	18.3	100	0	
Vert.	7311.000	AV	34.5	36.9	7.3	40.2	3.6	42.1	53.9	11.8	100	0	
Vert.	9748.000	AV	34.5	38.5	8.3	39.5	3.6	45.4	53.9	8.5	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB
Duty factor refer to "Duty factor Calculation chart" sheet.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11n-20 2462 MHz 10 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	46.5	27.9	13.8	41.0	3.6	50.8	73.9	23.1	141	114	
Hori.	4924.000	PK	44.2	31.9	5.9	39.4	3.6	46.2	73.9	27.7	100	0	
Hori.	7386.000	PK	45.0	36.9	7.4	40.3	3.6	52.6	73.9	21.3	100	0	
Hori.	9848.000	PK	44.7	38.5	8.4	39.4	3.6	55.8	73.9	18.1	100	0	
Hori.	2483.500	AV	34.3	27.9	13.8	41.0	3.6	38.6	53.9	15.3	141	114	
Hori.	4924.000	AV	33.6	31.9	5.9	39.4	3.6	35.6	53.9	18.3	100	0	
Hori.	7386.000	AV	34.8	36.9	7.4	40.3	3.6	42.4	53.9	11.5	100	0	
Hori.	9848.000	AV	34.2	38.5	8.4	39.4	3.6	45.3	53.9	8.6	100	0	
Vert.	2483.500	PK	46.3	27.9	13.8	41.0	3.6	50.6	73.9	23.3	100	353	
Vert.	4924.000	PK	44.4	31.9	5.9	39.4	3.6	46.4	73.9	27.5	100	0	
Vert.	7386.000	PK	45.6	36.9	7.4	40.3	3.6	53.2	73.9	20.7	100	0	
Vert.	9848.000	PK	45.2	38.5	8.4	39.4	3.6	56.3	73.9	17.6	100	0	
Vert.	2483.500	AV	34.5	27.9	13.8	41.0	3.6	38.8	53.9	15.1	100	353	
Vert.	4924.000	AV	34.2	31.9	5.9	39.4	3.6	36.2	53.9	17.7	100	0	
Vert.	7386.000	AV	34.9	36.9	7.4	40.3	3.6	42.5	53.9	11.4	100	0	
Vert.	9848.000	AV	34.4	38.5	8.4	39.4	3.6	45.5	53.9	**8.4**	100	0	

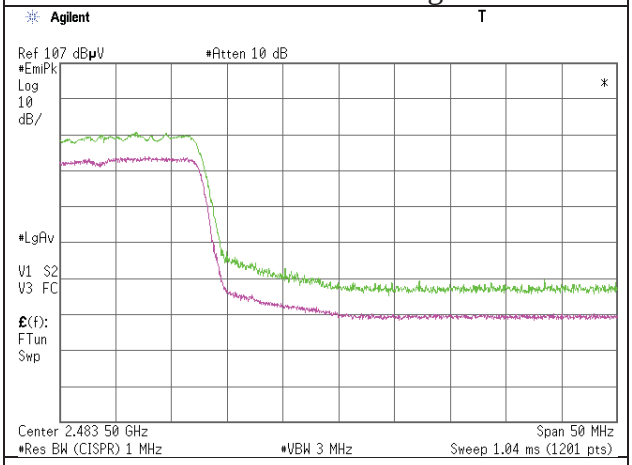
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11g 2462 MHz 10 dBm

Horizontal

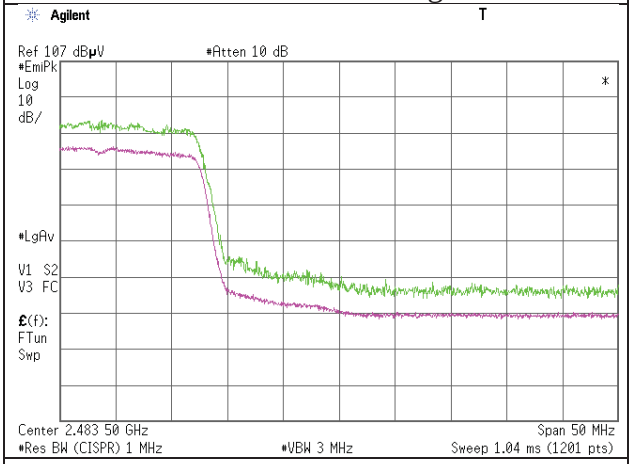
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11n-20 2412 MHz 12 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	46.5	27.8	13.7	41.0	3.6	50.6	73.9	23.3	100	78	
Hori.	4824.000	PK	44.0	31.5	5.8	39.5	3.6	45.4	73.9	28.5	100	0	
Hori.	7236.000	PK	44.3	36.9	7.2	40.1	3.6	51.9	73.9	22.0	100	0	
Hori.	9648.000	PK	44.8	38.5	8.3	39.6	3.6	55.6	73.9	18.3	100	0	
Hori.	2390.000	AV	34.4	27.8	13.7	41.0	3.6	38.5	53.9	15.4	100	78	
Hori.	4824.000	AV	35.3	31.5	5.8	39.5	3.6	36.7	53.9	17.2	100	0	
Hori.	7236.000	AV	35.5	36.9	7.2	40.1	3.6	43.1	53.9	10.8	100	0	
Hori.	9648.000	AV	35.3	38.5	8.3	39.6	3.6	46.1	53.9	7.8	100	0	
Vert.	2390.000	PK	47.9	27.8	13.7	41.0	3.6	52.0	73.9	21.9	101	0	
Vert.	4824.000	PK	44.2	31.5	5.8	39.5	3.6	45.6	73.9	28.3	100	0	
Vert.	7236.000	PK	44.5	36.9	7.2	40.1	3.6	52.1	73.9	21.8	100	0	
Vert.	9648.000	PK	44.6	38.5	8.3	39.6	3.6	55.4	73.9	18.5	100	0	
Vert.	2390.000	AV	35.2	27.8	13.7	41.0	3.6	39.3	53.9	14.6	101	0	
Vert.	4824.000	AV	35.3	31.5	5.8	39.5	3.6	36.7	53.9	17.2	100	0	
Vert.	7236.000	AV	35.6	36.9	7.2	40.1	3.6	43.2	53.9	10.7	100	0	
Vert.	9648.000	AV	35.4	38.5	8.3	39.6	3.6	46.2	53.9	**7.7**	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

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

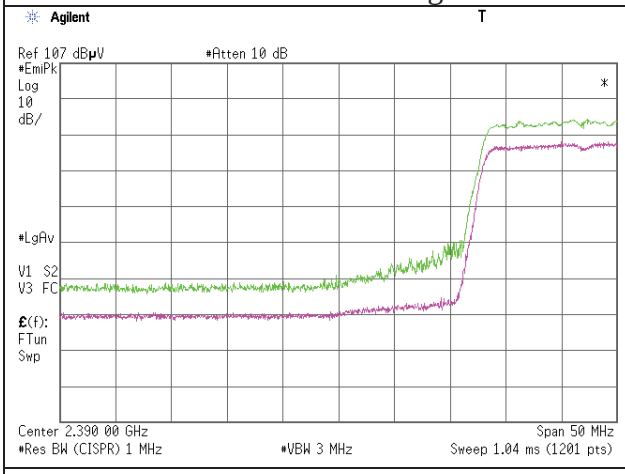
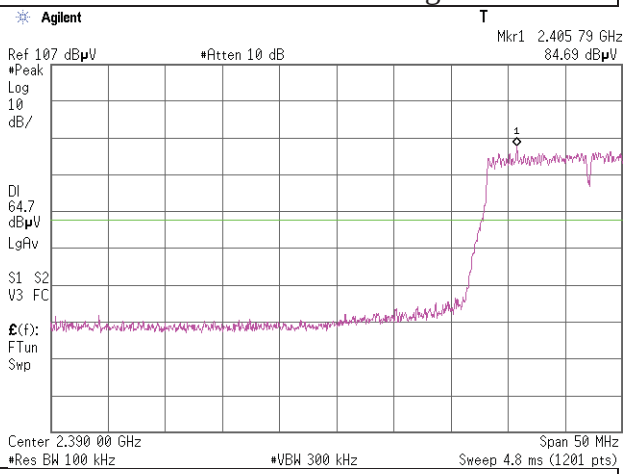
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	78.0	27.8	13.7	41.0	3.6	82.1	-	-	Carrier
Hori.	2400.000	PK	39.2	27.8	13.7	41.0	3.6	43.3	62.1	18.8	
Vert.	2412.000	PK	83.1	27.8	13.7	41.0	3.6	87.2	-	-	Carrier
Vert.	2400.000	PK	44.4	27.8	13.7	41.0	3.6	48.5	67.2	18.7	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

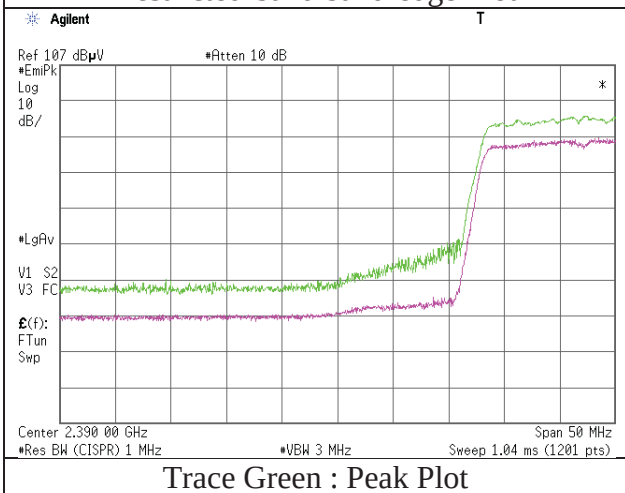
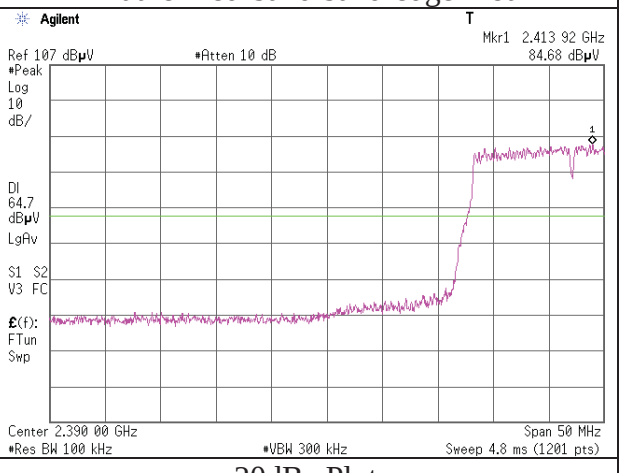
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11n-20 2412 MHz 12 dBm

Horizontal

Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical

Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and No.3 Semi Anechoic Chamber			
Report No.	11204559S-A-R1			
Date	April 8, 2016	April 9, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	24 deg.C, 44 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Makoto Hosaka	Wataru Kojima	Wataru Kojima

Mode Tx 11n-20 2437 MHz 12 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	240.000	QP	47.8	16.9	9.5	31.7	0.0	42.5	46.0	**3.5**	137	179	
Hori.	306.004	QP	44.1	14.0	6.5	31.8	0.0	32.8	46.0	13.2	100	87	
Hori.	336.000	QP	49.1	14.7	6.7	31.8	0.0	38.7	46.0	7.3	100	87	
Hori.	420.446	QP	37.5	16.3	7.3	31.8	0.0	29.3	46.0	16.7	100	74	
Hori.	4874.000	PK	44.2	31.7	5.9	39.5	3.6	45.9	73.9	28.0	100	0	
Hori.	7311.000	PK	45.3	36.9	7.3	40.2	3.6	52.9	73.9	21.0	100	0	
Hori.	9748.000	PK	43.5	38.5	8.3	39.5	3.6	54.4	73.9	19.5	100	0	
Hori.	4874.000	AV	35.4	31.7	5.9	39.5	3.6	37.1	53.9	16.8	100	0	
Hori.	7311.000	AV	36.2	36.9	7.3	40.2	3.6	43.8	53.9	10.1	100	0	
Hori.	9748.000	AV	35.6	38.5	8.3	39.5	3.6	46.5	53.9	7.4	100	0	
Vert.	47.999	QP	47.4	11.1	7.4	31.8	0.0	34.1	40.0	5.9	100	215	
Vert.	144.000	QP	41.2	14.3	8.6	31.8	0.0	32.3	43.5	11.2	100	59	
Vert.	239.998	QP	41.0	16.9	9.5	31.7	0.0	35.7	46.0	10.3	100	359	
Vert.	252.008	QP	38.6	17.2	9.6	31.7	0.0	33.7	46.0	12.3	100	242	
Vert.	336.000	QP	43.7	14.7	6.7	31.8	0.0	33.3	46.0	12.7	165	111	
Vert.	528.001	QP	39.1	17.8	7.9	32.0	0.0	32.8	46.0	13.2	112	211	
Vert.	4874.000	PK	43.8	31.7	5.9	39.5	3.6	45.5	73.9	28.4	100	0	
Vert.	7311.000	PK	45.4	36.9	7.3	40.2	3.6	53.0	73.9	20.9	100	0	
Vert.	9748.000	PK	43.9	38.5	8.3	39.5	3.6	54.8	73.9	19.1	100	0	
Vert.	4874.000	AV	35.6	31.7	5.9	39.5	3.6	37.3	53.9	16.6	100	0	
Vert.	7311.000	AV	36.3	36.9	7.3	40.2	3.6	43.9	53.9	10.0	100	0	
Vert.	9748.000	AV	35.6	38.5	8.3	39.5	3.6	46.5	53.9	7.4	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11204559S-A-R1		
Date	April 8, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Wataru Kojima	Wataru Kojima

Mode Tx 11n-20 2462 MHz 12 dBm

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	47.1	27.9	13.8	41.0	3.6	51.4	73.9	22.5	147	114	
Hori.	4924.000	PK	44.5	31.9	5.9	39.4	3.6	46.5	73.9	27.4	100	0	
Hori.	7386.000	PK	46.0	36.9	7.4	40.3	3.6	53.6	73.9	20.3	100	0	
Hori.	9848.000	PK	45.0	38.5	8.4	39.4	3.6	56.1	73.9	17.8	100	0	
Hori.	2483.500	AV	34.7	27.9	13.8	41.0	3.6	39.0	53.9	14.9	147	114	
Hori.	4924.000	AV	35.5	31.9	5.9	39.4	3.6	37.5	53.9	16.4	100	0	
Hori.	7386.000	AV	36.2	36.9	7.4	40.3	3.6	43.8	53.9	10.1	100	0	
Hori.	9848.000	AV	36.0	38.5	8.4	39.4	3.6	47.1	53.9	6.8	100	0	
Vert.	2483.500	PK	47.9	27.9	13.8	41.0	3.6	52.2	73.9	21.7	100	357	
Vert.	4924.000	PK	44.4	31.9	5.9	39.4	3.6	46.4	73.9	27.5	100	0	
Vert.	7386.000	PK	45.4	36.9	7.4	40.3	3.6	53.0	73.9	20.9	100	0	
Vert.	9848.000	PK	45.3	38.5	8.4	39.4	3.6	56.4	73.9	17.5	100	0	
Vert.	2483.500	AV	34.8	27.9	13.8	41.0	3.6	39.1	53.9	14.8	100	357	
Vert.	4924.000	AV	36.0	31.9	5.9	39.4	3.6	38.0	53.9	15.9	100	0	
Vert.	7386.000	AV	36.6	36.9	7.4	40.3	3.6	44.2	53.9	9.7	100	0	
Vert.	9848.000	AV	36.2	38.5	8.4	39.4	3.6	47.3	53.9	**6.6**	100	0	

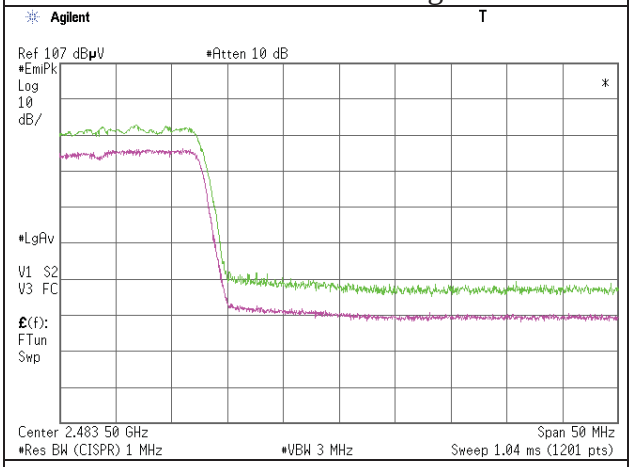
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.5 m / 3.0 m) = 3.6 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204559S-A-R1
Date	April 10, 2016
Temperature / Humidity	22 deg.C, 46 %RH
Engineer	Wataru Kojima
Mode	Tx 11g 2462 MHz 12 dBm

Horizontal

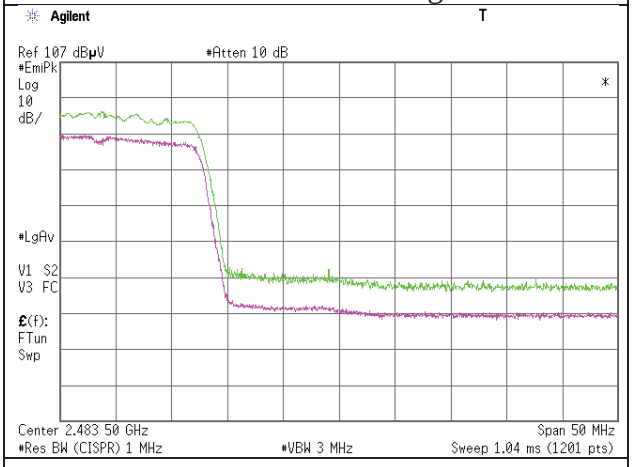
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



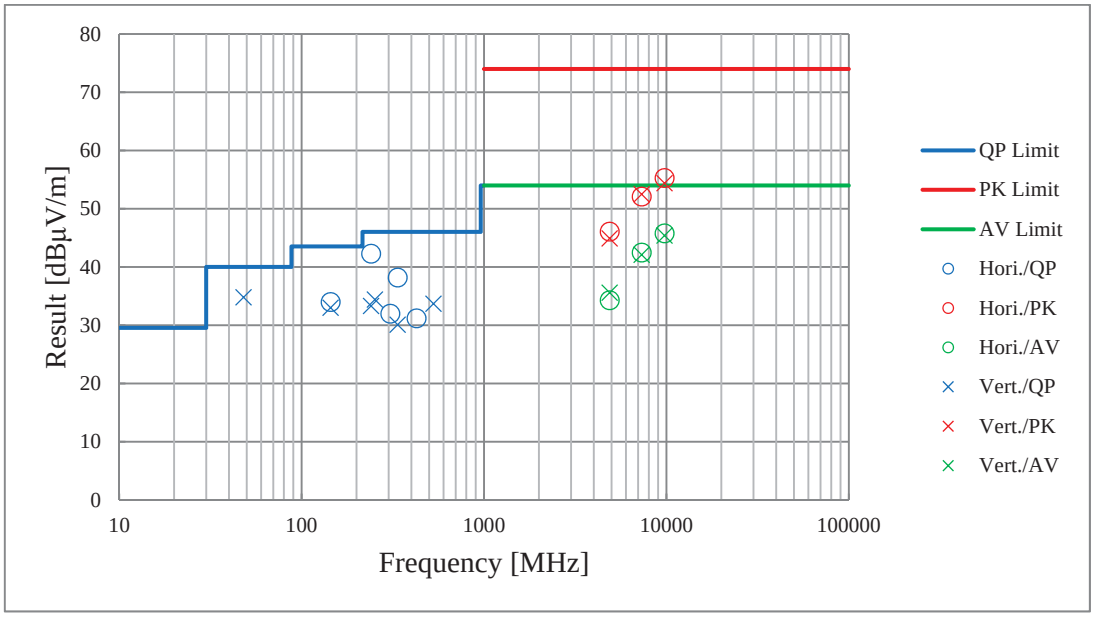
Trace Green : Peak Plot
Trace Purple : Average Plot

* Final result of restricted band edge was shown in tabular data.

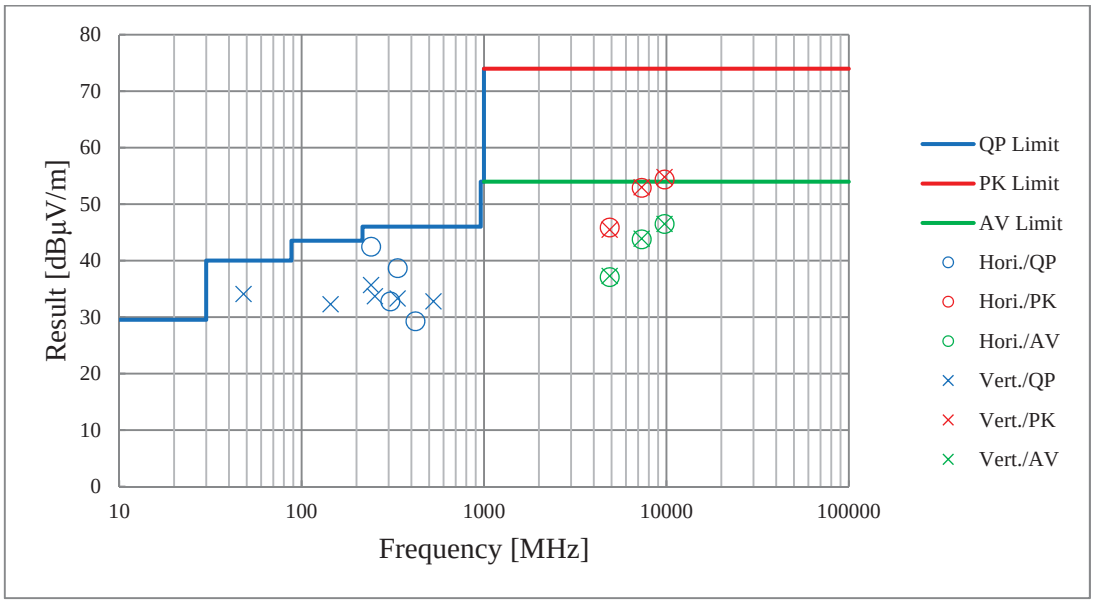
Radiated Spurious Emission
(Plot data, Worst case)

Test place	Shonan EMC Lab. No.1 and No.3 Semi Anechoic Chamber			
Report No.	11204559S-A-R1			
Date	April 8, 2016	April 9, 2016	April 10, 2016	April 11, 2016
Temperature / Humidity	25 deg.C, 48 %RH	24 deg.C, 44 %RH	22 deg.C, 46 %RH	23 deg.C, 40 %RH
Engineer	Kazutaka Takeyama	Makoto Hosaka	Wataru Kojima	Wataru Kojima
Mode	Tx 11n-20 2437 MHz 10 dBm and 12 dBm			

10 dBm



12 dBm

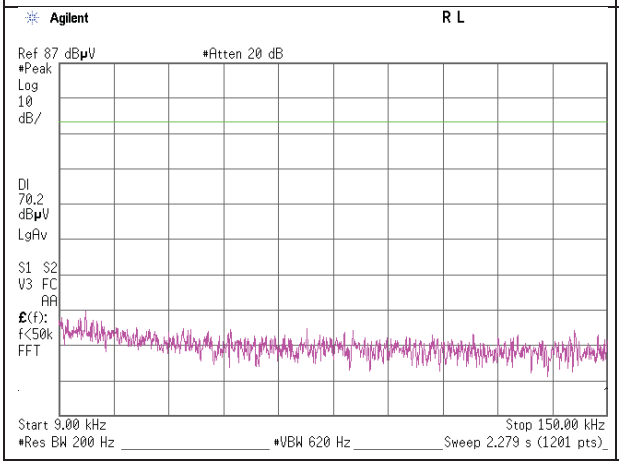


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

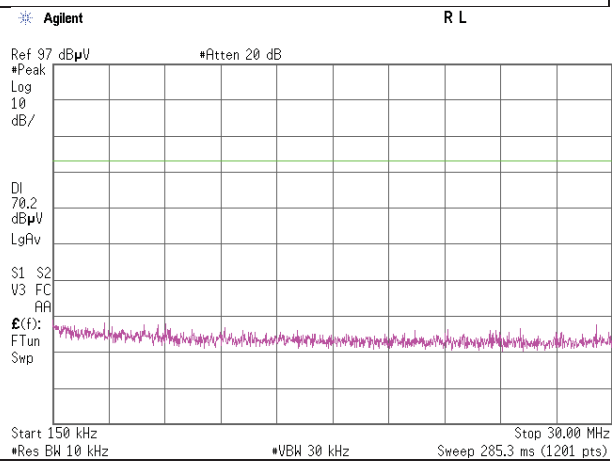
Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 22, 2014
Temperature / Humidity	23 deg. C / 45 % RH
Engineer	Tatsuya Arai
Mode	Tx 11n-20 2437 MHz 10dBm

9 kHz - 150 kHz



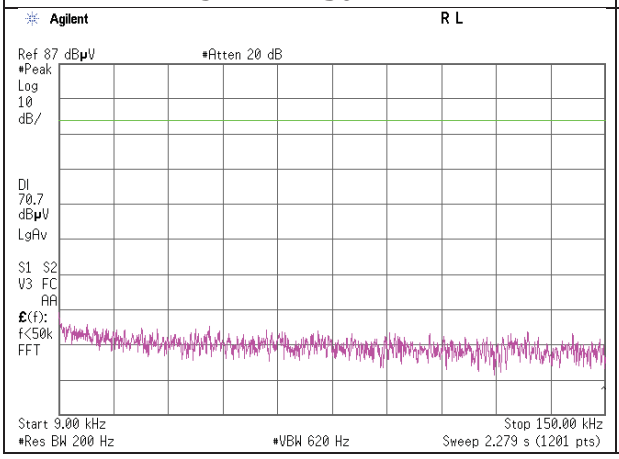
150 kHz - 30 MHz



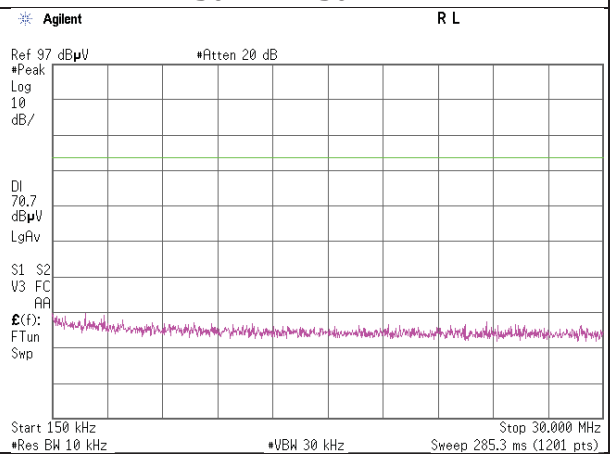
Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 22, 2014
Temperature / Humidity	23 deg. C / 45 % RH
Engineer	Tatsuya Arai
Mode	Tx 11n-20 2437 MHz 12 dBm

9 kHz - 150 kHz



150 kHz - 30 MHz



Power Density

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 22, 2014
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Tatsuya Arai
Mode	Tx 10 dBm

11b

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-27.42	1.85	9.65	-15.92	8.00	23.92
2437.00	-27.03	1.86	9.66	-15.51	8.00	23.51
2462.00	-26.78	1.87	9.66	-15.25	8.00	23.25

11g

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-31.89	1.85	9.65	-20.39	8.00	28.39
2437.00	-31.62	1.86	9.66	-20.10	8.00	28.10
2462.00	-31.41	1.87	9.66	-19.88	8.00	27.88

11n-20

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-31.41	1.85	9.65	-19.91	8.00	27.91
2437.00	-30.54	1.86	9.66	-19.02	8.00	27.02
2462.00	-30.38	1.87	9.66	-18.85	8.00	26.85

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenua

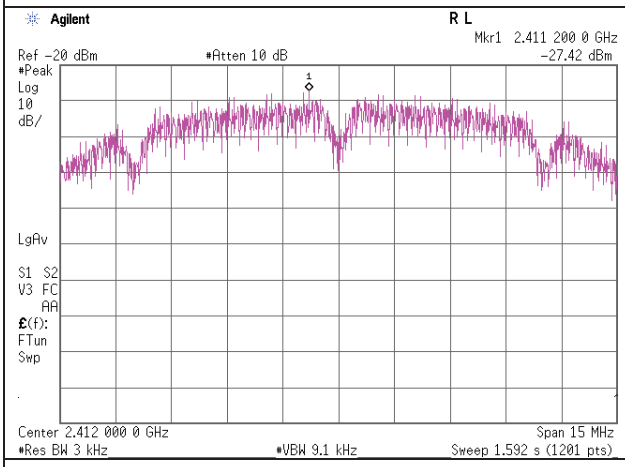
*The equipment and cables were not used for factor 0 dB of the data sheets.

Power Density

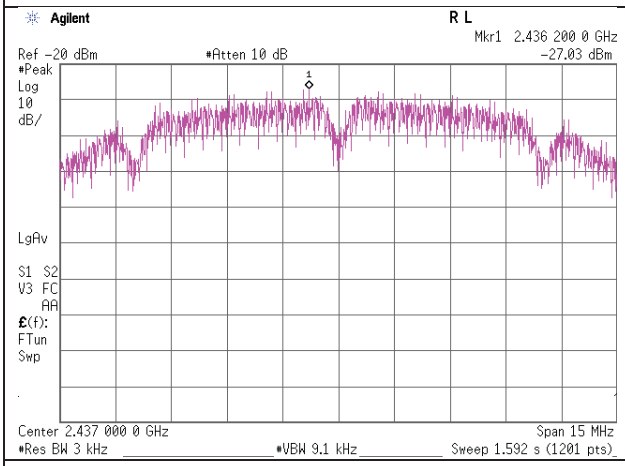
Tx 10 dBm

11b

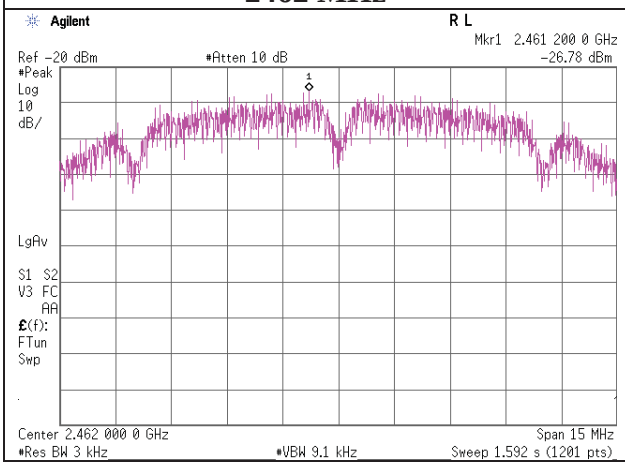
2412 MHz



2437 MHz

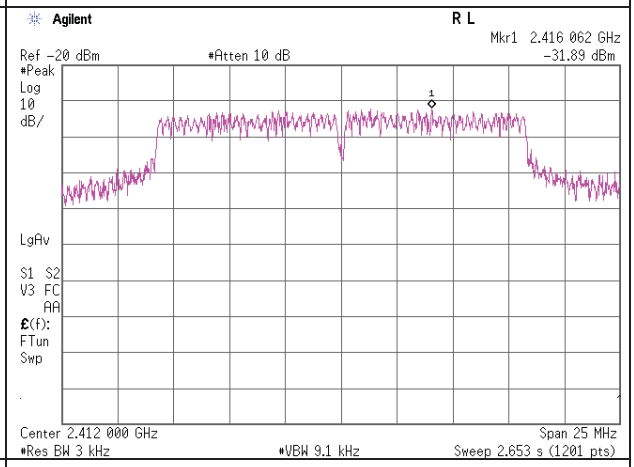


2462 MHz

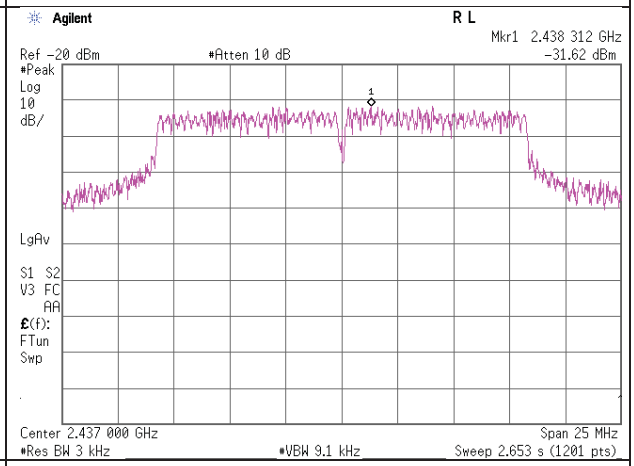


11g

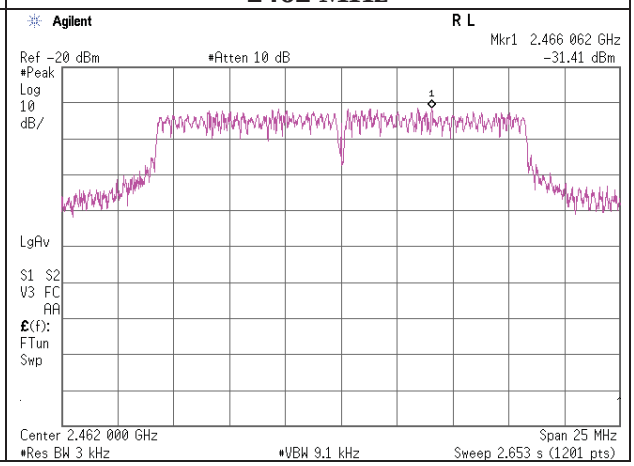
2412 MHz



2437 MHz



2462 MHz

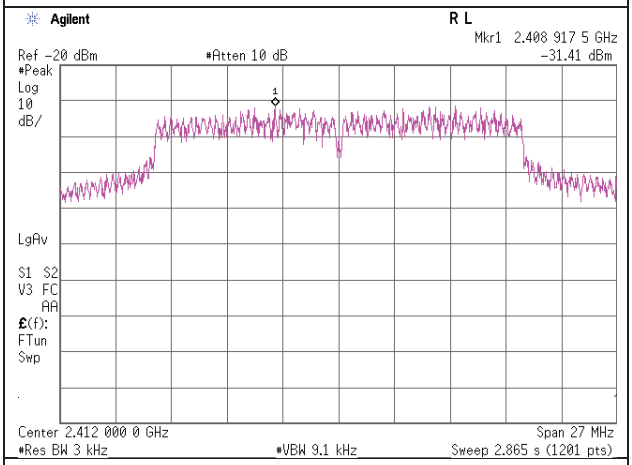


Power Density

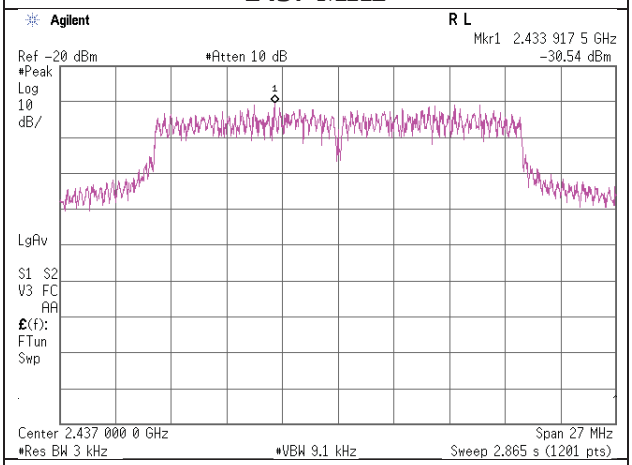
Tx 10 dBm

11n-20

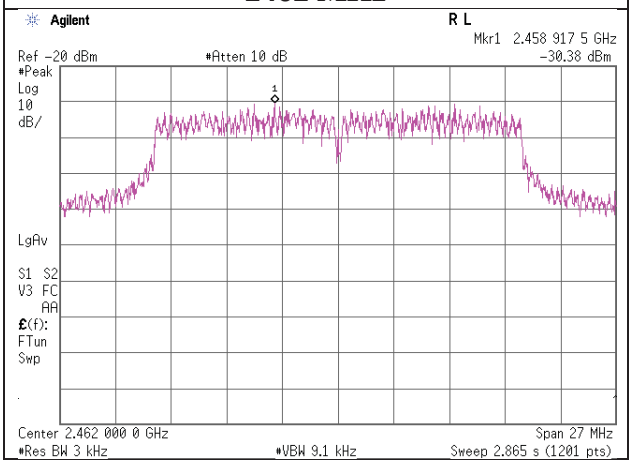
2412 MHz



2437 MHz



2462 MHz



Power Density

Test place	Shonan EMC Lab. No.5 Shielded Room	
Report No.	11204559S-A-R1	
Date	August 22, 2014	October 15, 2014
Temperature / Humidity	26 deg. C / 47 % RH	26 deg. C / 50 % RH
Engineer	Tatsuya Arai	Tatsuya Arai
Mode	Tx 12 dBm	

11b

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-25.33	1.54	9.90	-13.89	8.00	21.89
2437.00	-25.33	1.52	9.90	-13.91	8.00	21.91
2462.00	-25.49	1.52	9.90	-14.07	8.00	22.07

11g

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-31.50	1.85	9.65	-20.00	8.00	28.00
2437.00	-31.06	1.86	9.66	-19.54	8.00	27.54
2462.00	-30.80	1.87	9.66	-19.27	8.00	27.27

11n-20

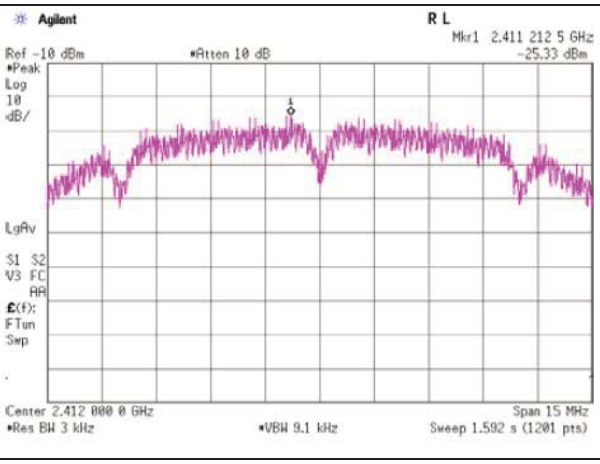
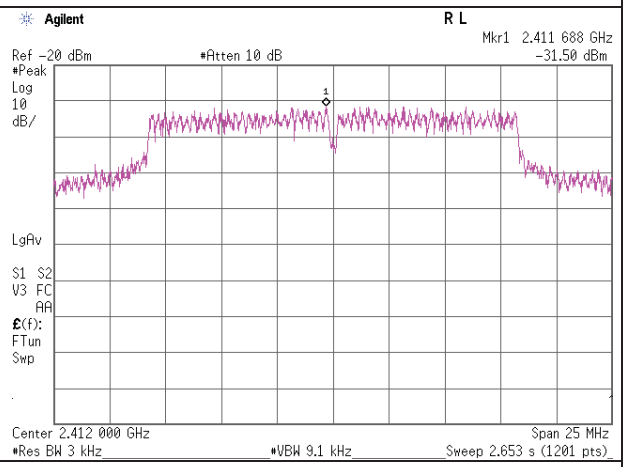
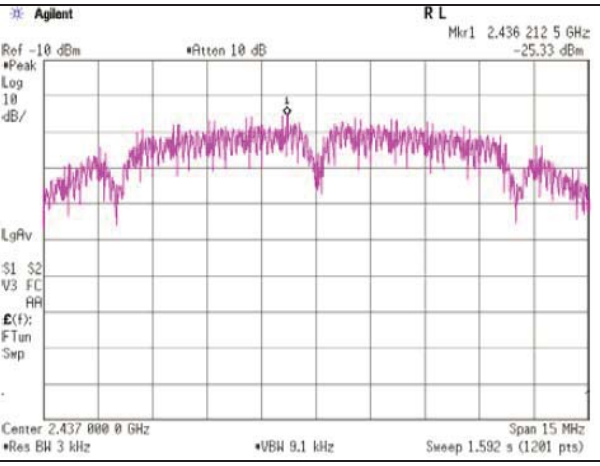
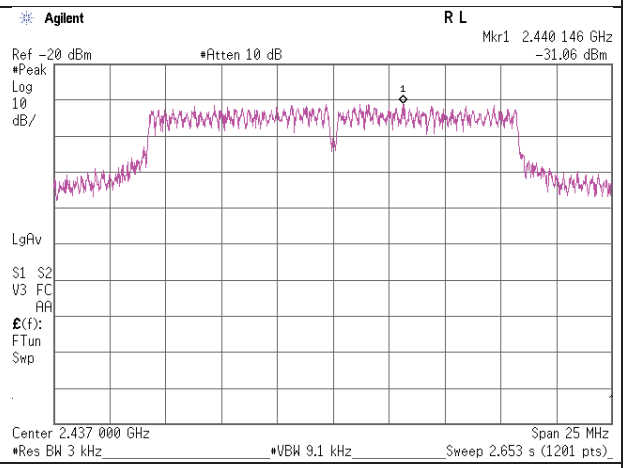
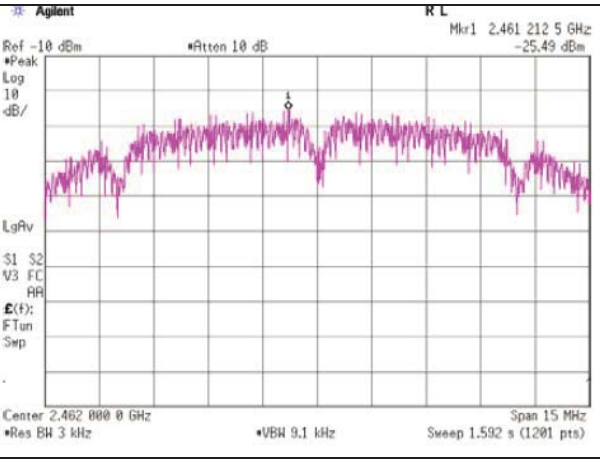
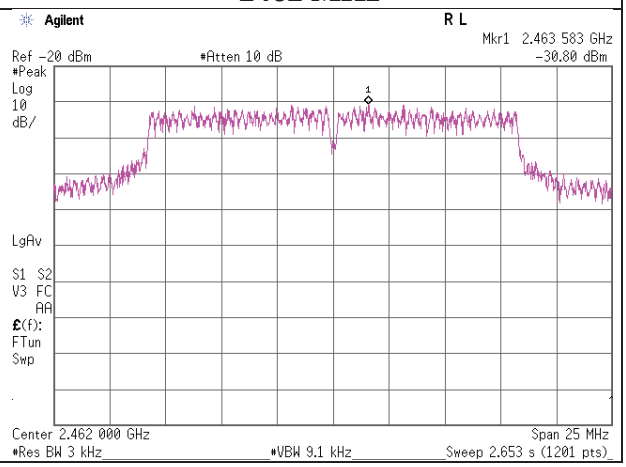
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-31.25	1.85	9.65	-19.75	8.00	27.75
2437.00	-30.32	1.86	9.66	-18.80	8.00	26.80
2462.00	-30.18	1.87	9.66	-18.65	8.00	26.65

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenua

*The equipment and cables were not used for factor 0 dB of the data sheets.

Power Density

Tx 12 dBm

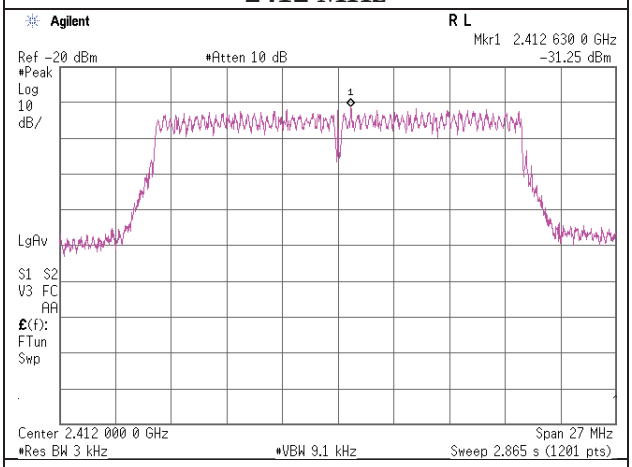
11b	11g
2412 MHz	**2412 MHz**
	
2437 MHz	**2437 MHz**
	
2462 MHz	**2462 MHz**
	

Power Density

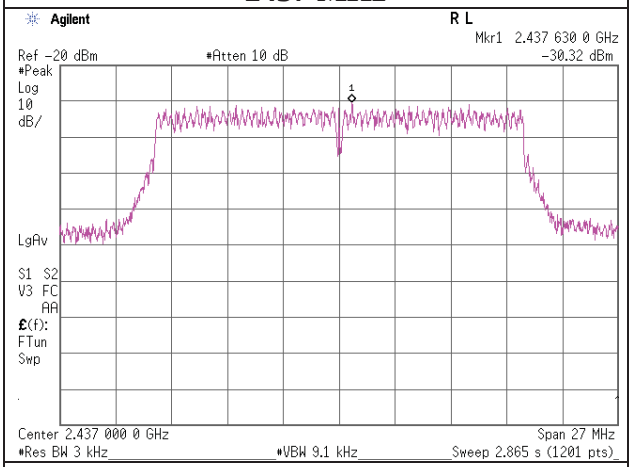
Tx 12 dBm

11n-20

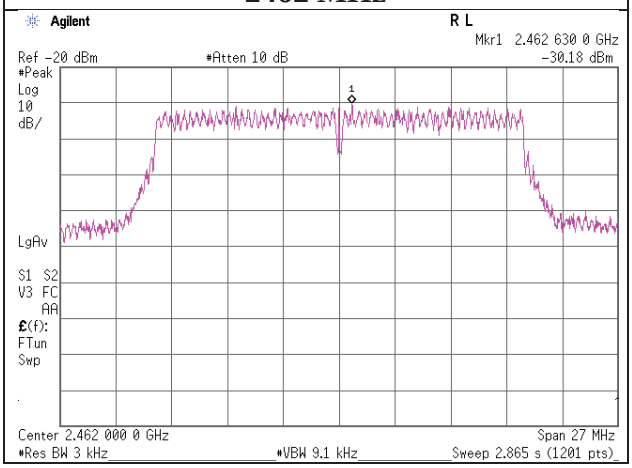
2412 MHz



2437 MHz



2462 MHz

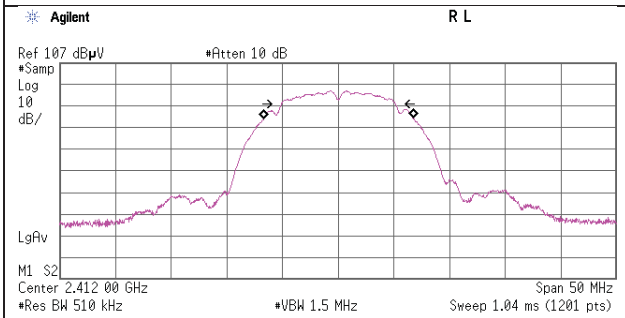


99%Occupied Bandwidth

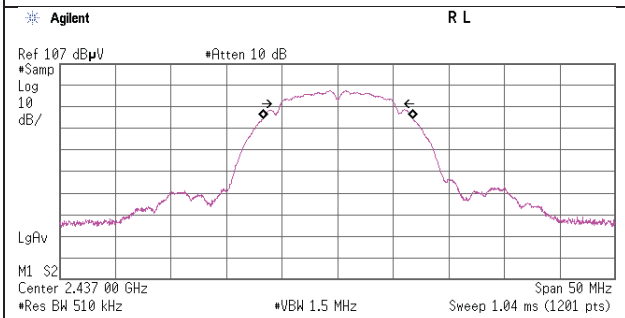
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 22, 2014
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Tatsuya Arai
Mode	Tx 10 dBm

11b

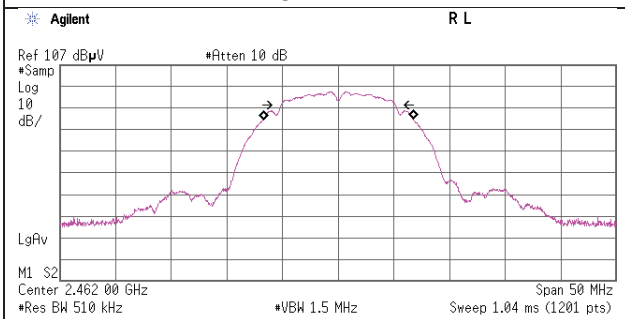
2412 MHz



2437 MHz

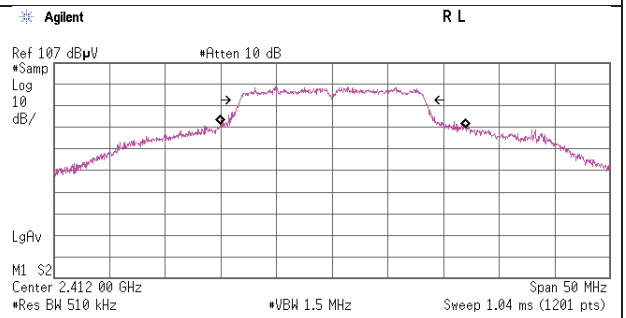


2462 MHz

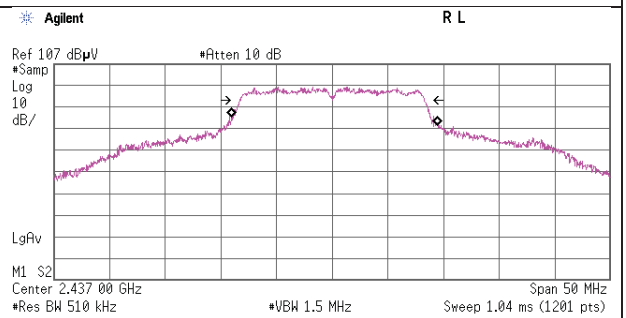


11g

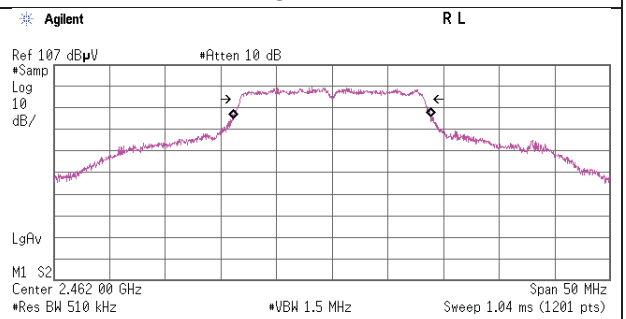
2412 MHz



2437 MHz



2462 MHz

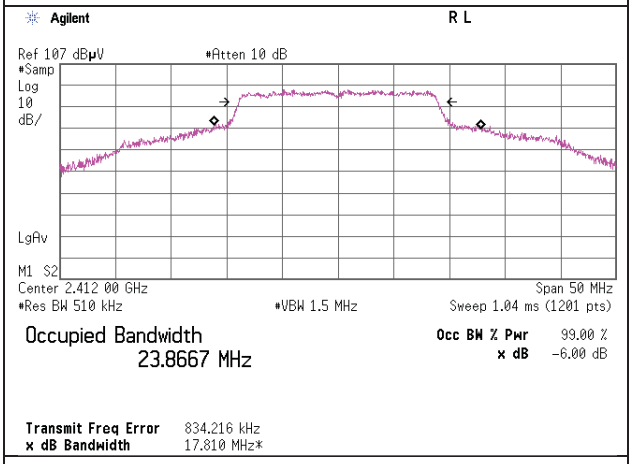


99% Occupied Bandwidth

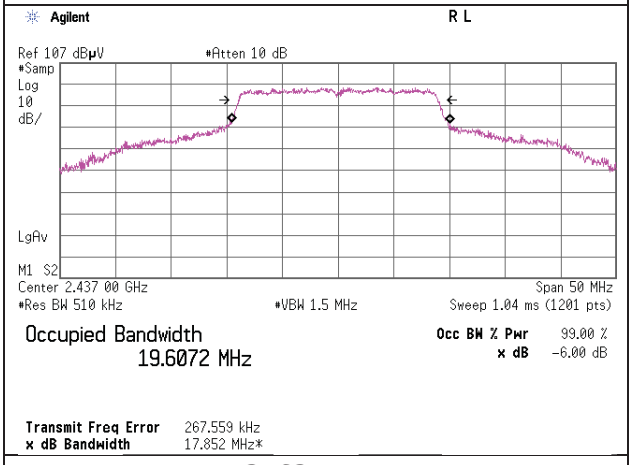
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 22, 2014
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Tatsuya Arai
Mode	Tx 10 dBm

11n-20

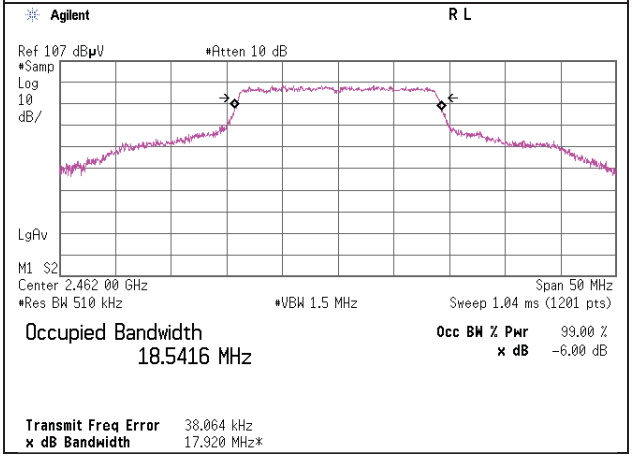
2412 MHz



2437 MHz



2462 MHz

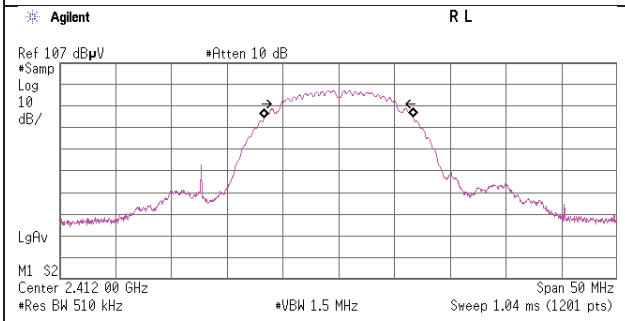


99% Occupied Bandwidth

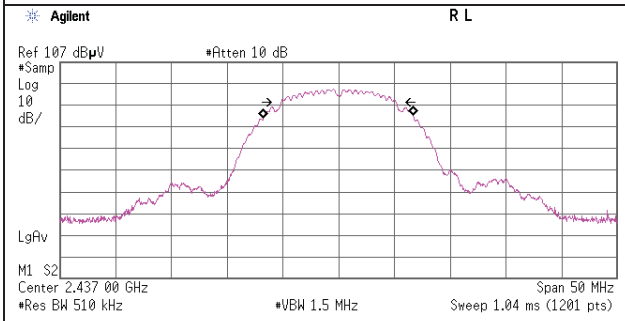
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 22, 2014
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Tatsuya Arai
Mode	Tx 12 dBm

11b

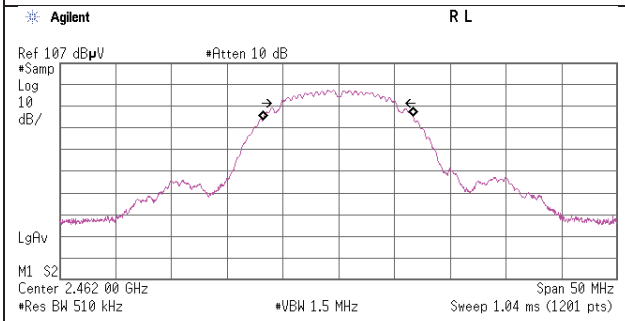
2412 MHz



2437 MHz

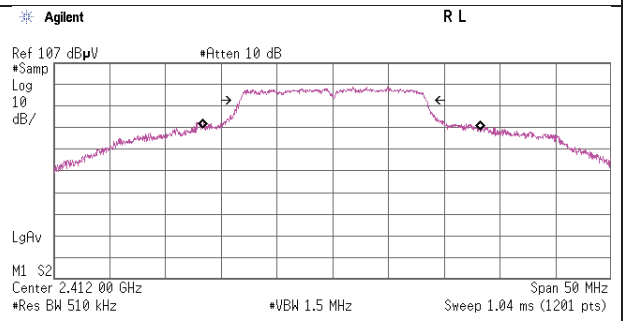


2462 MHz

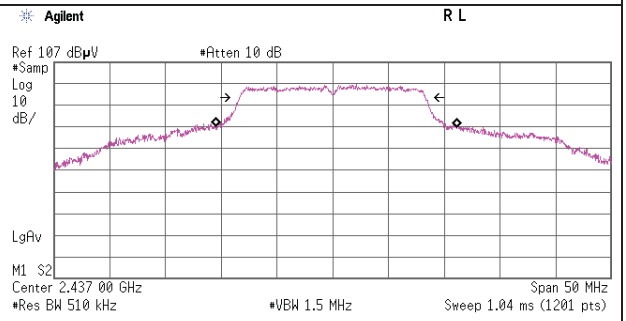


11g

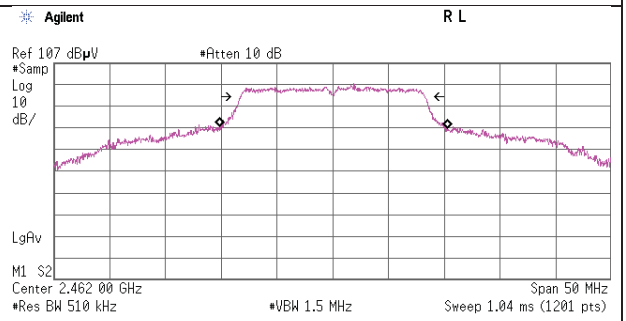
2412 MHz



2437 MHz



2462 MHz

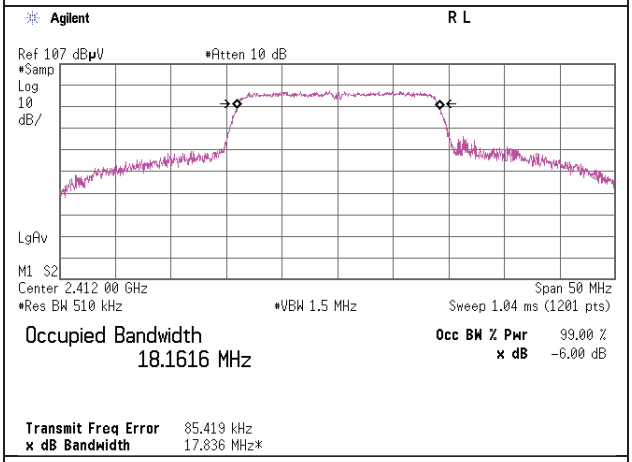


99% Occupied Bandwidth

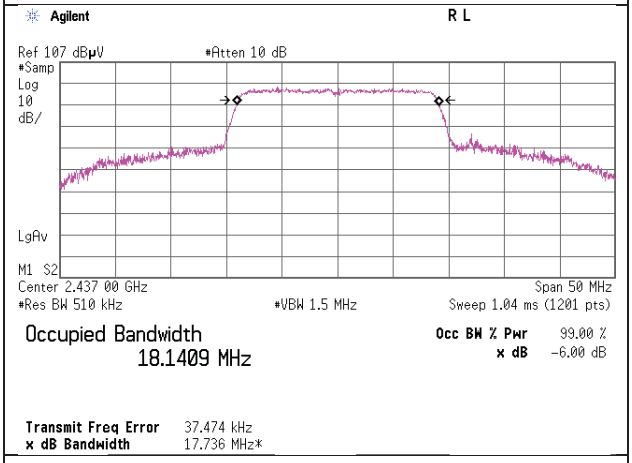
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11204559S-A-R1
Date	August 22, 2014
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Tatsuya Arai
Mode	Tx 12 dBm

11n-20

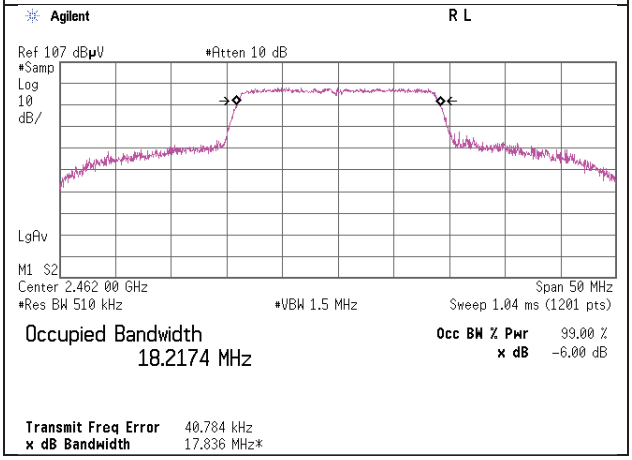
2412 MHz



2437 MHz



2462 MHz



APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2015/05/27 * 12
SCC-G04	Coaxial Cable	Junkosha	J12J102207-00	JUN-12-14-018	RE	2015/06/08 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2015/05/19 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2015/08/11 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2015/10/22 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2016/03/28 * 12
SJM-15	Measure	ASKUL	-	-	RE	-
SAEC-03(SVSWR)	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	RE	2015/08/28 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE,CE	-
STS-03	Digital Hitester	Hioki	3805-50	080997823	RE	2015/11/18 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2015/11/16 * 12
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	2016/02/19 * 12
KAT6-04	Attenuator	INMET	18N-6dB	-	RE	2015/12/18 * 12
SAT3-09	Attenuator	JFW	50HF-003N	-	RE	2015/08/31 * 12
SBA-01	Biconical Antenna	Schwarzbeck	BBA9106	91032664	RE	2015/10/11 * 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	2015/04/17 * 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	2015/04/17 * 12
SLA-01	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0888	RE	2015/10/11 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2015/10/22 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE	2015/11/06 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2015/07/13 * 12
STS-01	Digital Hitester	Hioki	3805-50	080997812	RE	2015/11/18 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2016/03/15 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2016/03/23 * 12
SCC-G33	Coaxial Cable	Junkosha	MWX241-01000KMSKMS	-	RE	2016/04/18 * 12
SCC-G15	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	RE	2016/03/08 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	AT,	2016/03/28 * 12
SCC-G14	Coaxial Cable	Suhner	SUCOFLEX 102	31600/2	AT	2016/03/23 * 12
SAT10-09	Attenuator	Weinschel Corp.	54A-10	W5692	AT	2015/11/04 * 12
SPM-07	Power Meter	Agilent	8990B	MY5100272	AT	2016/04/04 * 12
SPSS-04	Power sensor	Agilent	N1923A	MY5326009	AT	2016/04/04 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2015/12/07 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	,AT	2016/03/23 * 12
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	CE	2015/04/17 * 12

SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2016/02/09 * 12
SAT3-05	Attenuator	JFW	50HF-003N	-	CE	
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2015/12/07 * 12
STM-05	Terminator	TME	CT-01 BP	-	CE	2015/12/18 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	CE	2016/03/28 * 12

The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

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

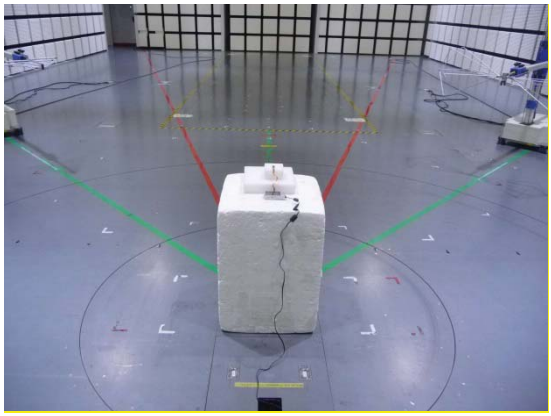
Test Item: **CE: Conducted Emission test**
RE: Radiated Emission test
AT: Antenna Terminal Conducted test

APPENDIX 3: Photographs of test setup

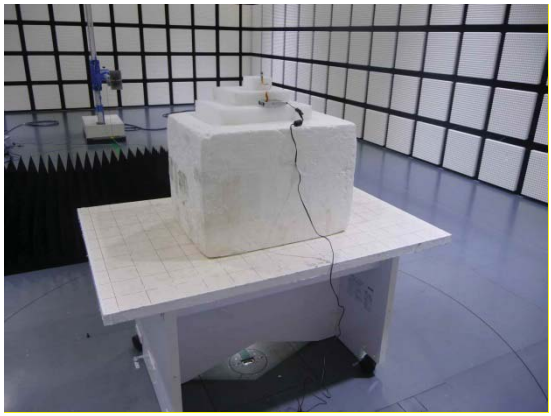
Conducted Emission

Radiated Spurious Emission

Below 1 GHz



Above 1 GHz



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Shonan EMC Lab.
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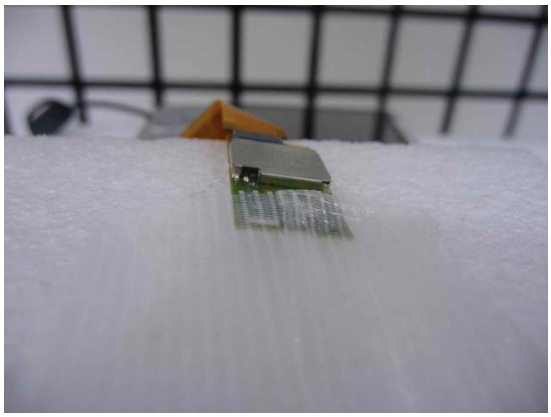
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Worst Case Position

X-axis



Y-axis

Z-axis

End of Report

UL Japan, Inc.
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Telephone : +81 463 50 6400
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